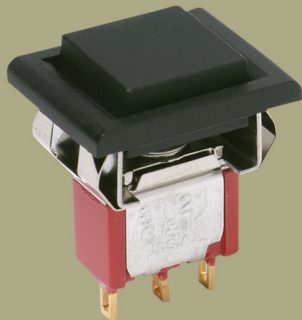
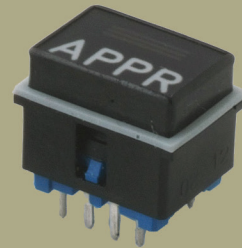
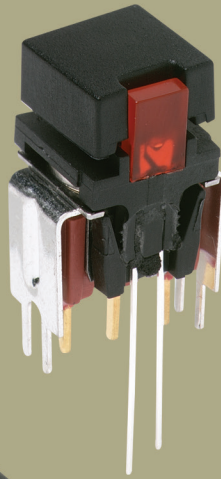


audio
automotive
aerospace
communication devices
consumer appliances
consumer electronics
datacom
data storage
handheld devices
industrial
industrial equipment
instrumentation
medical
military
mobile phones
portable tools
pumps & motors
security alarms
telecom
test equipment
thermostatic controls



pushbutton



Pushbutton Product Selection Guide

A
Pushbutton

Pushbutton									
Series	ELUM	EP	TP	E020	8020	E010	8060	8500	KM
Switch Type	Mom./ Latching	Tiny	Tiny	Snap-acting Mom.	Snap-acting Mom.	Miniature	Alternate Action	Sub-miniature	Sub-miniature
Poles/Throws	SPDT	SPST, SPDT, DPST	SPST, SPDT, DPST	SPDT, DPDT	SPDT, DPDT, 3PDT, 4PDT	SPDT	SPDT, DPDT	SPST	SPST, SPDT
Max. Current	3.5 VA	1 Amp	1 Amp	1 Amp	1 Amp	4 Amps	6 Amps	3 Amps	1 Amp
Process Sealed		•		•		•			
Illuminated	•				•		•	•	
PCB Mount Options									
Thru-hole	•	•	•	•	•	•	•	•	•
Vertical		•	•	•	•	•	•	•	•
Right Angle	•	•	•	•	•	•	•	•	•
Surface Mount	•	•							
Panel Mount			•		•	•	•	•	•
Page No.	A-4	A-9	A-15	A-21	A-29	A-46	A-52	A-62	A-67



Pushbutton							
Series	8600	8700	GP	PN	PHB	F	NE-18
Switch Type	Micro-miniature	Over Travel	Ultra-miniature	Alternate & Mom. Action	Short Stroke	Alternate & Mom. Action	Mains / Power
Poles/Throws	SPST	SPST	SPST, SPDT	SPDT, DPDT, 4PDT	DPDT, 4PDT	DPDT, 4PDT, 6PDT, 8PDT, 10PDT	DPST, DPDT Varied
Max. Current	500 mA	1 Amp	0.4 VA	200 mA	100 mA	500 mA	6 A
Process Sealed			•				
PCB Mount Options							
Thru-hole	•	•	•	•	•	•	•
Vertical	•	•	•				
Right Angle			•	•	•	•	•
Surface Mount			•				
Panel Mount	•	•				•	•
Page No.	A-71	A-74	A-77	A-81	A-84	A-87	A-96

Pushbutton Product Selection Guide



A
Pushbutton

Pushbutton								
Series	FP	AP	APB	NP	PNP	ATP	PBA	PB
Switch Type	Ultra Miniature	Industrial	Industrial	Sealed Power	Industrial	Anti-Vandal	Snap-acting Mom.	Miniature
Poles/Throws	SPST	SPST	SPST	SPDT	SPST SPDT	SPDT DPDT	DPDT 4PDT	DPDT 4PDT
Max. Current	0.4 VA	400mA	400mA	5 Amp	10mA / 3A / 5A	3A / 5A	0.3 / 1A	0.3 / 1A
Process Sealed	•	IP67	IP67	IP68		IP67		
PCB Mount Options								
Thru-hole	•	•	•	•	•		•	•
Vertical	•	•	•	•	•		•	•
Right Angle	•							
Panel Mount		•	•	•	•			
Wire Leads		•	•	•	•	•		
Solder Lug		•	•			•		
Surface Mount								
Quick Connect								
Page No.	A-105	A-108	A-114	A-118	A-125	A-130	A-141	A-145

Pushbutton		
Series	PS	PVA
Switch Type	Sub-miniature Microminiature	Short Stroke
Poles/Throws	SPST DPDT	DPST DPDT
Max. Current	0.1 / 1A 0.3 / 2A	100 mA
Process Sealed		
PCB Mount Options		
Thru-hole	•	•
Vertical	•	
Right Angle	•	
Panel Mount	•	
Wire Leads		
Solder Lug		
Surface Mount		
Quick Connect		
Page No.	A-158	A-169



ELUM™ Series Right Angle Illuminated Latching Pushbutton

**LEAD FREE
COMPATIBLE OPTION**

Pushbutton
A

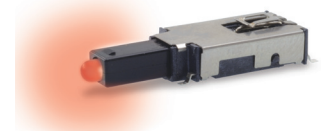
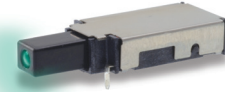
Features/Benefits

- **SPDT (N.O. & N.C.)**
- **Low height above PCB**
- **Reliable self-cleaning contact**
- **Surface-mount or thru-hole PCB**
- **Standard or custom actuator**
- **Central LED illumination**
- **Latching or Momentary**
- **Long travel. Smooth feel**
- **RoHS compliant and compatible**

Typical Applications

- **Telecom network equipment**
- **Automotive electronics**
- **Consumer electronics**
- **Computer, server, modem, data storage**
- **Professional instrumentation, medical**

Patent Numbers
6,974,924 B2 US
EP1583118B1 Europe



Materials

FIXED CONTACTS: Stainless steel, silver plated with gold flash
 TERMINALS: Stainless steel, silver plated
 MOVABLE CONTACTS: Copper alloy, silver plated with gold flash
 BASE: Glass filled LCP (UL94V-0)
 ACTUATOR: Glass filled nylon 4/6 (UL94V-0)
 COVER: Stainless steel

Operating Environment

OPERATING TEMPERATURE: -40°C TO 80°C.
 STORAGE TEMPERATURE: -40°C TO 80°C.
 RELATIVE HUMIDITY: 90% R.H. @ 80°C.
 OPERATING LIFE: 30,000 Cycles.
 VIBRATION: Per EIA 186-E Method
 MECHANICAL SHOCK: Per EIA 186-E Method 12.
 OVERLOAD: Withstands 40 N for 1 minute without damage

Electrical

MAXIMUM POWER: 3.5 VA
 MIN./MAX. VOLTAGE: 20 mV – 50 VDC
 MIN./MAX. CURRENT: 0.01 mA – 250 mA
 DIELECTRIC STRENGTH: ≥ 250 Vrms
 CONTACT RESISTANCE: ≤ 50 mΩ
 INSULATION RESISTANCE: ≥ 10⁹ Ω
 BOUNCE TIME: ≤1 ms
 LED SPECIFICATIONS: See page A-5

Process Environment

SOLDERABILITY: According to Mil STD 202F Method 208D or EIA RS-186E Method 9.
 LEAD FREE PROCESS COMPATIBLE: 260°C peak, 10 seconds Max. above 250° C.
 WASHING PROCESS: No clean process compatible (SMT)
 Bottom wash compatible (Thru-hole)
 SHEAR TEST (SWITCH/PCB): > 40 N

Mechanical

OPERATING FORCE: 2.5 N at Full Travel
 SWITCHING TRAVEL: .067" (1.7 mm)
 LATCH TRAVEL: .131" (3.6 mm)
 FULL TRAVEL: .200" (5.1 mm)

Packaging

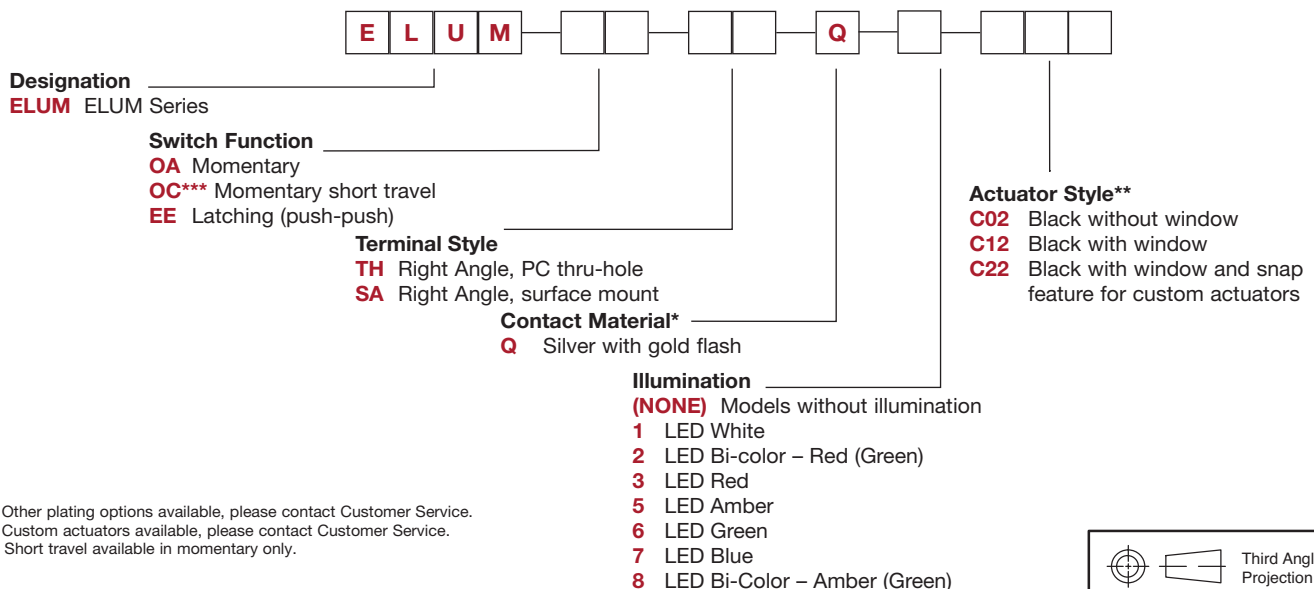
“SA” Terminal Style SMT: Tape and reel per EIA 481-2 (450/reel)
 “TH” Terminal Style PC: Tray (60/tray)

NOTE: Any models supplied with Q, contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

ELUM™ Series Right Angle Illuminated Latching Pushbutton

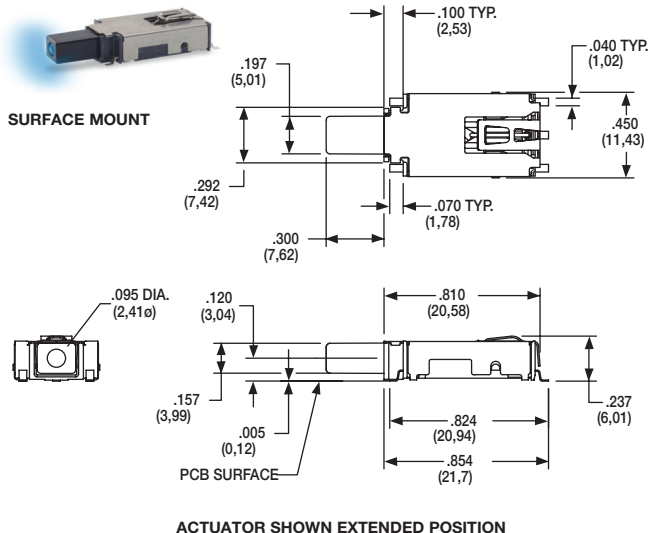


A

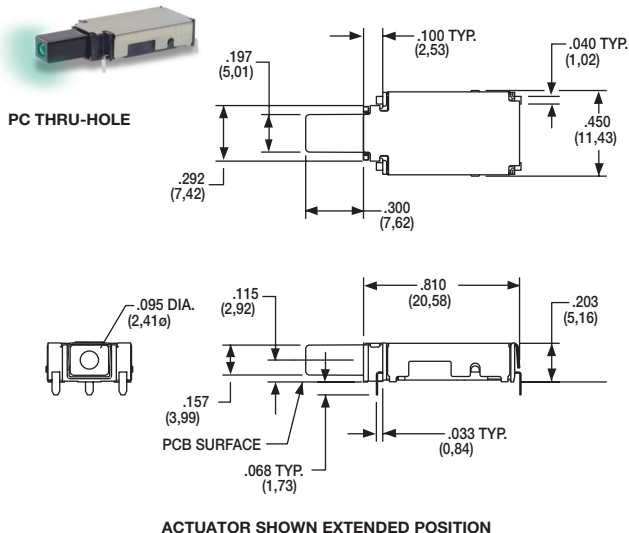
Pushbutton

STANDARD OPTIONS

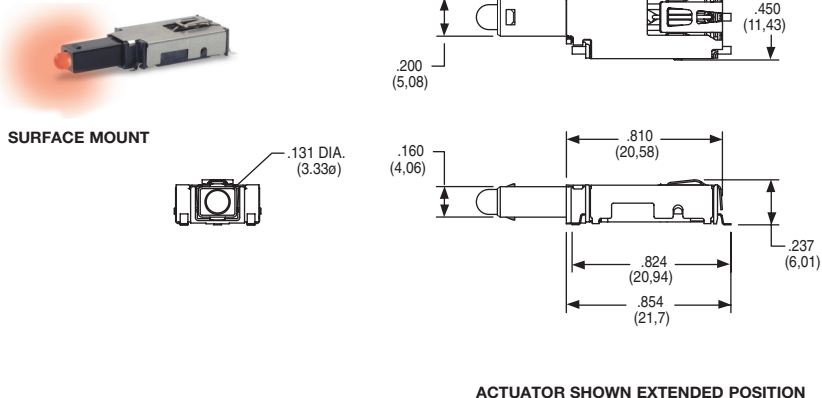
ELUMEESAQ7C12



ELUMOATHQ6C12



ELUMEESAQ3C22



DESIGNATION **ELUM** □ □ □ □ □ □ □ □

ELUM ELUM SERIES, Illuminated Latching Pushbutton

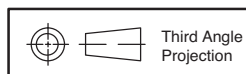
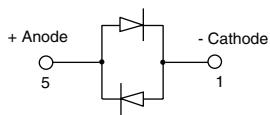
SWITCH FUNCTION

OPTION CODE	NO. OF POLES	POSITION 1	CONNECTED TERMINALS	POSITION 2	CONNECTED TERMINALS	SCHEMATIC
		SWITCH FUNCTION		SWITCH FUNCTION		
OA / OC	SP Momentary	ON	3 - 4	ON (Mom.)	3 - 2	
EE	SP Latching (Push-Push)	ON	3 - 4	ON	3 - 2	

For SPST N.O. function, only terminals 3 & 2 are used.
 For SPST N.C. function, only terminals 3 & 4 are used.
 Circuit: Make before break

LED pins 1 & 5 are independent of switch function.

NOTE:
 For bi-color LED's the polarity must be reversed to alternate the color



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



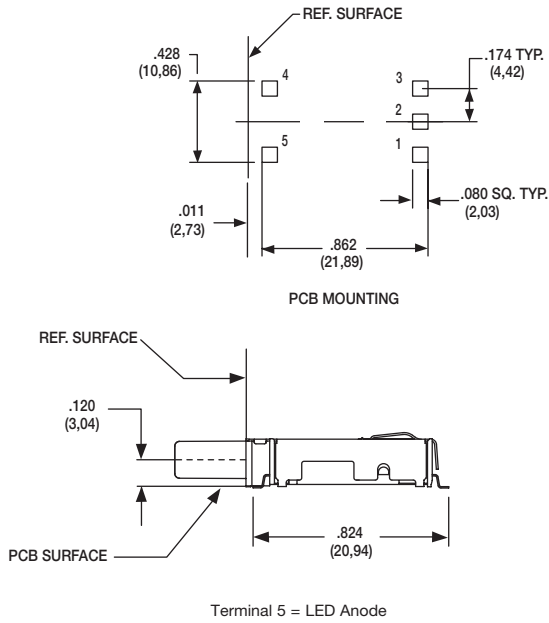


ELUM™ Series Right Angle Illuminated Latching Pushbutton

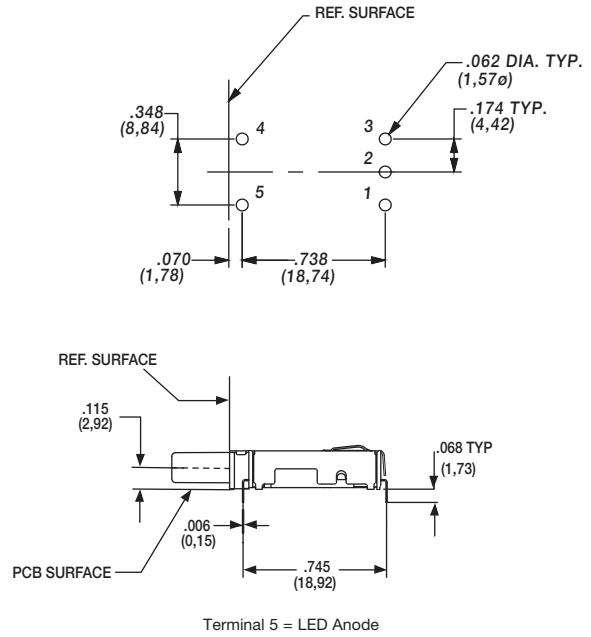
TERMINAL STYLE

Pushbutton
A

SA RIGHT ANGLE, SURFACE MOUNT



TH RIGHT ANGLE, PC THRU-HOLE



CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS
Q	SILVER WITH GOLD FLASH	SILVER	250 mA

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

FIXED CONTACTS AND TERMINALS: Stainless steel, silver plated with gold flash

MOVABLE CONTACTS: Copper alloy, silver plated with gold flash

NOTE: Any models supplied with Q, contact material are RoHS compliant.

ILLUMINATION

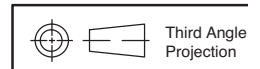
OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY* MIN	TYPICAL INTENSITY* MAX	PEAK WAVELENGTH	V _f Forward Voltage
		(mcd)		(nm)	
0	Model without illumination	N/A		N/A	
1	LED Super White	4,000	5,000	N/A	3.5
2	LED Bi-Color – Red (Green)	10	20	635/565	2.0
3	LED Red	4	8	700	2.0
5	LED Amber	35	50	610	2.0
6	LED Green	35	50	565	2.0
7	LED Super Blue	800	1,500	470	3.8
8	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

*LED FORWARD CURRENT: 20 mA

LED FORWARD VOLTAGE: see chart above

LED REVERSE VOLTAGE: 5.0 V MAX

* For information on specific and custom LED, please contact Customer Service.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

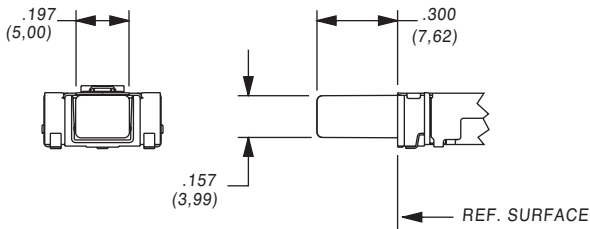
ELUM™ Series Right Angle Illuminated Latching Pushbutton



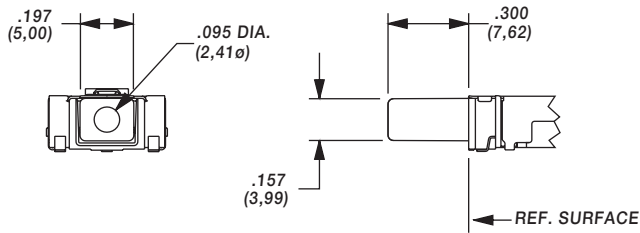
A
Pushbutton

ACTUATOR STYLE*

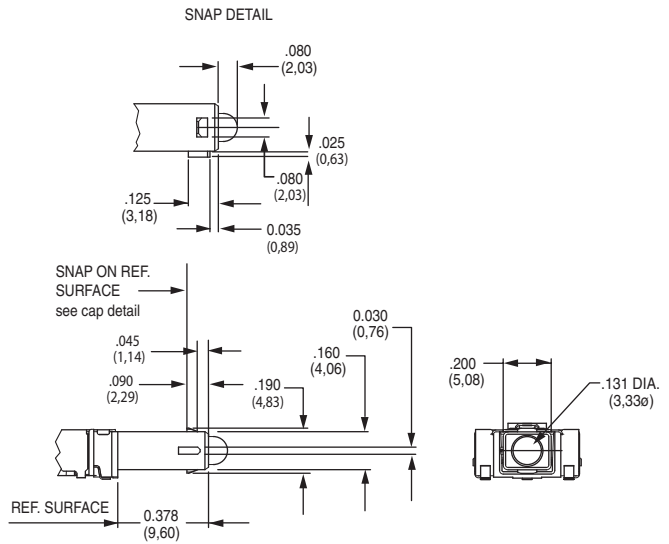
C02 BLACK WITHOUT WINDOW



C12 BLACK WITH WINDOW

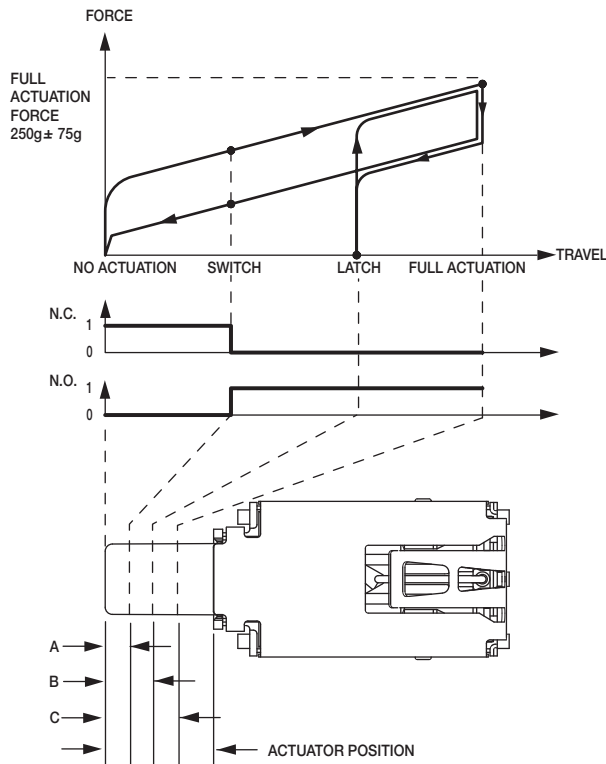


C22 BLACK WITH WINDOW AND SNAP FEATURE TO ACCEPT CUSTOM CAP



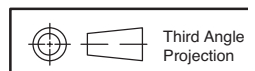
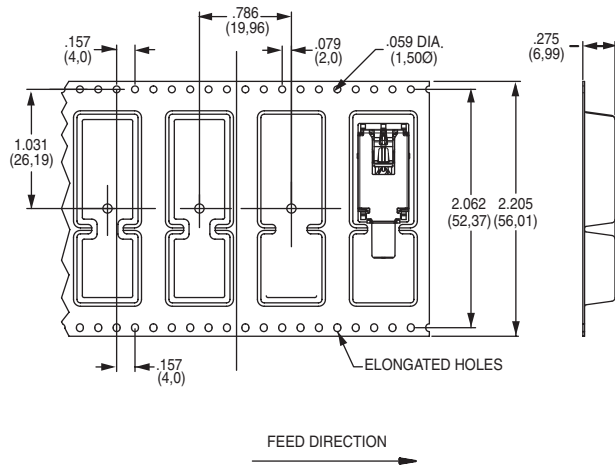
* Custom actuators available, please contact Customer Service.

FORCE TRAVEL DIAGRAM



OA, EE ACTUATOR POSITION			
A	SWITCH POINT	.067 ± .020	1,7 ± 0.5mm
B	LATCH	.131 ± .020	3,3 ± 0.5mm
C	FULL ACTUATION	.200 ± .020	5,1 ± 0.5mm
OC ACTUATOR POSITION			
A	SWITCH POINT	.067 ± .020	1,7 ± 0.5mm
C	FULL ACTUATION	.098 ± .020	2,5 ± 0.5mm

TAPE & REEL



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





ELUM™ Series Right Angle Illuminated Latching Pushbutton

AVAILABLE HARDWARE

A
Pushbutton

Cap



PART NO.

957C00000 High temperature black cap with universal standby symbol

956C02000 High temperature black cap with no symbol

Material: 4/6 Nylon SMT compatible

Cap



PART NO.

181D01000 Paint and Laser Etched with black paint and universal standby symbol

Material: Clear polycarbonate

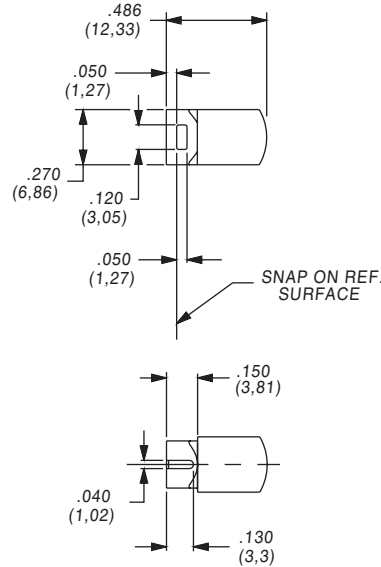
Cap



PART NO.

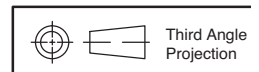
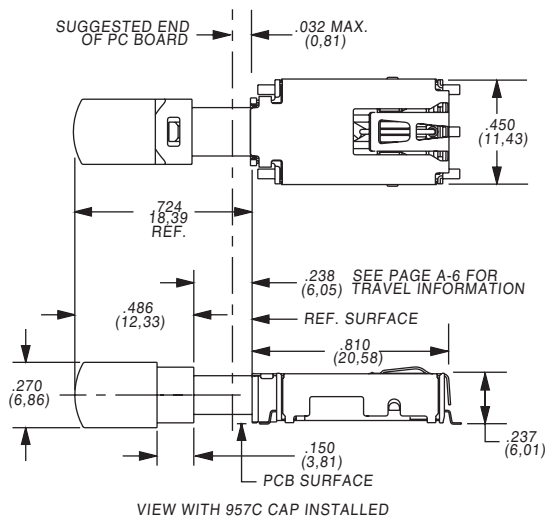
181D00000 Paint and laser etched with white paint underlay and black paint with universal standby symbol.

Material: Clear polycarbonate



NOTE: Caps are for use with the C22 actuator style. Other colors and symbols available, consult Customer Service Center.

CAP INSTALLATION



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



EP Series Sealed Tiny Pushbutton Switches



Features/Benefits

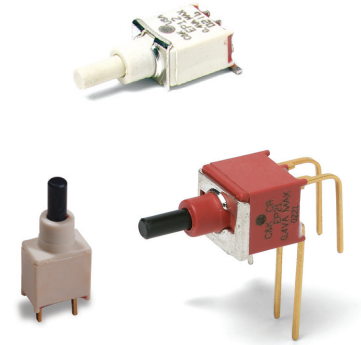
- Sealed against solder & cleaning processes
- Thru-hole and surface mount models
- Snap-fitting actuator accepts standard caps
- Tape & reel packaging available
- RoHS compliant models available



Models Available

Typical Applications

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. See page A-13 for additional ratings.

ELECTRICAL LIFE: EP11, EP21 models: 60,000 make-and-break cycles at full load. EP12 models: 30,000 cycles.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹ Ω9 min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 859°C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.

PACKAGING: Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-14 for drawings and reel information. Tape and cover strip are conductive for use near statically sensitive components, consult Customer Service Center.

Materials

CASE & BUSHING: High temperature material, glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0) on EP11 / EP12 models; glass filled nylon 6/6 on EP21.

PLUNGER: Thermoplastic polyester or glass filled nylon (UL 94V-0), with internal o-ring seal. SA surface mount: High temperature material, glass filled LCP (UL 94V-0).

SWITCH SUPPORT: Brass, matte-tin plated.

CONTACTS & TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-13 for additional contact materials.

TERMINAL SEAL: Epoxy.

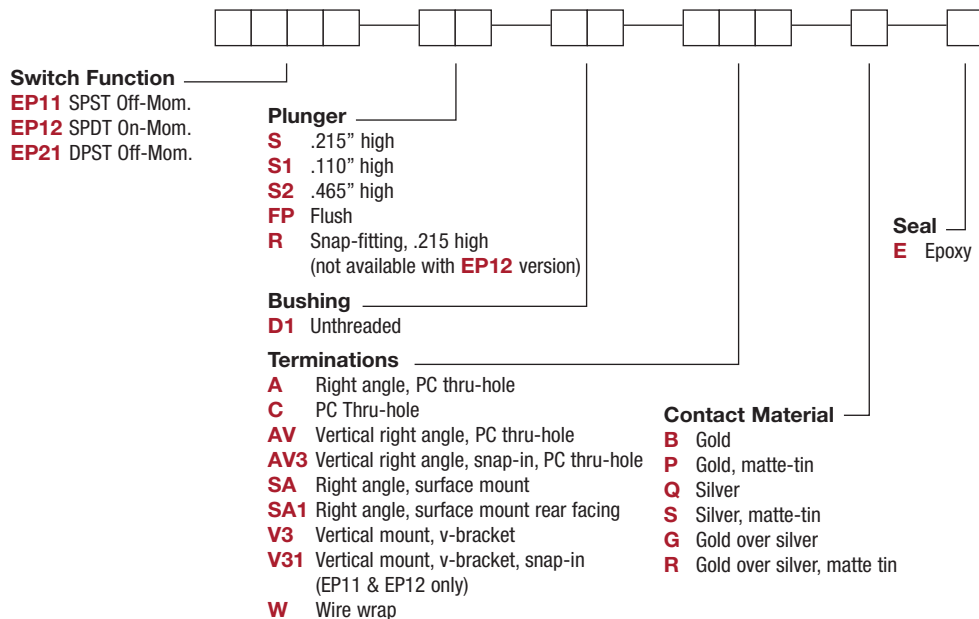
NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

CAUTION: PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

Build-A-Switch

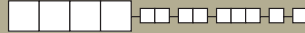
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-10 thru A-14. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.





EP Series Sealed Tiny Pushbutton Switches

SWITCH FUNCTION



NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	EP11	OFF	MOM.	OPEN	1-3	SPST
	EP12	ON	MOM.	2-1	2-3	SPDT
SPDT <p>Part number shown: EP12SD1CBE</p>						
DP	EP21	OFF	MOM.	OPEN	1-3,4-6	DPST
DPST <p>Part number shown: EP21SD1CBE</p>						

MOM. = Momentary

All models with all options when ordered with G, Q, R or S contact material.

PLUNGER



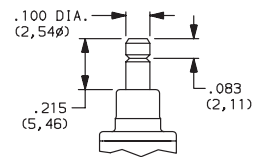
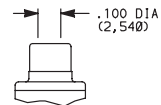
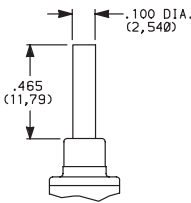
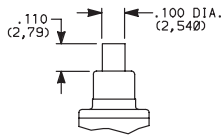
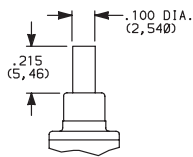
S .215" HIGH

S1 .110" HIGH

S2 .465" HIGH

FP FLUSH PLUNGER

R SNAP-FITTING



S1 & S2 actuators are not available with EP12 & EP21 models.

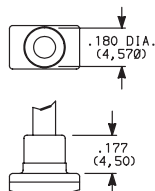
FP & R actuators are not available with EP21 model.
R actuators are not available with EP12 model.

NOTE: Caps available for plunger options, see page A-14.

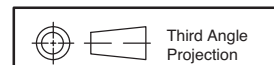
BUSHING



D1 UNTHREADED



NOTE: Internal actuator o-ring standard.



26 Mar 19

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

EP Series Sealed Tiny Pushbutton Switches

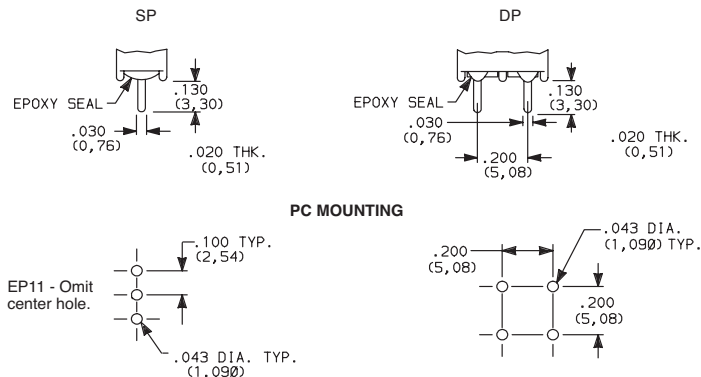


A Pushbutton

TERMINATIONS

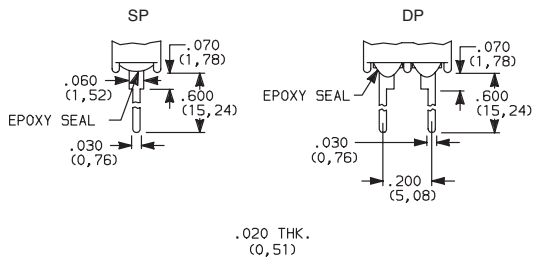


C PC THRU-HOLE



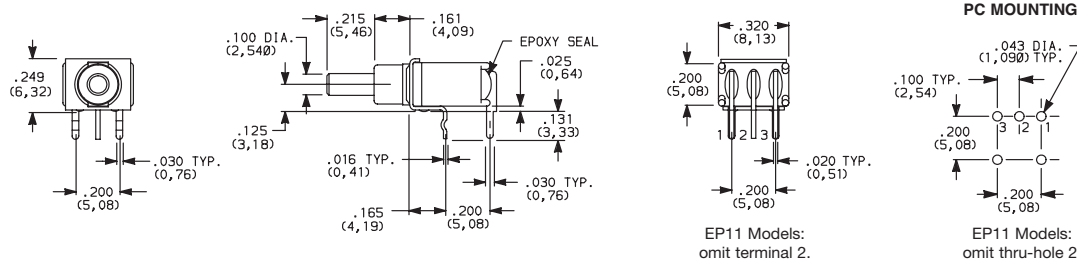
SP and DP

W WIRE WRAP



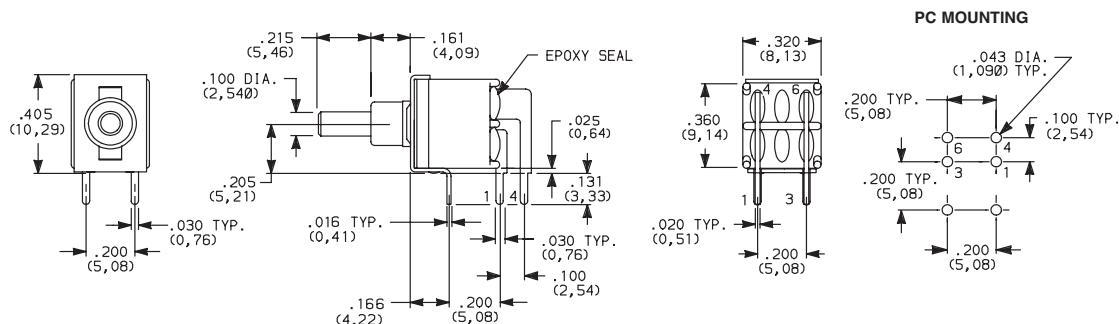
SP and DP

A RIGHT ANGLE, PC THRU-HOLE



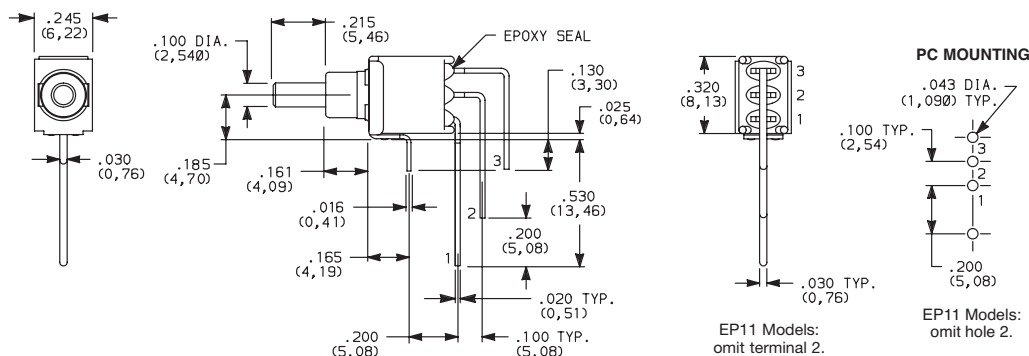
EP12SD1ABE SPDT

A RIGHT ANGLE, PC THRU-HOLE



EP21SD1ABE DPST

AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



EP12SD1AVBE SPDT

NOTE: Terminal bend radii and lead-in manufacturing option.



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



26 Mar 19



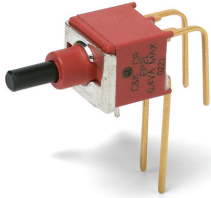
EP Series Sealed Tiny Pushbutton Switches

TERMINATIONS

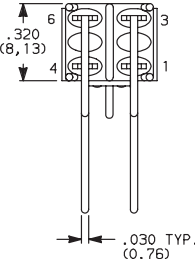
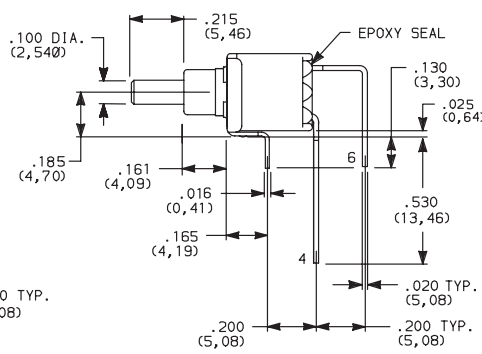
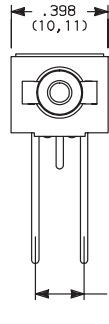


Pushbutton
A

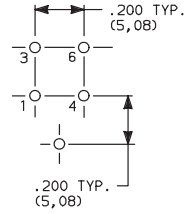
AV VERTICAL RIGHT ANGLE, THRU-HOLE



**EP21SD1AVBE
DPST**

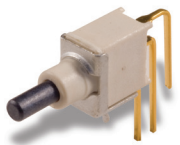


PC MOUNTING

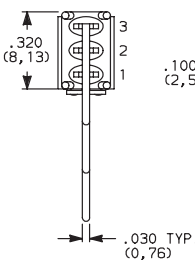
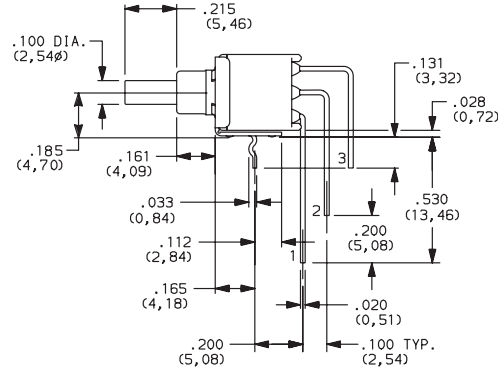
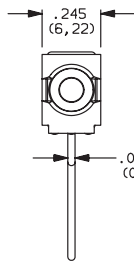


NOTE: Terminal bend radii and lead-in manufacturing option.

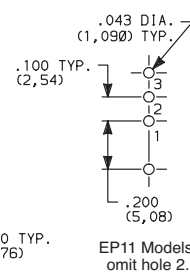
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



**EP12SD1AV3BE
SPST**



PC MOUNTING

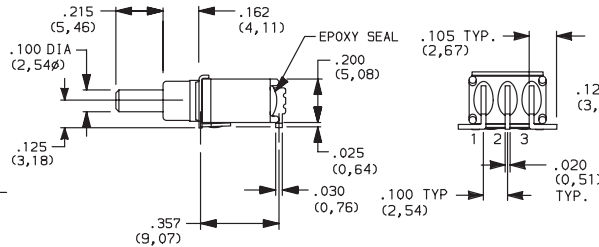
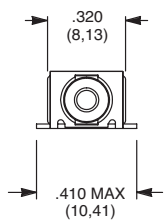


EP11 Models:
omit hole 2.

SA RIGHT ANGLE, SURFACE MOUNT

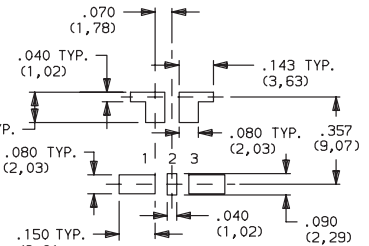


**EP12SD1SAPE
SPDT**



EP11 Models:
omit terminal 2.

PC MOUNTING



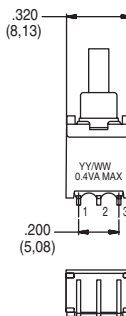
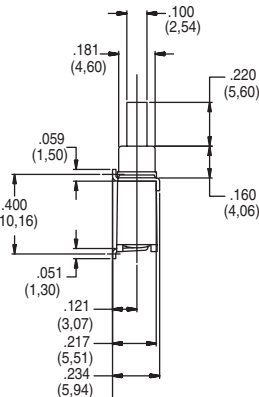
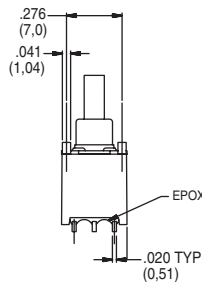
EP11 Models:
omit pad 2.

Available with P contact material only.
Not Available on DPST models.

SA1 RIGHT ANGLE, SURFACE MOUNT

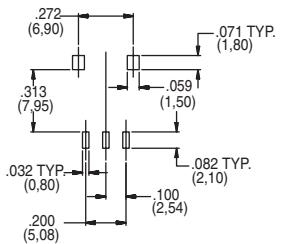


**EP12SD1SA1BE
SPDT**

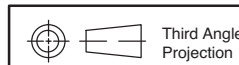


TERMINAL NOS.
FOR REF. ONLY

PC MOUNTING



SA1 is only available with B and P contact materials.
Not Available on DPST models.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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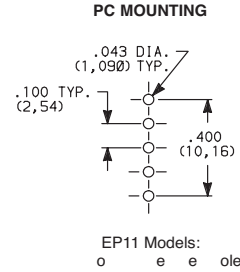
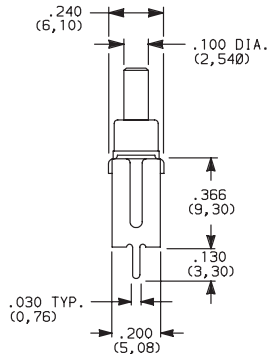
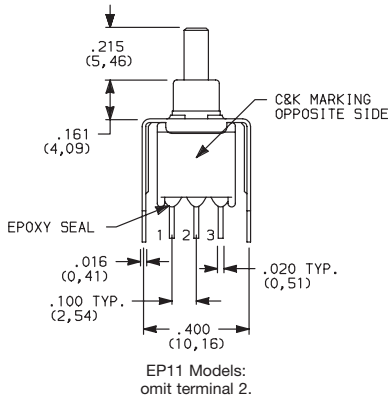
EP Series Sealed Tiny Pushbutton Switches



A Pushbutton

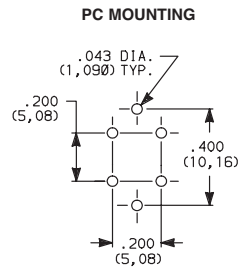
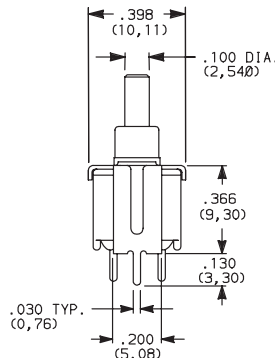
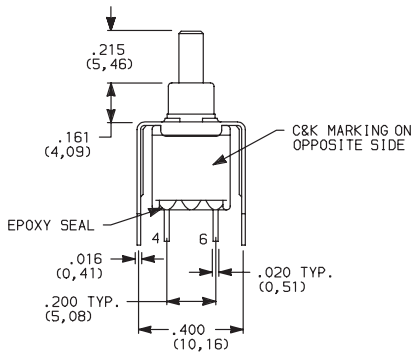
TERMINATIONS

- V3** VERTICAL MOUNT, V-BRACKET
- V31** VERTICAL MOUNT, V-BRACKET, SNAP-IN



EP12SD1V3BE SPDT

- V3** VERTICAL MOUNT, V-BRACKET



EP21SD1V3BE DPST

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	1 AMP @ 120 V AC OR 28 V DC.
S		MATTE-TIN ⁶		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁶		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

⁶ TERMINALS: Copper alloy, with matte tin over nickel plate.


² END CONTACTS: Coin silver, with gold plate over nickel plate.

³ CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

NOTE: Any models supplied with Q, B, P, S, R or G contact material are RoHS compliant.

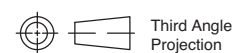
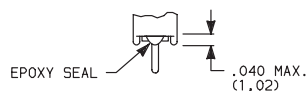
⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

All models  with all options when ordered with G, S, R or Q contact material.

SEAL

- E** EPOXY SEAL



26 Mar 19

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



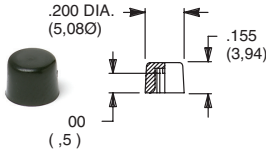
EP Series Sealed Tiny Pushbutton Switches

Pushbutton

A

AVAILABLE HARDWARE

Cap



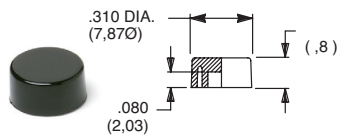
PART NO.

- 508101000** WHITE
- 508102000** BLACK
- 508103000** RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap



PART NO.

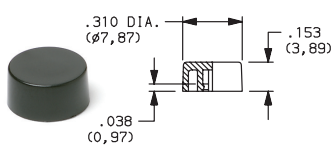
- 465801000** WHITE
- 465802000** BLACK
- 465803000** RED

Material: Nylon
Finish: Gloss

Not for use on S1 plunger

Cap

Compatible with snap-fitting plungers
EP11 & EP12 Models. R option only.



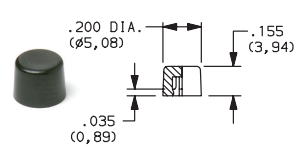
PART NO.

- 585A01000** WHITE
- 585A02000** BLACK
- 585A03000** RED

Material: Nylon
Finish: Gloss

Cap

Compatible with snap-fitting plungers
EP11 & EP12 Models. R option only.



PART NO.

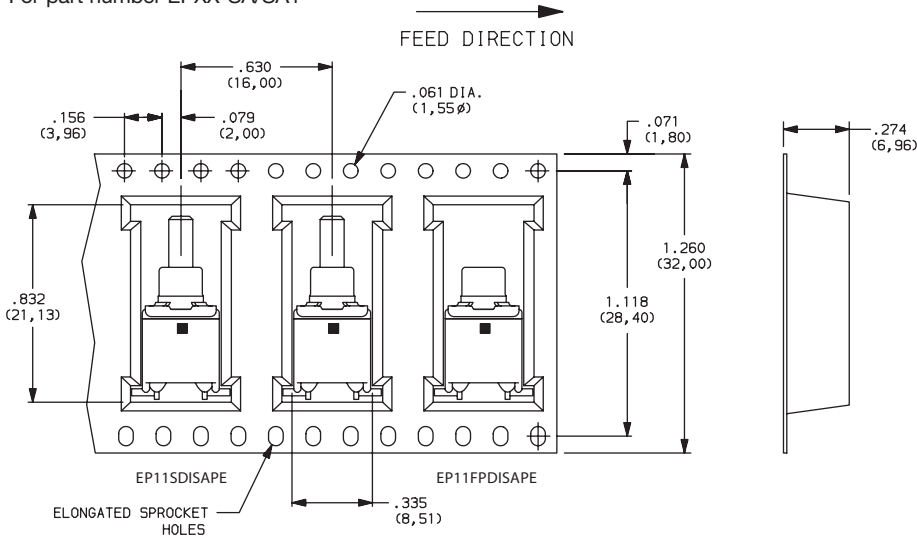
- 785A01000** WHITE
- 785A02000** BLACK
- 785A03000** RED

Material: Nylon
Finish: Gloss

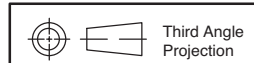
NOTE: Other colors available, consult Customer Service Center.

TAPE & REEL

For part number EPXX-SA/SA1



REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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Features/Benefits

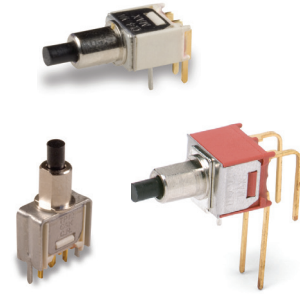
- Subminiature size—capable of switching 1 AMP
- Vertical & right angle terminations
- PC & panel mount models
- Snap-in front panel mounting available
- Epoxy terminal seal-compatible with bottom wash cleaning
- RoHS compliant models available



Models Available

Typical Applications

- Telecommunications and networking equipment
- Computers and peripherals
- Instrumentation and controls



Specifications

CONTACT RATING: B contact material: 0.4 VA max. @ 20 V AC or DC max. Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-19 for additional ratings.

ELECTRICAL LIFE: TP11, TP21 MODELS: 60,000 make-and-break cycles at full load. TP12 MODELS: 30,000 cycles.

CONTACT RESISTANCE: Below 20 mΩ @ 15 typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω 15min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°15C to 85°15C.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with Q, B, P, R or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 4/6 or 6/6, flame retardant, heat stabilized or diallyl phthalate (DAP), (UL 94V-0).

PLUNGER: Thermoplastic polyester (UL 94V-0).

CAP & FRAME: Nylon, black standard.

BUSHING: Brass, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass, matte-tin plated.

END CONTACTS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Coin silver, silver plated. See page A-19 for additional contact materials.

CENTER CONTACT & ALL TERMINALS: B contact material: Copper alloy, with gold plate over nickel plate. Q contact material: Copper alloy, silver plated. See page A-19 for additional contact materials.

TERMINAL SEAL: Epoxy. Refer to soldering and cleaning in Technical Data Chapter

HARDWARE: Nut & Locking Ring: Brass nickel plated.
Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-16 thru A-20. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all “bottom-wash” PCB cleaning methods.



Switch Function

- TP11 SPST Off-Mom.
TP12 SPDT On-Mom.
TP21 DPST Off-Mom.

Actuator or Bushing

- SH** .155" high plunger, threaded, .220" high bushing, flat
- SH8** .155" high plunger, unthreaded, .220" high bushing, round
- SH9** .155" high plunger, unthreaded, .220" high bushing, flat
- J81** Snap-in with frame
- LT** .215" high plunger, threaded, .310" high bushing, flat
- LT9** .215" high plunger, unthreaded, .310" high bushing, flat
- MS9** .130" high plunger, .020" high bushing, round

Terminations

- A** Right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- AV** Vertical right angle, PC thru-hole
- V3** Vertical mount, v-bracket
- W** Wire wrap

Contact Material

- B** Gold
- P** Gold, matte-tin
- Q** Silver
- G** Gold over silver
- R** Gold over silver, matte-tin

Seal

- E** Epoxy

Cap Color

- 2** Black
- NONE** Models with no cap
- 1** White

Frame Color

- 2** Black
- NONE** Models with no frame



TP Series Tiny Pushbutton Switches

SWITCH FUNCTION



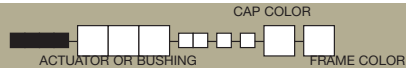
Pushbutton

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
		C&K marking on opposite side		C&K marking on opposite side		
SP	TP11	OFF	MOM.	OPEN	1-3	SPST
	TP12	ON	MOM.		2-3	SPDT
SPDT <p>Part number shown: TP12SHZQE</p> <p>Terminal Nos. For Reference Only</p>						
DP	TP21	OFF	MOM.	OPEN	1-3,4-6	DPST
DPST <p>Part number shown: TP21SHZQE</p> <p>Terminal Nos. For Reference Only</p>						

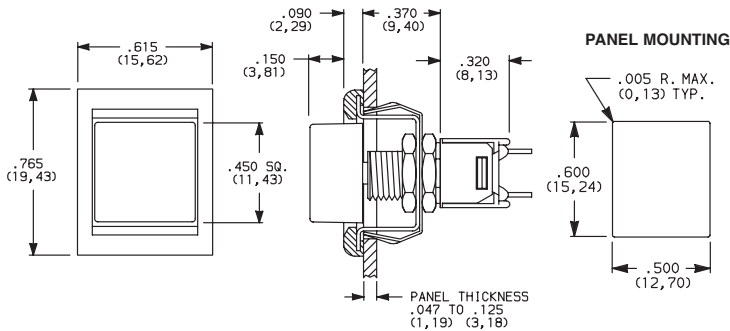
MOM. = Momentary

All models with all options when ordered with G, Q or R contact material.

ACTUATOR—SNAP-IN FRONT MOUNT



J81 SNAP-IN WITH FRAME

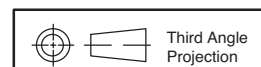


OPTION CODE	CAP COLOR
2	BLACK
1	WHITE

OPTION CODE	FRAME COLOR
2	BLACK
NONE	No Frame Color (J80 option)

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.
NOTE: Available with Z, C, or W terminations.

NOTE: Caps & frames available separately, see page A-20.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



TP Series Tiny Pushbutton Switches



A
Pushbutton

BUSHING

ACTUATOR OR BUSHING

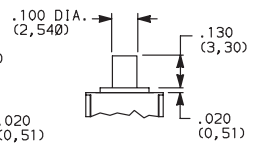
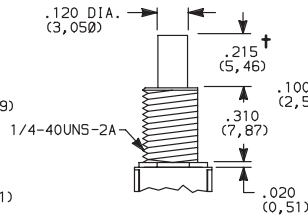
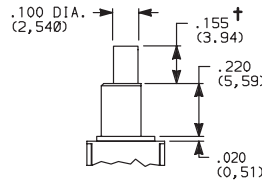
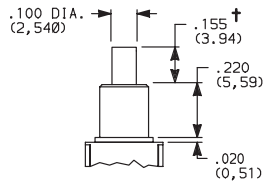
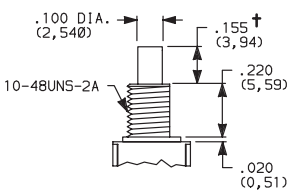
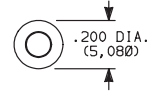
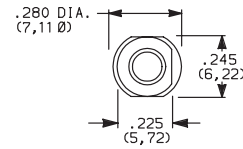
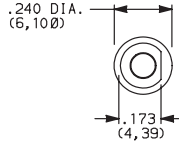
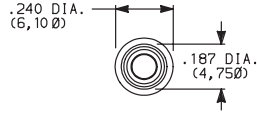
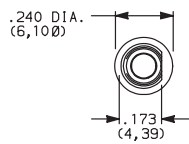
SH .155" HIGH PLUNGER,
.220" HIGH BUSHING,
THREADED, FLAT

SH8 .155" HIGH PLUNGER,
.220" HIGH BUSHING,
UNTHREADED

SH9 .155" HIGH PLUNGER,
.220" HIGH BUSHING,
UNTHREADED, FLAT

LT .21517" HIGH PLUNGER, **MS9** .130" HIGH
.310" HIGH BUSHING,
THREADED
PLUNGER

LT9 .215"17 HIGH PLUNGER,
.310" HIGH BUSHING,
UNTHREADED



Standard with Z, C, W terminations.

Standard with A, AV, V3 terminations.

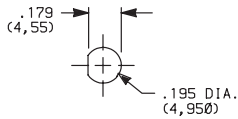
Not available with
Z terminations.

† Subtract .016 (0,41) for models with A, AV or V3 terminations.

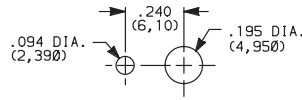
NOTE: Caps available for plunger options, see page A-20.

PANEL MOUNTING

10-48 BUSHING

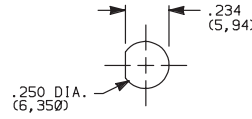


Without locking ring

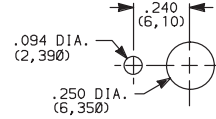


With standard locking ring

1/4 IN. BUSHING



Without locking ring

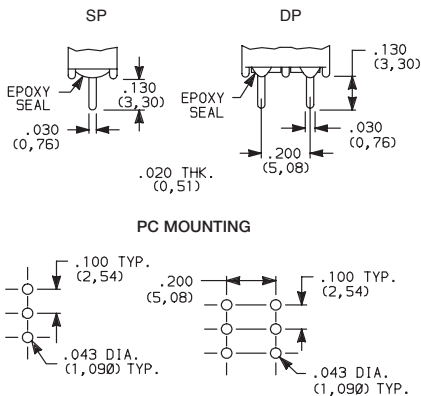


With standard locking ring

NOTE: One mounting nut, locking ring and lockwasher supplied standard with 10-48 threaded bushings (two nuts with 1/4-40 bushings).
Optional mounting nut and locking ring styles and finishes available separately, see section "Technical Data and Additional Hardware".

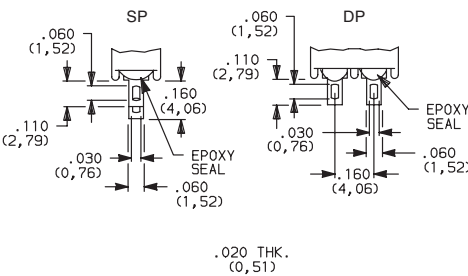
TERMINATIONS

C PC THRU-HOLE



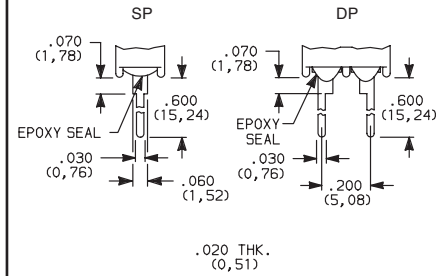
Omit center holes
for TP11 models

Z SOLDER LUG



Not available with MS9 bushing or P
or R contact material.

W WIRE WRAP



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



TP Series Tiny Pushbutton Switches

TERMINATIONS



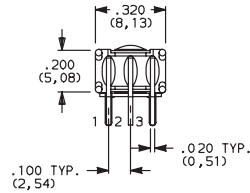
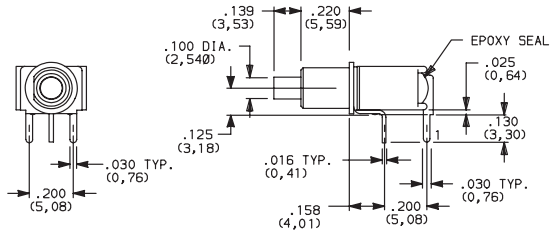
Pushbutton

A

A RIGHT ANGLE, PC THRU-HOLE

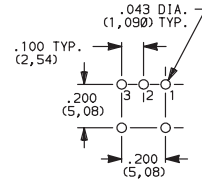


TP12SH9ABE
SPDT



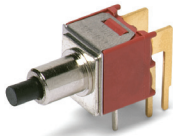
TP11 Models:
omit terminal 2.

PC MOUNTING

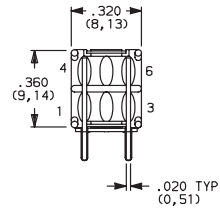
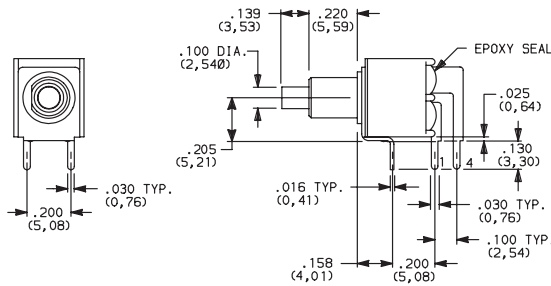


TP11 Models:
omit hole 2.

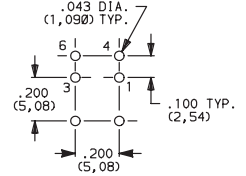
A RIGHT ANGLE, PC THRU-HOLE



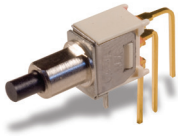
TP21SH9ABE
DPST



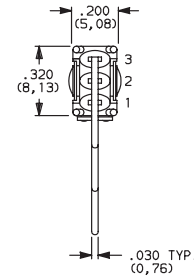
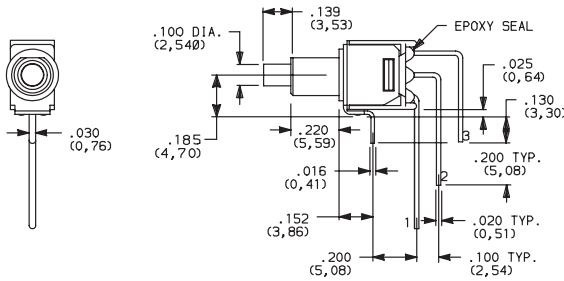
PC MOUNTING



AV VERTICAL RIGHT ANGLE, PC THRU-HOLE

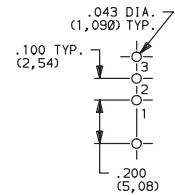


TP12SH9AVBE
SPDT



TP11 Models:
omit terminal 2.

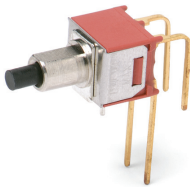
PC MOUNTING



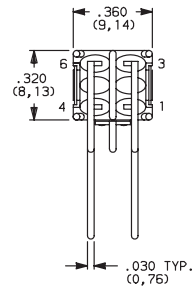
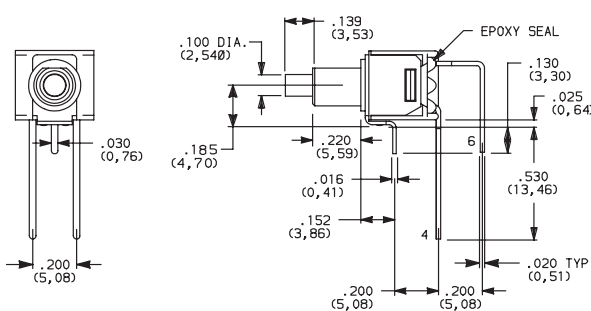
TP11 Models:
omit hole 2.

NOTE: Terminal bend radii and lead-in manufacturing option.

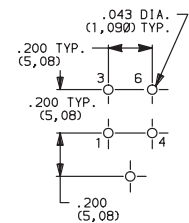
AV VERTICAL RIGHT ANGLE, PC THRU-HOLE



TP21SH9AVBE
DPST



PC MOUNTING



NOTE: Terminal bend radii and lead-in manufacturing option.

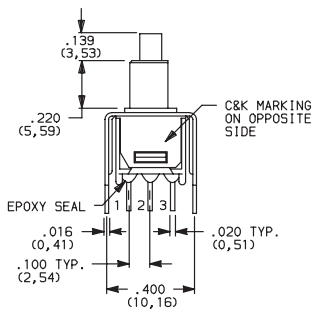


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

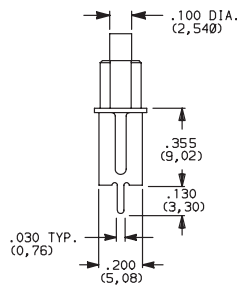


TERMINATIONS

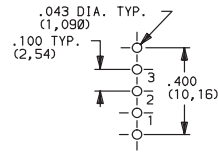
V3 VERTICAL MOUNT, V-BRACKET



TP11 Models:
omit terminal 2.



PC MOUNTING

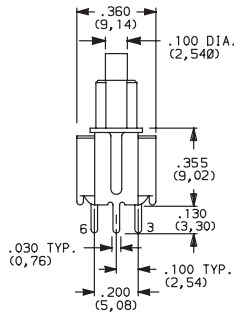
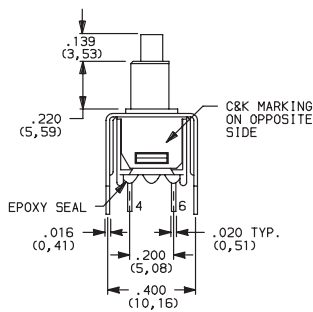


TP11 Models:
omit hole 2.

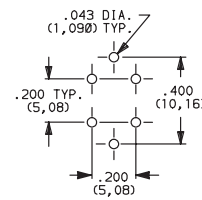


TP12SH9V3BE
SPDT

V3 VERTICAL MOUNT, V-BRACKET



PC MOUNTING



TP21SH9V3BE
DPST

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	1 AMP @ 120 V AC OR 28 V DC.
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁶		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

² END CONTACTS: Coin silver, with gold plate over nickel plate.

³ CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

⁶ TERMINALS: Copper alloy, with matte-tin over nickel plate.

NOTE: Any models supplied with P, R, Q, B or G contact material are RoHS compliant.

All models with all options when ordered with R, G, or Q contact material.

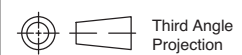
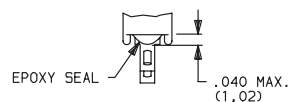
B contact material standard with A, AV, V3 & W terminations.

Q contact material standard with C & Z terminations

P, R contact materials not available with Z terminations.

SEAL

E EPOXY SEAL



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

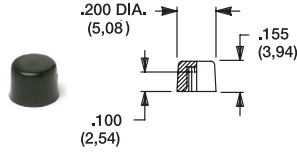


TP Series Tiny Pushbutton Switches

Pushbutton
A

AVAILABLE HARDWARE

Cap, .100" DIA. Plungers

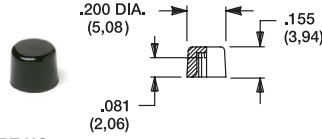


PART NO.

508101000 WHITE
508102000 BLACK

Material: Nylon
Finish: Gloss

Cap, .100" DIA. Plungers (Recommended for S9 plunger)

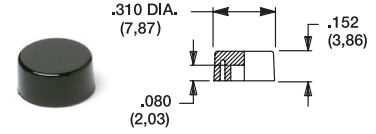


PART NO.

538701000 WHITE
538702000 BLACK

Material: Nylon
Finish: Gloss

Cap, .100" DIA. Plungers

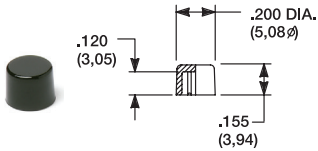


PART NO.

465801000 WHITE
465802000 BLACK

Material: Nylon
Finish: Gloss

Cap, .120" DIA. Plungers

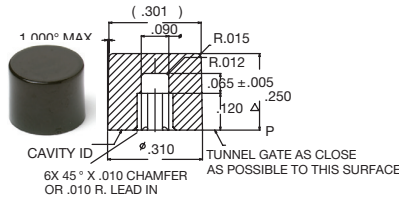


PART NO.

708901000 WHITE
708902000 BLACK

Material: Nylon
Finish: Gloss

Cap, .120" DIA. Plungers

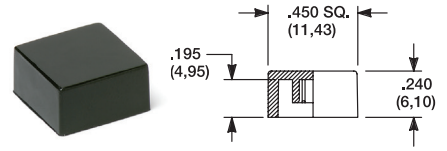


PART NO.

891D01000 WHITE
891D02000 BLACK

Material: Nylon
Finish: Gloss

Cap, J81 option only



PART NO.

484601000 WHITE
484602000 BLACK

Material: Nylon
Finish: Gloss

PART NO.

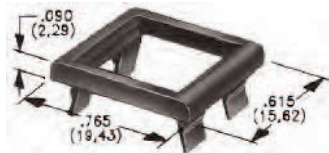
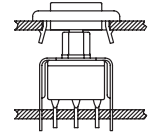
798201000 WHITE
798202263 BLACK

Material: Nylon
Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware". Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

PART NO.

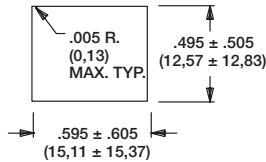
432702263

PART NO.

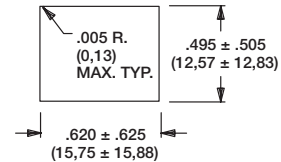
432802263 BLACK

PANEL MOUNTING

For part numbers
432502263, 432602263

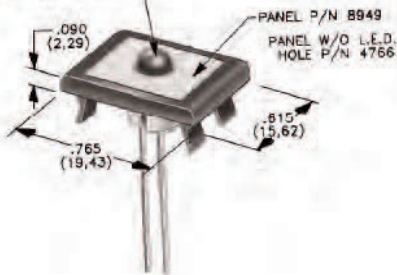


For part numbers
432702263, 432802263



Panel Inserts

L.E.D. (.200 DIA. (5,08)) SNAPS SECURELY INTO INSERT (P/N 8949). HEIGHT DEPENDS ON L.E.D. USED.



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.

PANEL INSERT WITH HOLE FOR LED

PART NO.

894902000

BLANK PANEL INSERT WITHOUT HOLE FOR LED

PART NO.

476602000 BLACK



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A

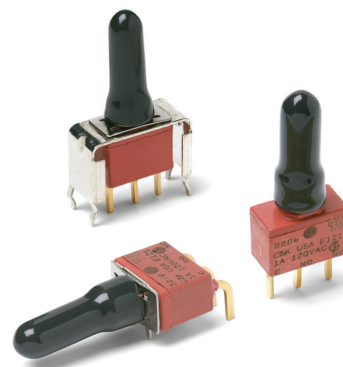
Pushbutton

Features/Benefits

- Process sealed with disposable splashproof boot
- Long life contact design
- Snap-fitting plunger available
- RoHS compliant models available

Typical Applications

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: B contact material (EX25 Models): 0.4 VA max. @ 20 V AC or DC max. G contact material (EX21 Models): 1 AMP @120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-make contacts. Multi-pole contacts do not make and break simultaneously. See page A-26 for additional ratings.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 m21Ω typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -3021°C to 75°21C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or

EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with P, R, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

SWITCH SUPPORT: Brass or steel, matte-tin.

SWITCH SUPPORT RETAINER: Stainless steel.

N.O. & N.C. CONTACTS: EX25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. EX21 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-26 for additional contact materials.

COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate. See page A-26 for additional contact materials.

TERMINAL SEAL: Epoxy.

DISPOSABLE BOOT: Vinyl splashproof boot supplied standard. Remove and discard only after soldering and cleaning processes are complete.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-22 thru A-28. For additional options not shown in catalog, consult our Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.



Switch Function

- E121** SPDT On-Mom. 1 Amp
- E221** DPDT On-Mom. 1 Amp
- E125** SPDT On-Mom. 0.4VA
- E225** DPDT On-Mom. 0.4VA

Plunger

- S** .282" high
- M** .331" high, snap-fitting
- S1** .332" high

Bushing

- D1** Unthreaded
- D3** .180" high, unthreaded

Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- A3** Right angle, snap-in, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V8** .953" high, V-bracket
- V31** .460" high, snap-in V-bracket
- V41** .630" high, snap-in V-bracket
- V61** .460" high, snap-in V-bracket

Contact Material

- B** Gold
- G** Gold over silver
- P** Gold, matte-tin
- R** Gold over silver, matte-tin

Seal

- E** Epoxy and disposable splashproof boot



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



E020 Series Sealed Snap-acting Momentary Pushbutton Switches

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	E121	ON	MOM.	1-3	1-2	
	E125	ON	MOM.			
SPDT						
Part number shown: E121SD1CGE						
DP	E221	ON	MOM.	1-3,4-6	1-2,4-5	
	E225	ON	MOM.			
DPDT						
Part number shown: E221SD1CBE						

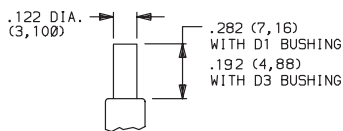
MOM. = Momentary

E121, E221 models with all options when ordered with G or R contact material.

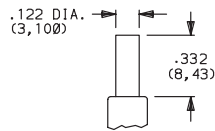
EX25 models must be ordered with B or P contact material.
EX21 models must be ordered with G or R contact material.

PLUNGER

S .282" HIGH

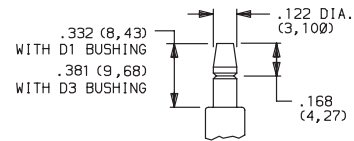


S1 .332" HIGH



Not Available with D1 bushing.

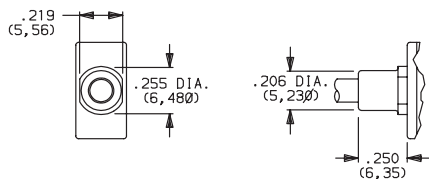
M .332" HIGH SNAP-FITTING



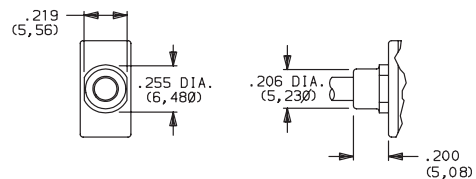
NOTE: Caps available for all plunger options, see page A-27.

BUSHING

D1 UNTHREADED



D3 .180" HIGH UNTHREADED



Not available with S1 actuator.

NOTE: Disposable splashproof vinyl over actuator and bushing supplied std., see page A-26.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

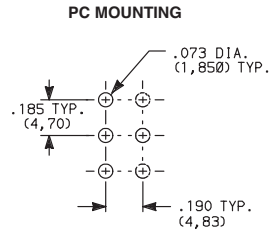
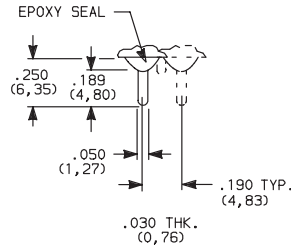
E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A Pushbutton

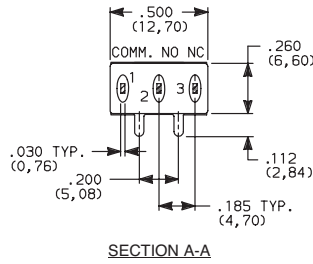
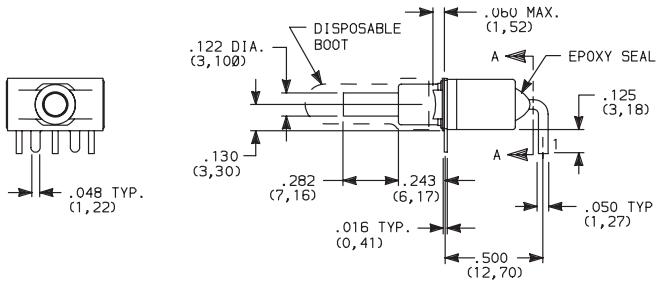
TERMINATIONS

C PC THRU-HOLE



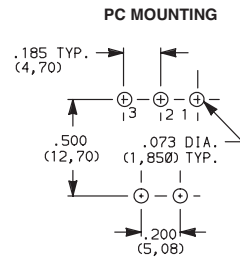
SPDT and DPDT

A RIGHT ANGLE, PC THRU-HOLE



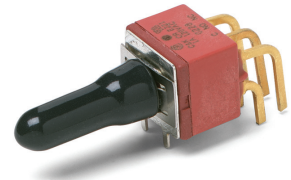
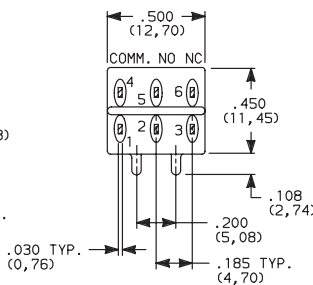
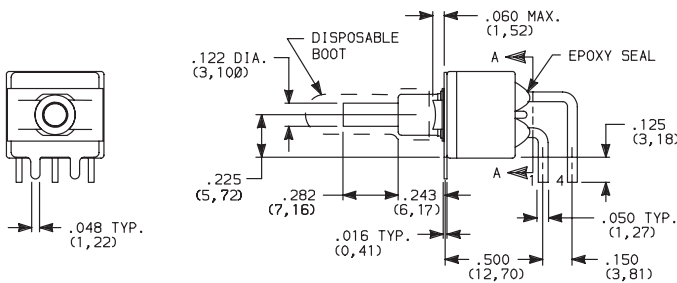
E121SD1AGE
SPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



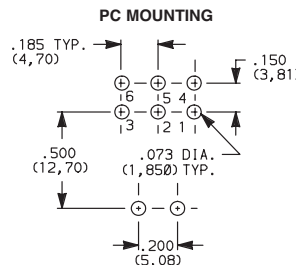
NOTE: Terminal bend radii and lead-in manufacturing option.

A RIGHT ANGLE, PC THRU-HOLE

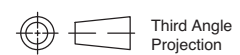


E221SD1AGE
DPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



E020 Series Sealed Snap-acting Momentary Pushbutton Switches

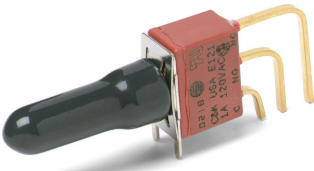
TERMINATIONS



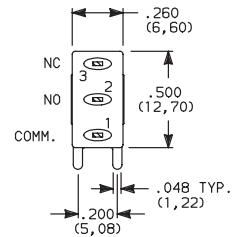
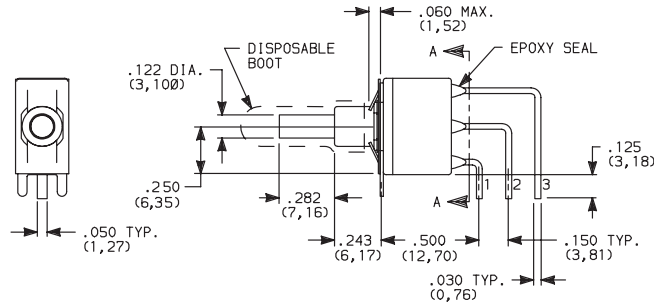
Pushbutton

A

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

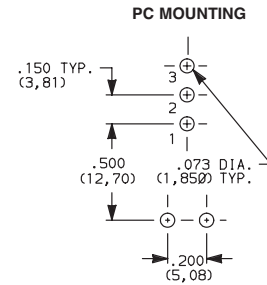
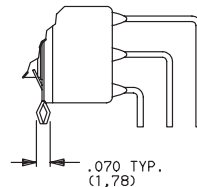
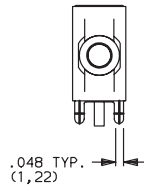


E121SD1AV2GE SPDT



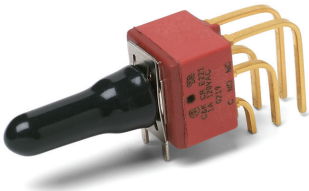
SECTION A-A

AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH

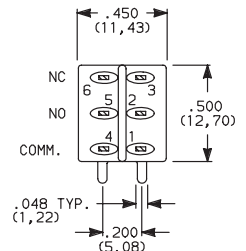
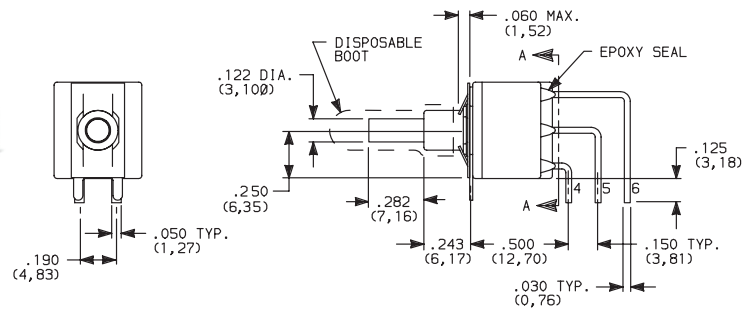


NOTE: Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

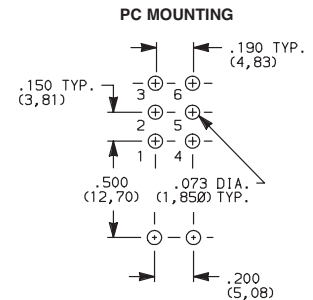
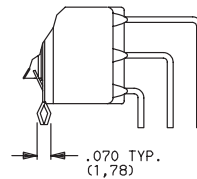
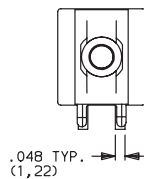


E221SD1AV2GE DPDT

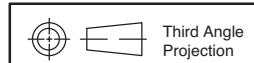


SECTION A-A

AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



NOTE: Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E020 Series Sealed Snap-acting Momentary Pushbutton Switches

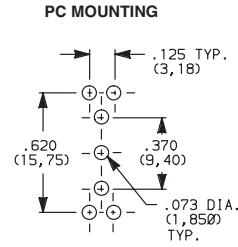
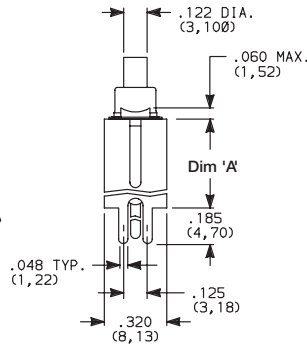
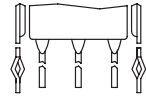
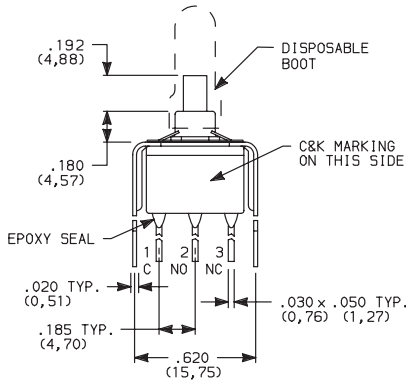


A Pushbutton

TERMINATIONS

V3, V4 VERTICAL MOUNT, V-BRACKET

V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN

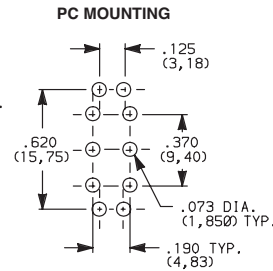
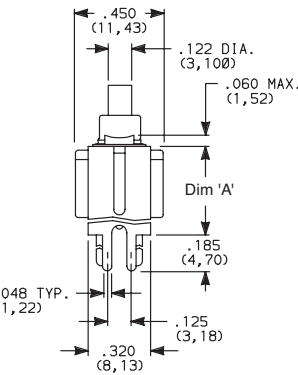
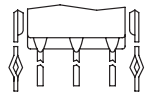
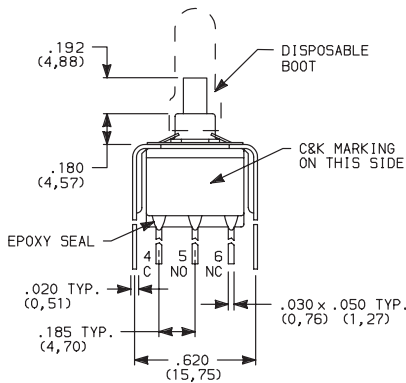


E121SD3_GE SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)

V3, V4 VERTICAL MOUNT, V-BRACKET

V31, V41 VERTICAL MOUNT, V-BRACKET, SNAP-IN

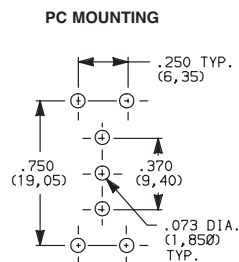
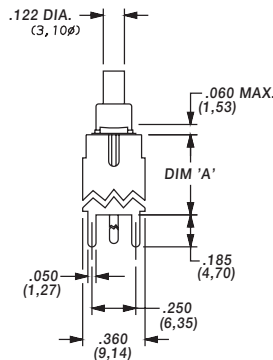
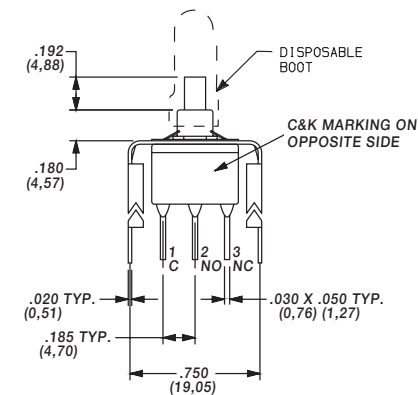


E221SD3_GE DPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4, V41	.630 (16,00)

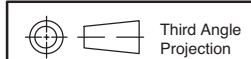
V6, V8 VERTICAL MOUNT, V-BRACKET

V61, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E121SD3_GE SPDT

OPTION CODE	DIM 'A'
V6, V61	.460 (11,68)
V8, V81	.953 (24,21)



Third Angle Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



E020 Series Sealed Snap-acting Momentary Pushbutton Switches

Pushbutton

A

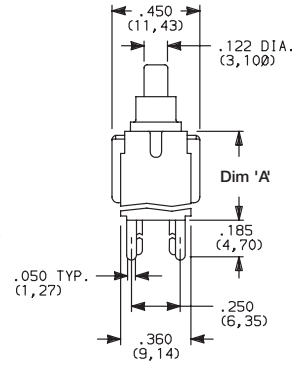
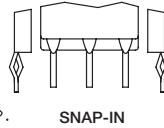
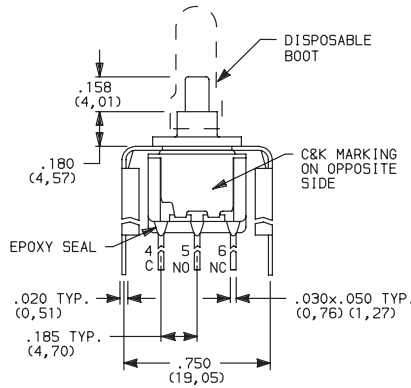
TERMINATIONS

V6, V8 VERTICAL MOUNT, V-BRACKET

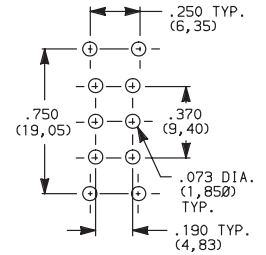
V61, V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN



E221SD3V6GE DPDT



PC MOUNTING



OPTION CODE	DIM 'A'
V6, V61	.460 (11,68)
V8, V81	.953 (24,21)

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	EX25 MODELS ONLY: 0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁴		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	EX21 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN ⁴		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- ¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- ² N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- ³ COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- ⁴ TERMINALS: Copper alloy, with matte-tin alloy over nickel plate.

NOTE: Any models supplied with P, R, B or G contact material are RoHS compliant.

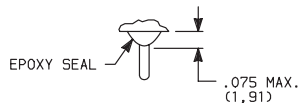
E121, E221 models with all options when ordered with mandatory G, or R contact material.

P or B contact material must be ordered with EX25 models.

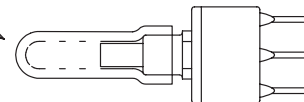
R or G contact material must be ordered with EX21 models.

SEAL

E EPOXY SEAL AND DISPOSABLE SPLASHPROOF BOOT



Disposable splashproof boot supplied standard. Remove and discard boot *only after* soldering and cleaning processes are complete.



Third Angle Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



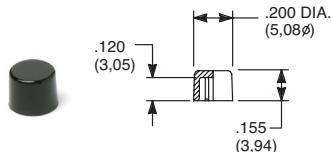
E020 Series Sealed Snap-acting Momentary Pushbutton Switches



A
Pushbutton

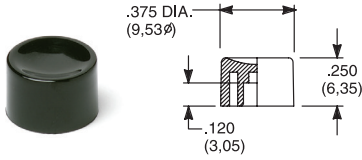
AVAILABLE HARDWARE

Cap



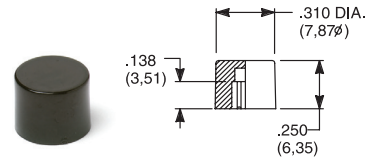
PART NO.
708901000 WHITE
708902000 BLACK
708903000 RED
 Material: Nylon
 Finish: Gloss

Cap



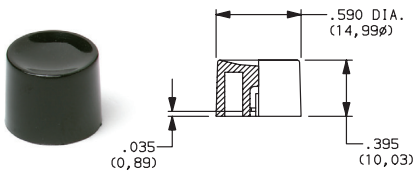
PART NO.
752701000 WHITE
752702000 BLACK
752703000 RED
 Material: Nylon
 Finish: Gloss

Cap



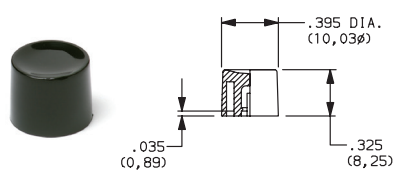
PART NO.
801801000 WHITE
801802000 BLACK
801803000 RED
 Material: Nylon
 Finish: Gloss

Cap, Snap-fitting plunger



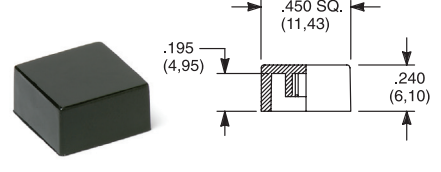
PART NO.
452D01000 WHITE
452D02000 BLACK
452D03000 RED
 Material: Nylon
 Finish: Gloss

Cap, Snap-fitting plunger



PART NO.
894101000 WHITE
894102000 BLACK
894103000 RED
 Material: Nylon
 Finish: Gloss

Cap



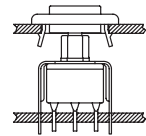
PART NO.
484601000 WHITE
484602000 BLACK
484603000 RED
 Material: Nylon
 Finish: Gloss

PART NO.
798201000 WHITE
798202263 BLACK
798203000 RED
 Material: Nylon
 Finish: Matte

NOTE: Other cap colors available, consult Customer Service Center.

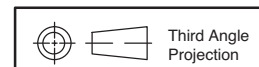
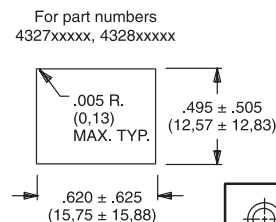
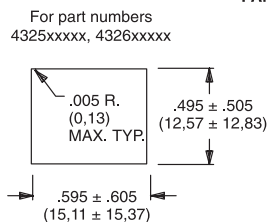
Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.
PART NO. **PART NO.**
432702263 **432802263** BLACK

PANEL MOUNTING



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

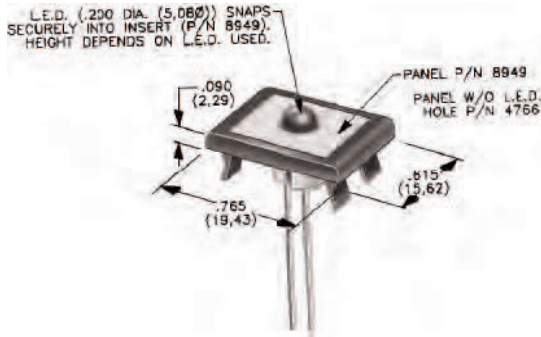


E020 Series Sealed Snap-acting Momentary Pushbutton Switches

AVAILABLE HARDWARE

PANEL INSERTS

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.



PANEL INSERT
WITH HOLE FOR LED

BLANK PANEL INSERT
WITHOUT HOLE FOR LED

PART NO.
894902000

PART NO.
476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.

8020 Series Snap-acting Momentary Pushbutton Switches



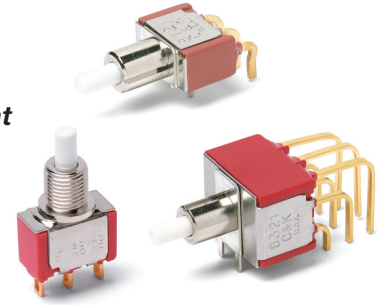
A Pushbutton

Features/Benefits

- Positive tactile feel
- Multi-positions available
- Wide variety of termination options
- Epoxy terminal seal compatible with bottom wash cleaning
- RoHS compliant models available

Typical Applications

- Instrumentation
- Computer peripherals
- Telecommunications equipment



Models Available

Specifications

CONTACT RATING: B contact material (8X25 Models): 0.4 VA max. @ 20 V AC or DC maximum. G contact material (8X21, U8X1 Models): 1 AMP @ 120 V AC or 28 V DC or 0.4 VA max. @ 20 V AC or DC max. Note: Break-before-make contacts. Multi-pole contacts do not make and break simultaneously. See page A-43 for additional ratings.

ELECTRICAL LIFE: 60,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: 8X2X MODELS: -30°C to 75°C. U8X1 MODELS: -30°C to 105°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with B, P, R, or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0).

CAP & FRAME: Nylon, black, standard.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

N.O. & N.C. CONTACTS: 8X21, U8X1 MODELS: G contact material: Coin silver, with gold plate over nickel plate. See page A-43 for additional contact materials.

8X25 MODELS: B contact material: Copper alloy, with gold plate over nickel plate. See page A-43 for additional contact materials.

COMMON CONTACT & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

TERMINAL SEAL: Epoxy. Refer to soldering and cleaning Technical Data Chapter.

HARDWARE: Nut & Locking Ring: Brass, nickel plated; Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-30 thru A-45. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Switch Function

- 8121** SPDT On-Mom. 1 Amp
- 8125** SPDT On-Mom. 0.4VA
- 8221** DPDT On-Mom. 1 Amp
- 8225** DPDT On-Mom. 0.4VA
- 8321** 3PDT On-Mom. 1 Amp
- 8325** 3PDT On-Mom. 0.4VA
- 8421** 4PDT On-Mom. 1 Amp
- 8425** 4PDT On-Mom. 0.4VA

Actuator or Plunger

- S** Plunger
- NONE** Snap-in
- J80** Snap-in
- J81** Snap-in w/frame
- J82** Snap-in w/frame for LED
- J83** Snap-in w/frame & flush cap
- J84** Snap-in w/frame for LED, flush cap
- J85** Snap-in w/frame & LED
- J95** PC w/V-bracket & LED
- L** Plunger
- M** Snap-fitting plunger

Bushing

- D9** .280" high, keyway
- H** .250" high, flat
- NONE** No bushing choice required
- D** .280" high, keyway
- D2** .288" high, flat
- D3** .180" high
- D8** .288" high, flat
- H9** .250" high, flat, hi torque
- Y** .350" high, keyway
- Y3** 6.35mm high, keyway, hi torque
- Y4** .378" high, flat, hi torque
- Y9** .350" high, keyway

Contact Material

- B** Gold
- P** Gold, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

Seal

- E** Epoxy
- I** Epoxy potted base

Cap Color

- 2** Black
- NONE** Models without caps
- 1** White
- 3** Red
- 4** Orange
- 5** Yellow
- 6** Green
- 7** Blue
- 9** Gray

Frame Color

- 2** Black
- NONE** Models without frame
- 1** White
- 3** Red
- 5** Yellow
- 6** Green
- 9** Gray

LED Color

- 3** Red
- NONE** Models without LED
- 5** Yellow
- 6** Green

Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- A2** Right angle, PC thru-hole
- A3** Right angle, snap-in, PC thru-hole
- A4** Right angle, PC thru-hole, reversed terminals
- A6** Right angle, PC thru-hole
- AV1** Vertical right angle, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- R** Right angle with PCB
- R2** Right angle with PCB, reversed terminals
- V2** .555" high, V-bracket
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V7** .630" high, V-bracket
- V8** .953" high, V-bracket
- V9** 1.150" high, V-bracket
- V31** .460" high, snap-in V-bracket
- V61** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- W1** .964" long, wire wrap
- W3** .425" long, wire wrap
- W4** 1.062" long, wire wrap
- Z3** Quick connect

Note: UL models available, see page A-30 and A-31.

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



29 Aug 18



8020 Series Snap-acting Momentary Pushbutton Switches

SWITCH FUNCTION

Pushbutton

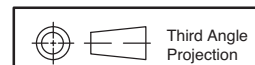
NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
SP	8121	U811	ON	MOM.	1-3	1-2	
	8125		ON	MOM.			
SPDT <p>Part number shown: 8121SHZGE</p>							
DP	8221	U821	ON	MOM.	1-3,4-6	1-2,4-5	
	8225		ON	MOM.			
DPDT <p>Part number shown: 8221SHZGE</p>							
3P	8321	U831	ON	MOM.	1-3,4-6,7-9	1-2,4-5,7-8	
	8325		ON	MOM.			
3PDT <p>Part number shown: 8321SHZGE</p>							

MOM. = Momentary

*U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



29 Aug 18

8020 Series Snap-acting Momentary Pushbutton Switches

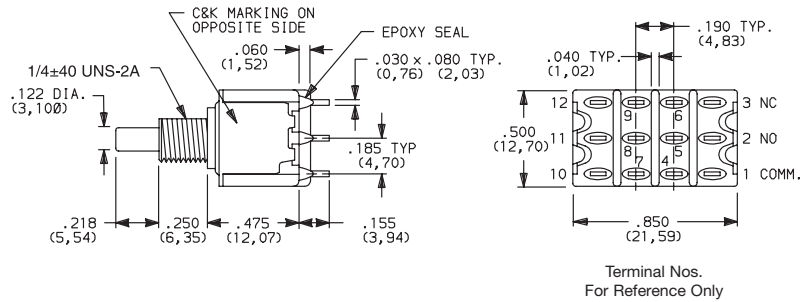


A Pushbutton

SWITCH FUNCTION

NO. POLES	MODEL NO.	UL/CSA* MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
			POS. 1	POS. 2	POS. 1	POS. 2	
4P	8421	U841	ON	MOM.	1-3,4-6-7-9,10-12	1-2,4-5,7-8,10-11	
	8425		ON	MOM.			

4PDT



Part number shown: 8421SHZGE

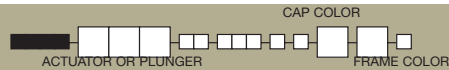
MOM. = Momentary

* U811 thru U841 model numbers with all options (except R, R2 terminations) when ordered with G or R contact material.

8X25 models must be ordered with B or P contact material.

8X21 and U8X1 models must be ordered with G or R contact material.

ACTUATOR—SNAP-IN FRONT MOUNT

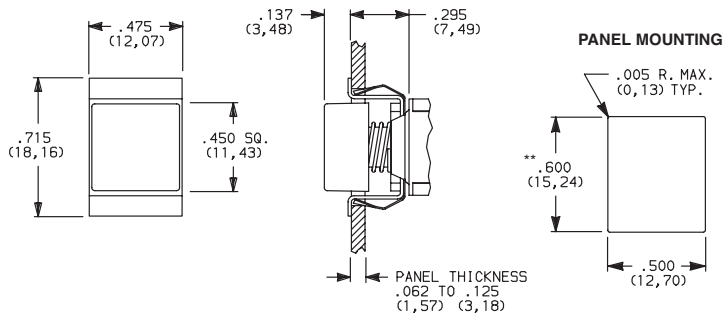


OPTION CODE	CAP AND FRAME COLOR
2	BLACK
NONE	No Frame Color (J80 option)
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center. Cap and Frame Finish: matte.

NOTE: Caps and frames available separately, see pages A-44 and A-45.

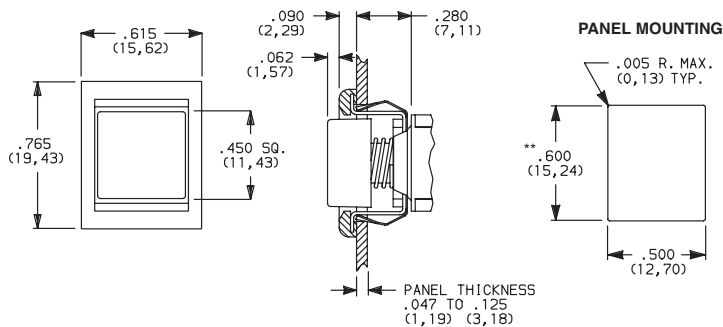
J80 SNAP-IN



NOTE: No frame color choice required.

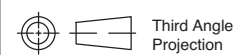
** Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

J81 SNAP-IN WITH FRAME



NOTE: Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

** Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

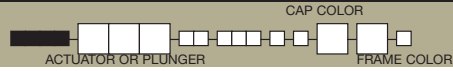


29 Aug 18



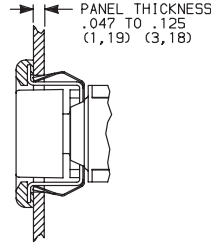
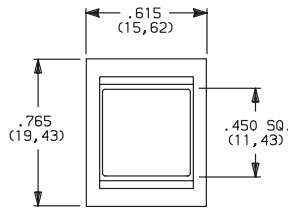
8020 Series Snap-acting Momentary Pushbutton Switches

ACTUATOR—SNAP-IN FRONT MOUNT

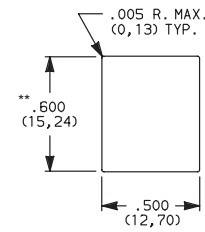


Pushbutton
A

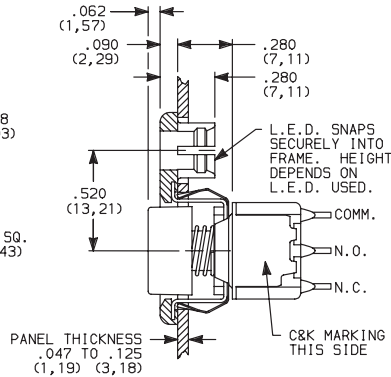
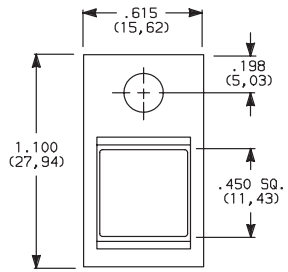
J83 SNAP-IN WITH FRAME AND FLUSH CAP



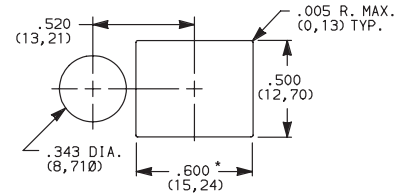
PANEL MOUNTING



J82 SNAP-IN WITH FRAME FOR LED



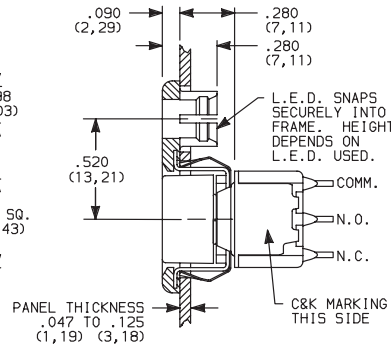
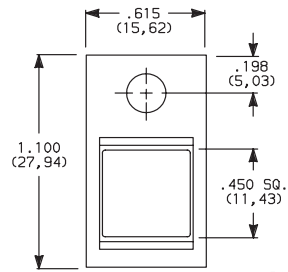
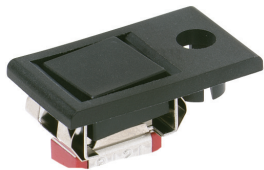
PANEL MOUNTING



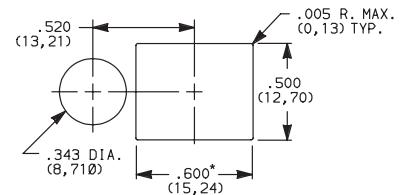
* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

LED not included.
For LED information, see page A-45.

J84 SNAP-IN WITH FRAME FOR LED, FLUSH CAP



PANEL MOUNTING



* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.

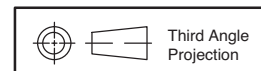
LED not included.
For LED information, see page A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

Other colors available, consult Customer Service Center.
Cap and Frame Finish: matte.

Available with C, W-W4, Z or Z3 terminations and SPDT and DPDT models only.

NOTE: Caps and frames available separately, see pages A-44 and A-45.



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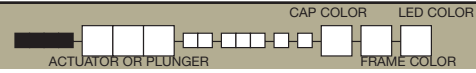
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8020 Series Snap-acting Momentary Pushbutton Switches

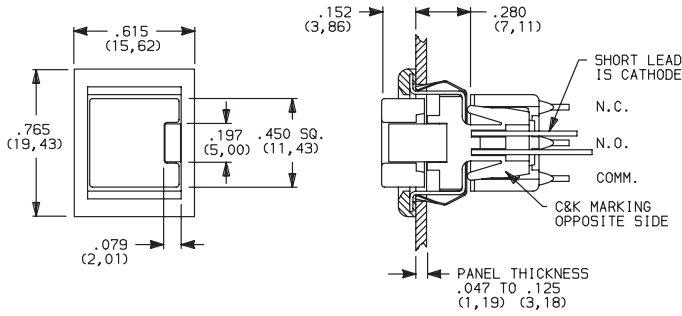


A Pushbutton

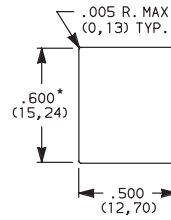
ACTUATOR—SNAP-IN FRONT MOUNT



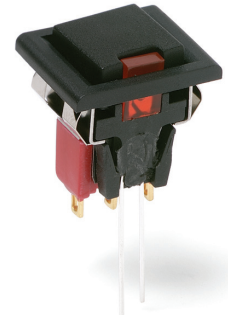
J85 SNAP-IN WITH FRAME AND LED



PANEL MOUNTING



* Increase this dim. to .620/.625 (15,75/15,88) for .091/.125 (2,31/3,18) thk. panels.



8121J85ZGE23 SPST

Available with C, W-W4, Z or Z3 terminations and SPDT models only. For LED information see page A-45.

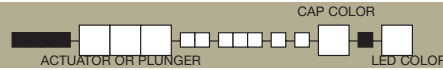
NOTE: Caps & frames available separately, see pages A-44 and A-45.

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

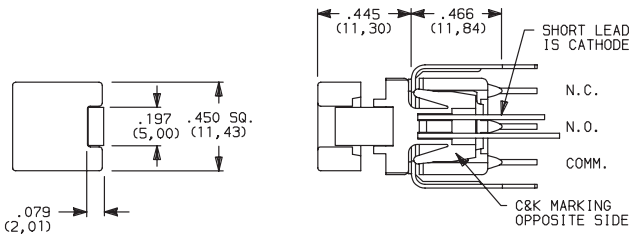
OPTION CODE	LED COLOR
3	RED
5	YELLOW
6	GREEN

For LED information see page A-45.

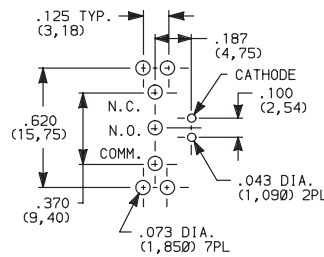
ACTUATOR—PC MOUNT



J95 PC WITH V-BRACKET AND LED



PC MOUNTING



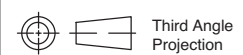
8121J95V3GE23 SPST

OPTION CODE	CAP AND FRAME COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
9	GRAY

OPTION CODE	LED COLOR
3	RED
5	YELLOW
6	GREEN

For LED information see page A-45.

NOTE: Caps available separately, see page A-44. Available with V3 terminations and SPDT models only.





8020 Series Snap-acting Momentary Pushbutton Switches

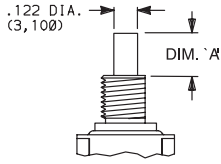
Pushbutton

A

PLUNGER

ACTUATOR OR PLUNGER

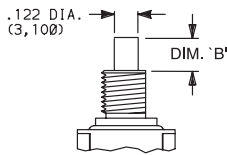
S PLUNGER



NONE NO PLUNGER CHOICE REQUIRED (JXX ACTUATORS)

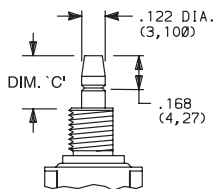
AVAILABLE BUSHINGS	DIM. 'A' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'A' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'A' FOR V3-V61 TERMINATIONS
D, D9	.244 (6,20)	.228 (5,79)	.224 (5,69)
H, H9	.218 (5,54)	.202 (5,13)	.198 (5,03)
Y, Y9	.203 (5,16)	.187 (4,75)	.183 (4,65)
Y3	(5,54)	(5,13)	(5,03)
Y4	.185 (4,70)	.169 (4,29)	.165 (4,19)
D2, D8	N/A	.232 (5,89)	.228 (5,79)
D3	N/A	.162 (4,11)	.158 (4,01)

L PLUNGER



AVAILABLE BUSHINGS	DIM. 'B' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'B' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'B' FOR V3-V61 TERMINATIONS
Y, Y9	.178 (4,52)	.162 (4,11)	.158 (4,01)
Y4	.090 (2,29)	.074 (1,88)	.070 (1,78)

M SNAP-FITTING PLUNGER



AVAILABLE BUSHINGS	DIM. 'C' FOR C, W-W4, Z & Z3 TERMINATIONS	DIM. 'C' FOR A, A2, A3, A4, A6, AV-A3, R & R2 TERMINATIONS	DIM. 'C' FOR V3-V61 TERMINATIONS
D, D9	.297 (7,54)	.281 (7,14)	.277 (7,04)
H, H9	.267 (6,78)	.251 (6,38)	.247 (6,27)
Y, Y9	.259 (6,58)	.243 (6,17)	.239 (6,07)
Y3	(6,78)	(6,37)	(6,27)
Y4	.259 (6,58)	.243 (6,17)	.239 (6,07)
D2, D8	N/A	.273 (6,93)	.269 (6,83)
D3	N/A	.361 (9,17)	.357 (9,07)

N/A = NOT AVAILABLE

NOTE: When selecting plunger option, bushing selection must also be made, see next page. No plunger option is required when any JXX actuator option is selected. Additional plunger lengths are available on SPDT and DPDT models, consult Customer Service Center. Not all plunger lengths sufficient for use with caps, see page A-44.

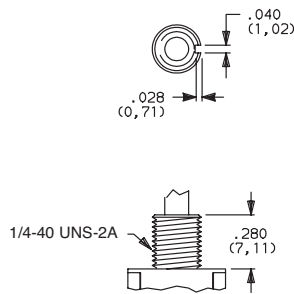
BUSHING

NONE NO BUSHING CHOICE REQUIRED (JXX ACTUATORS)

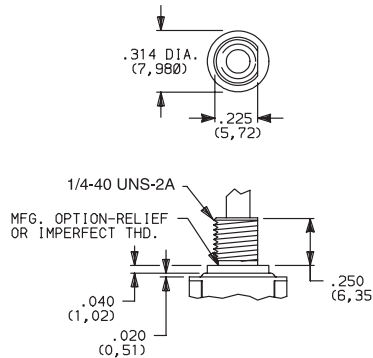
D .280" HIGH THREADED, KEYWAY
D9 .28034" HIGH UNTHREADED, KEYWAY

H .250"34 HIGH THREADED, FLAT
H9 .250"34 HIGH UNTHREADED, FLAT

Y .350" HIGH THREADED, KEYWAY
Y9 .350" HIGH UNTHREADED, KEYWAY

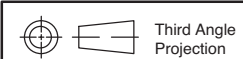
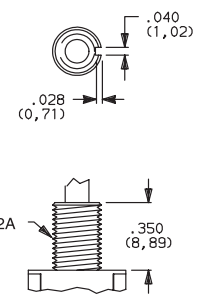


D9 bushing standard with A-A6, R, R2 AV-AV3 terminations.



H bushing standard with C, W-W4, Z or Z3 terminations. H, H9 bushings not available on single pole models with A3-A6, R, R2 terminations.

Will withstand 12 in./lbs. of torque with no distortion.



Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change



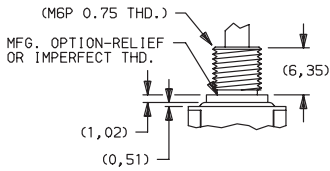
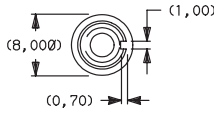
8020 Series Snap-acting Momentary Pushbutton Switches



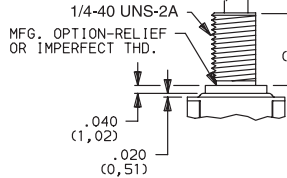
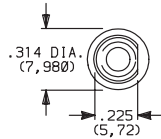
A Pushbutton

BUSHING

Y3 6.35mm THREADED, KEYWAY

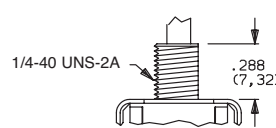


Y4 .378" HIGH THREADED, FLAT

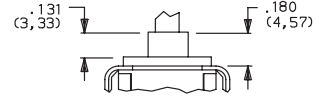
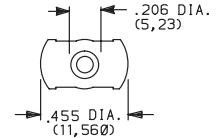


D2 .288" HIGH THREADED, FLAT

D8 .288" HIGH UNTHREADED, FLAT



D3 .180" HIGH UNTHREADED



Y3 & Y4 bushings not available on single pole models with A3-A6, R, R2 terminations. Will withstand 12 in./lbs. of torque with no distortion.

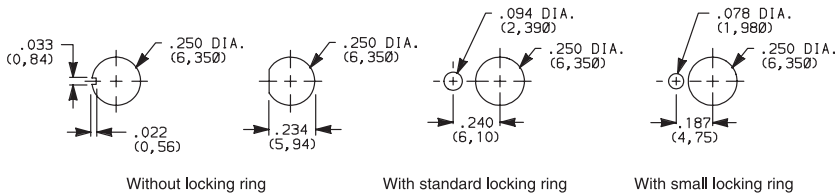
D2, D8 bushings not available with C, W-W4, Z, Z3 terminations.

D3 bushing available with A, A2, A3, AV, AV2, AV3 and V2-V61 terminations only.

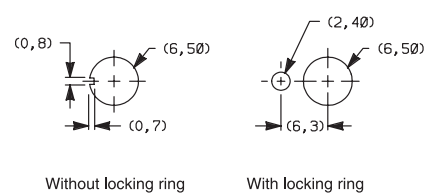
NOTE: No bushing option choice required when JXX actuator option is selected. When selecting bushing option, plunger selection must also be made, see previous page. Plunger lengths vary with bushing and termination options selected.

PANEL MOUNTING

1/4 INCH BUSHING



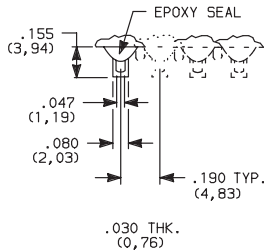
METRIC BUSHING



NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles available, see section "Technical Data and Additional Hardware".

TERMINATIONS

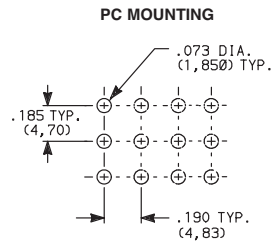
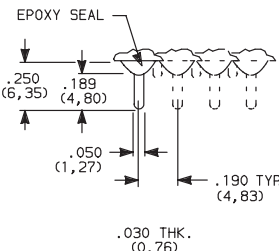
Z SOLDER LUG



Not available with J95 actuator, P or R contact material.

SPDT thru 4PDT

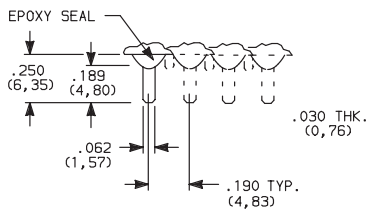
C PC THRU-HOLE



Not available with J95 actuator option.

SPDT thru 4PDT

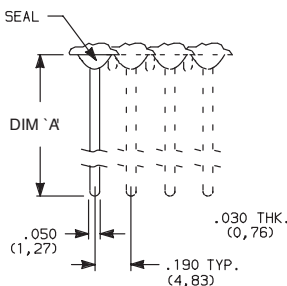
Z3 QUICK CONNECT



Not available with J95 actuator, P or R contact material. Mating quick connector available, order part number 530100000, page A-44.

SPDT thru 4PDT

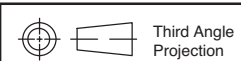
W W1, W3, W4 WIRE WRAP



OPTION CODE	DIM 'A'
W	.750 (19,05)
W1	.964 (24,49)
W3	.425 (10,80)
W4	1.062 (26,97)

Not available with J95 actuator option.

SPDT thru 4PDT



29 Aug 18

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

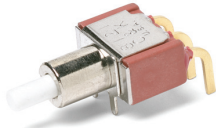
TERMINATIONS



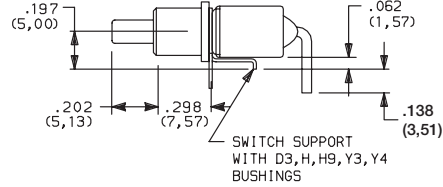
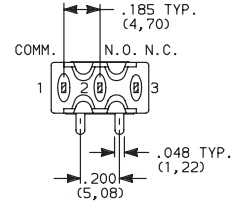
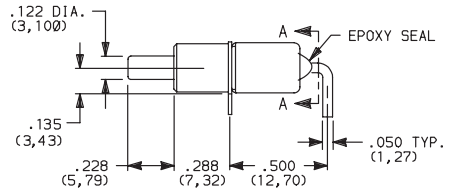
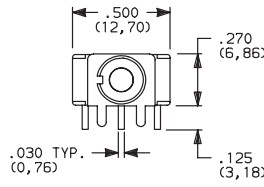
Pushbutton

A

A RIGHT ANGLE, PC THRU-HOLE



8121SD9AGE
SPDT

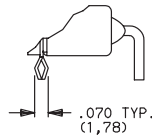
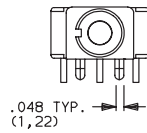


Part Number 8121SH9AGE

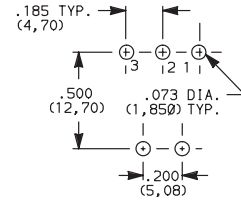
SECTION A-A

Terminal Nos.
For Reference Only.

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

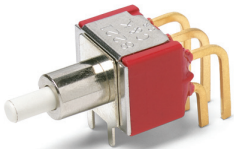


PC MOUNTING

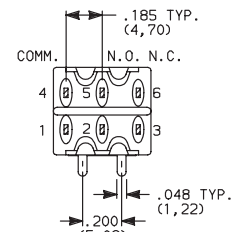
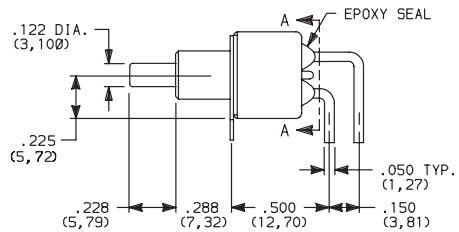
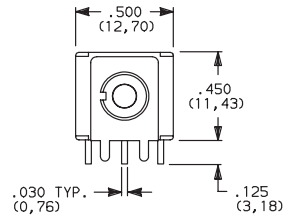


Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

A RIGHT ANGLE, PC THRU-HOLE

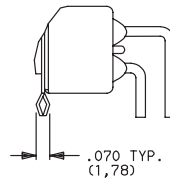
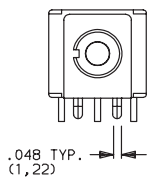


8221SD9AGE
DPDT

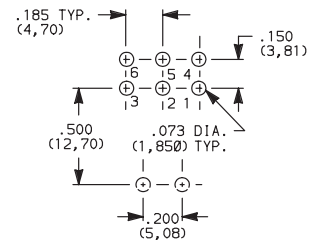


SECTION A-A

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



PC MOUNTING



Not available with JXX actuators and I seal option.
Terminal bend radii and lead-in manufacturing option.



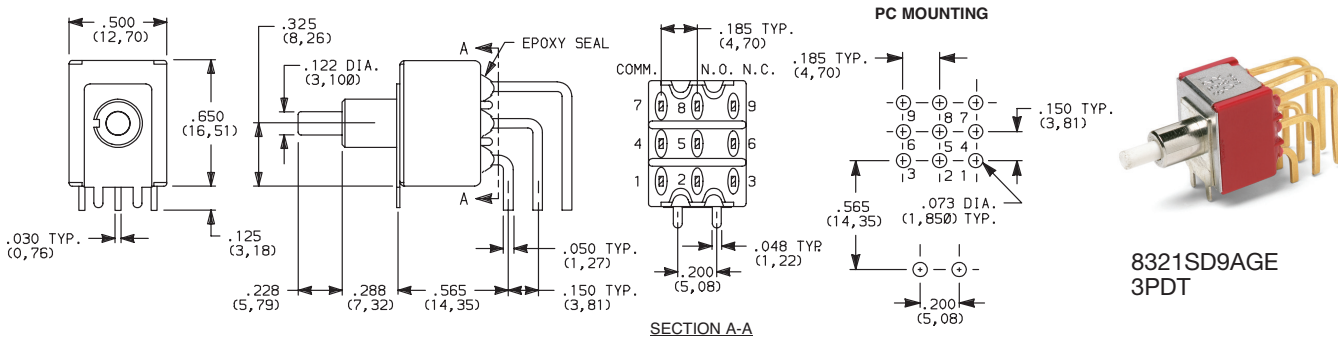
8020 Series Snap-acting Momentary Pushbutton Switches



A Pushbutton

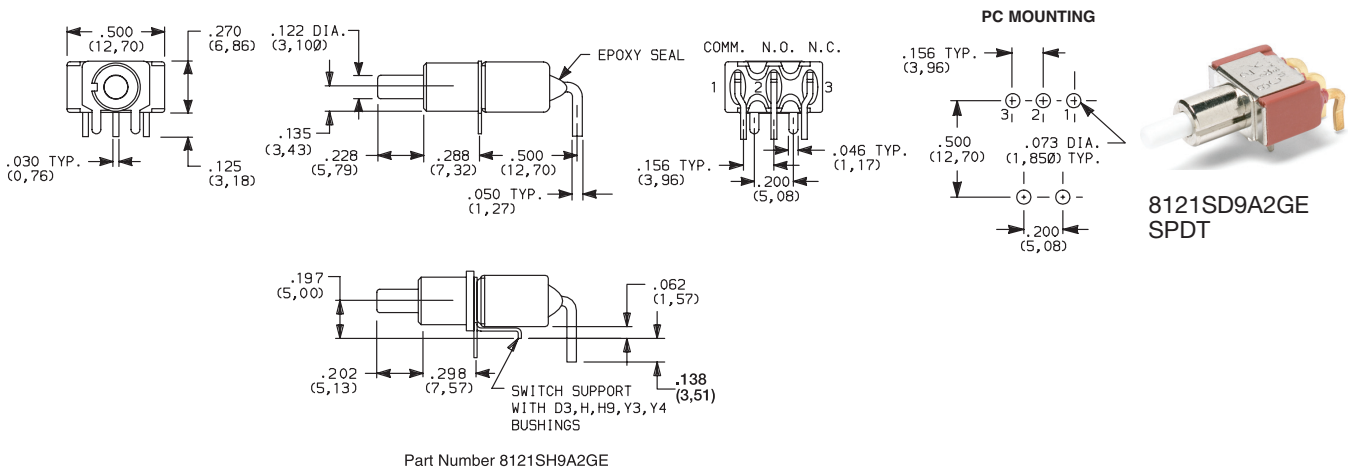
TERMINATIONS

A RIGHT ANGLE, PC THRU-HOLE



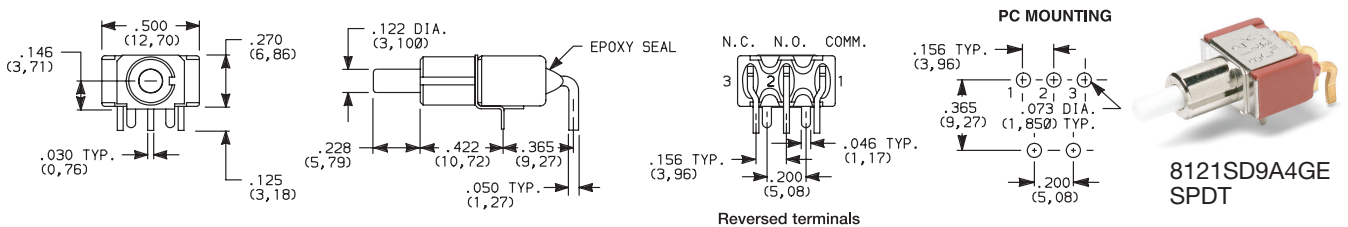
Not available with JXX actuators and I seal option.
Terminal bend radii and lead-in manufacturing option.

A2 RIGHT ANGLE, PC THRU-HOLE



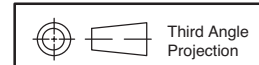
Not available with JXX actuators, I seal option.
Terminal bend radii and lead-in manufacturing option.

A4 RIGHT ANGLE, PC THRU-HOLE, REVERSED TERMINALS



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal.
Terminal bend radii and lead-in manufacturing option.

The A4 and R2 termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R2, the A4 option is available with UL/CSA.





8020 Series Snap-acting Momentary Pushbutton Switches

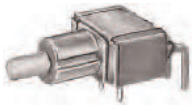
TERMINATIONS



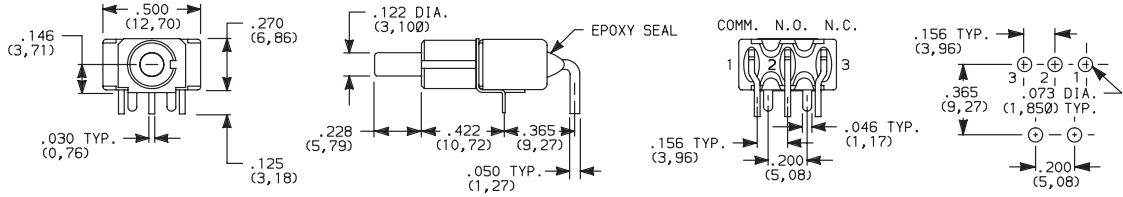
Pushbutton

A

A6 RIGHT ANGLE, PC THRU-HOLE



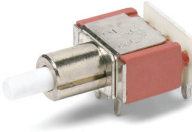
8121SD9A6GE
SPDT



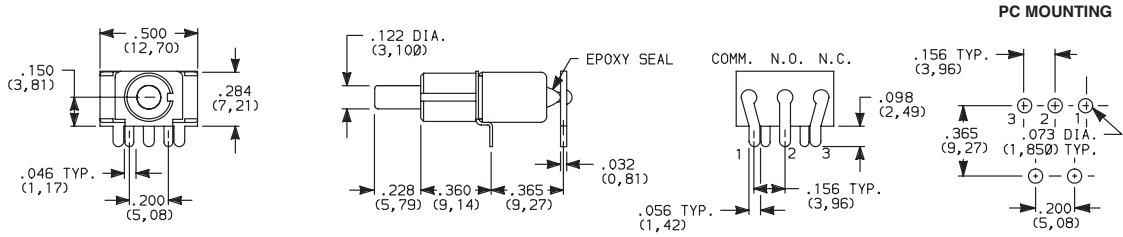
The A6 and R termination options are functionally identical and fit the same PC mounting pattern. The switches, however, are shifted relative to the mounting holes. The PC pattern must clear the switch support legs. Unlike the R, the A6 option is available with UL/CSA.

Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings and I seal. Terminal bend radii and lead-in manufacturing option.

R RIGHT ANGLE WITH PCB

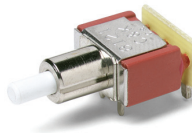


8121SD9RGE
SPDT

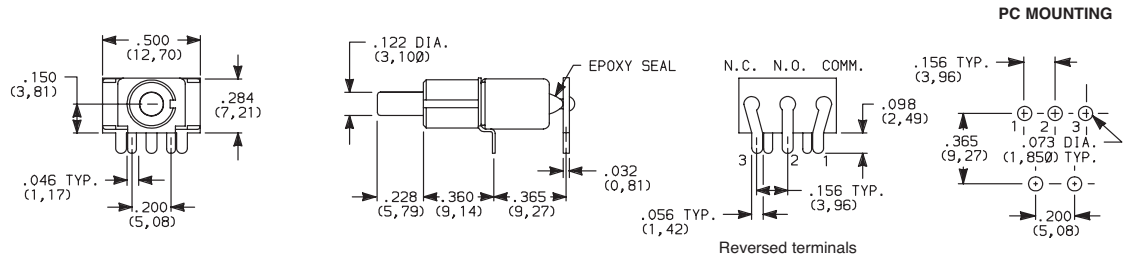


Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R termination not UL/CSA approved.

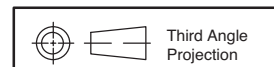
R2 RIGHT ANGLE WITH PCB, REVERSED TERMINALS



8121SD9R2GE
SPDT



Not available with JXX actuators, D3, H, H9, Y3, Y4 bushings, I seal option. R2 termination not UL/CSA approved.



Third Angle
Projection



29 Aug 18

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

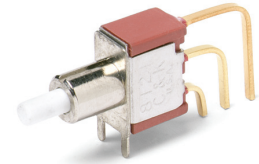
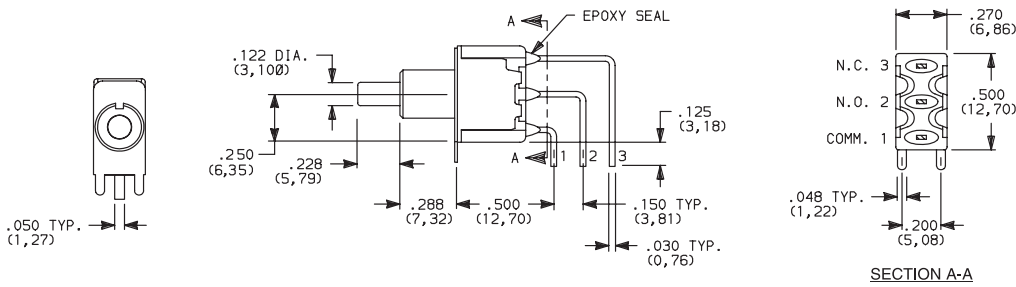
8020 Series Snap-acting Momentary Pushbutton Switches



A Pushbutton

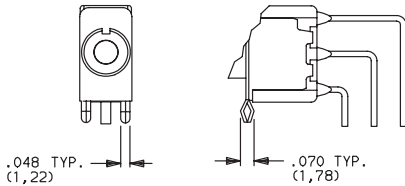
TERMINATIONS

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

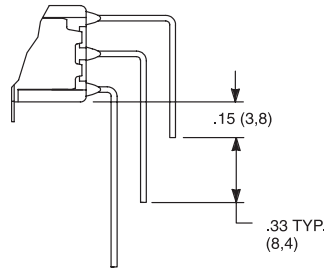


8121SD9AV2GE SPDT

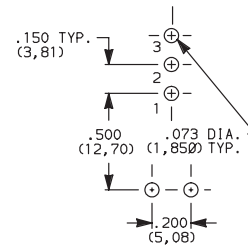
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH

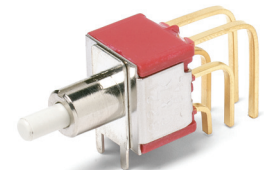
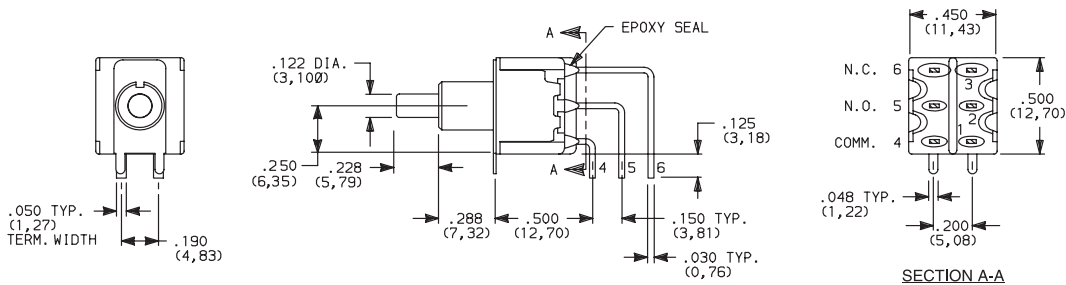


PC MOUNTING



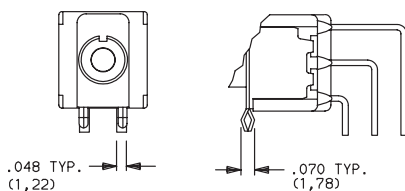
Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

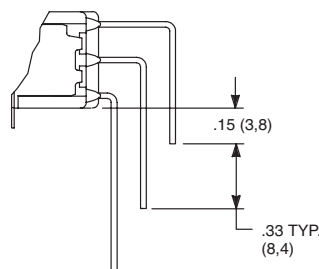


8221SD9AV2GE DPDT

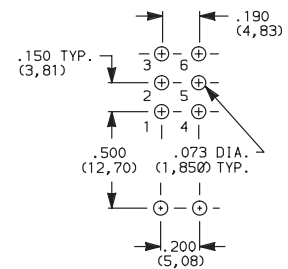
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



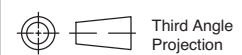
AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150" PITCH



PC MOUNTING



Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



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8020 Series Snap-acting Momentary Pushbutton Switches

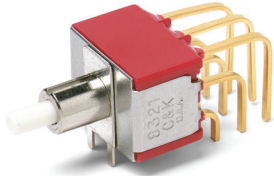
TERMINATIONS



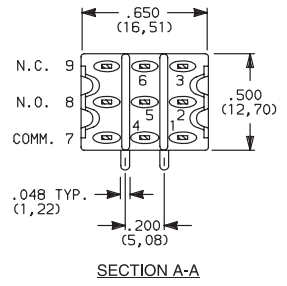
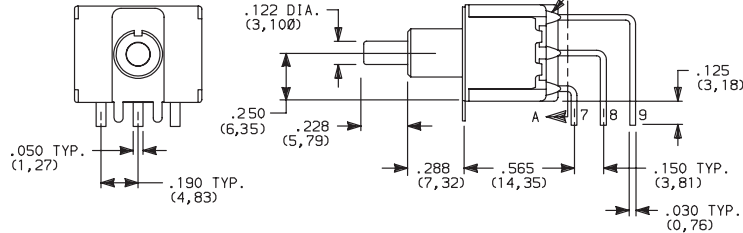
Pushbutton

A

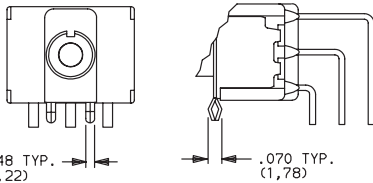
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, 150° PITCH



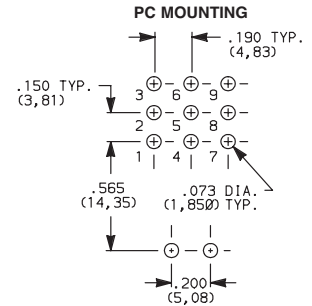
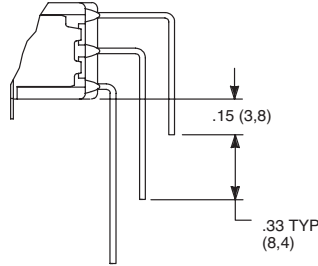
8321SD9AV2GE
3PDT



AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH

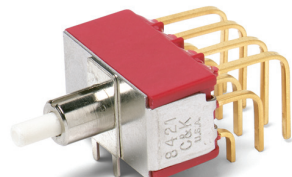


AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150° PITCH

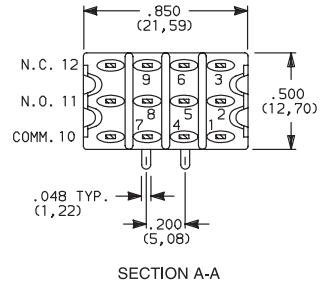
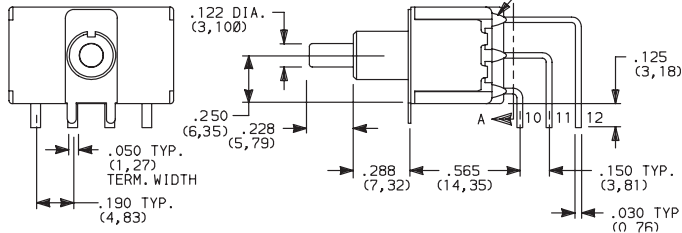


Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

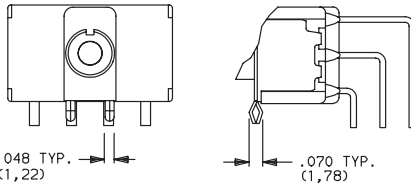
AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, 150° PITCH



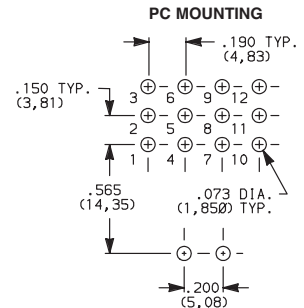
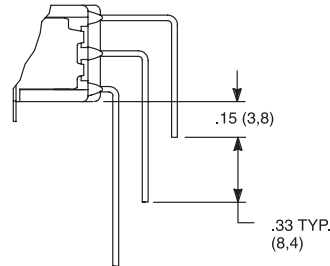
8421SD9AV2GE
4PDT



AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150° PITCH



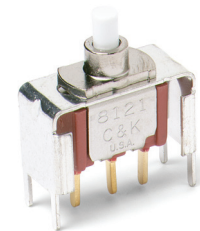
AV1 VERTICAL RIGHT ANGLE, EXTENDED, PC THRU-HOLE, .150° PITCH



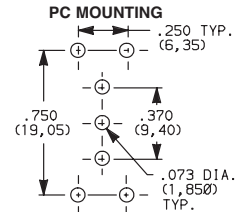
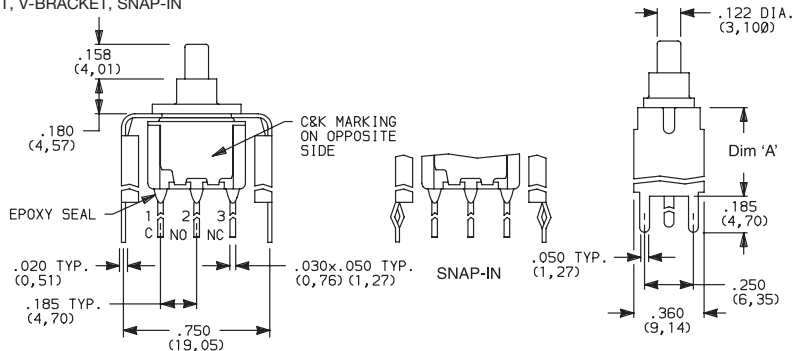
Not available with JXX actuators and I seal.
Terminal bend radii and lead-in manufacturing option.

V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN

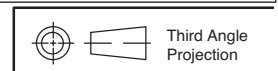


8121SD3_GE
SPDT



OPTION CODE	DIM 'A'
V2	.555 (14,10)
V6, V61	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.



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8020 Series Snap-acting Momentary Pushbutton Switches

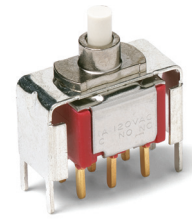
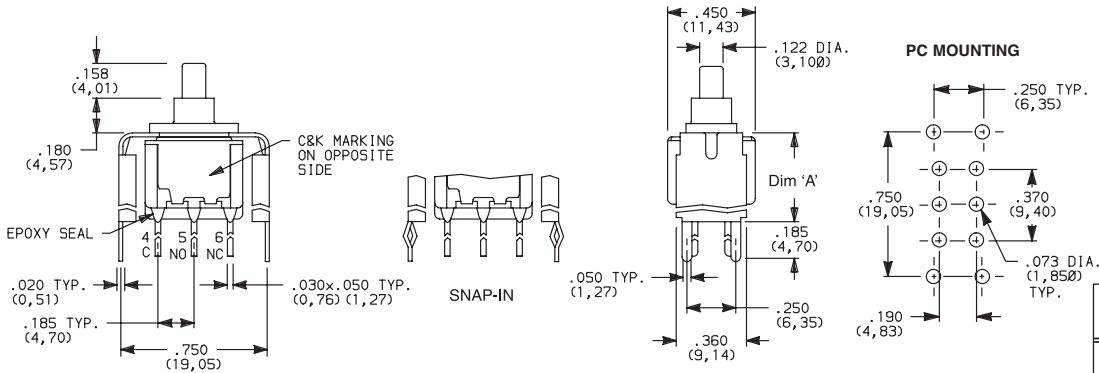


A Pushbutton

TERMINATIONS

V2, V6, V7, V8 VERTICAL MOUNT, V-BRACKET

V61 VERTICAL MOUNT, V-BRACKET, SNAP-IN

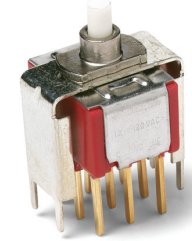
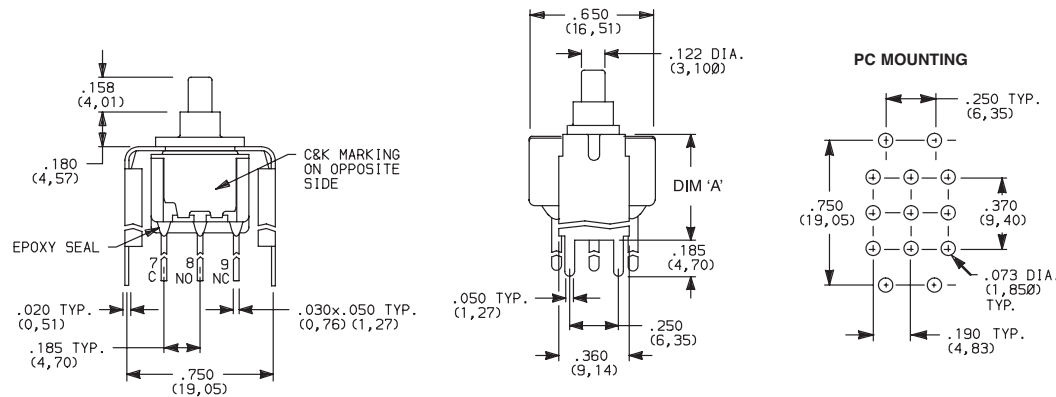


8221SD3_GE DPDT

OPTION CODE	DIM 'A'
V2	.555 (14,10)
V6, V61	.460 (11,68)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.

V2, V7, V8 VERTICAL MOUNT, V-BRACKET

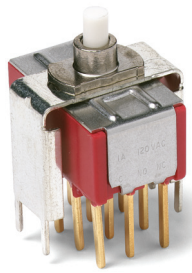
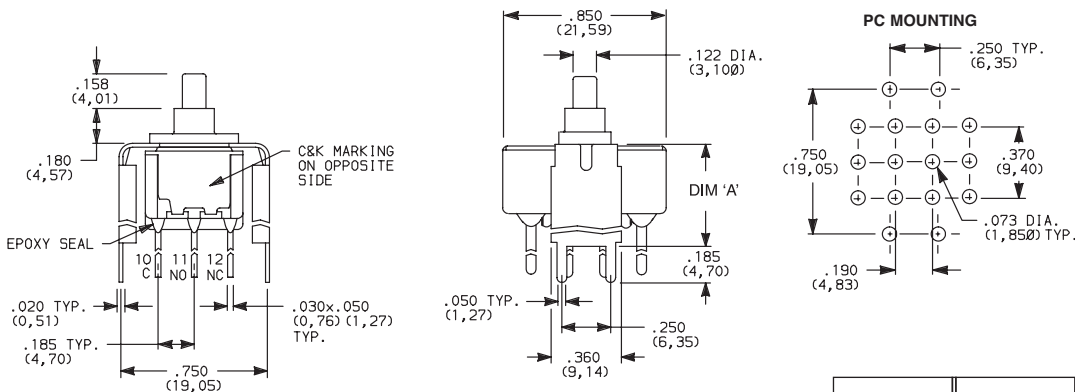


8321SD3_GE 3PDT

OPTION CODE	DIM 'A'
V2	.555 (14,10)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.

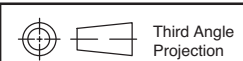
V2, V7, V8 VERTICAL MOUNT, V-BRACKET



8421SD3_GE 4PDT

OPTION CODE	DIM 'A'
V2	.555 (14,10)
V7	.630 (16,00)
V8	.953 (24,21)

Not available with JXX actuators and I seal.



29 Aug 18

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8020 Series Snap-acting Momentary Pushbutton Switches

TERMINATIONS

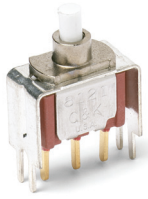


Pushbutton

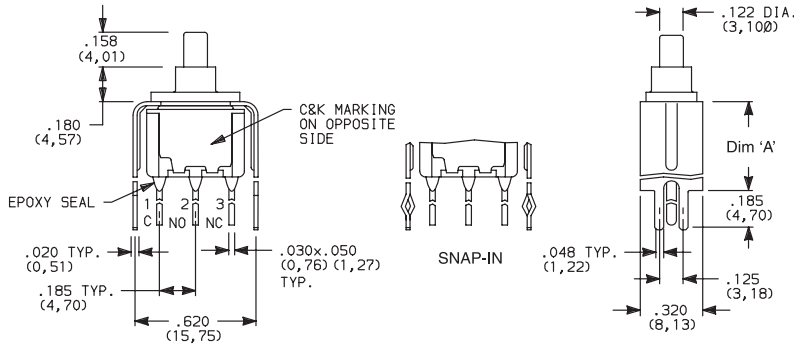
A

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

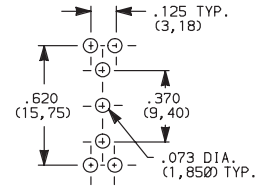
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



8121SD3_GE
SPDT



PC MOUNTING

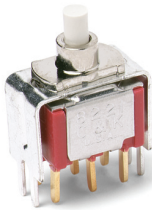


OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

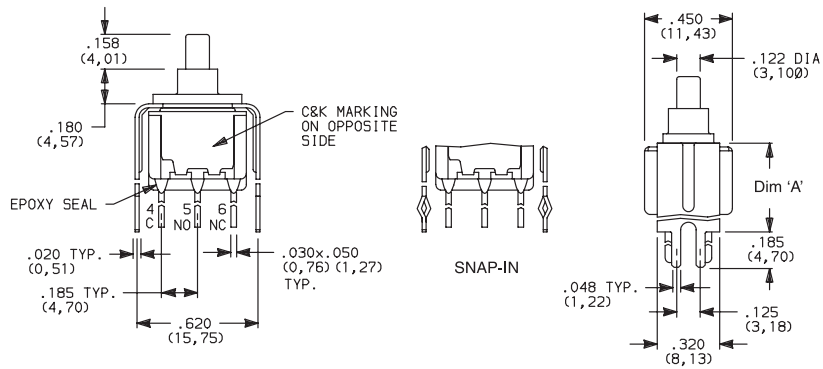
Not available with J8X actuators and I seal.

V3, V4, V9 VERTICAL MOUNT, V-BRACKET

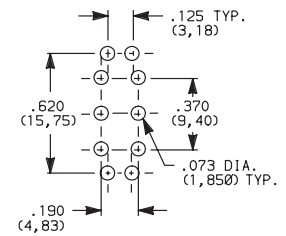
V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



8221SD3_GE
DPDT



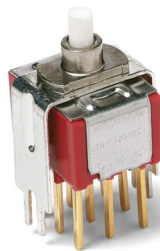
PC MOUNTING



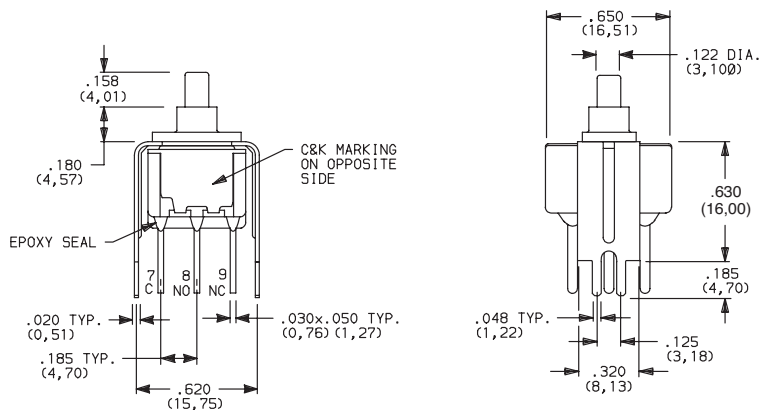
OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with J8X actuators and I seal.

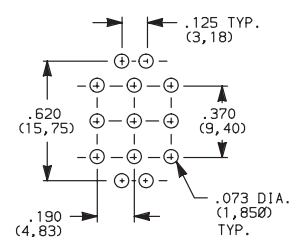
V4, V9 VERTICAL MOUNT, V-BRACKET



8321SD3V4GE
3PDT



PC MOUNTING



OPTION CODE	DIM 'A'
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with JXX actuators and I seal.



29 Aug 18

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

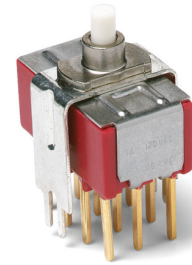
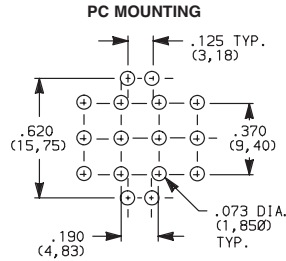
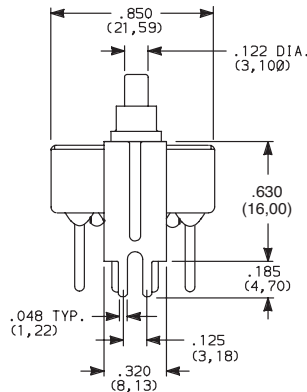
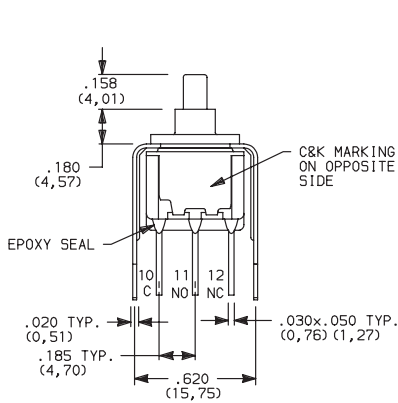
8020 Series Snap-acting Momentary Pushbutton Switches



A Pushbutton

TERMINATIONS

V4, V9 VERTICAL MOUNT, V-BRACKET



8421SD3V4GE
4PDT

OPTION CODE	DIM 'A'
V4	.630 (16,00)
V9	1.150 (29,21)

Not available with JXX actuators and I seal.

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD 1	GOLD 1	LOW LEVEL/DRY CIRCUIT	8x25 MODELS ONLY: 0.4 MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN 4		
G	GOLD OVER SILVER 2,3	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	8X21, U8X1 MODELS ONLY: 0.4 VA MAX @ 20 V AC OR DC MAX. OR 1 AMP @ 120 V AC OR 28 V DC.
R		MATTE-TIN 4		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- 1 ALL CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 N.O. AND N.C. CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 COMMON CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.
- 4 TERMINALS: Copper alloy, with matte-tin over nickel plate.

NOTE: Any models supplied with B, P, R or G contact material are RoHS compliant.

U811-U841 models with all options (except R, R2 terminations) when ordered with mandatory G or R contact material.

B or P contact material must be ordered with 8X25 models.

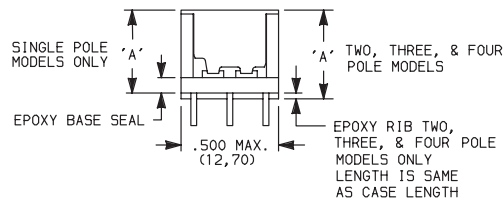
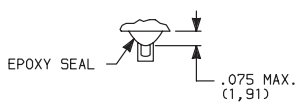
G or R contact material must be ordered with 8X21, U8X1 models.

P or R contact material not available with Z, Z3 terminations.

SEAL

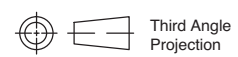
E EPOXY SEAL

I EPOXY POTTED BASE



NO. POLES	DIM 'A'
SP	.410 (10,41)
DP	.440 (11,18)
3P	.505 (12,83)
4P	.505 (12,83)

NOTE: Available with C, W-W4, Z, Z3 terminations only.



29 Aug 18

Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



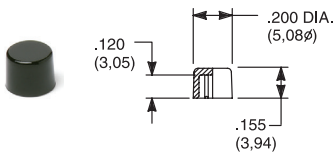
8020 Series Snap-acting Momentary Pushbutton Switches

AVAILABLE HARDWARE

Pushbutton

A

Cap

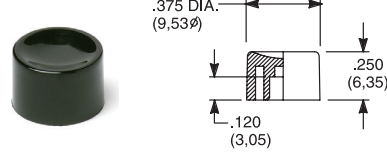


PART NO.

- 708901000** WHITE
- 708902000** BLACK
- 708903000** RED
- 708904000** ORANGE
- 708905000** YELLOW
- 708906000** GREEN
- 708907000** BLUE
- 708909000** GRAY

Material: Nylon
Finish: Gloss

Cap

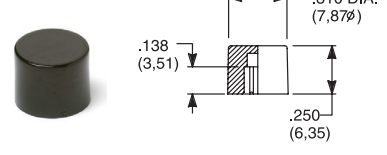


PART NO.

- 752701000** WHITE
- 752702000** BLACK
- 752703000** RED
- 752704000** ORANGE
- 752705000** YELLOW
- 752706000** GREEN
- 752707000** BLUE
- 752709000** GRAY

Material: Nylon
Finish: Gloss

Cap

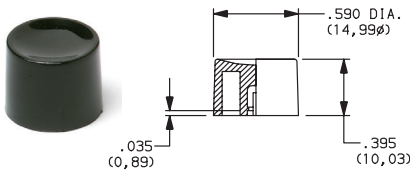


PART NO.

- 801801000** WHITE
- 801802000** BLACK
- 801803000** RED
- 801804000** ORANGE
- 801805000** YELLOW
- 801806000** GREEN
- 801807000** BLUE
- 801809000** GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

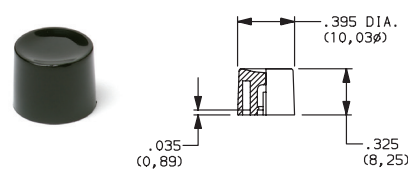


PART NO.

- 452D01000** WHITE
- 452D02000** BLACK
- 452D03000** RED
- 452D04000** ORANGE
- 452D05000** YELLOW
- 452D06000** GREEN
- 452D07000** BLUE
- 452D09000** GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

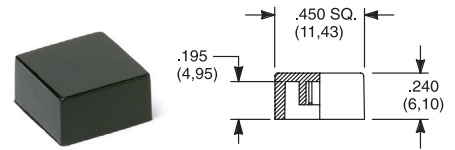


PART NO.

- 894101000** WHITE
- 894102000** BLACK
- 894103000** RED
- 894104000** ORANGE
- 894105000** YELLOW
- 894106000** GREEN
- 894107000** BLUE
- 894109000** GRAY

Material: Nylon
Finish: Gloss

Cap, J80, J81, J82, J83 & J84 options only



PART NO.

- 484601000** WHITE
- 484602000** BLACK
- 484603000** RED
- 484604000** ORANGE
- 484605000** YELLOW
- 484606000** GREEN
- 484607000** BLUE
- 484609000** GRAY

Material: Nylon
Finish: Gloss

PART NO.

- 798201000** WHITE
- 798202263** BLACK
- 798203000** RED
- 798204000** ORANGE
- 798205000** YELLOW
- 798206000** GREEN
- 798207000** BLUE
- 798209000** GRAY

Material: Nylon
Finish: Matte

Frame



PART NO.

- 615602263** BLACK

Material: Nylon
Finish: Matte

Frame

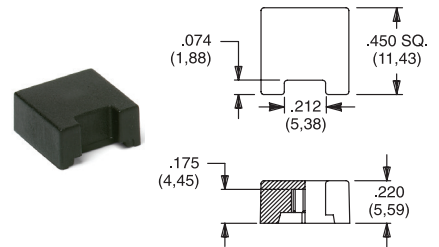


PART NO.

- 613302263** BLACK

Material: Nylon
Finish: Matte

Cap, J85 & J95 options only



PART NO.

- 459701000**
- 459702000**
- 459703000**
- 459704000**
- 459705000**
- 459706000**
- 459707000**
- 459709000**

Material: Nylon
Finish: Matte

Fits Z3 Termination female connector



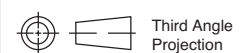
PART NO.

- 530100000**

Available in loose pieces.

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".

Other cap & frame colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8020 Series Snap-acting Momentary Pushbutton Switches

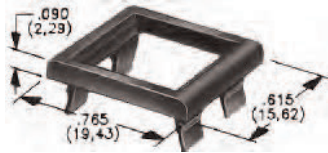
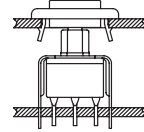


A
Pushbutton

AVAILABLE HARDWARE

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION



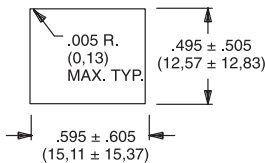
.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

PART NO.
432702263

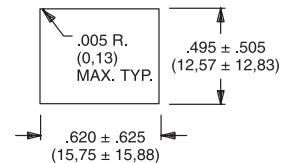
PART NO.
432802263 BLACK

PANEL MOUNTING

For part numbers
4325xxxxx, 4326xxxxx

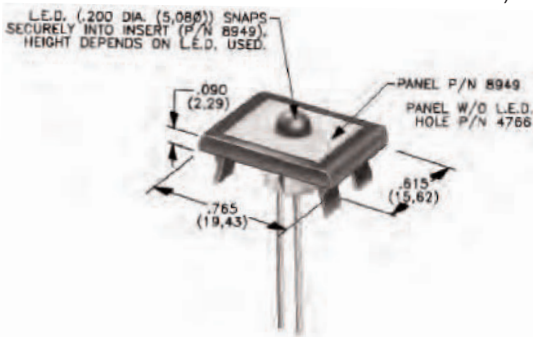


For part numbers
4327xxxxx, 4328xxxxx



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. LED not included.



PANEL INSERT
WITH HOLE FOR LED

PART NO.
894902000

BLANK PANEL INSERT
WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK

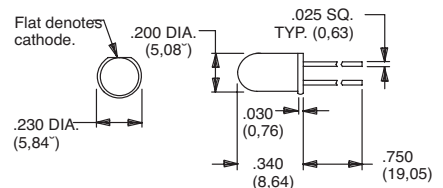
Special colors, custom markings available, consult Customer Service Center.

LED INFORMATION

SWITCHES WITH LED SUPPLIED: J85, J95 OPTIONS:

Rectangular LEDs are supplied on 8020 Series pushbutton switches with J85 and J95 options. These LEDs are factory installed and are not replaceable. The following specifications apply:

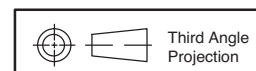
OPTION CODE	COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT	MAX RATINGS AT 25°C AMBIENT TEMPERATURE		
					FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd	2.1 V	20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd		10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW



Suggested LED for J82 & J84 options.
Dimensions for reference only.

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

Caution: Circuit elements must limit forward current of LED to 50mA max. continuous.
* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center.
LEDs are not supplied with J82, J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

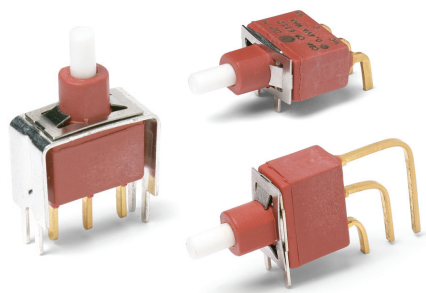


29 Aug 18



E010 Series Sealed Momentary Pushbutton Switches

Pushbutton
A



Features/Benefits

- Process sealed, withstands soldering and cleaning
- Long life contact design
- Snap-fitting plunger available, accepts a variety of caps
- RoHS compliant models available

Typical Applications

- Instrumentation
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: Q contact material: 4 AMPS @ 125 V AC or 28 V DC. See page A-50 for additional ratings.

ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 75°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

NOTE: Any models supplied with P, Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE & BUSHING: Glass filled nylon 6/6, flame retardant (UL 94V-0).

PLUNGER: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0), with internal o-ring seal standard.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

SWITCH SUPPORT RETAINER: Stainless steel.

END CONTACTS: Q contact material: Coin silver, silver plated. See A-50 for additional ratings.

CENTER CONTACTS & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-50 for additional ratings.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut & locking ring-Brass, nickel plated. Lockwasher-Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-47 thru A-51. For additional options not shown in catalog, consult Customer Service Center. All models are process sealed to withstand machine soldering temperatures and pressure wash cleaning methods.

<p>Switch Function _____</p> <p>E112 SPDT On-Mom.</p> <p>Plunger _____</p> <p>S .222" high</p> <p>L .338" high</p> <p>M .331" high, snap-fitting</p> <p>Bushing _____</p> <p>D1 Unthreaded</p> <p>Y Threaded, keyway</p> <p>Terminations _____</p> <p>A Right angle, PC thru-hole</p> <p>AV2 Vertical right angle, PC thru-hole</p> <p>C PC Thru-hole</p> <p>A3 Right angle, snap-in, PC thru-hole</p> <p>AV3 Vertical right angle, snap-in, PC thru-hole</p> <p>R2 Right angle with PCB</p> <p>V3 .460" high, V-bracket</p> <p>V4 .630" high, V-bracket</p> <p>V6 .460" high, V-bracket</p> <p>V8 .953" high, V-bracket</p> <p>V31 .460" high, snap-in V-bracket</p> <p>V81 .953" high, snap-in V-bracket</p> <p>V91 1.150" high, snap-in V-bracket</p> <p>W .750" long, wire wrap</p> <p>Z Solder lug</p>	<p>Contact Material _____</p> <p>B Gold</p> <p>P Gold, matte-tin</p> <p>Q Silver</p> <p>G Gold over silver</p> <p>Seal _____</p> <p>E Epoxy</p>
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Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

E010 Series Sealed Momentary Pushbutton Switches



A
Pushbutton

SWITCH FUNCTION

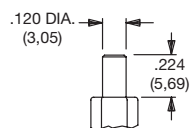
NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	E112	ON	MOM.	2-1	2-3	
<p>SPDT</p> <p>Part number shown: E112SD1CQE</p>						

MOM. = Momentary

All models with all options when ordered with G or Q contact material.

PLUNGER

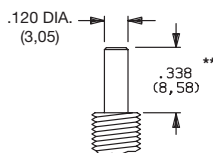
S .218" HIGH



Standard with D1 bushing (as shown).

† Subtract .100 (2,54) from plunger length when ordered with Y bushing.

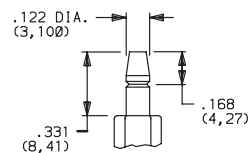
L .338" HIGH



Standard with Y bushing (as shown).

** Add .100 (2,54) from plunger length when ordered with D1 bushing.

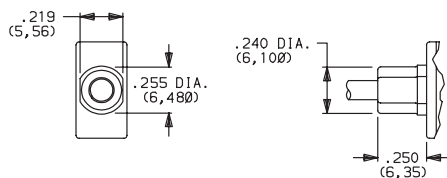
M .331" HIGH, SNAP-FITTING



NOTE: Caps available for all plunger options, see pages A-50 and A-51.

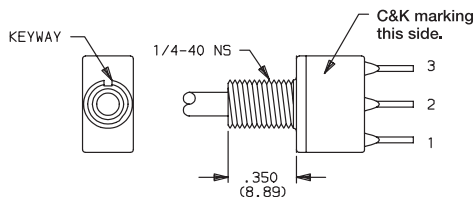
BUSHING

D1 UNTHREADED



S plunger standard with D1 bushing.

Y THREADED, KEYWAY

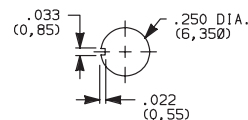


L plunger standard with Y bushing. Available only with C, Z terminations.

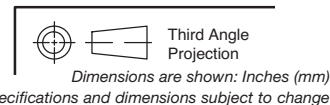
Hardware: One dress nut part number 299D01201, one hex nut and lockwasher supplied standard.

Withstands 4 in./lbs. without distortion.

PANEL MOUNTING



NOTE: Internal o-ring actuator seal standard for all bushing options.





E010 Series Sealed Momentary Pushbutton Switches

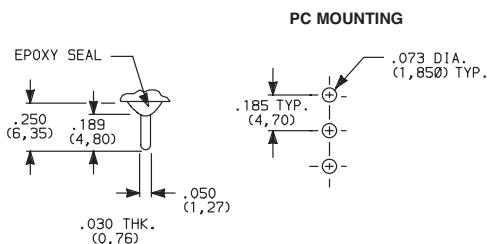
TERMINATIONS



Pushbutton

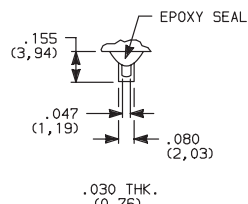
A

C PC THRU-HOLE



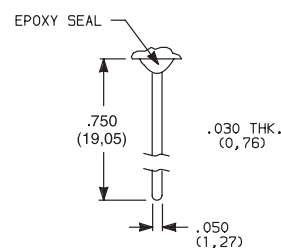
SPDT

Z SOLDER LUG



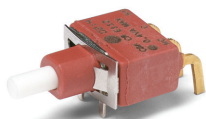
SPDT *Not available with P contact materials.*

W WIRE WRAP

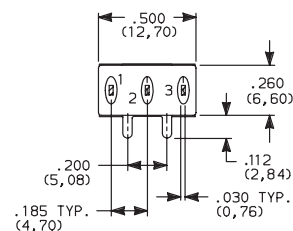
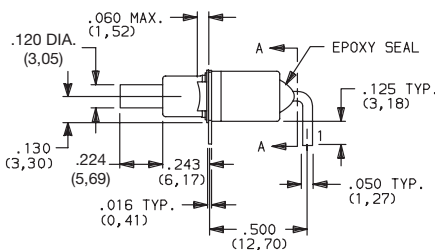
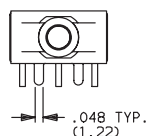


SPDT

A RIGHT ANGLE, PC THRU-HOLE

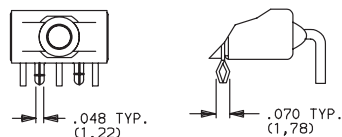


E112SD1ABE SPDT

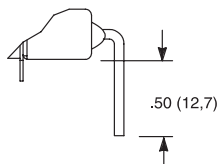


SECTION A-A

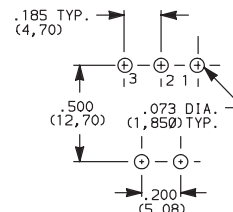
A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



AW RIGHT ANGLE, EXTENDED, PC THRU-HOLE

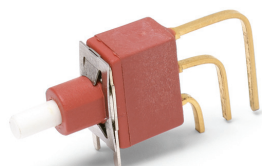


PC MOUNTING

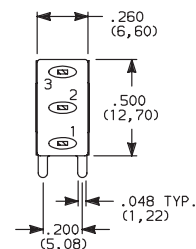
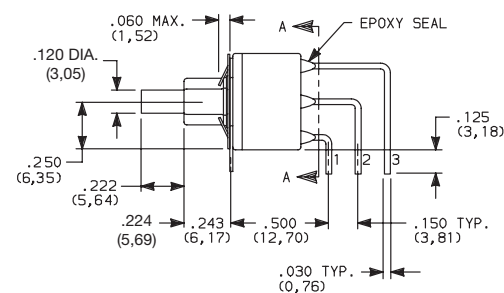
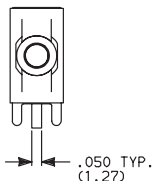


NOTE: Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

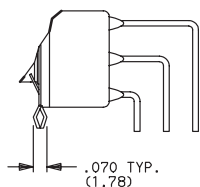
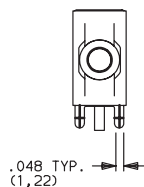


E112SD1AV2BE SPDT

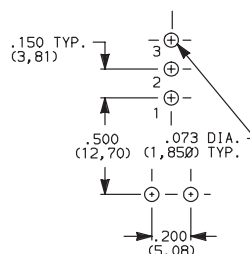


SECTION A-A

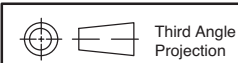
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



PC MOUNTING



NOTE: Terminal bend radii and lead-in manufacturing option. Available with D1 bushing only.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



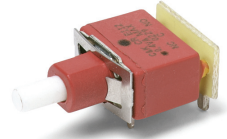
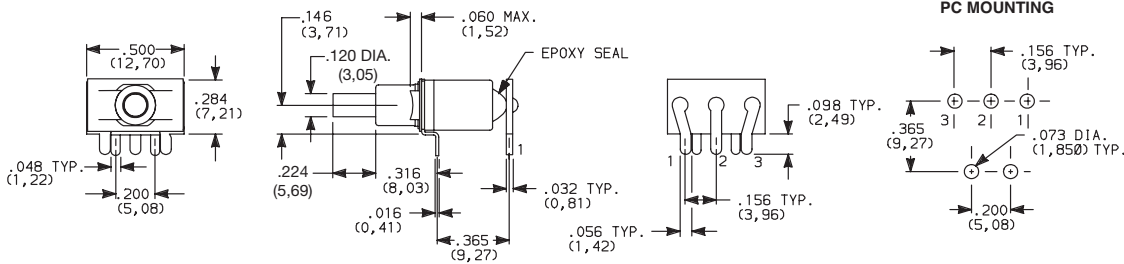
E010 Series Sealed Momentary Pushbutton Switches



A Pushbutton

TERMINATIONS

R2 RIGHT ANGLE WITH PCB

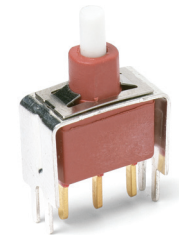
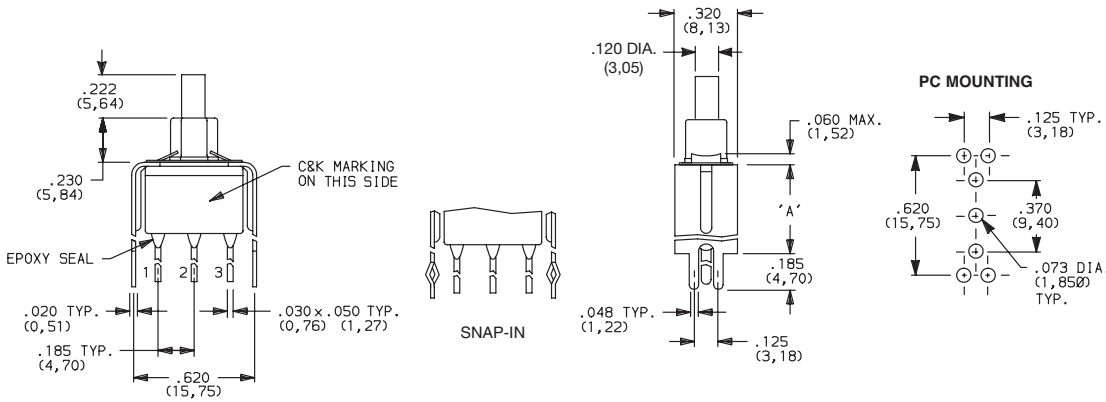


E112SD1R2BE SPDT

NOTE: Available with D1 bushing and B contact material only.

V3, V4 VERTICAL MOUNT, V-BRACKET

V31, V91 VERTICAL MOUNT, V-BRACKET, SNAP-IN

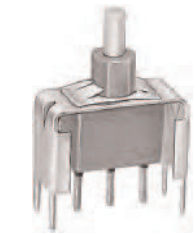
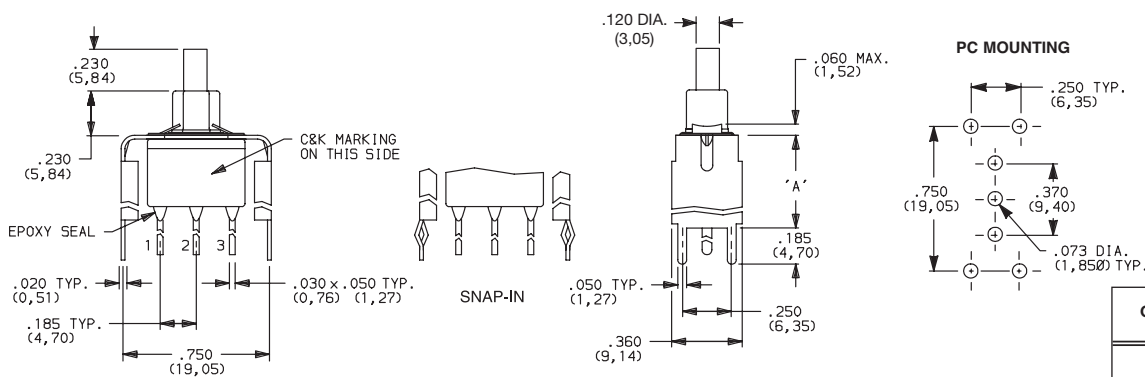


E112SD1_BE SPDT

NOTE: Available with D1 bushing only.

V6, V8 VERTICAL MOUNT, V-BRACKET

V81 VERTICAL MOUNT, V-BRACKET, SNAP-IN

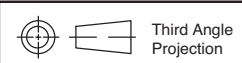


E112SD1_BE SPDT

NOTE: Available with D1 bushing only.

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)
V91	1.150 (29,21)

OPTION CODE	DIM 'A'
V6	.460 (11,68)
V8, V81	.953 (24,21)



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





E010 Series Sealed Momentary Pushbutton Switches

CONTACT MATERIAL



OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	4 AMPS @ 125 V AC OR 28 V DC.
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX. @ 20 V AC OR DC MAX. OR 4 AMPS @ 125 V AC OR 28 V DC.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

- 1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- 2 END CONTACTS: Coin silver, with gold plate over nickel plate.
- 3 CENTER CONTACTS & ALL TERMINALS: Coin silver, with gold plate over nickel plate.
- 4 END CONTACTS: Coin silver, silver plated.
- 5 CENTER CONTACTS & ALL TERMINALS: Copper alloy, silver plated.
- 6 TERMINALS: Copper alloy, with matte-tin over nickel plate.

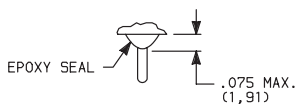
NOTE: Any models supplied with P, Q, B or G contact material are RoHS compliant.

All models **C&K** with all options when ordered with G or Q contact material.
 B contact material standard with all terminations except C, Z.
 B contact material must be ordered with R2 terminations.
 Q contact material standard with C, Z terminations.
 P contact materials not available with Z terminations.

SEAL

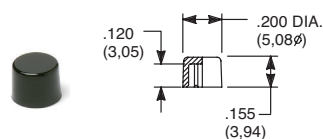


E EPOXY SEAL



AVAILABLE HARDWARE

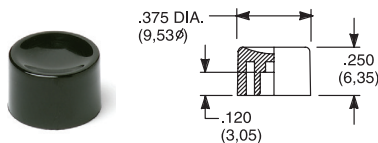
Cap



PART NO.
708901000 WHITE
708902000 BLACK
708903000 RED

Material: Nylon
 Finish: Gloss

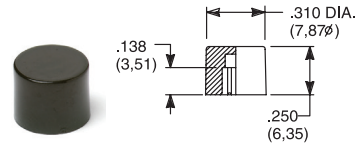
Cap



PART NO.
752701000 WHITE
752702000 BLACK
752703000 RED

Material: Nylon
 Finish: Gloss

Cap



PART NO.
801801000 WHITE
801802000 BLACK
801803000 RED

Material: Nylon
 Finish: Gloss

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
 Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



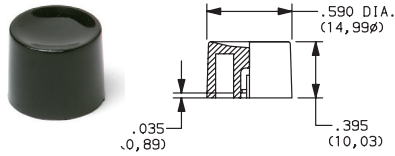
E010 Series Sealed Momentary Pushbutton Switches



A
Pushbutton

AVAILABLE HARDWARE

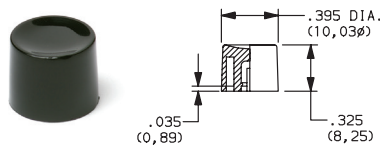
Cap, Snap-fitting plunger



PART NO.
452D01000 WHITE
452D02000 BLACK
452D03000 RED

Material: Nylon
 Finish: Gloss

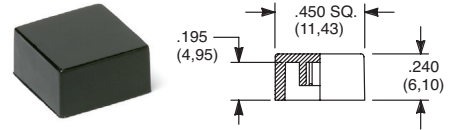
Cap, Snap-fitting plunger



PART NO.
894101000 WHITE
894102000 BLACK
894103000 RED

Material: Nylon
 Finish: Gloss

Cap



PART NO.
484601000 WHITE
484602000 BLACK
484603000 RED

Material: Nylon
 Finish: Gloss

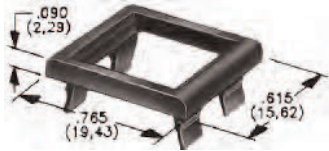
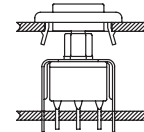
PART NO.
798201000 WHITE
798202263 BLACK
798203000 RED

Material: Nylon
 Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
 Other cap colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

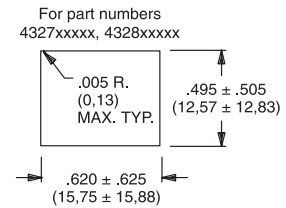
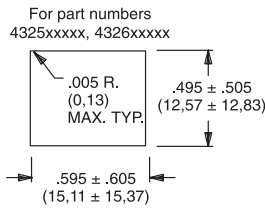
TYPICAL APPLICATION



.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

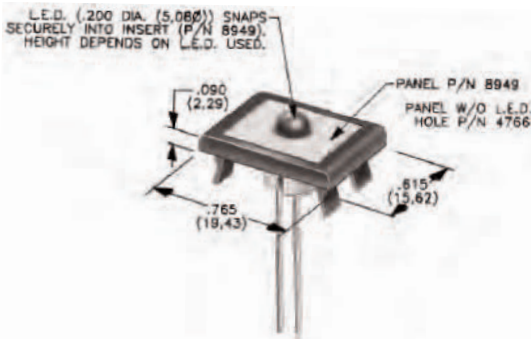
PART NO. **PART NO.**
432702263 **432802263** BLACK

PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**



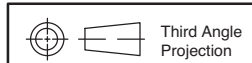
PANEL INSERT
WITH HOLE FOR LED

PART NO.
894902000

BLANK PANEL INSERT
WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK

Special colors, custom markings available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change





8060 Series

Alternate Action and Momentary Pushbutton Switches

Pushbutton
A



Features/Benefits

- Long travel
- Available with LED
- Long life contact design
- Epoxy terminal seal compatible with bottom wash cleaning
- RoHS compliant models available

Typical Applications

- Instrumentation
- Computers and peripherals
- Telecommunications and networking equipment



Models Available

Specifications

CONTACT RATING: Q contact material: 6 AMPS @ 120 V AC or 28 V DC; 3 AMPS @ 250 V AC. See page A-59 for additional ratings.

ELECTRICAL LIFE: 50,000 make-and-break cycles at full load.

CONTACT RESISTANCE: Below 20 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C

SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).

CAP INSTALLATION FORCE: 10 lbs. maximum permissible.

NOTE: Any models supplied with P, R, S, Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Glass filled nylon 6/6 or diallyl phthalate (DAP), flame retardant (UL 94V-0).

PLUNGER: S, S1, S2 Options: Glass filled nylon or glass filled polyester (PBT) (UL 94V-0). L, L1 Options: Brass, nickel plated.

CAP & FRAME: Nylon, black standard.

BUSHING: Brass or zinc, nickel plated.

HOUSING: Stainless steel.

SWITCH SUPPORT: Brass or steel, matte-tin plated.

END CONTACTS: Q contact material: Coin silver, silver plated. See page A-59 for additional contact materials.

CENTER CONTACT & ALL TERMINALS: Q contact material: Copper alloy, silver plated. See page A-59 for additional contact materials.

TERMINAL SEAL: Epoxy. Refer to soldering and cleaning in Technical Data Chapter.

HARDWARE: Nut & Locking Ring: Brass, nickel plated; Lockwasher: Steel, nickel plated.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-53 thru A-61. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Switch Function

- 8161** SPDT On-On
- 8168** SPDT On-Mom.
- 8261** DPDT On-On

Actuator or Plunger

- S** .710" high plunger with .375" dia. cap
- J80** Snap-in
- J81** Snap-in with frame
- J82** Snap-in with frame for LED
- J86** Snap-in with frame & LED
- L** .740" high plunger with .395" dia. cap
- L1** .740" high plunger with .590" dia. cap
- S1** .615" high plunger with .200" dia. cap
- S2** .710" high plunger with .310" dia. cap

Bushing

- H** .300" high, flat, hi torque
- H9** .300" high, flat, hi torque
- NONE** No bushing choice required
- Y3** 7.6mm, keyway

Terminations

- A** Right angle, PC thru-hole
- AV2** Vertical right angle, PC thru-hole
- C** PC Thru-hole
- Z** Solder lug
- A3** Right angle, snap-in, PC thru-hole
- AV3** Vertical right angle, snap-in, PC thru-hole
- V3** .460" high, V-bracket
- V4** .630" high, V-bracket
- V6** .460" high, V-bracket
- V21** .555" high, snap-in V-bracket
- V31** .460" high, snap-in V-bracket
- W** .750" long, wire wrap
- Z3** Quick connect

Contact Material

- B** Gold
- P** Gold, matte-tin
- Q** Silver
- S** Silver, matte-tin
- G** Gold over silver
- R** Gold over silver, matte-tin

Seal

- E** Epoxy
- I** Epoxy potted base

Cap Color

- 2** Black
- 1** White
- 3** Red
- 4** Orange
- 5** Yellow
- 9** Gray

Frame Color

- 2** Black

LED Color

- 3** Red
- NONE** Models without LED



29 Aug 18

8060 Series Alternate Action and Momentary Pushbutton Switches



A
Pushbutton

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC	
		POS. 1	POS. 2	POS. 1	POS. 2		
SP	8161 8168	ON	ON	2-3	2-1		
		ON	MOM.	2-3	2-1		
SPDT							
						<p>Part number shown: 8161SHZQE</p>	
DP	8261	ON	ON	2-3-5-6	2-1-5-4		
DPDT							
						<p>Part number shown: 8261SHZQE</p>	

MOM. = Momentary

All models with all options when ordered with G or Q contact material.

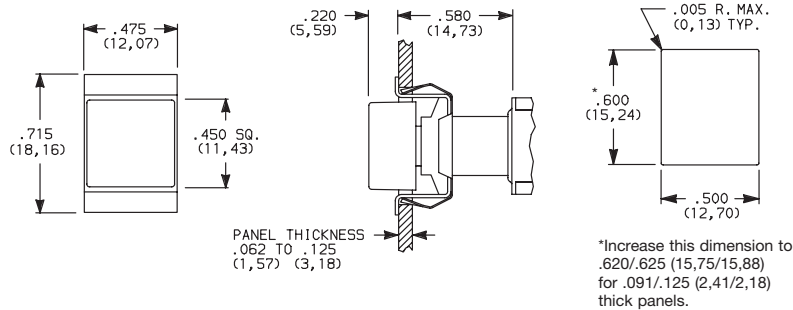
ACTUATOR—SNAP-IN FRONT MOUNT



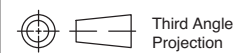
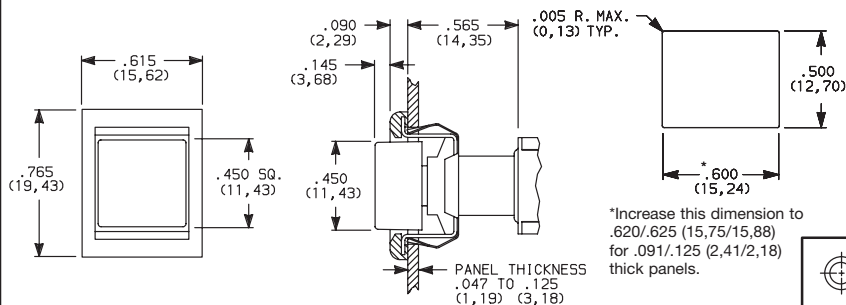
OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

Cap Finish: matte.
Other colors available, consult Customer Service Center.
Available with C, W, Z or Z3 terminations.
NOTE: Caps & frames available separately, see pages A-60 and A-61.

J80 SNAP-IN



J81 SNAP-IN WITH BLACK FRAME

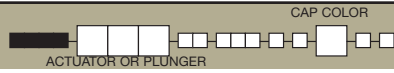




8060 Series

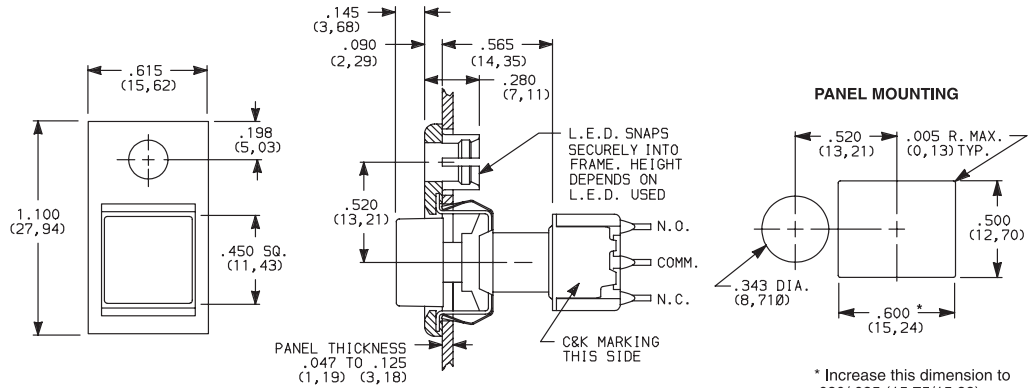
Alternate Action and Momentary Pushbutton Switches

ACTUATOR—SNAP-IN FRONT MOUNT



Pushbutton

J82 SNAP-IN WITH BLACK FRAME FOR LED



Available with C, W, Z or Z3 terminations.

LED not included.
For LED information, see page A-61.

NOTE: Caps & frames available separately, see pages A-60 and A-61.

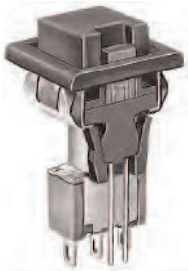
Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

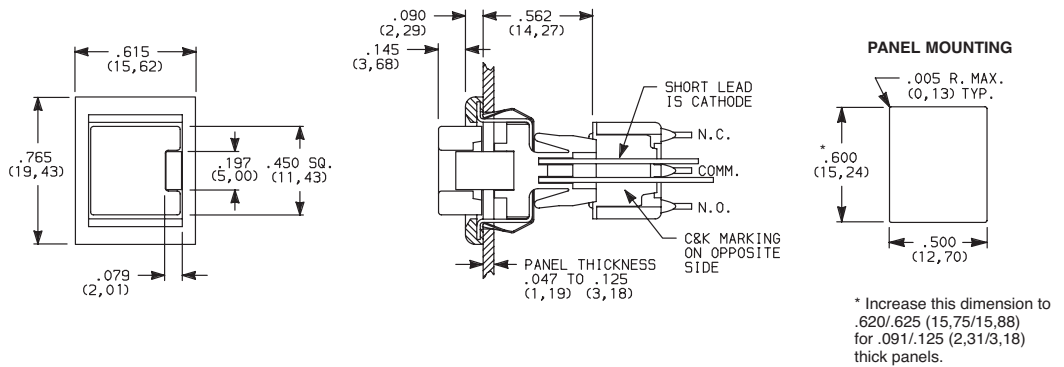
ACTUATOR—SNAP-IN FRONT MOUNT



J86 SNAP-IN WITH BLACK FRAME AND LED



8161J86ZQE223
SPDT



Available with C, W, Z or Z3 terminations and SPDT models only.

NOTE: Caps & frames available separately, see pages A-60 and A-61.

Other colors available, consult Customer Service Center.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

OPTION CODE	LED COLOR
3	RED

For LED information, see page A-61.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



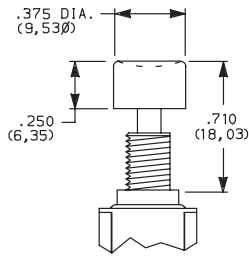
29 Aug 18

8060 Series Alternate Action and Momentary Pushbutton Switches

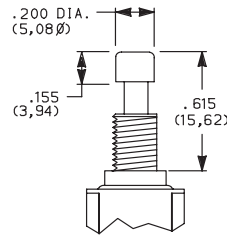


PLUNGER

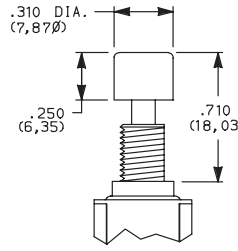
S PLUNGER WITH CAP P/N 7527



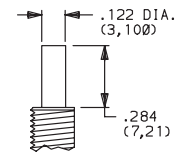
S1 PLUNGER WITH CAP P/N 7089



S2 PLUNGER WITH CAP P/N 8018

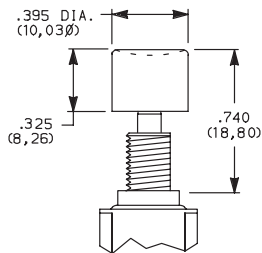


S, S1, S2 plunger dimensions.

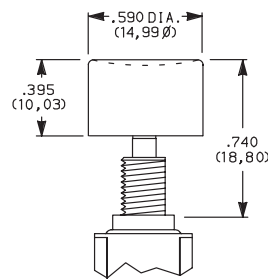


Plunger material: Glass filled nylon or glass filled polyester (UL 94V-0).

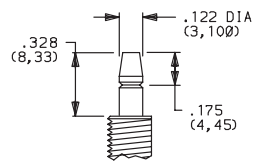
L PLUNGER WITH CAP P/N 8941



L1 PLUNGER WITH CAP P/N 8940



L, L1 plunger dimensions.



Plunger Material: Brass, chrome plated.

OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
4	ORANGE
5	YELLOW
9	GRAY

Cap Finish: gloss. Cap supplied not installed. Other colors available, consult Customer Service Center.

NOTE: When selecting plunger and cap option, bushing selection must also be made, see below.

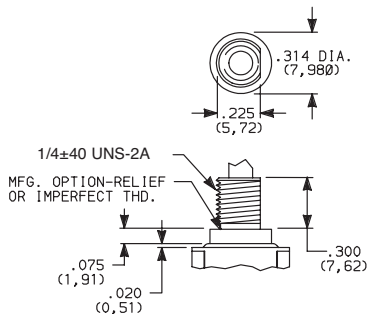
BUSHING

H .300" HIGH THREADED, FLAT

H9 .300" HIGH UNTHREADED, FLAT

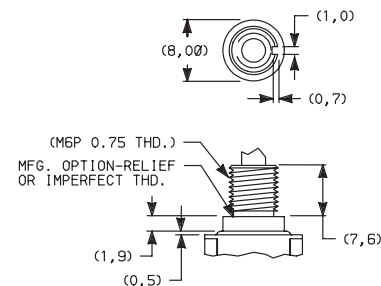
NONE NO BUSHING CHOICE REQUIRED (JXX ACTUATORS)

Y3 7.6mm THREADED, KEYWAY



H bushing standard with C, W, Z or Z3 terminations. H9 bushing standard with A, A3, AV2, AV3, or V3-V31 terminations.

Withstands 12 in./lbs. of torque with no distortion.

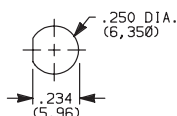


Withstands 12 in./lbs. of torque with no distortion.

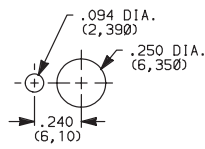
NOTE: When selecting bushing option, plunger selection must also be made, see above. No bushing option choice required when any JXX actuator option is selected.

PANEL MOUNTING

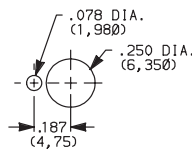
1/4 IN. BUSHING



Without Locking Ring

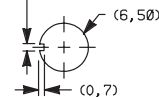


With Standard Locking Ring

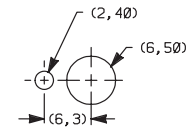


With Small Locking Ring

METRIC BUSHING



Without Locking Ring



With Locking Ring

NOTE: Two mounting nuts, locking ring and lockwasher supplied standard with threaded bushings. Optional mounting nut and locking ring styles and finishes available, see section "Technical Data and Additional Hardware".



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8060 Series

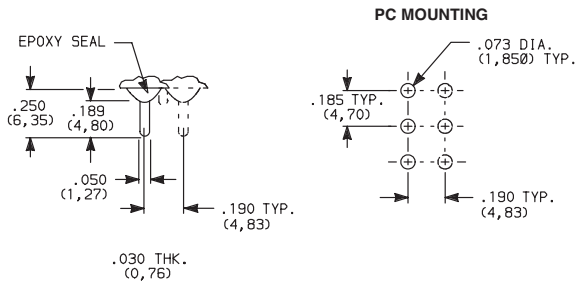
Alternate Action and Momentary Pushbutton Switches

TERMINATIONS



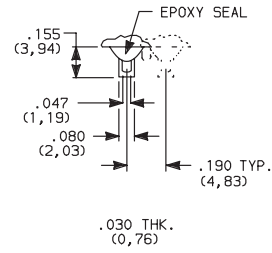
Pushbutton
A

C PC THRU-HOLE



SPDT and DPDT

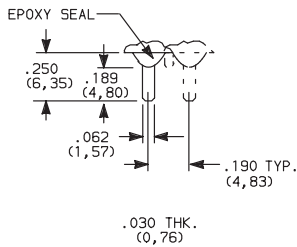
Z SOLDER LUG



SPDT and DPDT

Not available with P, S or R contact material.

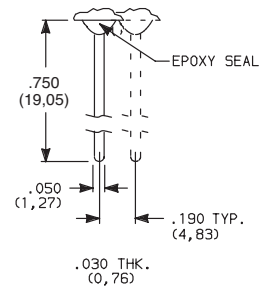
Z3 QUICK CONNECT



SPDT and DPDT

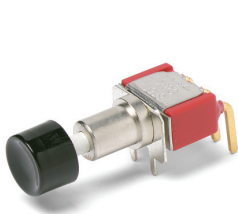
Not available with P, S or R contact material.
Mating quick connector available;
order part number 530100000, page A-61.

W WIRE WRAP

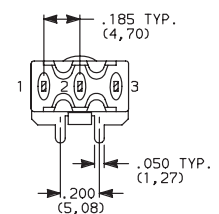
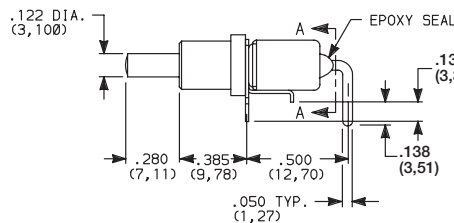
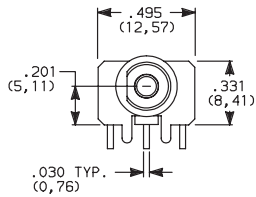


SPDT and DPDT

A RIGHT ANGLE, PC THRU-HOLE

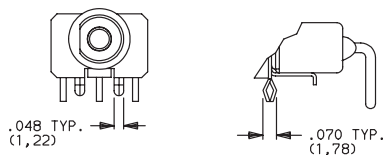


8161SH9ABE2
SPDT

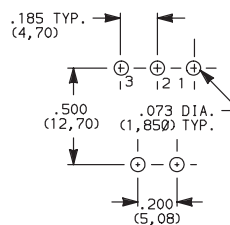


SECTION A-A

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE



PC MOUNTING



Not available with I seal.
Terminal bend radii and lead-in manufacturing option.

NOTE: PC pattern must clear switch support leg.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8060 Series Alternate Action and Momentary Pushbutton Switches

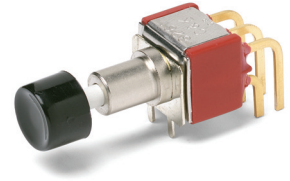
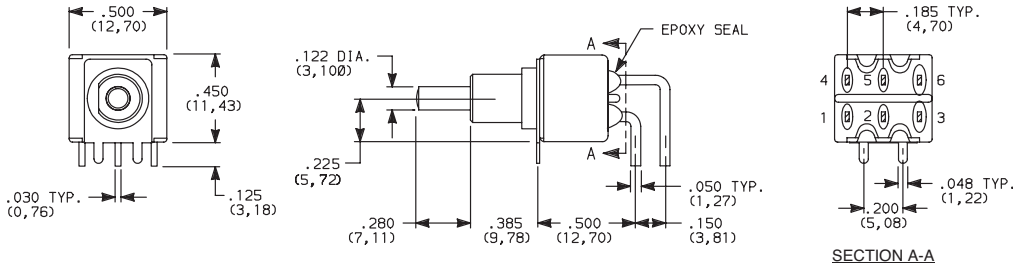


A
Pushbutton

TERMINATIONS

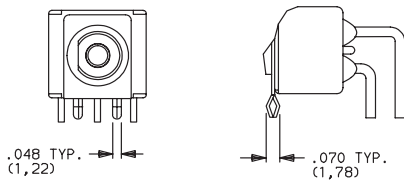


A RIGHT ANGLE, PC THRU-HOLE

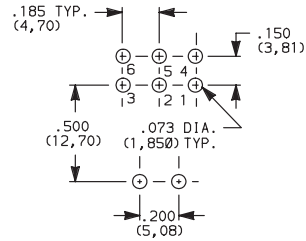


8261SH9ABE2
DPDT

A3 RIGHT ANGLE, SNAP-IN, PC THRU-HOLE

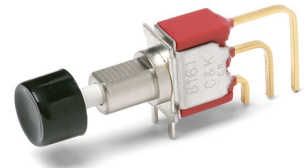
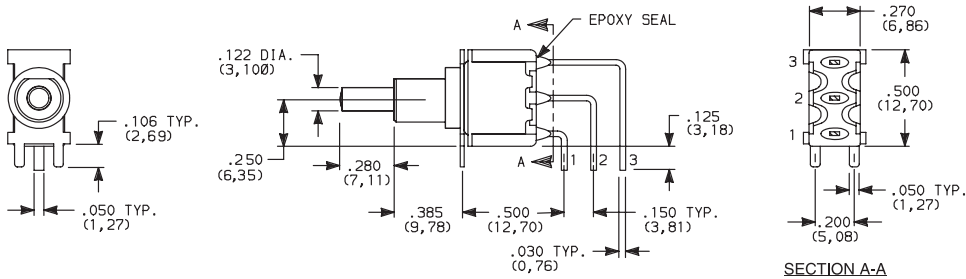


PC MOUNTING



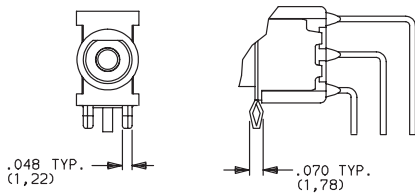
Not available with I seal.
Terminal bend radii and lead-in manufacturing option.

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

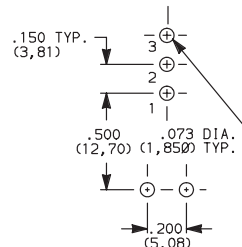


8161SH9AV2BE2
SPDT

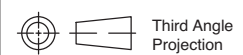
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



PC MOUNTING



Not available with I seal.
Terminal bend radii and lead-in manufacturing option.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



29 Aug 18



8060 Series Alternate Action and Momentary Pushbutton Switches

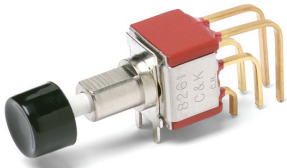
TERMINATIONS



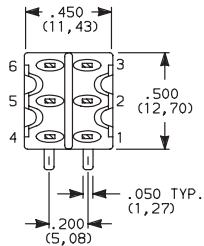
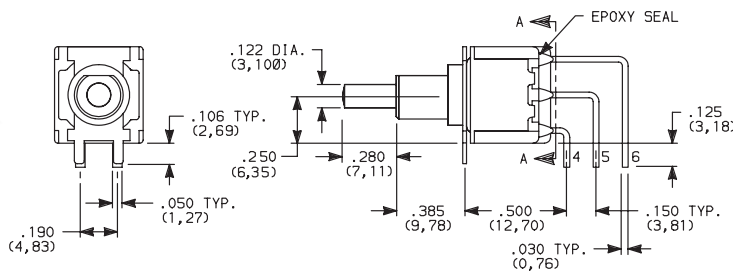
Pushbutton

A

AV2 VERTICAL RIGHT ANGLE, PC THRU-HOLE, .150" PITCH

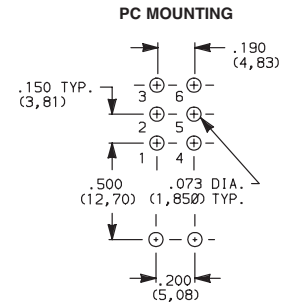
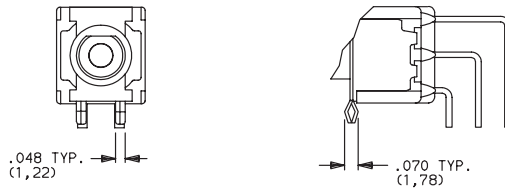


8261SH9AV2BE2
DPDT



SECTION A-A

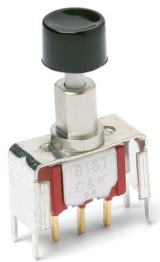
AV3 VERTICAL RIGHT ANGLE, SNAP-IN, PC THRU-HOLE, .150" PITCH



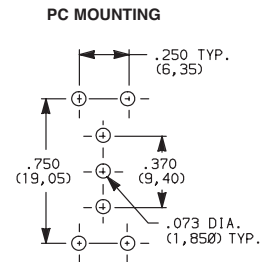
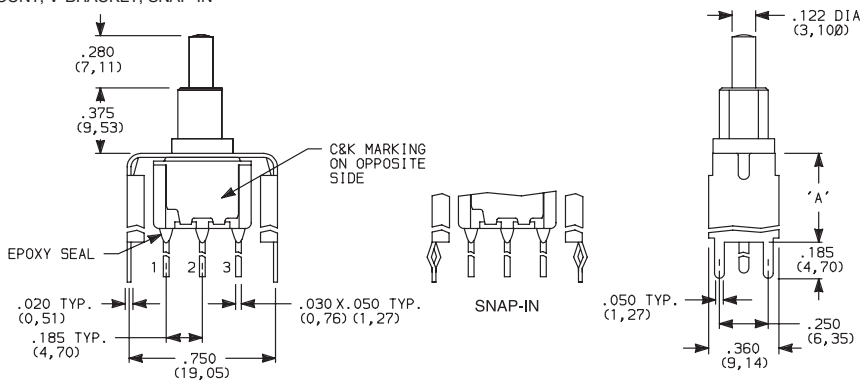
Not available with I seal.
Terminal bend radii and lead-in manufacturing option.

V6 VERTICAL MOUNT, V-BRACKET

V21 VERTICAL MOUNT, V-BRACKET, SNAP-IN



8161SH9_BE2
SPDT



OPTION CODE	DIM 'A'
V21	.555 (14,10)
V6	.460 (11,68)

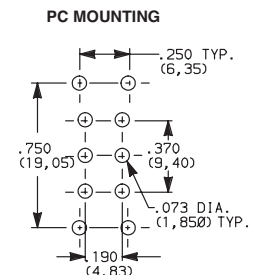
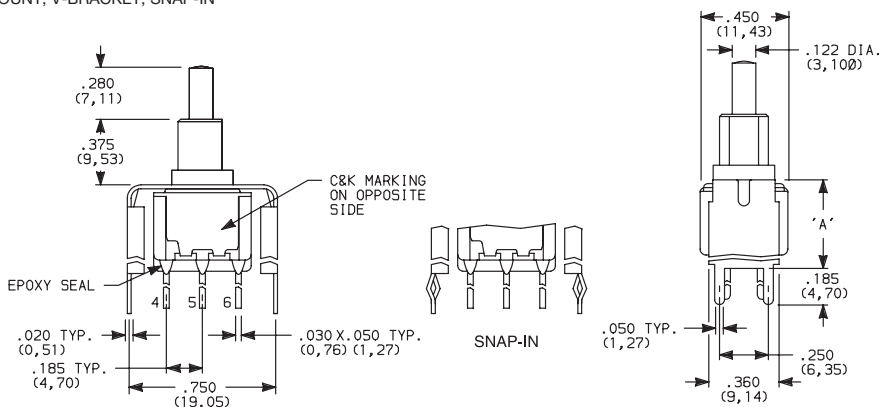
Not available with I seal.

V6 VERTICAL MOUNT, V-BRACKET

V21 VERTICAL MOUNT, V-BRACKET, SNAP-IN

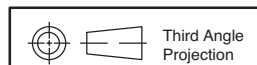


8261SH9_BE2
DPDT



OPTION CODE	DIM 'A'
V21	.555 (14,10)
V6	.460 (11,68)

Not available with I seal.



Third Angle
Projection



29 Aug 18

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8060 Series Alternate Action and Momentary Pushbutton Switches

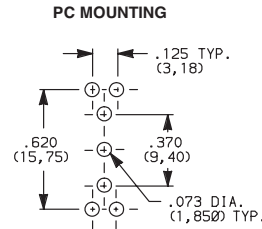
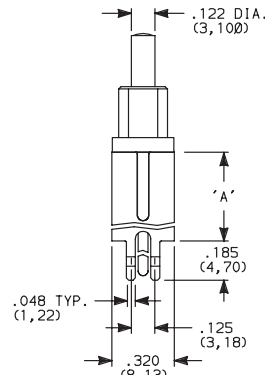
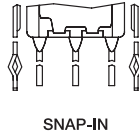
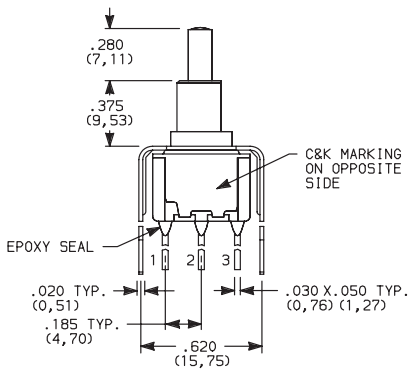


A
Pushbutton

TERMINATIONS

V3, V4 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



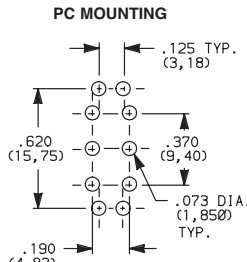
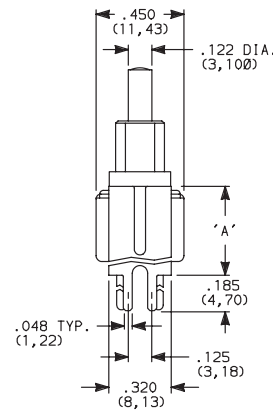
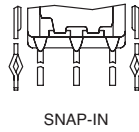
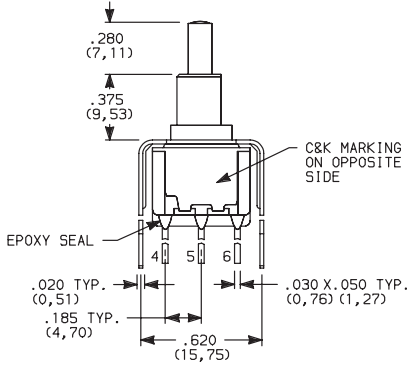
8161SH9_BE2
SPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)

Not available with I seal.

V3, V4 VERTICAL MOUNT, V-BRACKET

V31 VERTICAL MOUNT, V-BRACKET, SNAP-IN



8261SH9_BE2
DPDT

OPTION CODE	DIM 'A'
V3, V31	.460 (11,68)
V4	.630 (16,00)

Not available with I seal.

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	GOLD ¹	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
P		MATTE-TIN ⁶		
Q	SILVER ^{4,5}	SILVER ⁵	POWER	6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
S		MATTE-TIN ⁶		
G	GOLD OVER SILVER ^{2,3}	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 6 AMPS @ 120 V AC OR 28 V DC; 3 AMPS @ 250 V AC.
R		MATTE-TIN ⁶		

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

² END CONTACTS: Coin silver, with gold plate over nickel plate.

³ CENTER CONTACTS & ALL TERMINALS: Copper alloy, with gold plate over nickel plate.

⁴ END CONTACTS: Coin silver, silver plated.

⁵ CENTER CONTACT & ALL TERMINALS: Copper alloy, silver plated.

⁶ TERMINALS: Copper alloy, with matte-tin over nickel plate.

All models with all options when ordered with S, R, G, or Q contact material.

B contact material standard with all terminations except C, Z & Z3.

Q contact material standard with C, Z & Z3 terminations.

P, S & R contact materials not available with Z & Z3 terminations.

NOTE: Any models supplied with P, S, R, Q, B or G contact material are RoHS compliant.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



29 Aug 18



8060 Series

Alternate Action and Momentary Pushbutton Switches

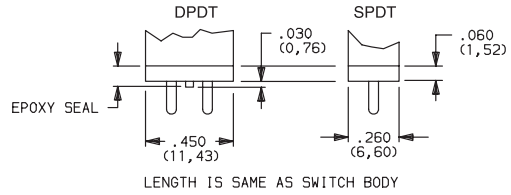
SEAL

Pushbutton

E EPOXY SEAL



I EPOXY POTTED BASE



NOTE: Available with C, W, Z, Z3 terminations only.

AVAILABLE HARDWARE

Cap

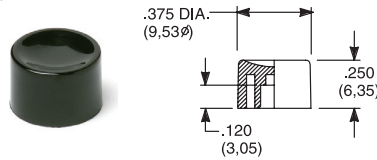


PART NO.

- 708901000** WHITE
- 708902000** BLACK
- 708903000** RED
- 708904000** ORANGE
- 708905000** YELLOW
- 708909000** GRAY

Material: Nylon
Finish: Gloss

Cap

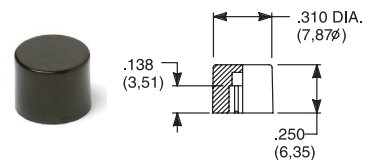


PART NO.

- 752701000** WHITE
- 752702000** BLACK
- 752703000** RED
- 752704000** ORANGE
- 752705000** YELLOW
- 752709000** GRAY

Material: Nylon
Finish: Gloss

Cap



PART NO.

- 801801000** WHITE
- 801802000** BLACK
- 801803000** RED
- 801804000** ORANGE
- 801805000** YELLOW
- 801809000** GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger



PART NO.

- 452D01000** WHITE
- 452D02000** BLACK
- 452D03000** RED
- 452D04000** ORANGE
- 452D05000** YELLOW
- 452D09000** GRAY

Material: Nylon
Finish: Gloss

Cap, Snap-fitting plunger

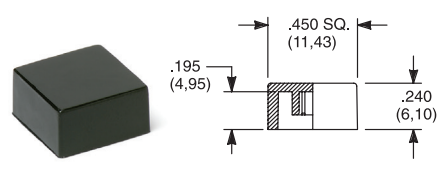


PART NO.

- 894101000** WHITE
- 894102000** BLACK
- 894103000** RED
- 894104000** ORANGE
- 894105000** YELLOW
- 894109000** GRAY

Material: Nylon
Finish: Gloss

Cap, J80, J81 & J82 options only



PART NO.

- 484601000** WHITE
- 484602000** BLACK
- 484603000** RED
- 484604000** ORANGE
- 484605000** YELLOW
- 484609000** GRAY

Material: Nylon
Finish: Gloss

PART NO.

- 798201000** WHITE
- 798202263** BLACK
- 798203000** RED
- 798204000** ORANGE
- 798205000** YELLOW
- 798209000** GRAY

Material: Nylon
Finish: Matte

Cap, J86 & J96 options only



PART NO.

- 459701000**
- 459702000**
- 459703000**
- 459704000**
- 459705000**
- 459709000**

Material: Nylon
Finish: Matte

Frame



PART NO.

- 615602263** BLACK

Material: Nylon
Finish: Matte

Frame

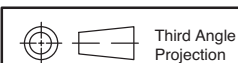


PART NO.

- 613302263** BLACK

Material: Nylon
Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
Other cap & frame colors available, consult Customer Service Center.



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



29 Aug 18

8060 Series Alternate Action and Momentary Pushbutton Switches



A
Pushbutton

AVAILABLE HARDWARE

Fits Z3 Termination
female connector

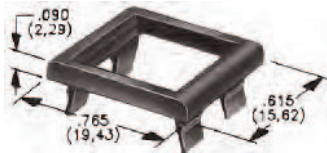
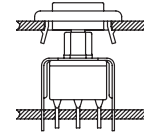


PART NO.
530100000

Available in loose pieces.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION

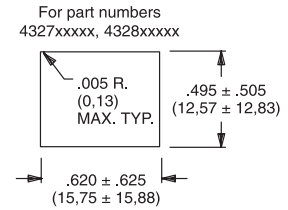
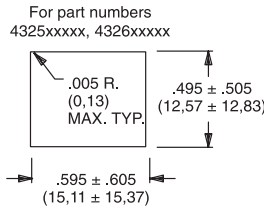


.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

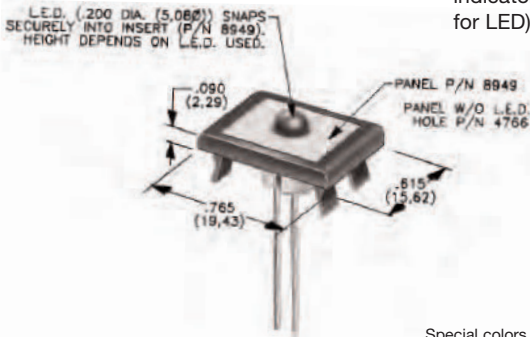
PART NO.
432702263

PART NO.
432802263 BLACK

PANEL MOUNTING



Panel Inserts



Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

PANEL INSERT
WITH HOLE FOR LED

PART NO.
894902000

BLANK PANEL INSERT
WITHOUT HOLE FOR LED

PART NO.
476602000 BLACK

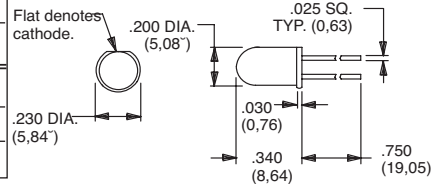
Special colors, custom markings available, consult Customer Service Center.

LED INFORMATION

SWITCHES WITH LED SUPPLIED: J86 OPTION:

Rectangular LEDs are supplied on 8060 Series pushbutton switches with J86 option. These LEDs are factory installed and are not replaceable. The following specifications apply:

OPTION CODE	COLOR	TYP. INTENSITY	TYP. FORWARD VOLTAGE	TYP. FORWARD CURRENT	MAX RATINGS AT 25°C AMBIENT TEMPERATURE		
					FORWARD VOLTAGE	CONTINUOUS FORWARD CURRENT	POWER DISSIPATION
6	Green	1.0 mcd	2.1 V	20 mA	2.5 V	50 mA	125 mW
3	Red*	0.5 mcd		10 mA		30 mA	75 mW
5	Yellow	4.0 mcd		20 mA		50 mA	125 mW



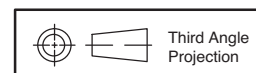
Suggested LED for J82 & J84 options.
Dimensions for reference only.

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.

Caution: Circuit elements must limit forward current of LED to 50mA max. continuous.

* Extra-bright red LED available (typ. intensity 4.5 mcd), consult Customer Service Center.

LEDs are not supplied with J82 & J84 options. LED snaps into switch frame surrounding actuator and is wired externally.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



29 Aug 18



8500 Series Subminiature Pushbutton Switches

Pushbutton
A



Features/Benefits

- Pre-travel or over-travel models available
- Ratings up to 3 AMPS
- Reliable contact design
- RoHS compliant

Typical Applications

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: Q contact material (853X Models): 1 AMP @ 120 V AC or 28 V DC; (855X Models): 3 AMPS @ 120 V AC or 28 V DC. See page A-65 for additional ratings.

ELECTRICAL LIFE:

853X MODELS: 250,000 actuations at full load.

855X MODELS: 10,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @

2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

TORQUE SPECS: T, T1 15/32" bushings - 50 in. lbs max.

All other 1/4 -40 bushing types 12 in. lbs max.

Materials

CASE: Glass filled phenolic or diallyl phthalate (DAP) (UL 94V-0).

PLUNGER: Phenolic or glass filled polyester, black standard(UL94V-0).

CAP & FRAME: Nylon, black, standard.

BUSHING: Brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated. See page A-65 for additional contact materials.

TERMINALS: Q contact material: Copper alloy, silver plated. See page A-65 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut: Brass, nickel plated; Lockwasher: Steel, bright nickel plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-63 thru A-66. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



Switch Function

- 8531** SPST Off-Mom. 1 Amp
- 8532** SPST Off-Mom. 1 Amp
- 8533** SPST On-Mom. 1 Amp
- 8534** SPST On-Mom. 1 Amp
- 8551** SPST Off-Mom. 3 Amps
- 8552** SPST Off-Mom. 3 Amps

Actuator or Plunger

- M** .150" high
- J81** Snap-in with frame
- J82** Snap-in with frame for LED
- S** .210" high
- T** 15/32 bushing
- T1** 15/32 bushing with frame (8532 and 8534 only)

Terminations

- Z** Solder lug
- AV*** Right angle, PC thru-hole
- C** PC Thru-hole

Contact Material

- Q** Silver
- B** Gold
- G** Gold over silver

Seal

- E** Epoxy
- D** No epoxy seal

Cap or Plunger Color

- 2** Black
- 1** White
- 3** Red
- 9** Gray

Frame Color

- 2** Black
- NONE** Models without frame

* Available with M or S plunger models, and B contact material only.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

8500 Series Subminiature Pushbutton Switches

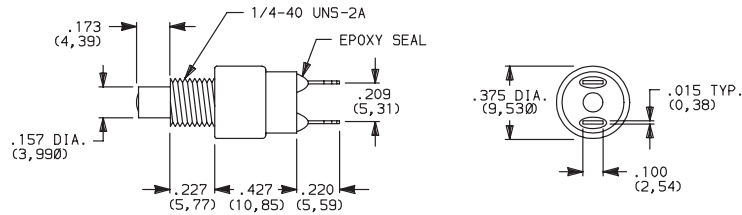


A
Pushbutton

SWITCH FUNCTION

NO. POLES	MODEL NO.	RATING	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
			POS. 1	POS. 2			
SP	8531	1 AMP	OFF	MOM.	.095 (2,41) TYP. with overtravel .042 (1,07) TYP.	7.7 oz (220g) TYP.	N.O. with overtravel
	8551	3 AMPS					

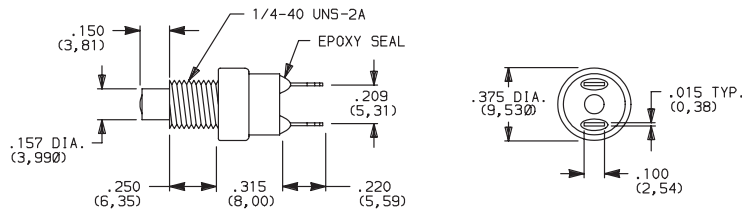
SPST



Part number shown: 8531MZQE2

SP	8532	1 AMP	OFF	MOM.	.050 (1,27) TYP.	6 oz (170g) TYP.	N.O.
	8552	3 AMPS					

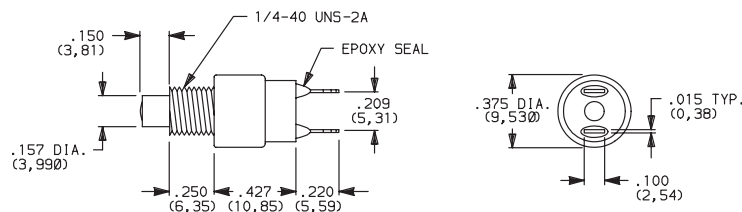
SPST



Part number shown: 8532MZQE2

SP	8533	1 AMP	ON	MOM.	.080 (2,03) TYP. with pretravel .057 (1,45) TYP.	11.5 oz (456 g) TYP.	N.C. with pretravel
	8534	1 AMP	ON	MOM.			

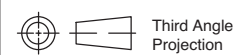
SPST



Part number shown: 8533MZQE2

MOM. = Momentary

All models with all options when ordered with G or Q contact material.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

C&K

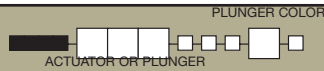


8500 Series Subminiature Pushbutton Switches

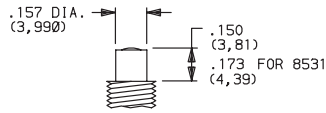
Pushbutton

A

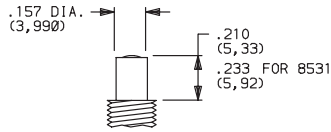
PLUNGER



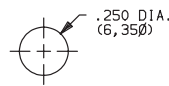
M .150" HIGH PLUNGER



S .210" HIGH PLUNGER



PANEL MOUNTING



OPTION CODE	PLUNGER COLOR
2	BLACK
3	RED

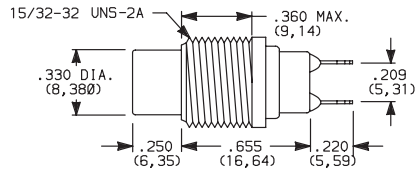
NOTE: One mounting nut and lockwasher supplied with all actuators (except T actuator: two nuts supplied).

CAP COLOR

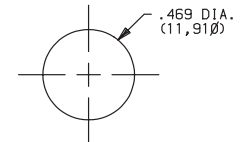
ACTUATOR



T 15/32 BUSHING



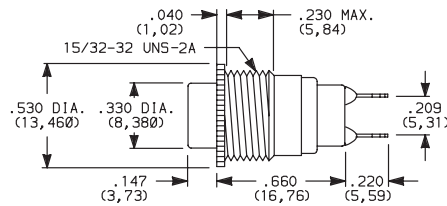
PANEL MOUNTING



OPTION CODE	CAP COLOR
2	BLACK
1	WHITE
3	RED
9	GRAY

NOTE: No frame color choice required.

T1 15/32 BUSHING WITH FRAME



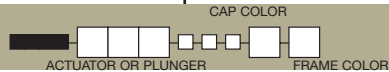
Cap Finish: gloss. Other colors available, consult Customer Service Center.

One mounting nut and lockwasher supplied with all actuators (except T actuator: two nuts supplied).

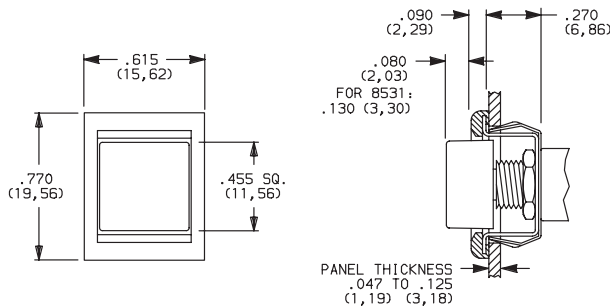
NOTE: Caps available for plunger options, see page A-65.

NOTE: No frame color choice required. Available with 8532 and 8534 models only.

ACTUATOR—SNAP-IN FRONT MOUNT



J81 SNAP-IN WITH FRAME



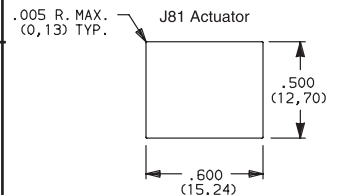
OPTION CODE	CAP AND FRAME COLOR
2	BLACK

Cap and Frame Finish: matte. Other colors available, consult Customer Service Center.

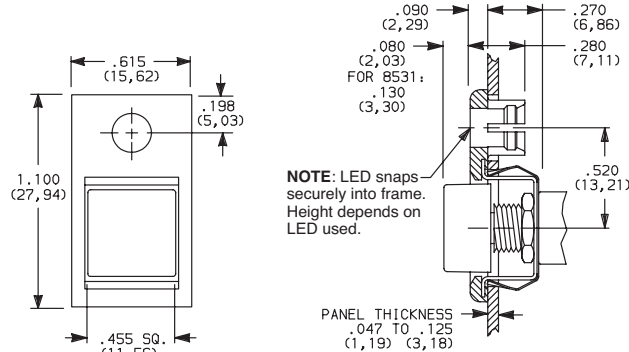
One mounting nut and lockwasher supplied with all actuators.

NOTE: Caps & frames available separately, see pages A-65 and A-66.

PANEL MOUNTING

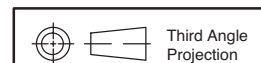
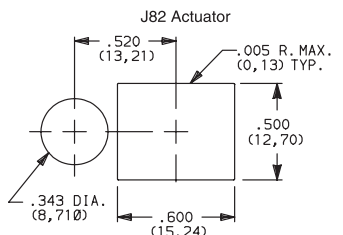


J82 SNAP-IN WITH FRAME FOR LED



NOTE: LED snaps securely into frame. Height depends on LED used.

LED not included. For LED information, see page A-66.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



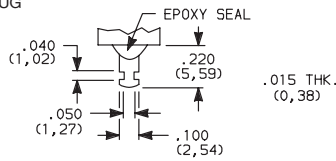
8500 Series Subminiature Pushbutton Switches



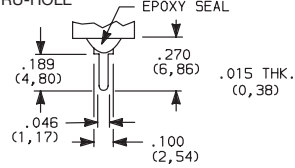
A
Pushbutton

TERMINATIONS

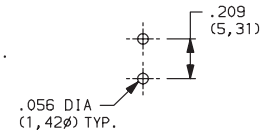
Z SOLDER LUG



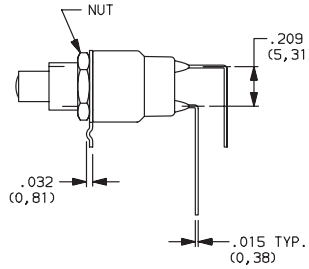
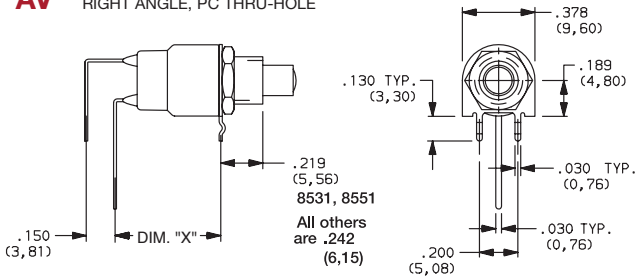
C PC THRU-HOLE



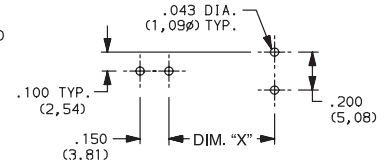
PC MOUNTING



AV RIGHT ANGLE, PC THRU-HOLE



PC MOUNTING



Available with

MODEL NO.	DIM "X"
8531, 8533	0.550
8532, 8534	0.438

NOTE: Available with M or S plunger models, and B contact material only.

CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	TERMINAL PLATING	CONTACT MATERIAL	RATINGS	
B	YES	YES	GOLD ¹	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER ⁴	SILVER ⁵	POWER	853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.
G	YES	YES	GOLD OVER SILVER ²	GOLD ³	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 V MAX @ 20 V AC OR DC MAX. OR 853X MODELS: 1 AMP @ 120 V AC OR 28 V DC. 855X MODELS: 3 AMPS @ 120 V AC OR 28 V DC.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

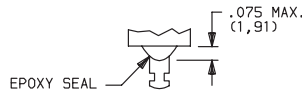
- ¹ CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.
- ² CONTACTS: Coin silver, with gold plate over nickel plate.
- ³ TERMINALS: Copper alloy, with gold plate over nickel plate.
- ⁴ CONTACTS: Coin silver, silver plated.
- ⁵ TERMINALS: Copper alloy, silver plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

All models with all options when ordered with G or Q contact material.
Q contact material standard with C, Z terminations.
8551 & 8552 available with Q contact material only.

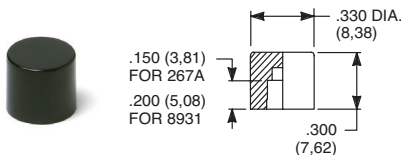
SEAL

E EPOXY SEAL



REPLACEMENT HARDWARE

Cap for 0.157" dia. plungers

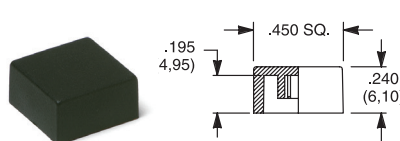


PART NO.	COLOR	PART NO.	COLOR
267A01000	WHITE	893101000	WHITE
267A02000	BLACK	893102000	BLACK
267A03000	RED	893103000	RED
267A09000	GRAY	893109000	GRAY

85X2T, 8534T models only
Material: Nylon
Finish: Gloss

85X1T, 8532T1, 8533T, 8534T1 models only
Material: Nylon
Finish: Gloss

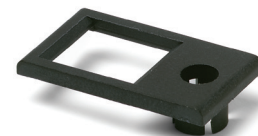
Cap, J80, J81 & J 82 options only



PART NO.	COLOR
448901000	WHITE
448902000	BLACK
448903000	RED
448909000	GRAY

Material: Nylon
Finish: Gloss or matte
Other colors available, consult Customer Service Center.

Frame



PART NO.	COLOR
613302263	BLACK

Material: Nylon
Finish: Matte



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





8500 Series Subminiature Pushbutton Switches

AVAILABLE HARDWARE

Frame

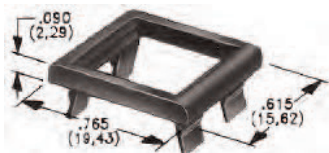
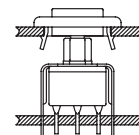


PART NO.
615602263 BLACK
Material: Nylon
Finish: Matte

NOTE: Additional nuts, locking rings and lockwashers available separately, see section "Technical Data and Additional Hardware".
Other colors available, consult Customer Service Center.

Frames snap into panel opening and are independent from switch mounting. Accurate positioning of the PC mounted switch relative to the panel opening is necessary to provide proper clearance between actuator and frame. Available in two basic styles and four panel thicknesses .047-.125 in. Material: Nylon. Finish: Matte.

TYPICAL APPLICATION

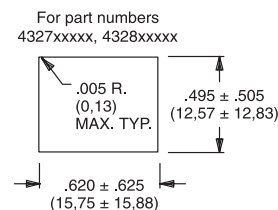
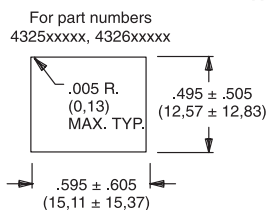


.090" (2,29) PANEL THK. .125" (3,18) PANEL THK.

PART NO.
432702263

PART NO.
432802263 BLACK

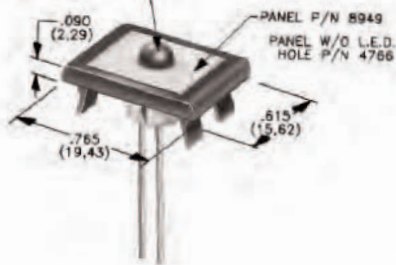
PANEL MOUNTING



Panel Inserts

Above frames (part nos. 432XXXXXX) are also available with insert which accepts LED for indicator light assembly. Order insert separately from frame. Blank insert panel (without hole for LED) also available. **LED not included.**

L.E.D. (.200 DIA. (5,08)) SNAPS
SECURELY INTO INSERT (P/N 8949).
HEIGHT DEPENDS ON L.E.D. USED.



PANEL INSERT
WITH HOLE FOR LED

BLANK PANEL INSERT
WITHOUT HOLE FOR LED

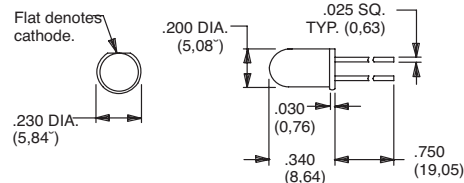
PART NO.
894902000

PART NO.
476602000 BLACK

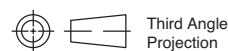
Special colors, custom markings available, consult Customer Service Center.

LED INFORMATION

Process Information: Soldering to LED leads must be completed within 5 seconds at 500°F (260°C) maximum.
LEDs are not supplied with J82 option. LED snaps into switch frame surrounding actuator and is wired externally.



Suggested LED for J82 option.
Dimensions for reference only.



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

KM Series Subminiature Pushbutton Switches



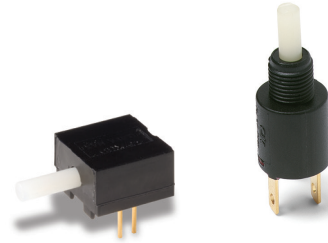
A
Pushbutton

Features/Benefits

- **Reliable contact design**
- **Available with pretravel and overtravel**
- **RoHS compliant**

Typical Applications

- **Alarm systems**
- **Computers**
- **Detector switch application**



Models Available

Specifications

CONTACT RATING: Q contact material (KM11, KM12 Models): 0.25 AMPS @ 125 V AC or DC (UL); (KM33 Model): 1 AMP @ 125 V AC or 28 V DC. See page A-69 for additional ratings.

ELECTRICAL LIFE: 10,000 actuations min. at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE: 10⁹Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

CAP INSTALLATION FORCE: 10 lbs. max. permissible.

NOTE: Any models supplied with Q or B contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

HOUSING & BUSHING: 6/6 nylon (UL94V-2), black.

ACTUATOR: 6/6 nylon (UL 94V-2), natural. Internal o-ring seal, available on KM11 & KM33 models.

MOVABLE CONTACT: B contact material: Bronze or copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

STATIONARY CONTACTS & TERMINALS: B contact material: Copper, with gold plate over nickel plate. See page A-69 for additional contact materials.

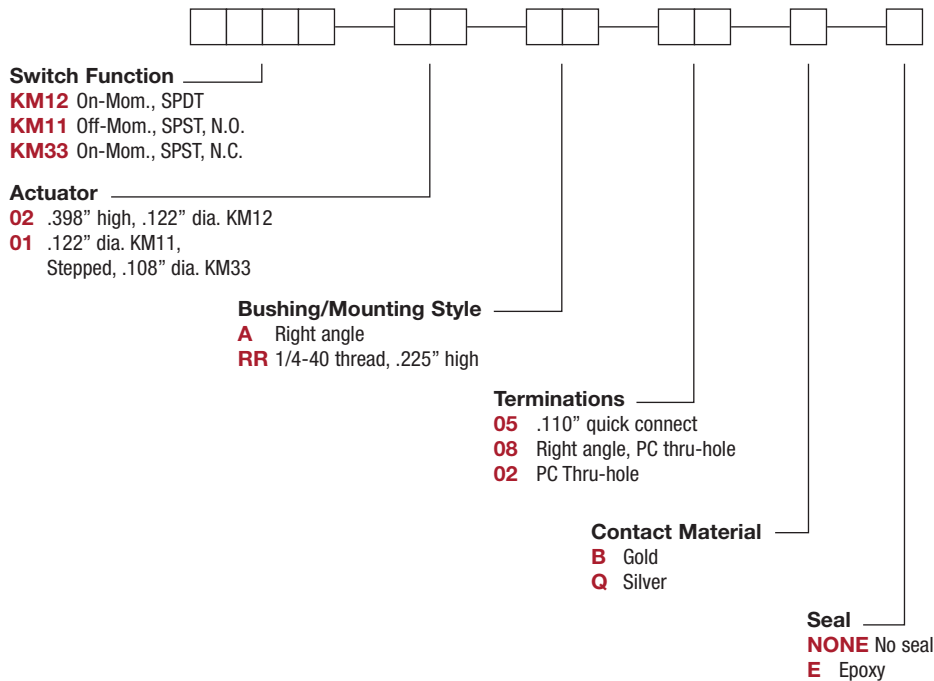
RETURN SPRING: Music wire, phosphor coated.

MOUNTING NUT: Brass, nickel plated.

TERMINAL SEAL: Epoxy.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-68 and A-70. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



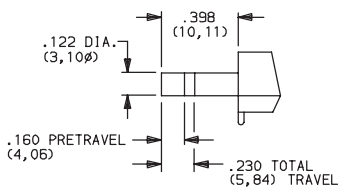
KM Series Subminiature Pushbutton Switches

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		CONNECTED TERMINALS		SCHEMATIC
		POS. 1	POS. 2	POS. 1	POS. 2	
SP	KM11	OFF	MOM.	OPEN	2-1	SPST N.O.
	KM33	ON	MOM.	2-1	OPEN	SPST N.C.
SPST <p>Part number shown: KM1101RR05BE</p>						
SP	KM12	ON	MOM.	2-1	4-3	SPDT
SPDT <p>Part number shown: KM1202A08BE</p>						

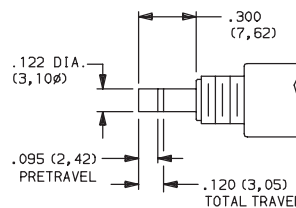
ACTUATOR

02 .398" HIGH, .122" DIA.

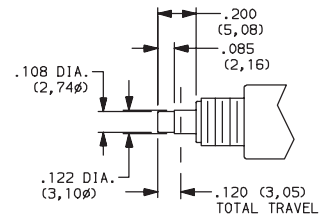


KM12 models only.

01 .122" DIA.



KM11 models only.



KM33 models only.

NOTE: Caps available for plunger options, see page A-70.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

KM Series Subminiature Pushbutton Switches



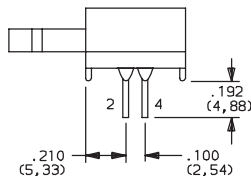
A

Pushbutton

BUSHING/ MOUNTING STYLE

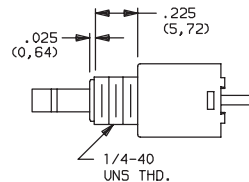


A RIGHT ANGLE



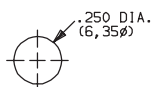
KM12 models only.

RR 1/4-40 THREAD, .225" HIGH



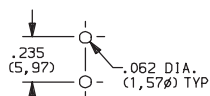
KM11 & KM33 models only.

PANEL MOUNTING

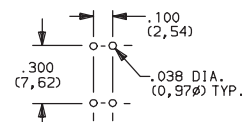


KM11 & KM33 models.

PC MOUNTING



KM11 models only.

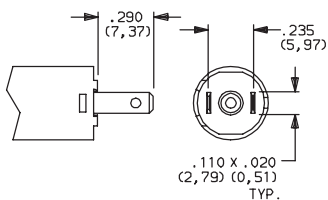


KM12 models only.

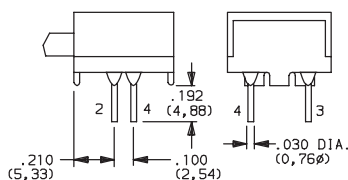
TERMINATIONS



05 .110" QUICK CONNECT

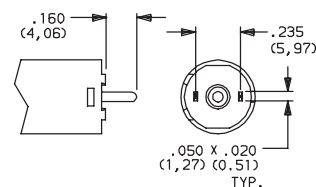


08 RIGHT ANGLE, PC THRU-HOLE



KM12 models only.

02 PC THRU-HOLE



KM11 models only.

CONTACT MATERIAL



OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT AND TERMINAL MATERIAL	RATINGS	
B	YES	YES	GOLD ¹	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER ²	POWER	0.25 AMPS @ 125 V AC OR DC (KM11, KM12) (UL) 1 AMP @ 125 V AC OR 28 V DC (KM33).

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

¹ STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate. MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate.

² STATIONARY CONTACTS & TERMINALS: Copper, silver plated (standard with all termination options). MOVABLE CONTACT: Phosphor bronze or beryllium copper, silver plated.

³ STATIONARY CONTACTS & TERMINALS: Copper, with gold plate over nickel plate over silver plate. MOVABLE CONTACT: Phosphor bronze or beryllium copper, with gold plate over nickel plate over silver plate.

NOTE: Any models supplied with Q or B contact material are RoHS compliant.

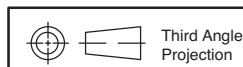
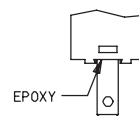
KM11, KM12 models when ordered with 'Q' contact material.

SEAL



NONE NO SEAL

E EPOXY SEAL



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

C&K

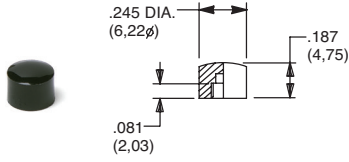


KM Series Subminiature Pushbutton Switches

AVAILABLE HARDWARE

Pushbutton
A

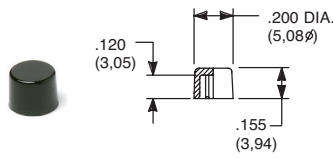
Cap, KM33 models



PART NO.
785101000 WHITE
785102000 BLACK
785103000 RED

Material: Nylon
 Finish: Gloss

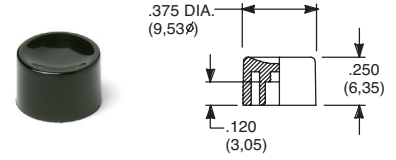
Cap, KM11 and KM12 models



PART NO.
708901000 WHITE
708902000 BLACK
708903000 RED

Material: Nylon
 Finish: Gloss

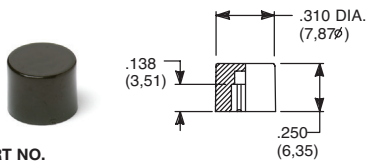
Cap, KM11 and KM12 models



PART NO.
752701000 WHITE
752702000 BLACK
752703000 RED

Material: Nylon
 Finish: Gloss

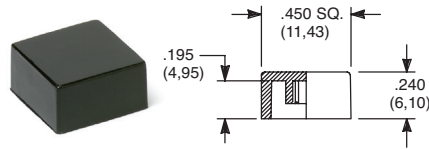
Cap, KM11 and KM12 models



PART NO.
801801000 WHITE
801802000 BLACK
801803000 RED

Material: Nylon
 Finish: Gloss

Cap, KM11 models



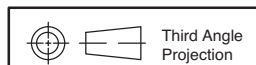
PART NO.
484601000 WHITE
484602000 BLACK
484603000 RED

PART NO.
798201000 WHITE
798202263 BLACK
798203000 RED

Material: Nylon
 Finish: Gloss

Material: Nylon
 Finish: Matte

NOTE: Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

8600 Series Microminiature Pushbutton Switches



A
Pushbutton

Features/Benefits

- Available with overtravel
- Normally closed models available
- Microminiature size ideal for applications where space is limited
- RoHS compliant

Typical Applications

- Detection
- Telecommunications and networking equipment
- Computers and peripherals



Models Available

Specifications

CONTACT RATING: Q contact material (8631, 8632 Models): 500 mA @ 120 V AC or 28 V DC; 250 mA @ 250 V AC; (8633 Model): 250 mA @ 120 V AC or 28 V DC; 125 mA @ 250 V AC. See page A-73 for additional ratings.

ELECTRICAL LIFE:

8631 and 8633 MODELS: 250,000 actuations at full load.
8632 MODEL: 100,000 actuations at full load.

CONTACT RESISTANCE:

Below 30 mΩ typ. initial @ 2-4 V DC, 100 mA, for both silver and gold plated contacts.

INSULATION RESISTANCE:

109 Ω min.

DIELECTRIC STRENGTH:

500 Vrms min. @ sea level.

OPERATING TEMPERATURE:

-30°C to 65°C.

SOLDERABILITY:

Per MIL-STD-202F method 208D, or EIA RS-186E method 9.

Materials

CASE: Glass filled phenolic or diallyl phthalate (DAP), (UL94V-0).

PLUNGER: Glass filled nylon (UL94V-0), black standard.

BUSHING: Brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated.

See page A-73 for additional contact materials.

TERMINALS:

8631, 8632 MODELS: Copper alloy, silver plated.

8633 MODEL: Q contact material: Coin silver.

See page A-73 for additional contact materials.

TERMINAL SEAL:

8633 MODEL: Epoxy.

8631, 8632 MODELS: Terminals insert molded.

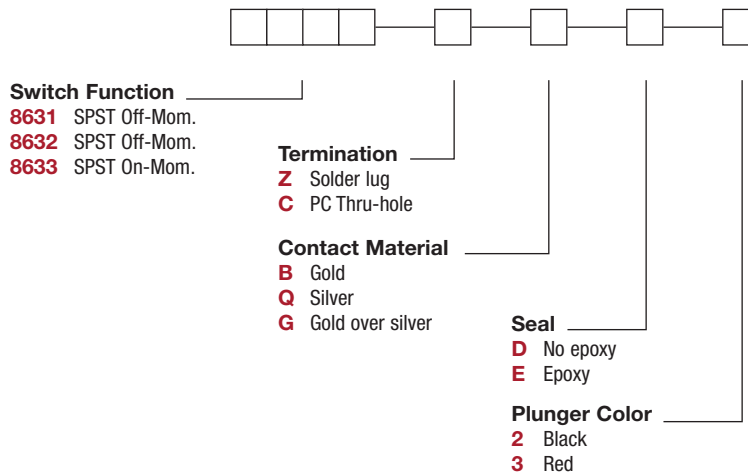
HARDWARE: Nut: Brass, nickel plated.

NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-72 and A-73. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8600 Series Microminiature Pushbutton Switches

Pushbutton

A

SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC	
		POS. 1	POS. 2				
SP	8631	OFF	MOM.	.040 (1,02) TYP.	5 oz (140g) TYP.	N.O.	
SPST							
Part number shown: 8631ZQD2							
SP	8632	OFF	MOM.	.106 (2,69) TYP.	with overtravel .024 (0,61) TYP.	6.25 oz (177g) TYP.	N.O. with overtravel
SPST							
Part number shown: 8632ZQD2							
SP	8633	ON	MOM.	.048 (1,22) TYP.	5 oz (140g) TYP.	N.C.	
SPST							
Part number shown: 8633ZQE2							

MOM. = Momentary

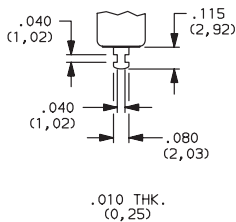
NOTE: Caps available for plunger options, see page A-73.

TERMINATIONS

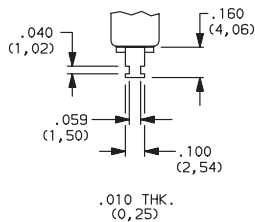
Z SOLDER LUG

C PC THRU-HOLE

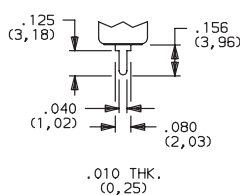
8631, 8632 models only.



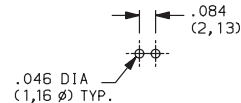
8633 models only.



8631, 8632 models only.



PC MOUNTING



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



8600 Series Microminiature Pushbutton Switches



A
Pushbutton

CONTACT MATERIAL

OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
B	YES	YES	GOLD 1	GOLD 1	LOW LEVEL/ DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.
Q	YES	YES	SILVER 4	SILVER 5	POWER	8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.
G	YES	YES	GOLD OVER SILVER 4	GOLD 3	LOW LEVEL/DRY CIRCUIT OR POWER	0.4 VA MAX @ 20 V AC OR DC MAX. OR 8631, 8632 MODELS: 500 mA @ 120 V AC OR 28 V DC; 250 mA @ 250 V AC. 8633 MODELS: 250 mA @ 120 V AC OR 28 V DC; 125 mA @ 250 V AC.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

1 CONTACTS & TERMINALS: Copper alloy, with gold plate over nickel plate.

2 CONTACTS: Coin silver, with gold plate over nickel plate.

3 TERMINALS: Copper alloy, with gold plate over nickel plate.
8633 model only: Coin silver, with gold plate over nickel plate.

4 CONTACTS: Coin silver, silver plated.

5 TERMINALS: Copper alloy, silver plated. 8633 model only: coin silver.

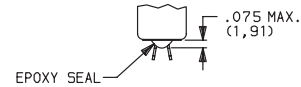
NOTE: Any models supplied with Q, B or G contact material are RoHS compliant.

8631, 8632 models with all options when ordered with G or Q contact material.
Q contact material standard with C, Z terminations.

SEAL

D NO EPOXY SEAL

E EPOXY SEAL



Not available on 8633 model.
Standard on 8631, 8632 models.

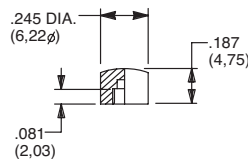
Not available on 8631, 8632 models.
Standard on 8633 model only.

PLUNGER COLOR

OPTION CODE	COLOR
2	BLACK
3	RED

AVAILABLE HARDWARE

Cap



PART NO.

785101000 WHITE
785102000 BLACK
785103000 RED

Material: Nylon
Finish: Gloss

NOTE: Other cap colors available, consult Customer Service Center.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





8700 Series Overtravel Pushbutton Switches

A
Pushbutton



Features/Benefits

- Extended pre-travel or over-travel
- Heavy-duty brass plunger
- Long electrical life – 100K cycles
- RoHS compliant

Typical Applications

- Telecommunications
- High end Instrumentation
- Medical & test equipment
- Detection

Specifications

CONTACT RATING: Q contact material: 1 AMP @ 120 V AC or 28 V DC. See page A-76 for additional ratings.

ELECTRICAL LIFE: 100,000 actuations at full load.

CONTACT RESISTANCE: Below 30 mΩ typ. Initial @ 2-4 V DC, 100 mA.

INSULATION RESISTANCE: 10³Ω min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.

OPERATING TEMPERATURE: -30°C to 65°C.

NOTE: Any models supplied with Q, or B contact material are RoHS compliant.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Materials

CASE: Diallyl phthalate (DAP) (UL 94V-0).

PLUNGER:

8731 – .39074" brass, nickel plated.

8732 – .390"74 PBT polyester, black.

BUSHING: brass, nickel plated.

CONTACTS: Q contact material: Coin silver, silver plated. See page A-76 for additional contact materials.

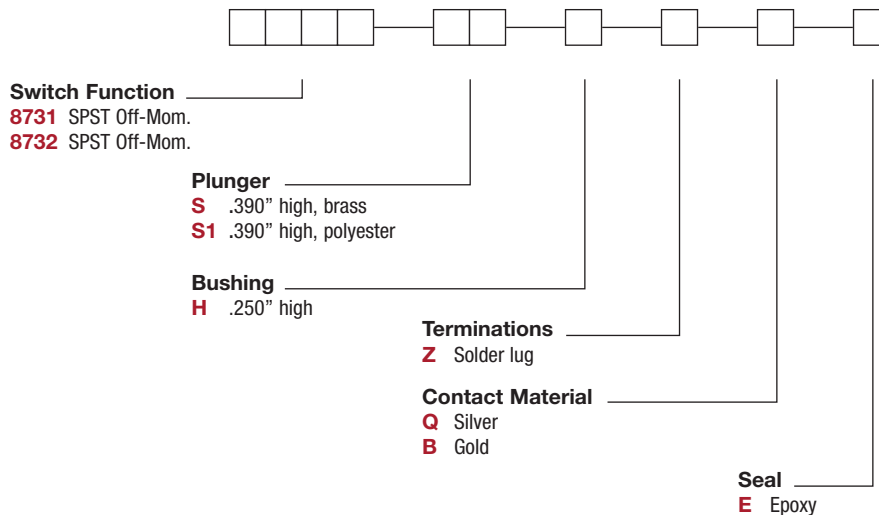
TERMINALS: Q contact material: Copper alloy, silver plated. See page A-76 for additional contact materials.

TERMINAL SEAL: Epoxy.

HARDWARE: Nut: Brass, nickel plated; lockwasher: Steel, bright nickel plate. One mounting nut & lockwasher supplied with all switches.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-75 and A-76. For additional options not shown in catalog, consult Customer Service Center. All models have epoxy terminal seal and are compatible with all "bottom-wash" PCB cleaning methods.



8700 Series Overtravel Pushbutton Switches



A
Pushbutton

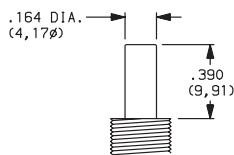
SWITCH FUNCTION

NO. POLES	MODEL NO.	SWITCH FUNCTION		TOTAL TRAVEL	ACTUATION FORCE	SCHEMATIC
		POS. 1	POS. 2			
SP	8731	OFF	MOM.	.390 (9,91) TYP. with overtravel .311 TYP.	4.7 oz TYP.	N.O. with overtravel SPST
SPST <p>Part number shown: 8731SHZQE</p>						
SP	8732	OFF	MOM.	.390 (9,91) TYP. with overtravel .350 TYP.	2.2 oz TYP.	N.O. with overtravel SPST
SPST <p>Part number shown: 8732S1HZQE</p>						

MOM. = Momentary

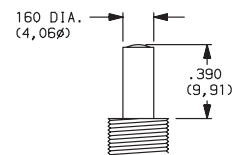
PLUNGER

S .390" HIGH, BRASS



Available with 8731 model only.

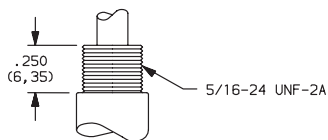
S1 .390" HIGH, PBT POLYESTER



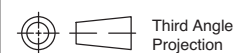
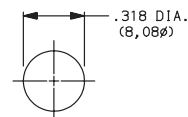
Available with 8732 model only.

BUSHING

H .250" HIGH



PANEL MOUNTING



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



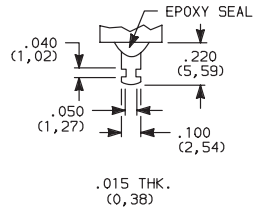


8700 Series Overtravel Pushbutton Switches

Pushbutton
A

TERMINATIONS

Z SOLDER LUG



CONTACT MATERIAL

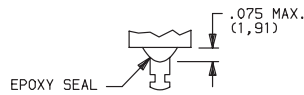
OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	CONTACT MATERIAL	TERMINAL PLATING	RATINGS	
Q	YES	YES	SILVER	SILVER	POWER	1 AMP @ 125 V AC OR 28 V DC.
B	YES	YES	GOLD	GOLD	LOW LEVEL/DRY CIRCUIT	0.4 VA MAX. @ 20 V AC OR DC MAX.

* Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

NOTE: Any models supplied with Q, or B contact material are RoHS compliant.

SEAL

E EPOXY SEAL



GP Series Sealed Ultraminiature Pushbutton Switches



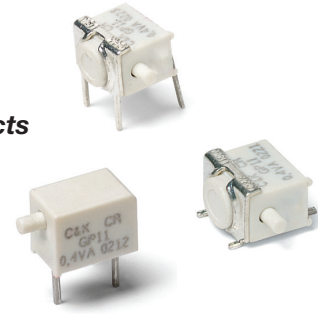
A Pushbutton

Features/Benefits

- Ultraminiature design saves space
- Process compatible, withstands most soldering and washing processes
- Thru-hole and surface mount models available
- Sealed construction—internal o-ring and epoxy base
- RoHS compliant

Typical Applications

- Telecommunications and network equipment
- Computers and peripheral products
- Instrumentation
- Medical Applications



Specifications

CONTACT RATING: 0.4 VA max. @ 20 V AC or DC max.
 MECHANICAL & ELECTRICAL LIFE: 40,000 make-and-break cycles at full load.
 CONTACT RESISTANCE: Below 50 mΩ typ. initial @ 2-4 V DC, 100 mA.
 INSULATION RESISTANCE: 10⁹Ω min.
 DIELECTRIC STRENGTH: 500 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -40°C to 85°C.
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9 (1 hour steam aging).
 DEGREE OF PROTECTION: IP57; Protection against harmful dust deposit, full-scale voltage protection, temporary immersion.
 PACKAGING: Surface mount switches standard in anti-static tape and reel packaging per EIA 481-3, see page A-80 for drawings and reel information. Thru-Hole parts are shipped in trays.
 All models are RoHS compliant and compliant.

Materials

HOUSING & BASE: Glass filled nylon 4/6, flame retardant, heat stabilized (UL 94V-0).
 ACTUATOR: Glass filled nylon 4/6, flame retardant (UL 94V-0) with standard internal o-ring seal.
 SWITCH SUPPORT: Brass, tin plated.
 MOVABLE CONTACT: Copper alloy, with gold plate over nickel plate.
 STATIONARY CONTACTS Copper alloy, with gold plate over nickel plate.
 TERMINALS: Copper alloy, with gold flash over nickel plate.
 TERMINAL SEAL: Epoxy/Urethane. All terminals insert molded.

NOTE: Any models supplied with B contact material are RoHS compliant and compatible.

NOTE: Materials listed above are general specifications. Specifications available for specific and custom switches, consult Customer Service Center.

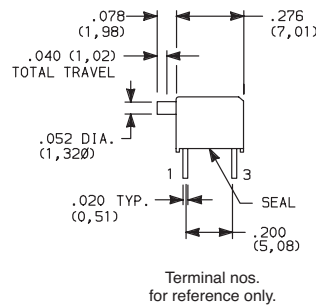
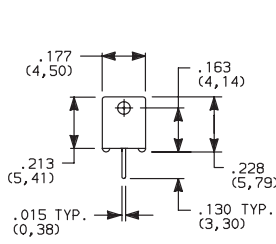
CAUTION: PC mounting layouts and pads as shown are designed to be compatible with the latest equipment and reflow techniques. Care should be taken in the design and location of PC lands to suit individual needs. Orientation relative to reflow direction may significantly impact solder joint integrity.

How To Order

Complete part numbers for GP Series Sealed Ultraminiature Pushbutton Switches are shown on pages A-78 thru A-80.

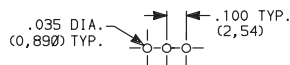
PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
GP11MCBE	OFF	MOM.	
Conn. Terms.	OPEN	1-3	
GP12MCBE	ON	MOM.	
Conn. Terms	2-1	2-3	

MOM. = Momentary

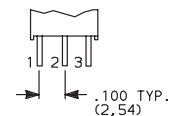


GP11MCBE SPST

PC MOUNTING



GP11—omit center hole.



GP12 Model



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



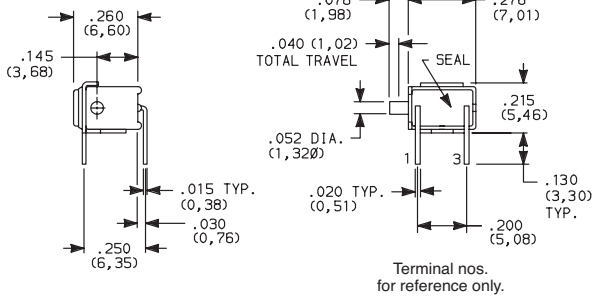
GP Series Sealed Ultraminiature Pushbutton Switches

Pushbutton

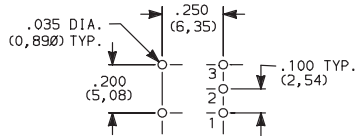
A



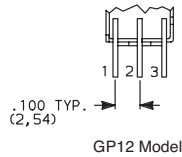
**GP11MABE
SPST**



PC MOUNTING



GP11- omit hole 2.



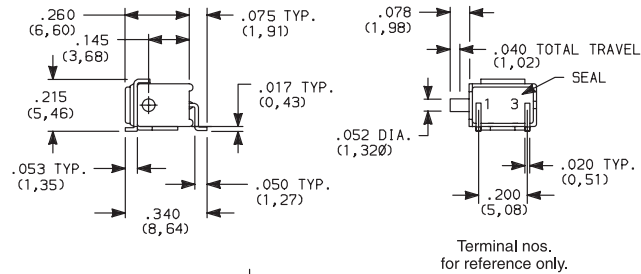
GP12 Model

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MABE	OFF	MOM.	
Conn. Terms.	OPEN	1-3	
GP12MABE	ON	MOM.	
Conn. Terms.	2-1	2-3	

MOM. = Momentary

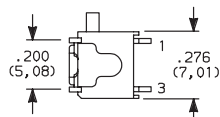


**GP11MSABE
SPST**

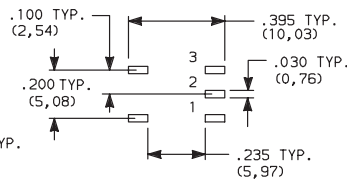


Terminal nos. for reference only.

PC MOUNTING



GP12 Model



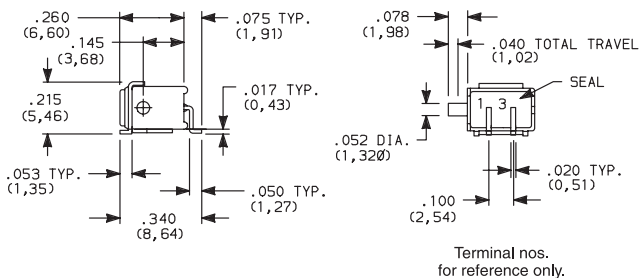
GP11- omit pad 2.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MSABE	OFF	MOM.	
Conn. Terms.	OPEN	1-3	
GP12MSABE	ON	MOM.	
Conn. Terms.	2-1	2-3	

MOM. = Momentary

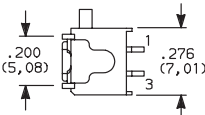


**GP11MSA1BE
SPST**

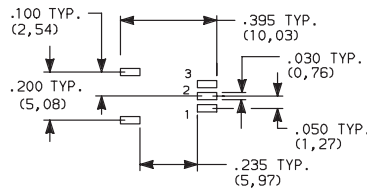


Terminal nos. for reference only.

PC MOUNTING



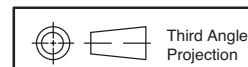
GP12 Model



GP11- omit pad 2.

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS.1	POS. 2	
GP11MSA1BE	OFF	MOM.	
Conn. Terms.	OPEN	1-3	
GP12MSA1BE	ON	MOM.	
Conn. Terms.	2-1	2-3	

MOM. = Momentary



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



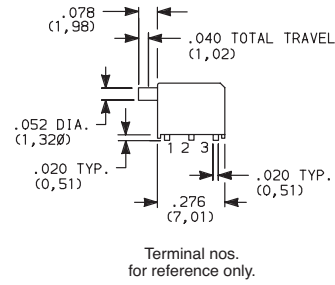
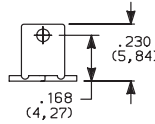
GP Series Sealed Ultraminiature Pushbutton Switches



A
Pushbutton

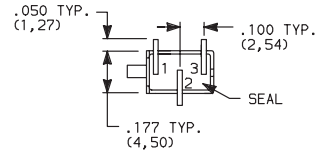
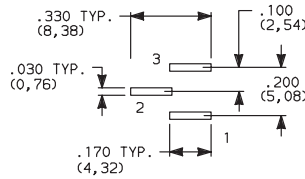
PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
GP12MSCBE	ON	MOM.	 NC 1 2 (COMM) 3 NO SPDT
Conn. Terms	2-1	2-3	

MOM. = Momentary

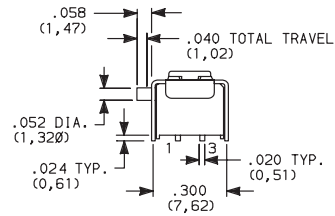
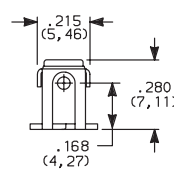


GP12MSCBE
SPDT

PC MOUNTING



NOTE: Recommended for infrequent use applications only
For increased switch mounting strength, order, SV1 termination style with support bracket (see below).

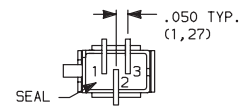
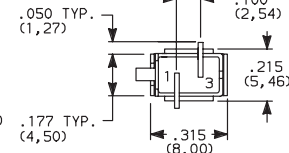
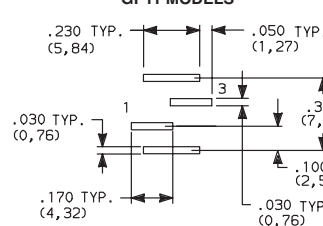


GP11MSV1BE
SPST

PART NUMBER	SWITCH FUNCTION		SCHEMATIC
	POS. 1	POS. 2	
GP11MSV1BE	OFF	MOM.	 1 2 3 SPST
Conn. Terms.	OPEN	1-3	
GP12MSV1BE	ON	MOM.	 NC 1 2 (COMM) 3 NO SPDT
Conn. Terms.	2-1	2-3	

MOM. = Momentary

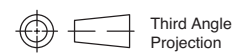
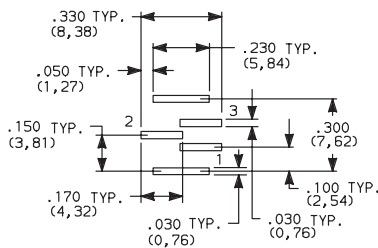
**PC MOUNTING
GP11 MODELS**



GP12 Model

Terminal nos. for reference only.

**PC MOUNTING
GP12 Models**



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change





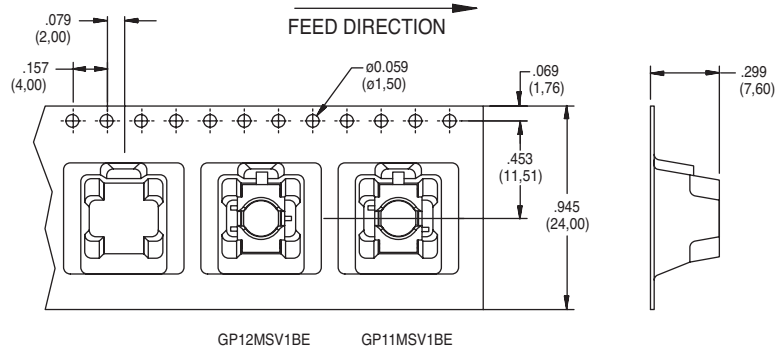
GP Series Sealed Ultraminiature Pushbutton Switches

TAPE & REEL

Pushbutton
A

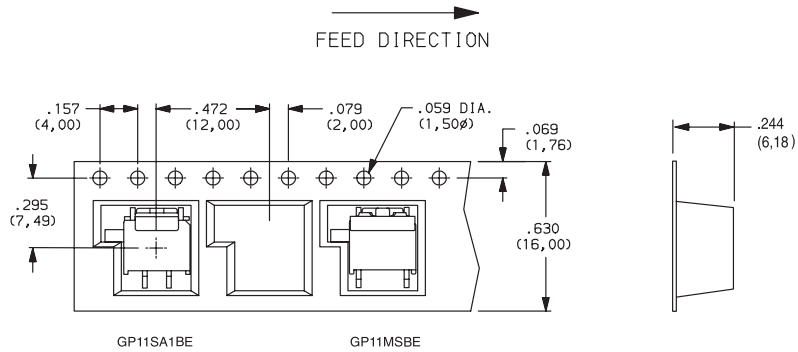
For part numbers GP11MSV1BE, GP12MSV1BE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



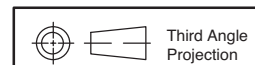
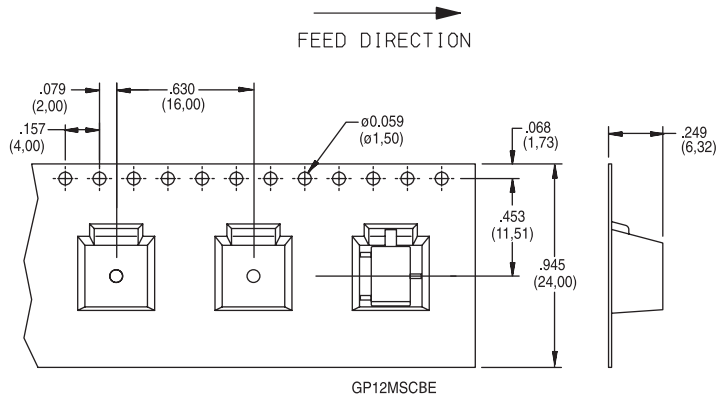
For part numbers GPXXSA1BE, GPXXMSABE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



For part numbers GP12MSCBE

REEL INFORMATION	
OUTSIDE DIAMETER	13.00 (330,0)
PILOT HOLE	.512 (13,0)
QUANTITY PER REEL	600



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



PN Series Alternate & Momentary Action Pushbutton Switches

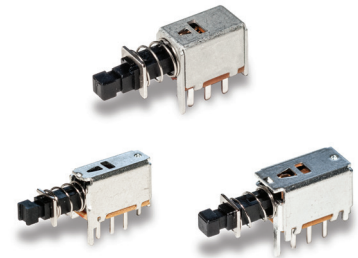


Features/Benefits

- Momentary or locking action
- Different actuation forces for customized feel
- Low cost, reliable contact design
- Single and double pole options
- RoHS compliant

Typical Applications

- Computers and peripherals
- Instrumentation and measurement equipment
- Non-power, on-off switch applications



Specifications

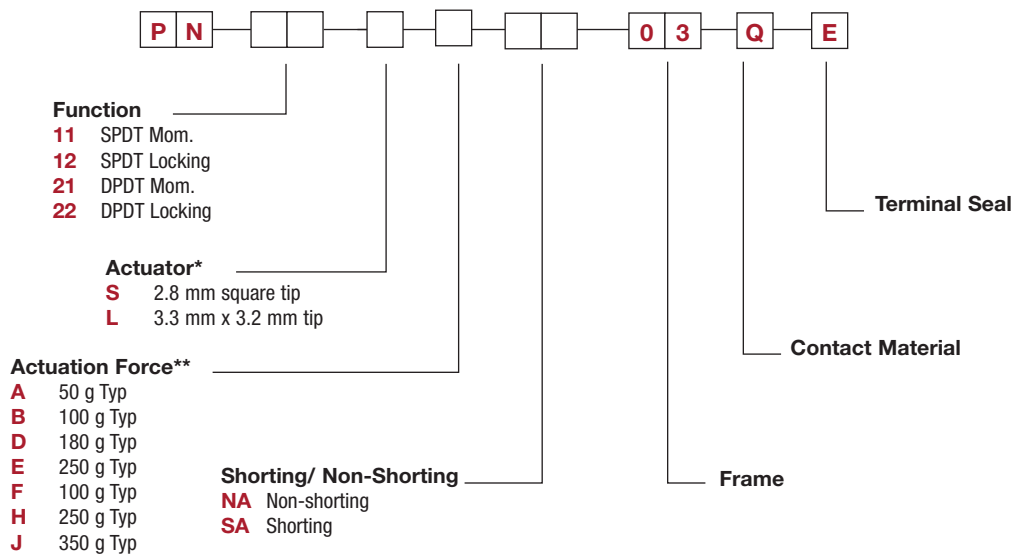
CONTACT RATING: 0.2 AMP @ 30 V DC max.
 ELECTRICAL LIFE: 10,000 make-and-break cycles at full load.
 MECHANICAL LIFE: 10,000 on/off cycles.
 CONTACT RESISTANCE: 30 mΩ max. initial
 INSULATION RESISTANCE: 100 MΩ min.
 DIELECTRIC STRENGTH: 500 V AC min.
 OPERATING/STORAGE TEMPERATURES: -10°C to 60°C.
 PACKAGING: Switches are supplied in anti-static trays.

Materials

FRAME: Tin plated steel.
 ACTUATOR: PA 66 black.
 BASE: Phenolic resin.
 TERMINALS: Silver plated brass.
 MOVABLE CONTACTS: Silver plated phosphor bronze.
 RETURN SPRING: SWC
 DETENT SPRING: Phosphor bronze.
 DETENT SPRING PLATE: Phosphor bronze.
 RETURN SPRING RETAINER RING: Nickel plated steel.
 TERMINAL SEAL: Epoxy.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.



* Note - The switch body style dimensions differ for each of these 3 groupings

“S” actuator available for PN 11 & PN 12 options

“S” actuator available for PN 21 & PN 22 options

“L” actuator available for PN 21 & PN 22 options

** Actuation Force “A” only available with PN11 with “S” actuator

PN 11 & PN 21 available with Actuation Force “B”, “D”, “E”, “F”, “H”, “J”

PN 12 & PN 22 available with Actuation Force “D”, “E”, “H”, “J”

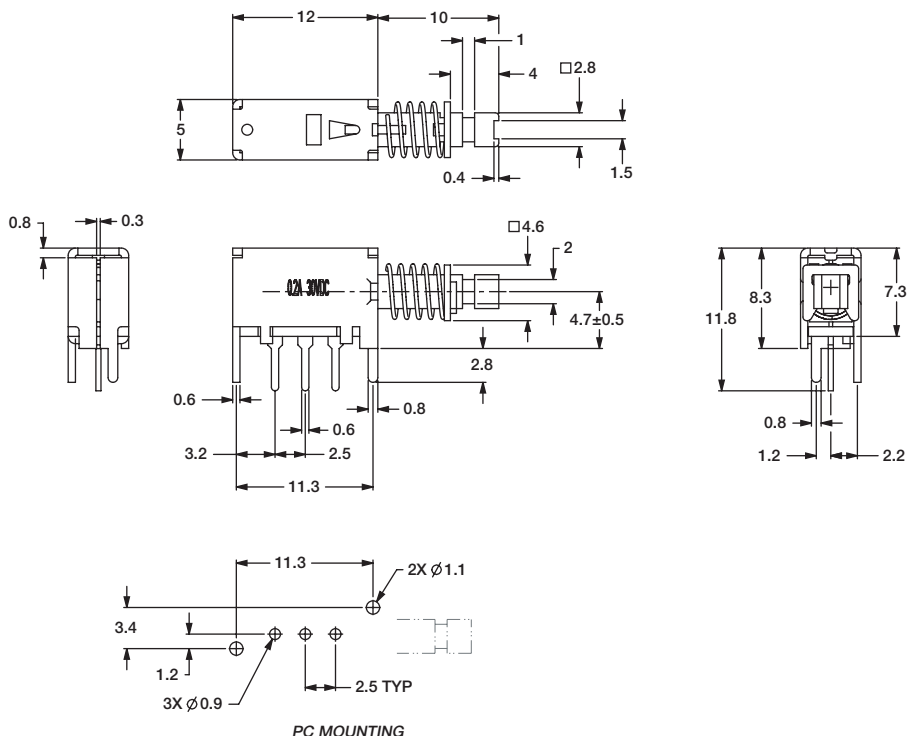
Full travel



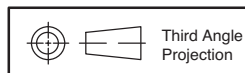
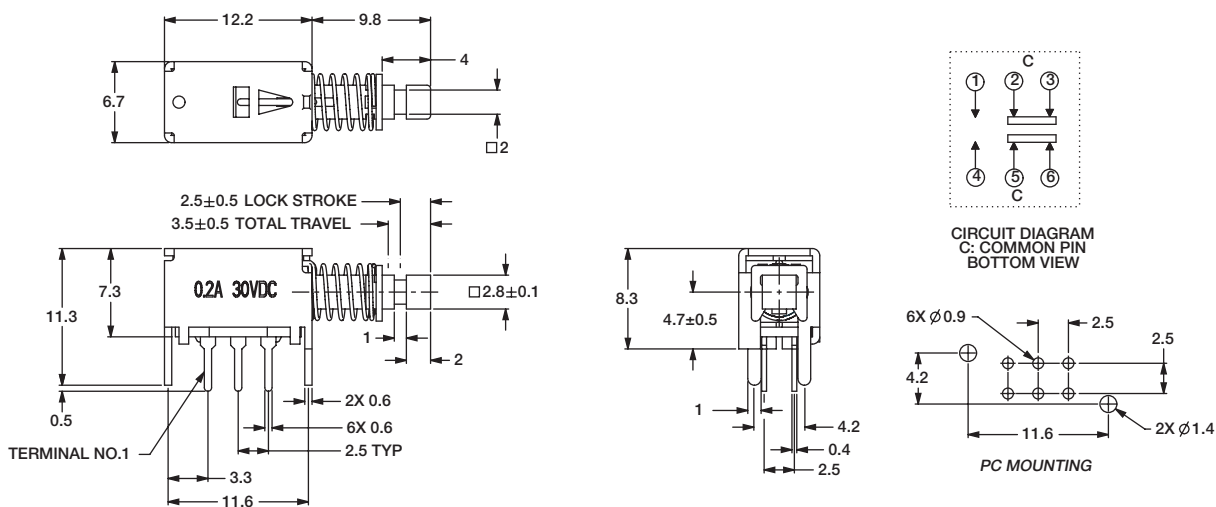
PN Series Alternate & Momentary Action Pushbutton Switches

Pushbutton

PN 11 SPDT Mom.
PN 12 SPDT Locking



PN 21 DPDT Mom. with "S" Actuator
PN 22 DPDT Locking with "S" Actuator



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

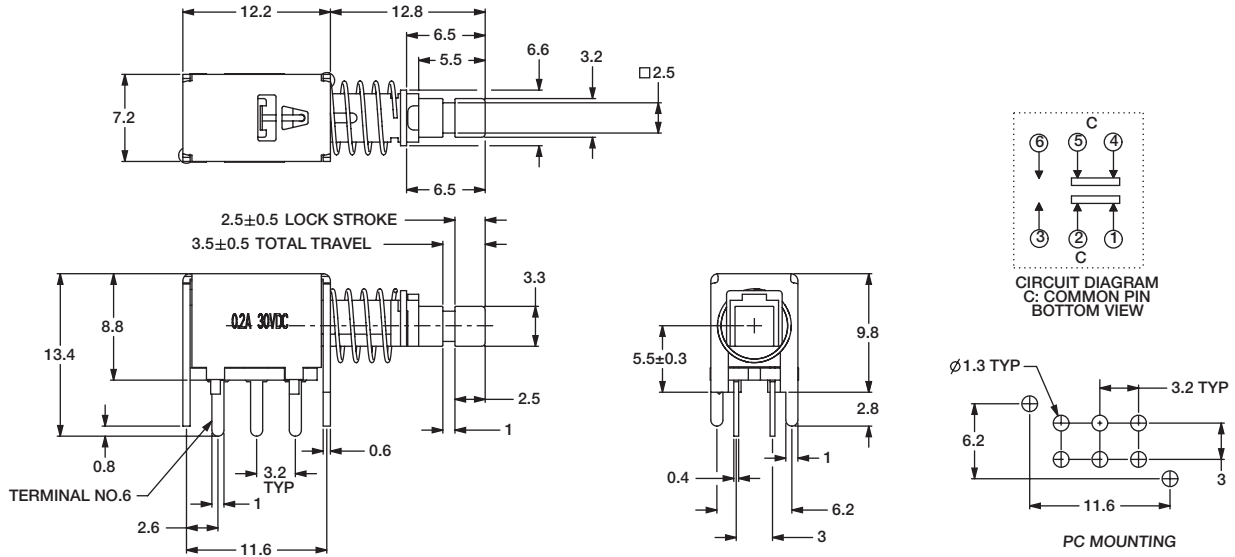


PN Series Alternate & Momentary Action Pushbutton Switches



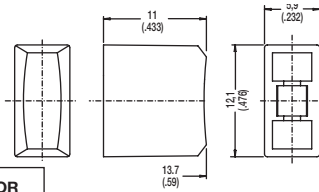
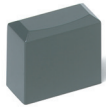
A
Pushbutton

PN 21 DPDT Mom. with "L" Actuator
PN 22 DPDT Locking with "L" Actuator

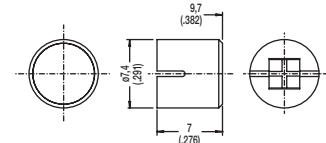


BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

PE



PV

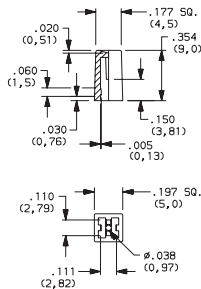
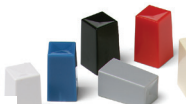


OPTION CODE	COLOR
RD	Red
GY	Gray
BK	Black
WH	White

PE and PV buttons fit "L" actuators

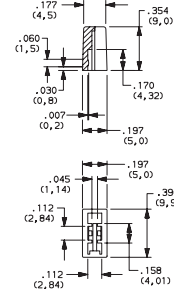
Indexed

- G001A** Black
- G001G** Gray
- G001I** Ivory
- G001R** Red



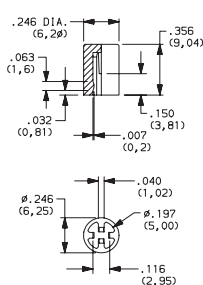
Rectangular

- G002A** Black
- G002G** Gray
- G002I** Ivory
- G002R** Red



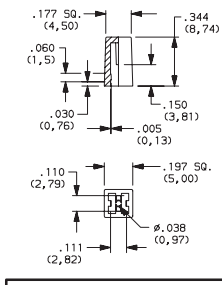
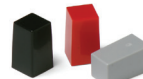
Round

- G003A** Black
- G003G** Gray
- G003I** Ivory
- G003R** Red

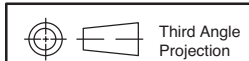


Square

- G004A** Black
- G004G** Gray
- G004I** Ivory
- G004R** Red



G001, G002, G003 and G004 buttons fit "S" actuators

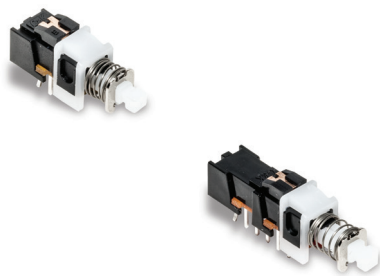


Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



PHB Series Short Stroke Pushbutton Switches

Pushbutton
A



Features/Benefits

- Momentary or latching action
- Low cost, reliable contact design
- 2 & 4 pole configurations
- Sealed contacts
- Optional buttons
- RoHS compliant

Typical Applications

- Computers and peripherals
- Instrumentation and measurement equipment
- Non-power, on-off switch applications

Specifications

RATING: 1 A @ 15 V DC
 DIELECTRIC STRENGTH (50 Hz/1 min.): 500 V DC between terminals or between terminals and frame for 1 minute
 OPERATING LIFE: 10,000 cycles at rated load
 CONTACT RESISTANCE: 20 m Ωohms initial
 INSULATION RESISTANCE: 100 M Ωohms
 TOTAL TRAVEL/LATCHING TRAVEL: 2.5mm (± 0.5 mm) / 1.5mm (± 0.5 mm) to latch EE option (push-push)
 OPERATING FORCE:
 2U option: 170 grams ± 100 grams (1.67 ± 0.98N)
 4U option: 230 grams ± 100 grams (2.26 ± 0.98N)
 OPERATING TEMPERATURE: -10°C to 60°C
 BOUNCE TIME: ≤10 ms
 SEALING: Sealed contacts.
 PACKAGING: Switches; PHB2 models: 84 pcs per tray; PHB4 models 72 pcs per tray
 Optional Caps; Bulk bag - 100 caps per bag

Materials

FIXED TERMINAL: Brass, silver plated
 MOVABLE CONTACT: Phosphor bronze, silver plated
 COVER: PA 66 Black
 COVER TO BASE RETAINING CLIP: POM
 ACTUATOR: POM
 RETURN SPRING: Stainless steel
 SPRING RETAINING RING: Steel, nickel plate
 BASE: Phenolic resin
 TERMINAL SEAL: Epoxy.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. For additional options not shown in catalog, consult Customer Service Center.

Switch



Contact Arrangement

- 2U** 2 Changeovers
- 4U** 4 Changeovers

Mechanical Function

- OA** Momentary
- EE** Push-push

Termination

- TS** Straight
- SN** Kinked (plug in)

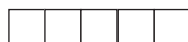
Electrical Rating

- 1A** 1 Amp / 15 VDC

Contacts / Timing

- (Blank) Shorting
- NS** 1 Amp / 15 VDC

Caps (order separately)



INDEXED	COLOR	RECTANGULAR	COLOR	ROUND	COLOR	SQUARE	COLOR
G001A	BLACK	G002A	BLACK	G003A	BLACK	G004A	BLACK
G001G	GRAY	G002G	GRAY	G003G	GRAY	G004G	GRAY
G001I	IVORY	G002I	IVORY	G003I	IVORY	G004I	IVORY
G001R	RED	G002R	RED	G003R	RED	G004R	RED





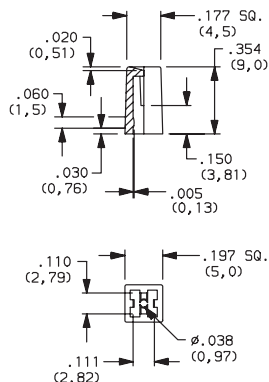
PHB Series Short Stroke Pushbutton Switches

CAPS

Pushbutton
A

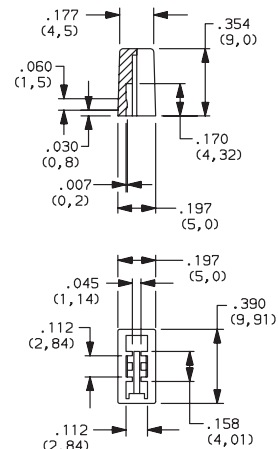
Indexed

- G001A** Black
- G001G** Gray
- G001I** Ivory
- G001R** Red



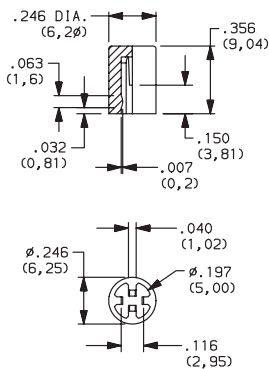
Rectangular

- G002A** Black
- G002G** Gray
- G002I** Ivory
- G002R** Red



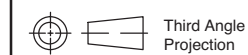
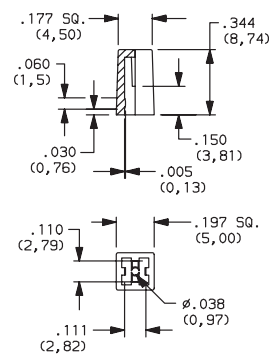
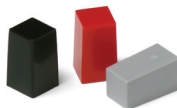
Round

- G003A** Black
- G003G** Gray
- G003I** Ivory
- G003R** Red



Square

- G004A** Black
- G004G** Gray
- G004I** Ivory
- G004R** Red



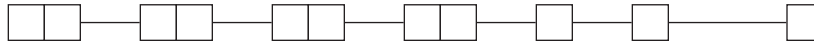
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



F Series Pushbutton Switches

Pushbutton
A

European Order Code - Switch Only



Designation

SF F Series
ZF Central mounted F series

Contact Arrangement

2U 2PDT
4U 4PDT
6U 6PDT
8U 8PDT

Mechanical Function

OA Momentary
EE Alternate (push-push)
GR Interlock

Terminal Style

(NONE) Solder lugs & PC pins

LB Cut solder lugs
PB Cut PC pins, for other configurations, consult factory

Electrical Function

(NONE) BBM

Contact Material

(NONE) Silver, AG
P Gold

Dress nut*

*Central mounted F series only

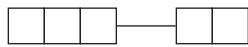
(NONE) No dress nut

B Black
C Chrome

*Minimum order quantities apply.

Order Code - Buttons

Solid Buttons



Style

F01 FMR
F02 FG*
F12 FSC
F13 FSD
F14 FU12
F15 FSB
F16 FE
F19 FA
F21 F001

Button Color

01 Black
02 White
03 Red
04 Light gray

Mechanical Indicator Buttons



Style

F01 FA100
F02 FA101
F07 FA120
F08 FA201
F11 FA200*

Shell Color

01 Black

Out Position Color

01 Black

In Position Color

02 White
06 Yellow
07 Blue
08 Green
12 Orange

*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

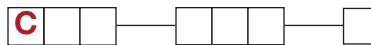
BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.

Order Code - Chassis

To order a switch with chassis, create the switch part number listed above and add the Chassis part number configurator information at the end of the part number.

Note: We do not guarantee or recommend interlocking beyond 10 stations.



No. of Stations

01 thru 23 Comes with standard .094 (2,4mm) mounting holes
Note: Single station chassis available with special mounting configurations, consult factory.

Spacing between Stations

00 Single station
10 10mm
12.5 12.5mm
15 15mm
17.5 17.5mm
20 20mm

Special Acknowledgements

See note

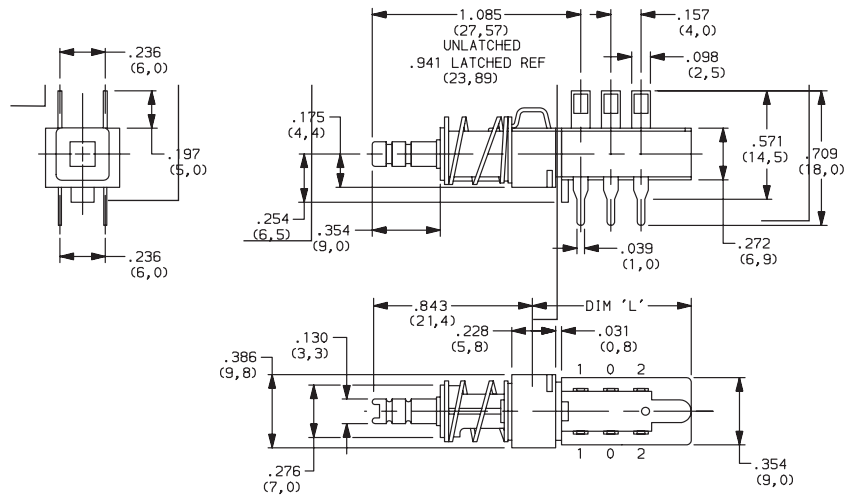
*Minimum order quantities apply.



SWITCHES WITH STANDARD OPTIONS

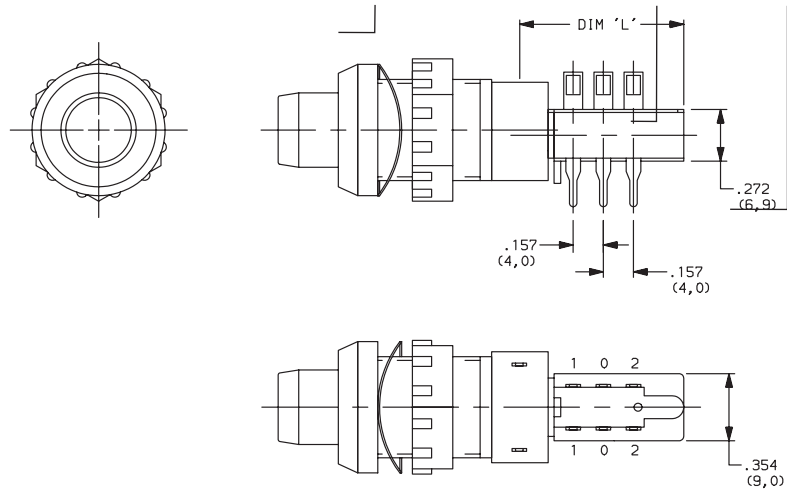
F2UEE

CONTACT ARRANGEMENT	LENGTH DIM 'L'
2U	0.827 (21,00)
4U	1.300 (33,00)
6U	1.770 (45,00)
8U	2.240 (57,00)
10U	2.720 (69,00)



ZF2UEEBF11010108

CONTACT ARRANGEMENT	LENGTH DIM 'L'
2U	0.827 (21,00)
4U	1.300 (33,00)
6U	1.770 (45,00)
8U	2.240 (57,00)
10U	2.720 (69,00)



DESIGNATION

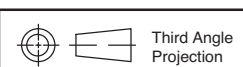


Designation, North America

- F** F Series
- FLT** Light touch F series
- ZF** Central mounted F series

Designation, Europe

- SF** F Series
- ZF** Central mounted F series

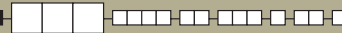


Third Angle Projection
Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



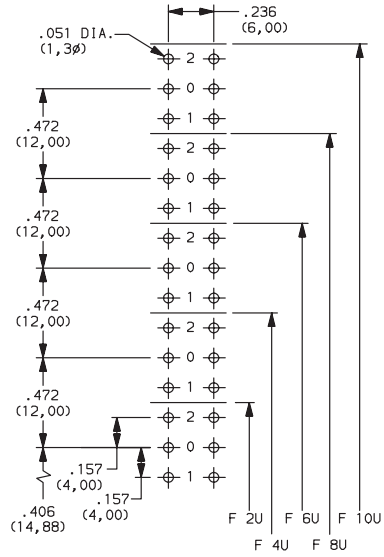
F Series Pushbutton Switches

CONTACT ARRANGEMENT



OPTION CODE	NO. OF POLES	SCHEMATIC
2U	2PDT	
4U	4PDT	2X
6U	6PDT	3X
8U	8PDT	4X
10U	10PDT	5X

PC MOUNTING



MECHANICAL FUNCTION



North America

OPTION CODE	FUNCTION
OA	Momentary
EE	Alternate (push-push)
GR	Interlock
AOR	Central release
OASP	Momentary with lockout
GRSP	Interlock with lockout

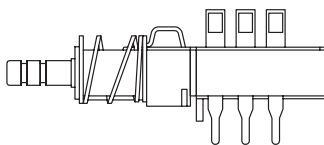
Europe

OPTION CODE	FUNCTION
OA	Momentary
EE	Alternate (push-push)
GR	Interlock

TERMINAL SEALING

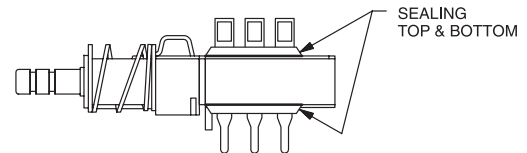


(NONE) NO SEAL

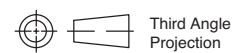


F2UEE shown in example above.

TB TOP & BOTTOM



NOTE: Available for North America only



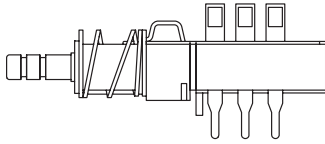
Third Angle Projection



TERMINAL STYLE

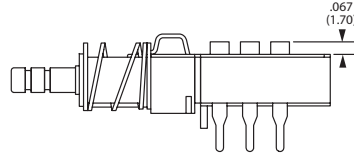


(NONE) SOLDER LUGS & PC PINS



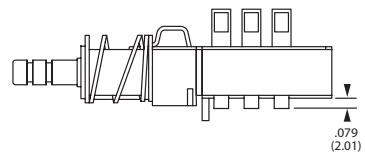
01A CUT SOLDER LUGS (North America)

LB CUT SOLDER LUGS (Europe)



01B CUT PC PINS (North America)

PB CUT PC PINS (Europe)



ELECTRICAL FUNCTION



OPTION CODE	FUNCTION
(NONE)	BBM Non-shorting
M	MBB Shorting (North America only)

CONTACT MATERIAL



NORTH AMERICA OPTION CODE	EUROPE OPTION CODE	RoHS COMPLIANT *	RoHS COMPATIBLE *	MATERIAL	RATING
(NONE)	(NONE)	YES	YES	SILVER, AG	50 VA/15 W; 125/30 V; 0.5/0.5 A
AU	P	YES	YES	GOLD	1 VA/300mW; 50/30 V; 0.04 A/0.01 A

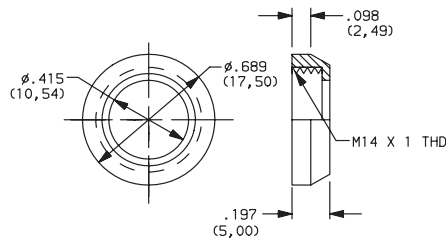
* Note: See Technical Data section of this catalog for RoHS compliant and compatible definitions and specifications.

DRESS NUT

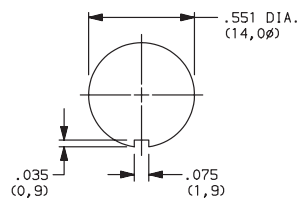


(NONE) NO DRESS NUT FOR F & F/LT DESIGNATIONS

B BLACK

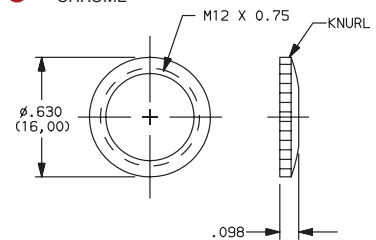


PANEL CUTOUT

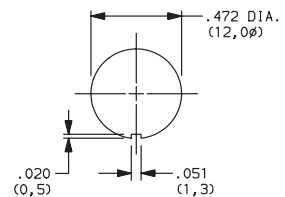


NOTE: Available with ZF designation and FA200 buttons.

C CHROME



PANEL CUTOUT



NOTE: Available with ZF designation and FG button.



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

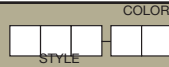


F Series Pushbutton Switches

Pushbutton

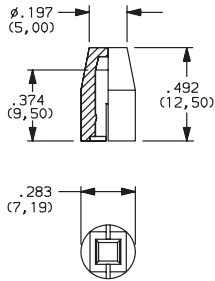
A

SOLID BUTTON

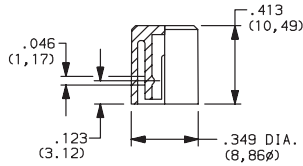


STYLE

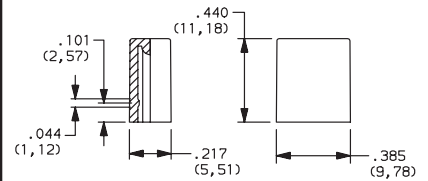
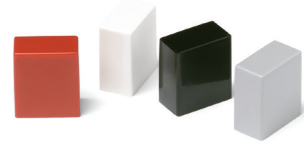
F01 FMR



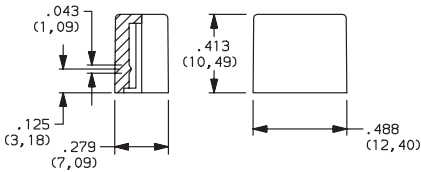
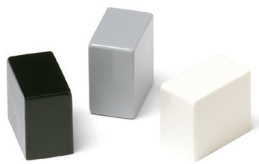
F02 FG



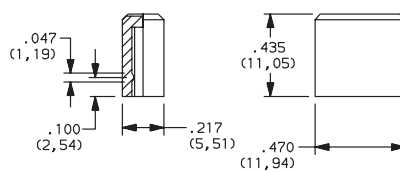
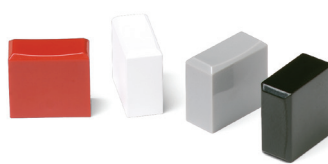
F12 FSC



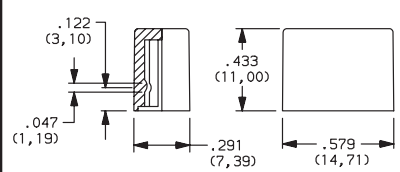
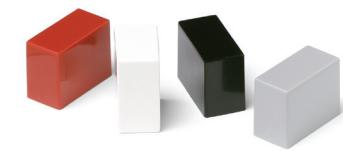
F13 FSD



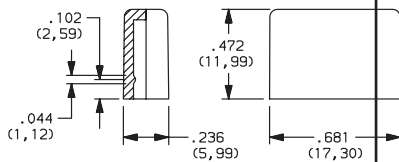
F14 FU12



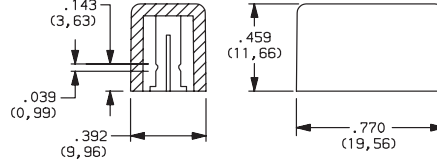
F15 FSB



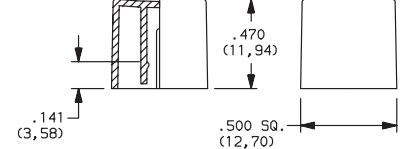
F16 FE



F19 FA



F21 F001



OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY

F Series Pushbutton Switches



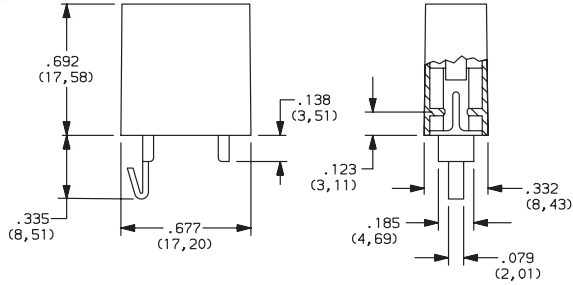
A Pushbutton

MECHANICAL BUTTON

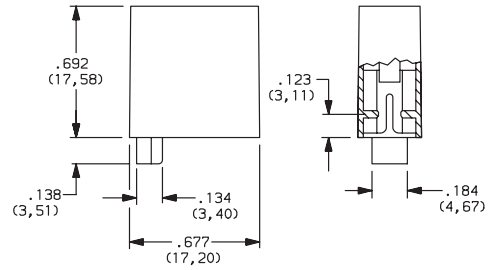


STYLE

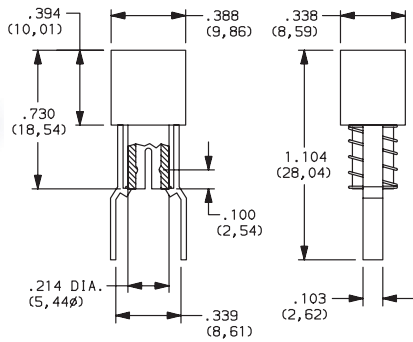
F01 FA100



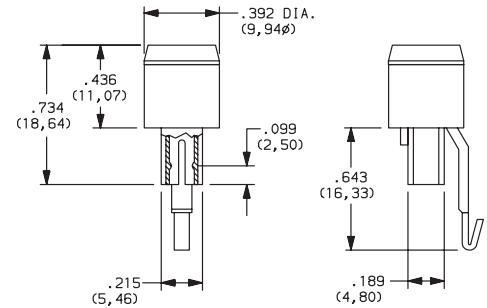
F02 FA101



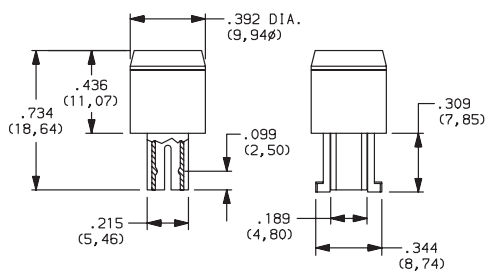
F07 FA120



F08 FA201



F11 FA200



SHELL COLOR

01 BLACK

OUT POSITION COLOR

01 BLACK

IN POSITION COLOR

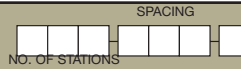
OPTION CODE	COLOR
02	WHITE
06	YELLOW
07	BLUE
08	GREEN
12	ORANGE



F Series Pushbutton Switches

Pushbutton
A

CHASSIS



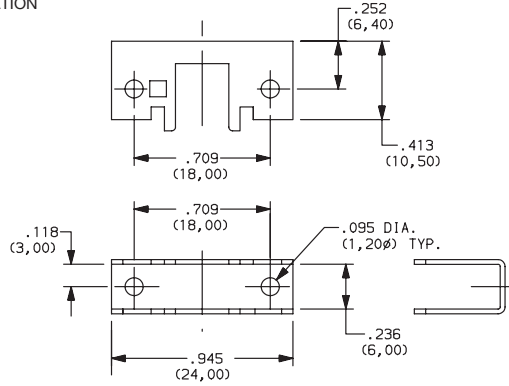
NUMBER OF STATIONS

C00 Thru C10 Comes with standard 0.094 (2,44mm) mounting holes

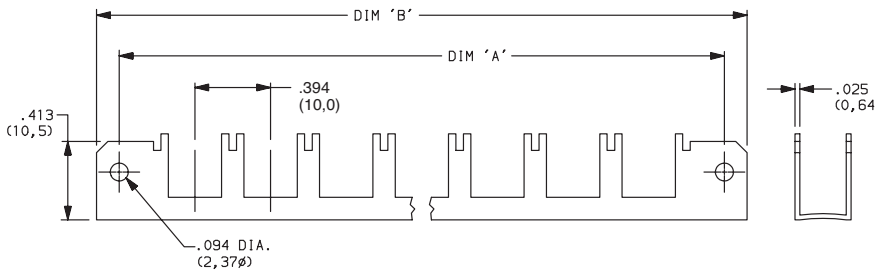
NOTE: Single station chassis available with mounting configurations, consult factory.

SPACING

00 SINGLE STATION

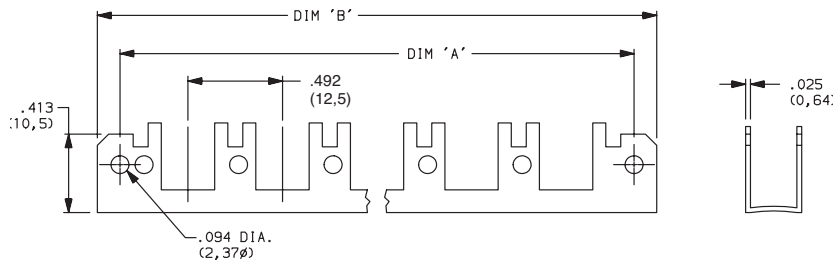


10 10mm

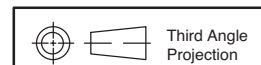


No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.182 (30,02)	1.418 (36,02)	0.005
3	1.575 (40,01)	1.811 (46,00)	0.010
4	1.969 (50,01)	2.205 (56,01)	0.010
5	2.363 (60,02)	2.599 (66,01)	0.010
6	2.757 (70,03)	2.993 (76,02)	0.015
7	3.150 (80,01)	3.386 (86,00)	0.015
8	3.544 (90,02)	3.780 (96,01)	0.015
9	3.938 (100,03)	4.174 (106,02)	0.015
10	4.331 (110,01)	4.567 (116,00)	0.015

12.5 12.5mm



No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.200 (30,48)	1.436 (36,47)	0.005
3	1.692 (42,98)	1.928 (48,97)	0.010
4	2.184 (55,47)	2.420 (61,47)	0.010
5	2.676 (67,97)	2.912 (73,96)	0.010
6	3.169 (80,49)	3.405 (86,49)	0.015
7	3.661 (92,99)	3.897 (98,98)	0.015
8	4.153 (105,49)	4.389 (111,48)	0.015
9	4.645 (117,98)	4.881 (123,98)	0.015
10	5.137 (130,48)	5.373 (136,47)	0.015



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

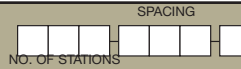


F Series Pushbutton Switches



A Pushbutton

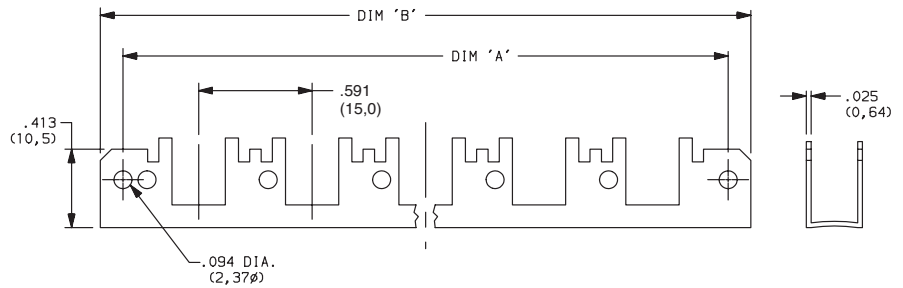
CHASSIS



SPACING

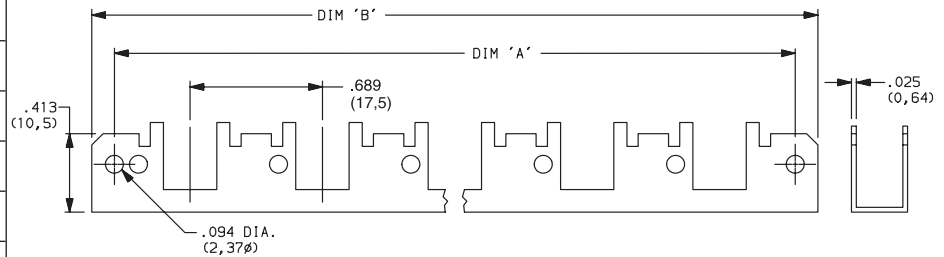
15 15mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.374 (34,90)	1.615 (41,02)	0.005
3	1.969 (50,01)	2.205 (56,01)	0.010
4	2.560 (65,02)	2.796 (71,02)	0.010
5	3.150 (80,01)	3.386 (86,00)	0.010
6	3.741 (95,02)	3.977 (101,02)	0.015
7	4.332 (110,03)	4.568 (116,03)	0.015
8	4.922 (125,02)	5.158 (131,01)	0.015
9	5.513 (140,03)	5.749 (146,02)	0.015
10	6.103 (155,02)	6.339 (161,01)	0.015



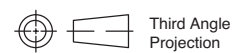
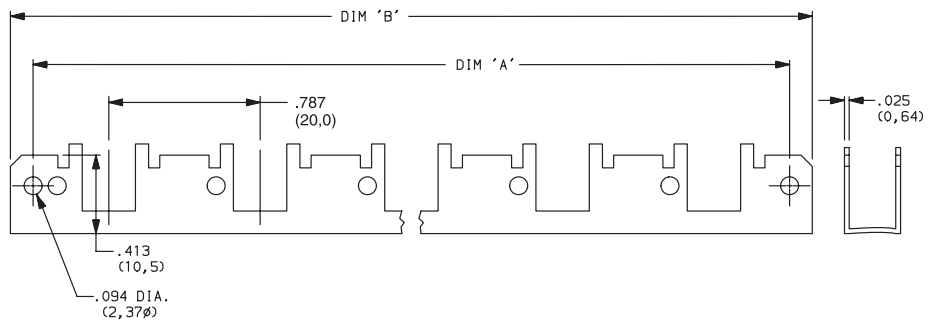
17.5 17.5mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.477 (37,52)	1.713 (43,51)	0.005
3	2.166 (55,02)	2.402 (61,01)	0.010
4	2.855 (75,52)	3.091 (78,51)	0.010
5	3.544 (90,02)	3.780 (96,01)	0.010
6	4.233 (107,52)	4.469 (113,51)	0.015
7	4.922 (125,02)	5.158 (131,01)	0.015
8	5.611 (142,52)	5.847 (148,51)	0.015
9	6.300 (160,02)	6.536 (166,01)	0.015
10	6.989 (177,52)	7.225 (183,52)	0.015



20 20mm

No. of Stations	Dim. 'A'	Dim. 'B'	Tolerance
2	1.575 (40,01)	1.811 (46,00)	0.005
3	2.363 (60,02)	2.599 (66,01)	0.010
4	3.150 (80,01)	3.386 (86,00)	0.010
5	3.938 (100,03)	4.174 (106,02)	0.010
6	4.725 (120,02)	4.961 (126,01)	0.015
7	5.512 (140,00)	5.748 (146,00)	0.015
8	6.300 (160,02)	6.536 (166,01)	0.015
9	7.087 (180,01)	7.323 (186,00)	0.015
10	7.875 (200,03)	8.111 (206,02)	0.015



Third Angle Projection



29 may 19

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches

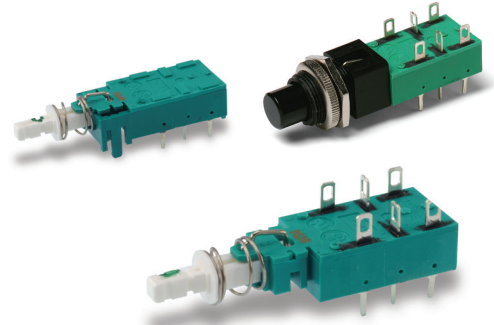
Pushbutton

Features/Benefits

- Chassis or panel mount
- Various buttons
- Various contact configurations
- RoHS compliant

Typical Applications

- Mains/power switching
- Consumer electronics
- Audio equipment
- Digital products



UL61058-1



Specifications

ELECTRICAL RATING:

NE18 Series:

- 8A GP, 125 VAC, 50/60 Hz, 1E4, T70
- 6A GP, 250 VAC, 50/60 Hz, 1E4, T70
- 6(4)A RM, 250 VAC, 50/60 Hz, 1E4, T70
- 6/48A RC, 250 VAC, 50/60 Hz, 1E4, T70
- 1RA, 100 VDC, 1E4, T70
- 8RA, 30VDC, 1E4, T70

NE18CTII Series:

- 4A GP, 250 VAC, 50/60 Hz, 1E4, T70
- 4/48A RC, 250 VAC, 50/60 Hz, 1E4, T70
- 1RA, 100 VDC, 1E4, T70
- 4RA, 30VDC, 1E4, T70

DIELECTRIC STRENGTH (50 Hz, 1 min.): 2000 V

OPERATING LIFE AT MAX. LOAD AND AT MAX. INRUSH CURRENT: $\wedge 10^4$ operations⁵

CONTACT RESISTANCE: Initial: 50m Ω ; After 10^4 operations: 70m Ω .

INSULATION RESISTANCE: $\wedge 10^{12}$ Ω chassis – nearest contact;
 $\wedge 10^{12}$ Ω mains contact – mains contact; $\wedge 10^{12}$ Ω mains contact – mains contact after 10^4 operations.

LOW VOLTAGE CONTACT:

SWITCHING POWER MAX.: 12W

SWITCHING VOLTAGE MAX.: 24V

SWITCHING CURRENT MAX.: 0.5A

TOTAL TRAVEL: 4.7mm (.185 inch)

LATCHING TRAVEL: 3.3mm (.130 inch)

OPERATING FORCE: Without auxiliary low voltage contacts:
NE18: 7N (700 grams); NE18CTII: 9.5N (950 grams).

With auxiliary low voltage contacts: NE18: 8N (800 grams);
NE18CTII: 11N (1100 grams).

SEALING: Dust proof.

Materials

HOUSING, ACTUATOR & TERMINAL BOARD: Thermoplastic polyester (UL 94V-0).

MOVABLE CONTACT: Silver nickel alloy, silver plated.

FIXED CONTACTS: Silver nickel alloy, silver plated.

COMMON CONTACTS & TERMINALS: Copper alloy, silver plated.

RETURN SPRING: Music wire.

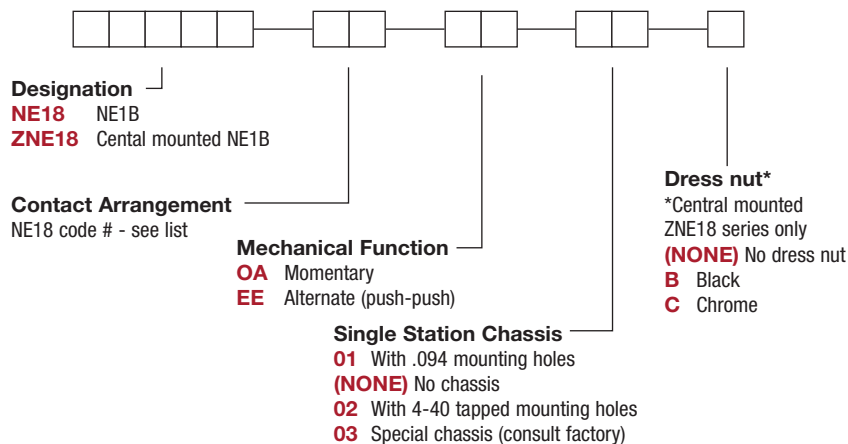
NOTE: All models are RoHS compliant and compatible.

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-97 thru A-104. For additional options not shown in catalog, consult Customer Service Center.

If requesting only a switch, select the switch as noted below. Buttons are sold separately.

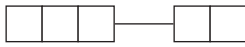


Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change



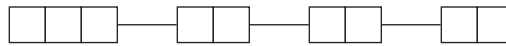
Order Code - Buttons

Solid Buttons



Style		Button Color
F01	FMR	01 Black
F02	FG*	02 White
F12	FSC	03 Red
F13	FSD	04 Light gray
F14	FU12	
F15	FSB	
F16	FE	
F19	FA	
F21	F001	

Mechanical Indicator Buttons



Style		Shell Color	
F01	FA100	01	Black
F02	FA101		
F07	FA120	Out Position Color	
F08	FA201	01	Black
F11	FA200*		
		In Position Color	
		02	White
		06	Yellow
		07	Blue
		08	Green
		12	Orange

*Button options for central mounting configurations, use 'FG' for central mount with chrome dress nut, use 'FA200' for central mount with black dress nut.

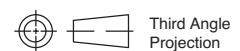
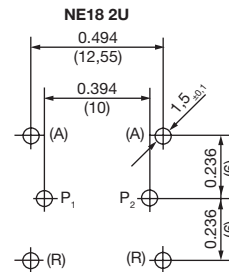
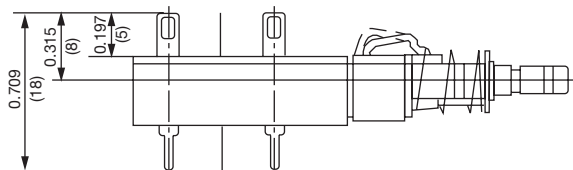
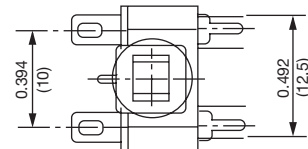
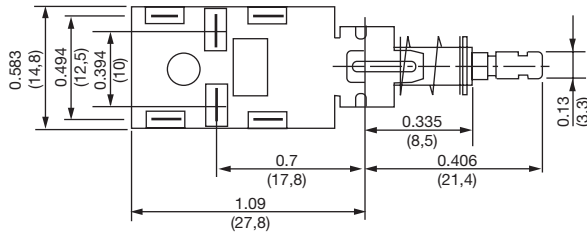
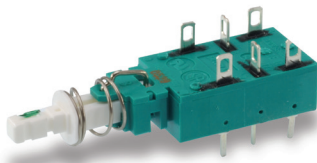
BUTTON REMOVAL

A button of a push-push switch should only be removed in the "OFF" non-latching position.

DESIGNATION & SWITCHES WITH STANDARD OPTIONS



NE1838EE



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



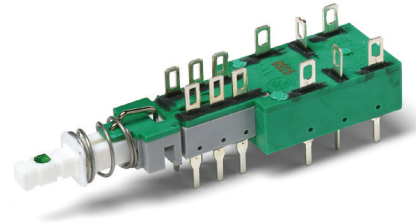
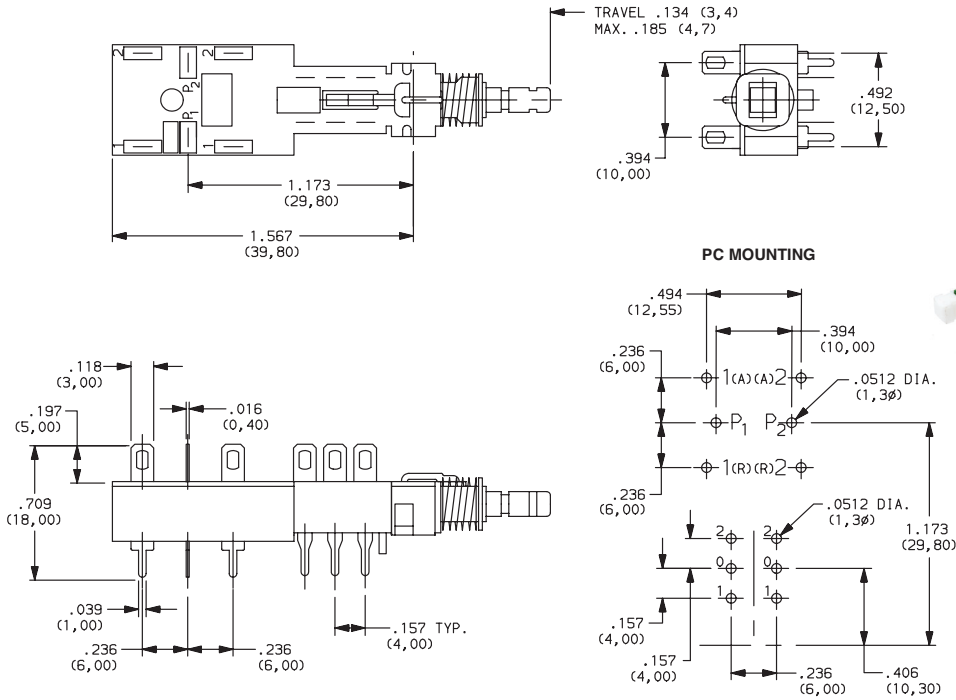
NE-18 Series Mains / Power Switches

DESIGNATION & SWITCHES WITH STANDARD OPTIONS

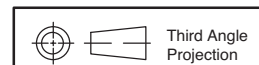
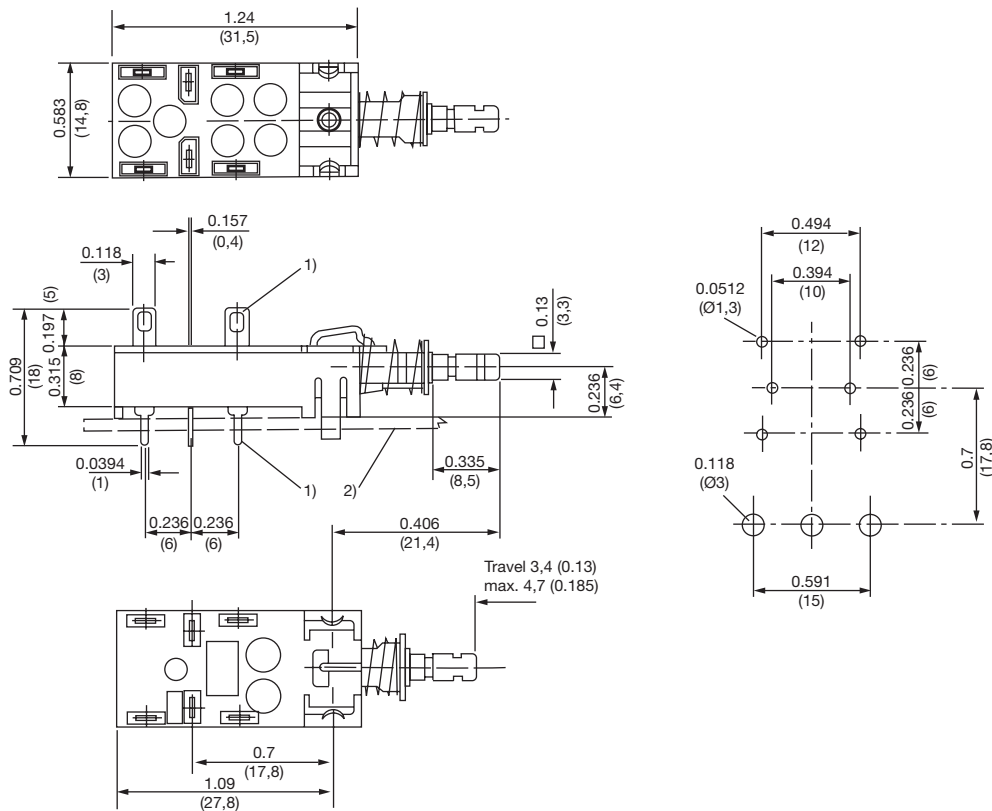


Pushbutton

NE1839EE



NE1846EE



Third Angle
Projection

Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches

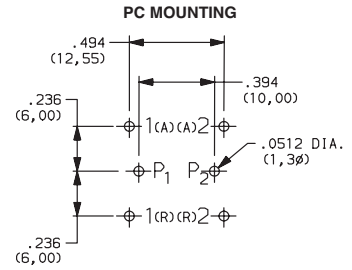
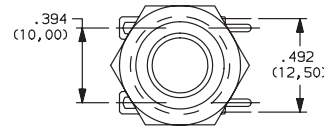
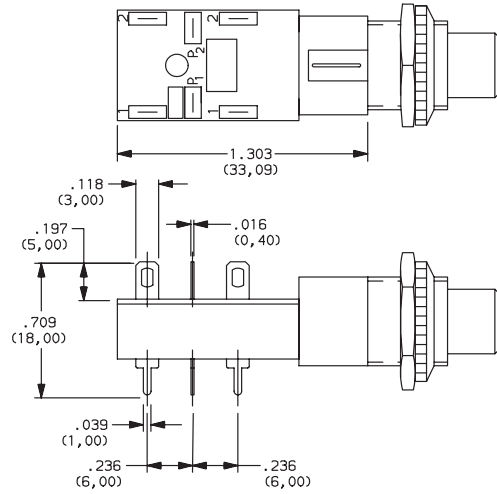
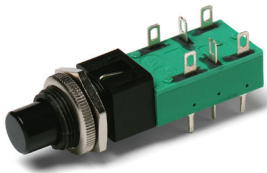


A
Pushbutton

DESIGNATION & SWITCHES WITH STANDARD OPTIONS



ZNE1838EECF0201



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches

CONTACT ARRANGEMENT









Pushbutton
A

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
37	NE18 – 2AX	DPST
38	NE18 – 2UX	DPDT
51	2U + NE18 – 2AX	DPST*
52 (4A/64)	NE18CTII – 2AX	DPST
39	2U + NE18 – 2UX	DPDT*
41	NE18 – 2AP	DPST
42	NE18 – 2UP	DPDT
43	NE18 – 2AW	DPST
44	NE18 – 2UW	DPDT
45	NE18 – 2ASX	DPST

OPTION CODE Contact capacity and availability	STYLE	ELECTRICAL CIRCUIT
46	NE18 – 2USX	DPDT
47	NE18 – 2ASP	DPST
48	NE18 – 2USP	DPDT
49	NE18 – 2ASW	DPST
50	NE18 – 2USW	DPDT
53 (4A/64)	2U + NE18CTII – 2AX	DPST
54	2U + NE18 – 2AW	DPST
55	2U + NE18 – 2AP	DPST
56	2U + NE18 – 2UW	DPDT
57	2U + NE18 – 2UP	DPDT

* 2U + Denotes auxiliary set of low current contacts DPDT
 2A = DPST
 2U = DPDT
 S = Snap-in mounting
 X = Solder lug/PC pins
 W = Solder lugs only
 P = PC pins only

NOTES
 1. Contact plating is silver on all Power Switches.
 2. The electrical function is Break Before Make (BBM) on all Power Switches.
 3. The terminals will be epoxy sealed.

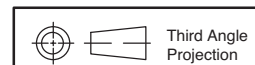
TYPE	POSSIBLE CONTACT ARRANGEMENT		CONTACT SPACING	PROTECTION CLASS (CEE 24)	APPROVALS
	POWER CONTACTS ¹	AUXILIARY CONTACTS			
NE18	2A ²	2U	> 3mm (.118 inch)	II	  UL61058-1
NE18	2A ² 2U	2U	> 3mm (.118 inch)	I	  UL61058-1
NE18CTII	2A ²	2U	> 3mm (.118 inch)	II	  UL61058-1

1) A = make contact, U = changeover contact
 2) With 2A mains contacts: Mounting only by PC pins is not sufficient.

MECHANICAL FUNCTION



OPTION CODE	FUNCTION
OA	Momentary
EE	Alternate (push-push)



Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change





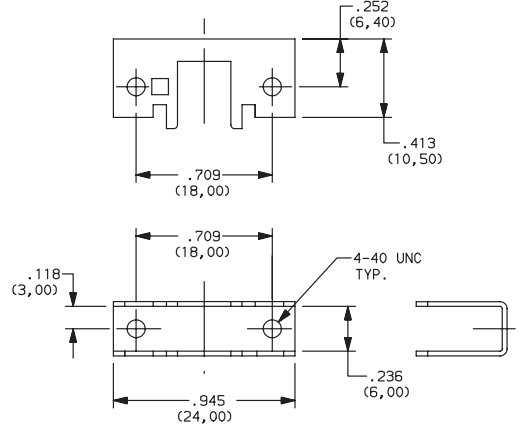
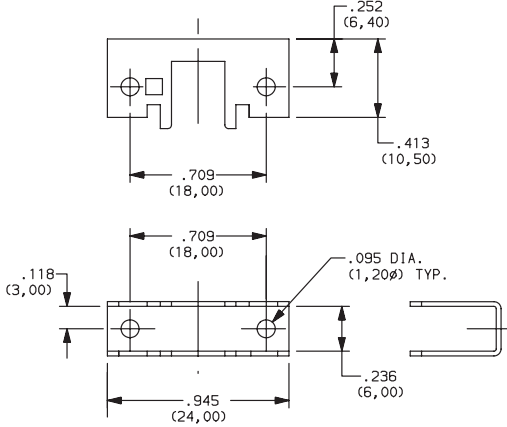
SINGLE STATION CHASSIS



01 WITH .094 MOUNTING HOLES

(NONE) NO CHASSIS

02 WITH 4-40 TAPPED MOUNTING HOLES



03 SPECIAL CHASSIS (CONSULT FACTORY)

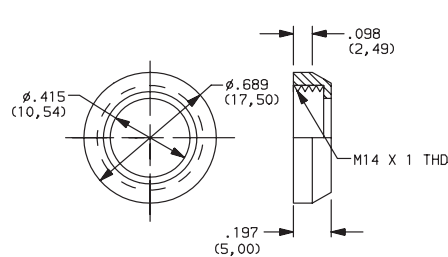
DRESS NUT



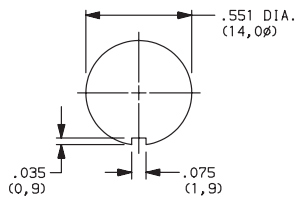
(NONE) NO DRESS NUT

B BLACK

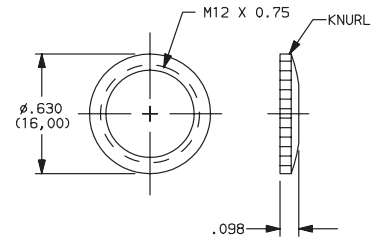
C CHROME



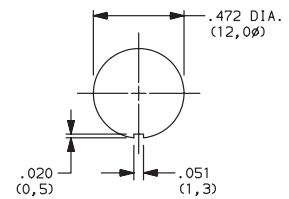
PANEL CUTOUT



NOTE: Available with ZNE18 designation and FA200 buttons.



PANEL CUTOUT



NOTE: Available with ZNE18 designation and FG button.



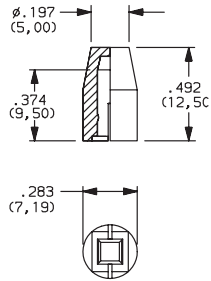
NE-18 Series Mains / Power Switches

SOLID BUTTON

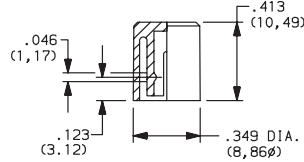
Pushbutton A

STYLE

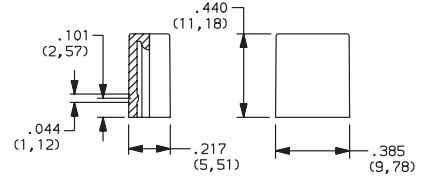
F01 FMR



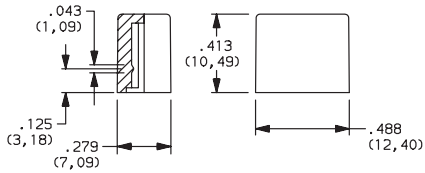
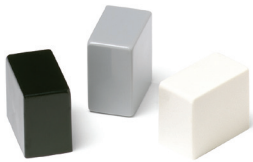
F02 FG



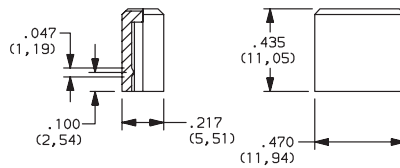
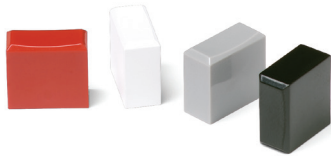
F12 FSC



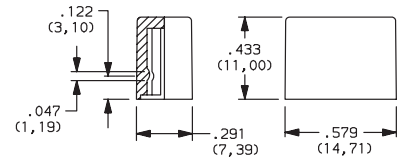
F13 FSD



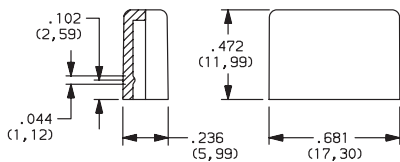
F14 FU12



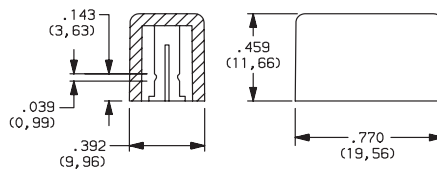
F15 FSB



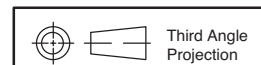
F16 FE



F19 FA



OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY

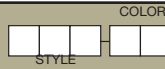


Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



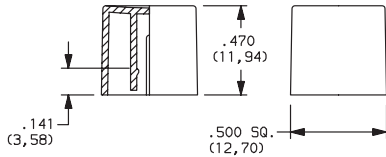


SOLID BUTTON



STYLE

F21 F001



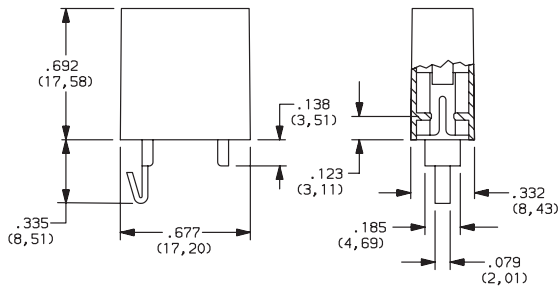
OPTION CODE	COLOR
01	BLACK
02	WHITE
03	RED
04	LT. GRAY
09	BLACK/CHROME (F03, F06 & F07 buttons only)

MECHANICAL BUTTON

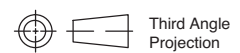
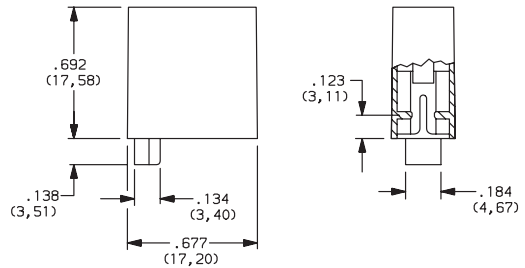


STYLE

F01 FA100



F02 FA101



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NE-18 Series Mains / Power Switches

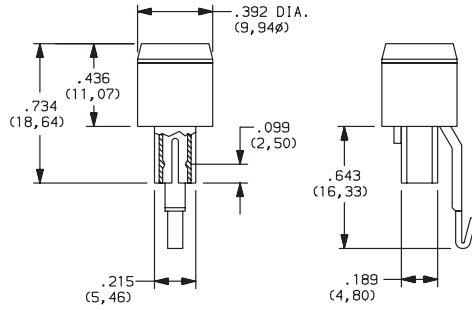
MECHANICAL BUTTON



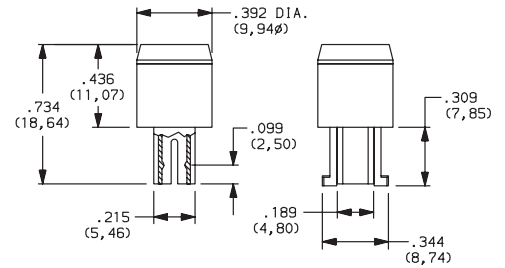
Pushbutton A

STYLE

F08 FA201



F11 FA200



SHELL COLOR

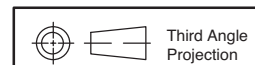
01 BLACK

OUT POSITION COLOR

01 BLACK

IN POSITION COLOR

OPTION CODE	COLOR
02	WHITE
06	YELLOW
07	BLUE
08	GREEN
12	ORANGE



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

FP Series Sealed Ultra Miniature Pushbutton Switches



A

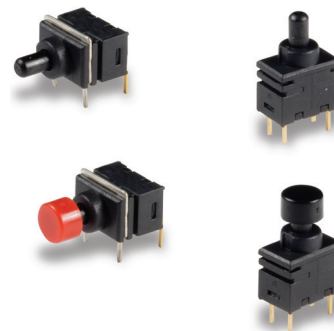
Pushbutton

Features/Benefits

- Vertical and right angle mount
- Extended operating life 50,000 cycles
- Optional caps
- Sealed against soldering and cleaning processes
- RoHS compliant

Typical Applications

- Networking equipment
- Modems
- Reset functions
- Instrumentation



Specifications

CONTACT RATING: Max. 0.4 VA (28 V DC or V AC).
 ELECTRICAL LIFE: 50,000 cycles.
 CONTACT RESISTANCE: (10mA @ 2 V DC) 80 mΩ/105 max. initial.
 INSULATION RESISTANCE: 500MΩ 105min. @ 500 V DC - 1 minute.
 OPERATING TEMPERATURE: -20°105C to 80°105C.
 SOLDERABILITY: Per MIL-STD-202F method 208D, or EIA RS-186E method 9.
 PACKAGING:
 Tray pack - 100 switches per tray.
 Caps (optional) - Bulk bag; 100 caps per bag.

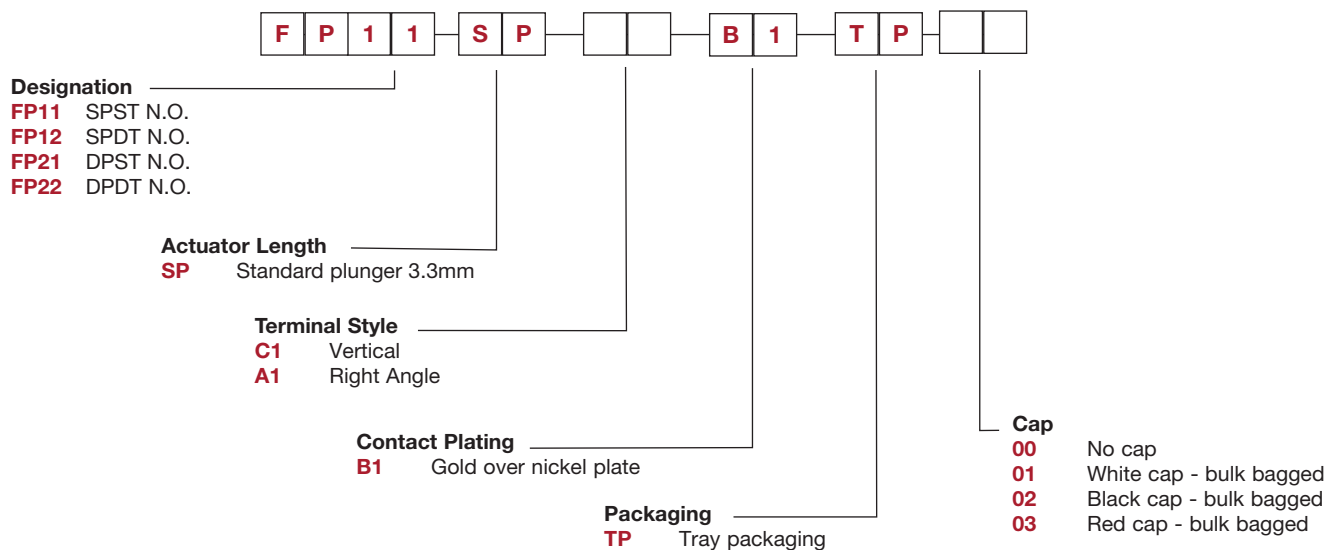
Materials

MOVABLE CONTACTS:
 Base metal: Phosphor bronze
 Plating: Gold over nickel plate
 FIXED CONTACTS:
 Base metal: Brass
 Plating: Gold over nickel plate
 COVER: PA66 - Black
 ACTUATOR: PPS - Black
 BASE: PPS - Black
 SUPPORT BRACKET (A1 Terminal Style only): Steel with tin plate

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages A-106 thru A-107. For additional options not shown in catalog, consult Customer Service Center.





FP Series Sealed Ultra Miniature Pushbutton Switches

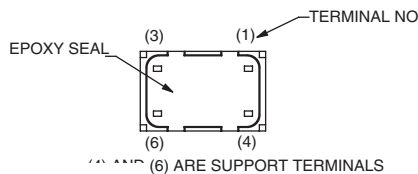
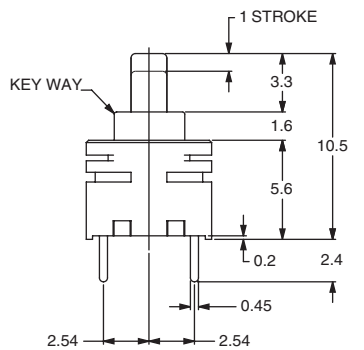
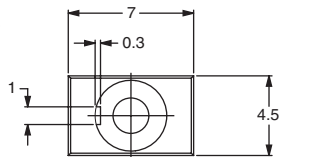
Pushbutton
A

SWITCH CIRCUIT

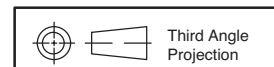
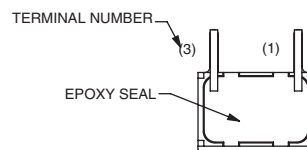
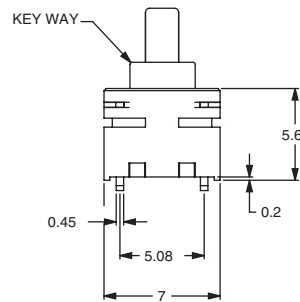
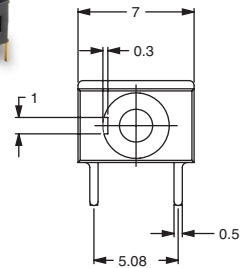
CIRCUIT	MODEL NO.	SWITCH FUNCTION		SCHEMATIC
		POS. 1	POS. 2	
SPST	FP11	OFF	MOM	
		CONNECTED TERMINALS		
		OPEN	1-3	
SPDT	FP12	ON	MOM	
		CONNECTED TERMINALS		
		2-1	2-3	
DPST	FP21	OFF	MOM	
		CONNECTED TERMINALS		
		OPEN	1-3, 4-6	
DPDT	FP22	ON	MOM	
		CONNECTED TERMINALS		
		2-3, 5-6	2-1, 5-4	

SWITCH FUNCTION

C1 VERTICAL



A1 RIGHT ANGLE



FP Series Sealed Ultra Miniature Pushbutton Switches

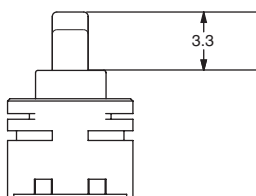


A

Pushbutton

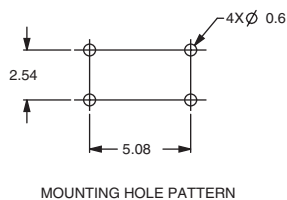
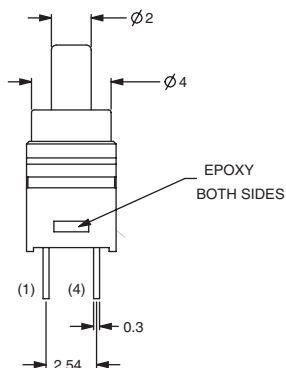
ACTUATOR LENGTH

SP STANDARD PLUNGER 3.3MM

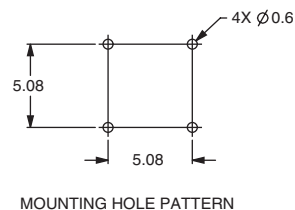
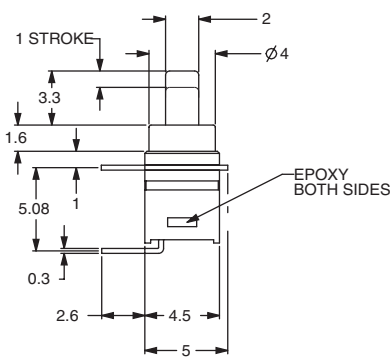


TERMINAL STYLE

C1 VERTICAL



A1 RIGHT ANGLE



CONTACT PLATING

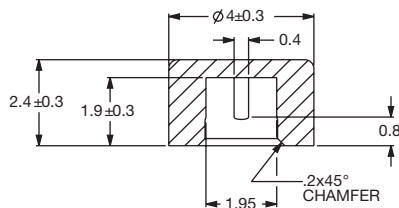
B1 GOLD OVER NICKEL PLATE

PACKAGING

TP TRAY PACKAGING

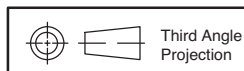
CAPS

OPTION CODE	DESCRIPTION
00	NO CAP
01	WHITE CAP, BULK BAGGED
02	BLACK CAP, BULK BAGGED
03	RED CAP, BULK BAGGED



To purchase Caps separately without switch, please use these part numbers

PART #	COLOR
798D01000	WHITE
798D02000	BLACK
798D03000	RED



Dimensions are shown: mm
Specifications and dimensions subject to change



14 feb 19



AP Series Industrial Pushbutton Switch

Pushbutton A

Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination / non-illumination
- Multiple colored caps
- Threaded or snap-in mounting
- Caps available separately
- RoHS compliant

Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



Specifications

FUNCTION: SPST Momentary
 CONTACT ARRANGEMENT: N.O.
 MOUNTING TYPE:
 Snap-in (no panel seal)
 Threaded body (hex nut, lock washer, and panel seal gasket provided)
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

Mechanical

OPERATING LIFE: 1,000,000 cycles
 TOTAL TRAVEL: 2.1 ± 0.2 mm
 OPERATING POINT 1.55 ± 0.25 mm
 OVER TRAVEL: 0.6 min.
 OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N
 VIBRATION: 10-500 Hz 10g Max
 SHOCK: 60g 11ms sawtooth wave

Electrical

CONTACT RATING:
 200mA @ 24 V DC resistive (500,000 cycles)
 100mA @ 50 V DC resistive (500,000 cycles)
 400mA @ 32 V AC resistive (500,000 cycles)
 125mA @ 125 V AC resistive (1,000,000 cycles)
 DIELECTRIC STRENGTH: 1000 V AC min.
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)
 BOUNCE TIME: <5 ms

Materials

HOUSING: PBT
 BASE: PBT
 CAP: PBT
 ACTUATOR:
 Illuminated: Clear polycarbonate
 Non-illuminated: PBT
 INTERNAL SEAL: Silicone rubber
 TERMINALS: Copper alloy, gold over silver plating
 MOVABLE CONTACT: Copper alloy, gold over silver plating
 TERMINAL SEAL: Epoxy
 WIRE LEADS: UL1569 Black 22 AWG

Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C (+105°C non-illuminated)
 ESD PROTECTION: 20 KV min.

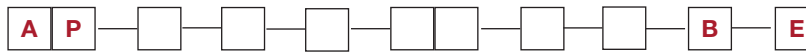
Process Environment

SEALING: IP67 for threaded body
 IP65 for snap-in version (no panel seal)

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation

AP AP Series

Operating Force

2 2 Newtons
4 4 Newtons

Actuator Style

D Dome / Convex
C Concave
E Extended Dome
N None

Actuator Color

0 No Cap
2 Black
3 Red
4 Orange
5 Yellow
6 Green
7 Blue
9 Gray

Illumination

00 No LED*
01 Super White
02 Bi-color; Red (Green)
03 Red
05 Amber
06 Green
07 Super Blue
08 Bi-color; Amber (Green)

Terminal Seal

E Epoxy
 All models are epoxy sealed

Contact Material

B Gold

Termination

Z Solder Lug
W 12" Wire Leads 22 AWG
C*** PC Terminals

Bushing Style**

S** Snap-in plastic
T Threaded plastic

** No panel seal option
 *** PC terminals not available with illumination

Contact Customer Service for additional hardware options.

Please contact Customer Service for additional colors and paint / laser etched button options.

* No LED available in short body only



Specifications and dimensions subject to change

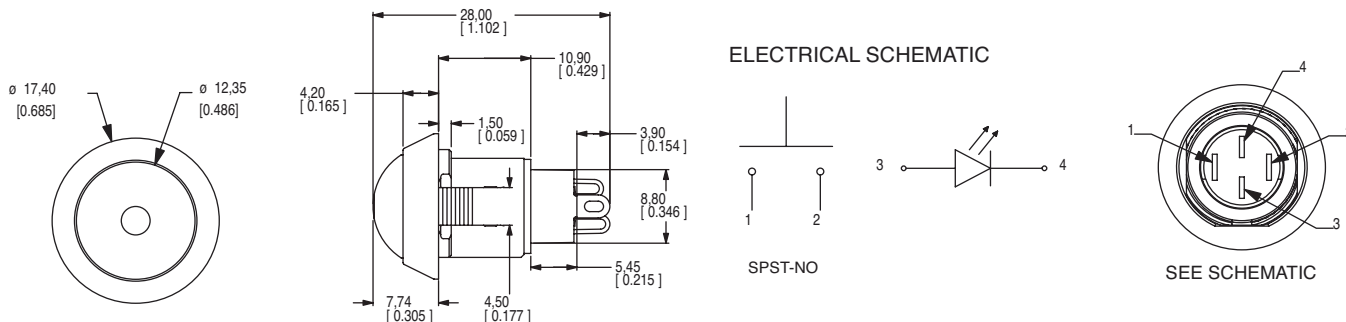
AP Series Industrial Pushbutton Switch



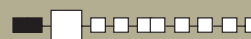
A

Pushbutton

STANDARD VIEW

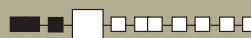


OPERATING FORCE

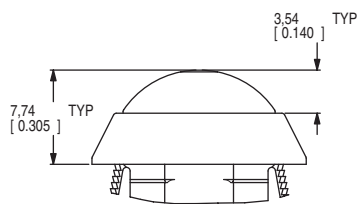


OPTION CODE	OPERATING FORCE
2	2 N, 200 g
4	4 N, 400 g

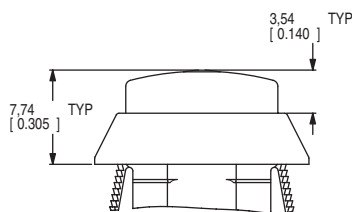
ACTUATOR STYLE



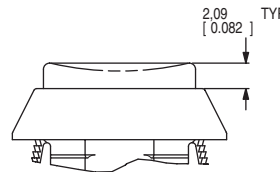
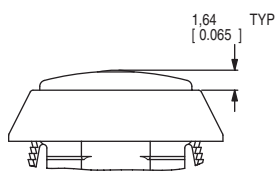
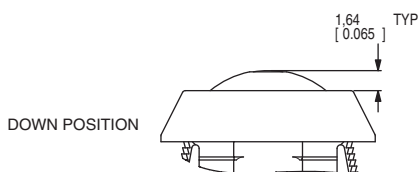
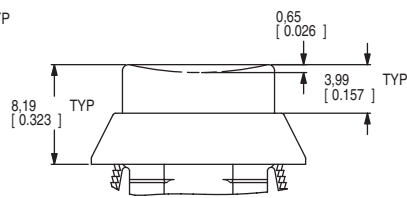
D DOME / CONVEX



E EXTENDED DOME



C CONCAVE

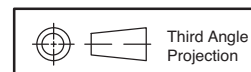


ACTUATOR COLOR



OPTION CODE	ACTUATOR COLOR
0	No Cap
2	Black
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

For additional colors please contact Customer Service.





AP Series Industrial Pushbutton Switch

A

Pushbutton

ILLUMINATION



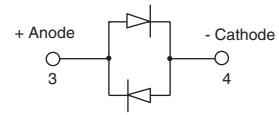
OPTION CODE	ILLUMINATION TYPE	TYPICAL INTENSITY*		PEAK WAVELENGTH	Vf Forward Voltage
		MIN	MAX		
		(mcd)		(nm)	
00	Model without illumination	N/A		N/A	
01	LED Super White	4,000	5,000	N/A	3.5
02	LED Bi-Color – Red (Green)	10	20	635/565	2.0
03	LED Red	4	8	700	2.0
05	LED Amber	35	50	610	2.0
06	LED Green	35	50	565	2.0
07	LED Super Blue	800	1,500	470	3.8
08	LED Bi-Color – Amber (Green)	10	10	585/565	2.0

*LED FORWARD CURRENT: 20 mA
 LED FORWARD VOLTAGE: see chart above
 LED REVERSE VOLTAGE: 5.0 V MAX

* For information on specific and custom LED, please contact Customer Service.

NOTE:

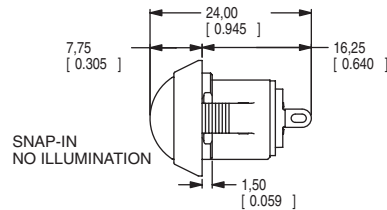
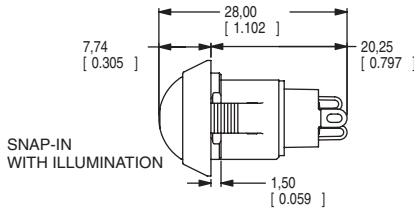
For bi-color LED's the polarity must be reversed to alternate the color



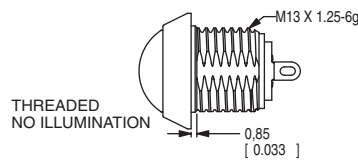
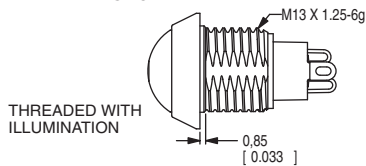
BUSHING STYLE



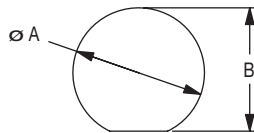
S SNAP-IN



T THREADED PLASTIC



PANEL CUTOUT



PANEL THICKNESS	DIM A (± 0.05 mm)	DIM B (± 0.05 mm)
1 mm [0.039 in]	13.70 mm [0.539 in]	13.00 mm [0.512 in]
2 mm [0.079 in]	13.80 mm [0.539 in]	13.00 mm [0.512 in]
3 mm [0.118 in]	13.90 mm [0.547 in]	13.10 mm [0.516 in]
THREADED BODY MIN PANEL THICKNESS 1 mm	13.70 mm [0.539 in]	13.00 mm [0.512 in]



A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version.

are shown: mm (inches)
 sions subject to change

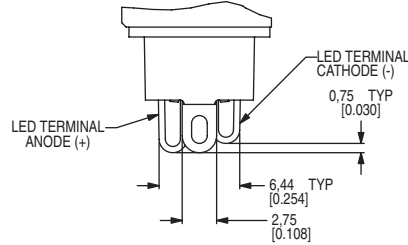
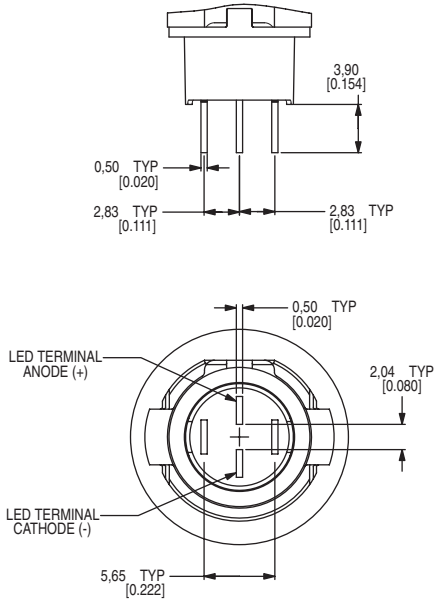
ckswitches.com



TERMINATION



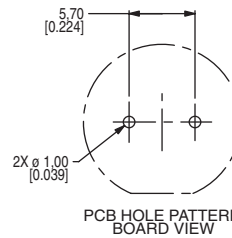
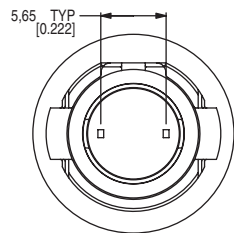
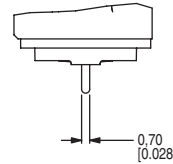
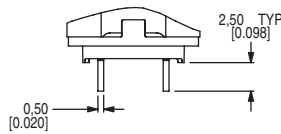
Z SOLDER LUG



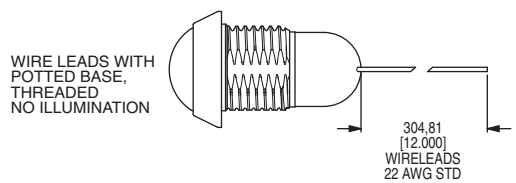
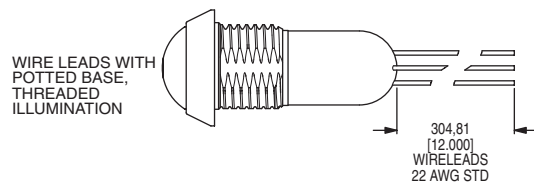
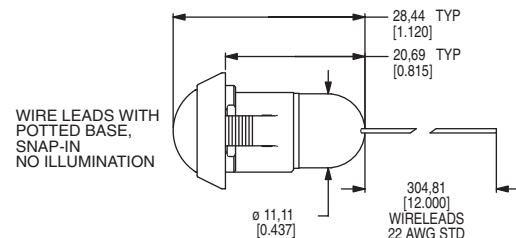
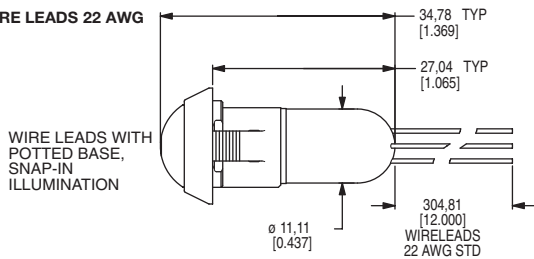
* Switching terminals are gold and LED terminals are silver

C PC TERMINALS

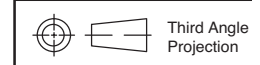
*** Illumination not available with PC Terminals



W 12" WIRE LEADS 22 AWG



Wires: Black wires - Terminals
Red wires - LED (+) Positive
White wire - LED (-) Negative





AP Series Industrial Pushbutton Switch

Pushbutton
A

CONTACT MATERIAL



B GOLD

OPTION CODE	CONTACT MATERIAL
B	Gold

TERMINAL SEAL



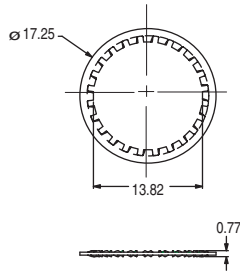
E EPOXY

All models are epoxy sealed

HARDWARE

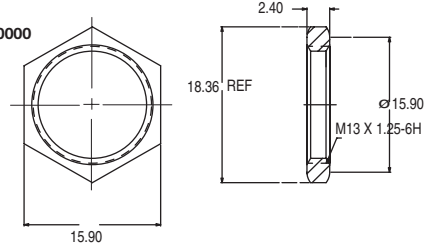
LOCK WASHER

Part Number 647D00000



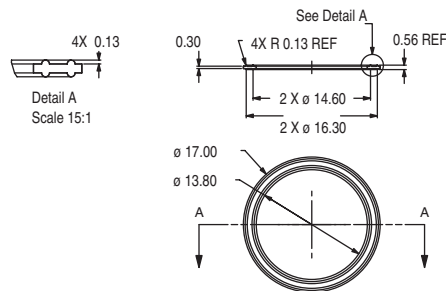
HEX NUT

Part number 515D00000



PANEL SEAL

Part Number 655D00000



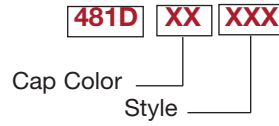
Caps available on next page



Third Angle
Projection



AVAILABLE CAPS

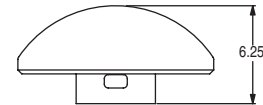
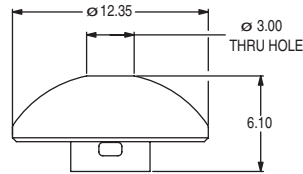


OPTION	CAP COLOR
01	WHITE
02	BLACK
03	RED
04	ORANGE
05	YELLOW
06	GREEN
07	BLUE
08	BROWN
09	GRAY

PART NUMBER	HOLE	STYLE
481DXX000	NO	DOME
481DXX001	YES	DOME
481DXX002	NO	EXTENDED DOME
481DXX003	YES	EXTENDED DOME
481DXX004	NO	CONCAVE
481DXX005	YES	CONCAVE

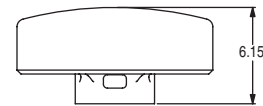
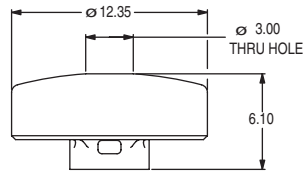
DOME

481DXX000 = NO HOLE
481DXX001 = HOLE



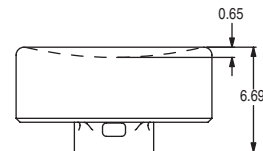
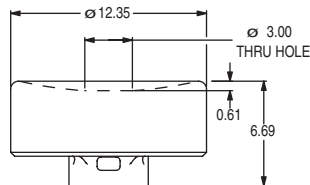
EXTENDED DOME

481DXX002 = NO HOLE
481DXX003 = HOLE



CONCAVE

481DXX004 = NO HOLE
481DXX005 = HOLE





APB Series Backlit Pushbutton Switch

Pushbutton
A

Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination
- Threaded or snap-in mounting
- RoHS compliant

Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



Specifications

FUNCTION: SPST Momentary
 CONTACT ARRANGEMENT: N.O.
 MOUNTING TYPE:
 Snap-in (no panel seal)
 Threaded body (hex nut, lock washer, and panel seal gasket provided)
 Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

Mechanical

OPERATING LIFE: 1,000,000 cycles
 TOTAL TRAVEL: 2.1 ± 0.2 mm
 OPERATING POINT 1.55 ± 0.25 mm
 OVER TRAVEL: 0.6 min.
 OPERATING FORCE: 4N ± 1N standard configuration; other force option 2N ± 0.5N
 VIBRATION: 10-500 Hz 10g Max
 SHOCK: 60g 11ms sawtooth wave

Electrical

CONTACT RATING:
 200mA @ 24 V DC resistive (500,000 cycles)
 100mA @ 50 V DC resistive (500,000 cycles)
 400mA @ 32 V AC resistive (500,000 cycles)
 125mA @ 125 V AC resistive (1,000,000 cycles)
 DIELECTRIC STRENGTH: 1000 V AC min.
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)
 BOUNCE TIME: <5 ms

Materials

HOUSING: PBT
 BASE: PBT
 CAP: Painted polycarbonate
 ACTUATOR:
 Illuminated: Clear polycarbonate
 INTERNAL SEAL: Silicone rubber
 TERMINALS: Copper alloy, gold over silver plating
 MOVABLE CONTACT: Copper alloy, gold over silver plating
 TERMINAL SEAL: Epoxy
 WIRE LEADS: UL1569 Black 22 AWG

Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C
 ESD PROTECTION: 20 KV min.

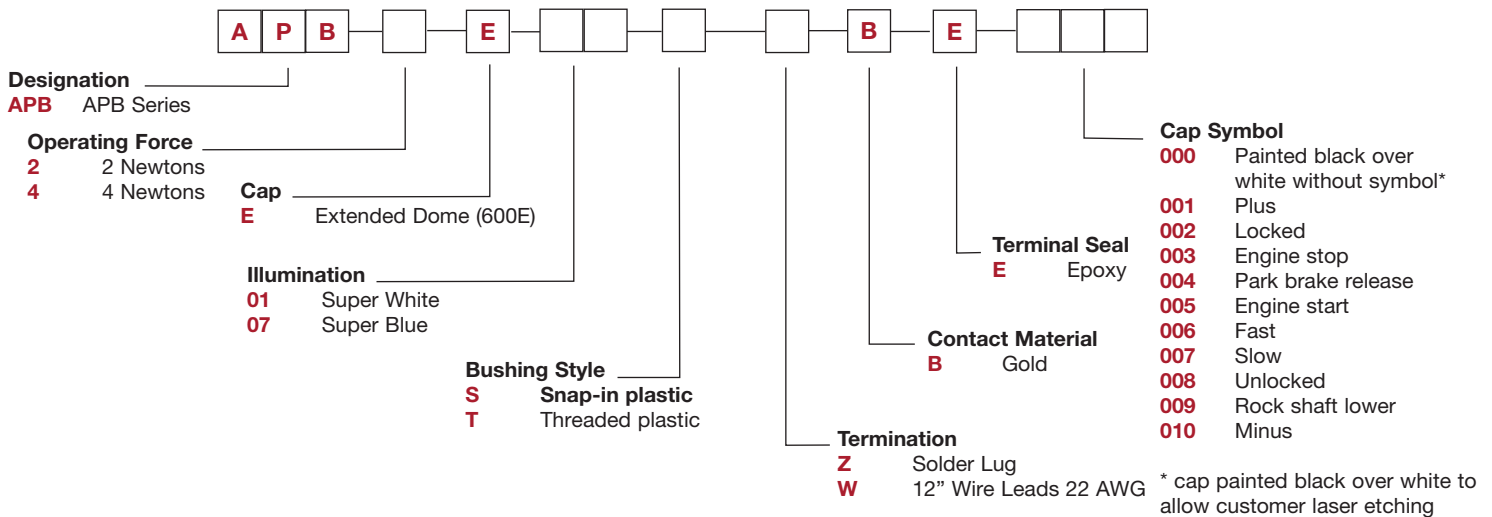
Process Environment

SEALING: IP67 for threaded body
 IP65 for snap-in version (no panel seal)

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

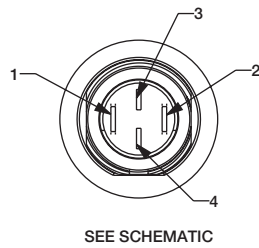
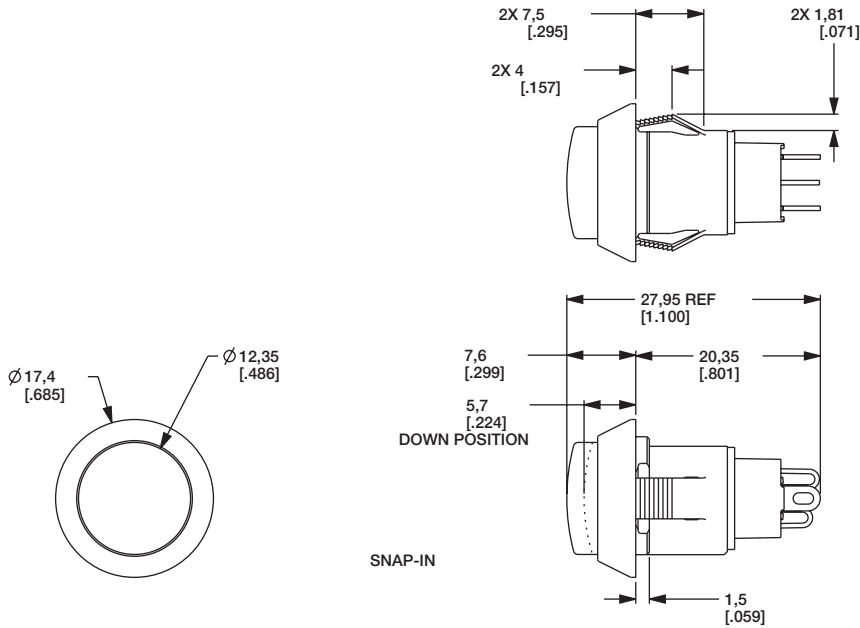


Dimensions are shown: Inches (mm)
 Specifications and dimensions subject to change

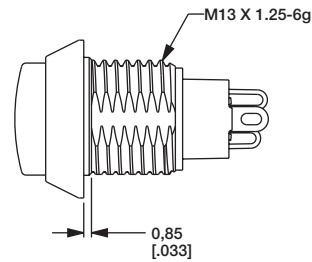
APB Series Backlit Pushbutton Switch



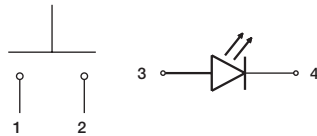
A
Pushbutton



THREADED

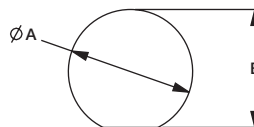


ELECTRICAL SCHEMATIC



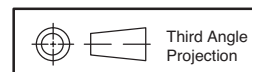
SPST-NO-DB

PANEL CUTOUT



PANEL THICKNESS	DIM A (±0.05 MM)	DIM B (±0.05 MM)
1 MM [0.039 IN]	13.70 MM [0.539 IN]	13.00 MM [0.512 IN]
2 MM [0.079 IN]	13.80 MM [0.539 IN]	13.00 MM [0.512 IN]
3 MM [0.118 IN]	13.90 MM [0.547 IN]	13.10 MM [0.516 IN]
THREADED BODY MIN PANEL THICKNESS 1 MM	13.70 MM [0.539 IN]	13.00 MM [0.512 IN]

A 0.1 MM MIN CHAMFER ON THE LEADING EDGE OF MOUNTING HOLE IS RECOMMENDED FOR SNAP-IN VERSION.



Third Angle
Projection



APB Series Backlit Pushbutton Switch

TERMINATION

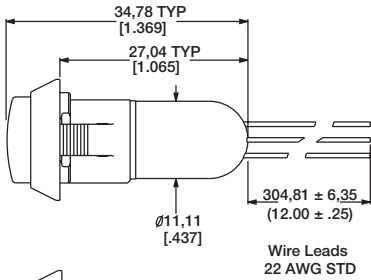
Pushbutton

A

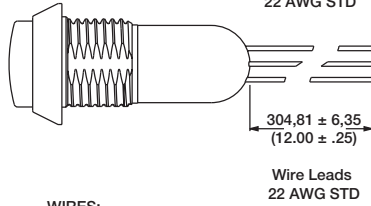
W 12" WIRE LEADS

Z SOLDER LUG

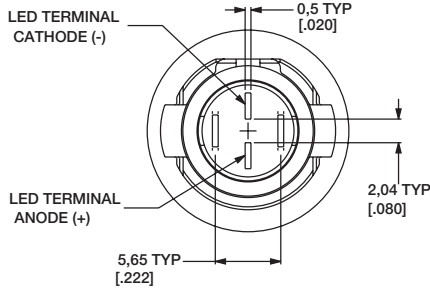
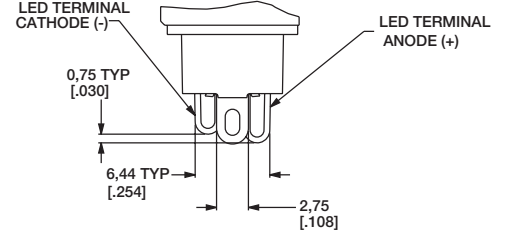
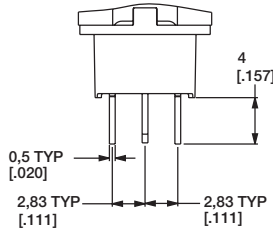
WIRE LEADS WITH
POTTED BASE,
SNAP-IN
ILLUMINATION



WIRE LEADS WITH
POTTED BASE,
THREADED
ILLUMINATION



WIRES:
BLACK - TERMINALS
RED - LED (+) POSITIVE
WHITE - LED (-) NEGATIVE



CONTACT MATERIAL



B GOLD

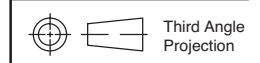
OPTION CODE	CONTACT MATERIAL
B	Gold

TERMINAL SEAL



E EPOXY

All models are epoxy sealed



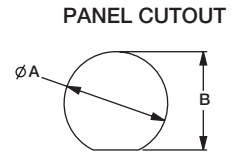
Third Angle
Projection



CAP SYMBOLS

	-000		NO SYMBOL
	-001		PLUS
	-002		LOCKED
	-003		ENGINE STOP
	-004		PARK BRAKE RELEASE
	-005		ENGINE START

	-006		FAST
	-007		SLOW
	-008		UNLOCKED
	-009		ROCK SHAFT LOWER
	-010		MINUS



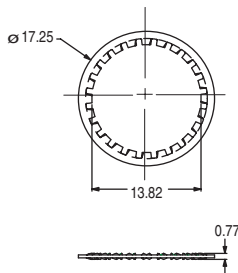
Panel Orientation
Flat indicates bottom

See chart on previous page
for dimensions

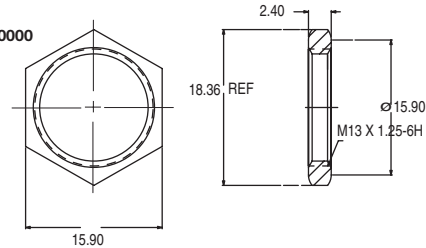
NOTES:
1. ALL GRAPHICS MUST BE POSITIONED AS SHOWN, PERPENDICULAR TO ALIGNMENT FEATURE ON UNDERSIDE OF CAP.
2. GRAPHIC MARKING MUST BE ALIGNED WITH THE FLAT FEATURE ON THE UNDERSIDE OF THE CAP AS SHOWN, TOLERANCE $\pm 3^\circ$

HARDWARE

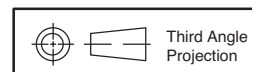
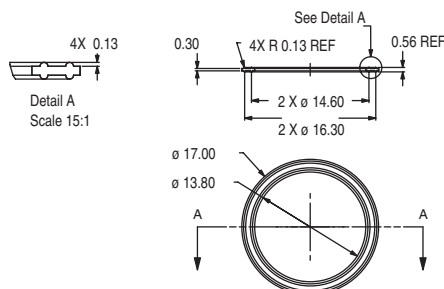
LOCK WASHER
Part Number 647D00000



HEX NUT
Part number 515D00000



PANEL SEAL
Part Number 655D00000



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change



NP Series Sealed Industrial Pushbutton Switch

Pushbutton
A

Features/Benefits

- IP68 sealed
- 1,000,000 life cycle
- Multiple housing styles
- Capable of up to 5A resistive load
- Wirelead options available
- RoHS compliant

Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Transportation
- Military



Specifications

FUNCTION: SPDT Double Break (Form Z) Momentary
CONTACT ARRANGEMENT: N.O. and N.C.
MOUNTING TYPE: Threaded front or rear mount and slot mount
TORQUE SPEC FOR THREADED BODY: Do not exceed 50 in-lbs (5.65 N-m)

Mechanical

OPERATING LIFE: 1,000,000 cycles
TOTAL TRAVEL: 1.6 ± 0.15 mm
OPERATING POINT 0.9 ± 0.25 mm
OVER TRAVEL: 0.45 min.
OPERATING FORCE: 8N ± 1.5N
VIBRATION: 10-500 Hz 10g Max
SHOCK: 50g 11ms sawtooth wave

Electrical

CONTACT RATING:
Option G - Gold over Silver
10mA/5 VDC (1,000,000 cycles)
Option Q - Silver
1A/32 VDC resistive (100,000 cycles)
5A/32 VDC resistive (25,000 cycles)
3A/32 VDC resistive (25,000 cycles)

Electrical (cont.)

DIELECTRIC STRENGTH: 1000 V AC for 1 min.
INSULATION RESISTANCE: 1 G Ω @ 500 VDC
INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)
BOUNCE TIME: <5 ms

Materials

HOUSING: 6061-T6 Aluminum, black or clear anodized
BASE: PBT
CAP: PBT
ACTUATOR: PBT
INTERNAL SEAL: Silicone rubber
TERMINALS: Copper with silver nickel inlay, silver plating
MOVABLE CONTACT: Copper alloy, gold over silver plating
TERMINAL SEAL: Epoxy

Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C
ESD PROTECTION: 15KV min.

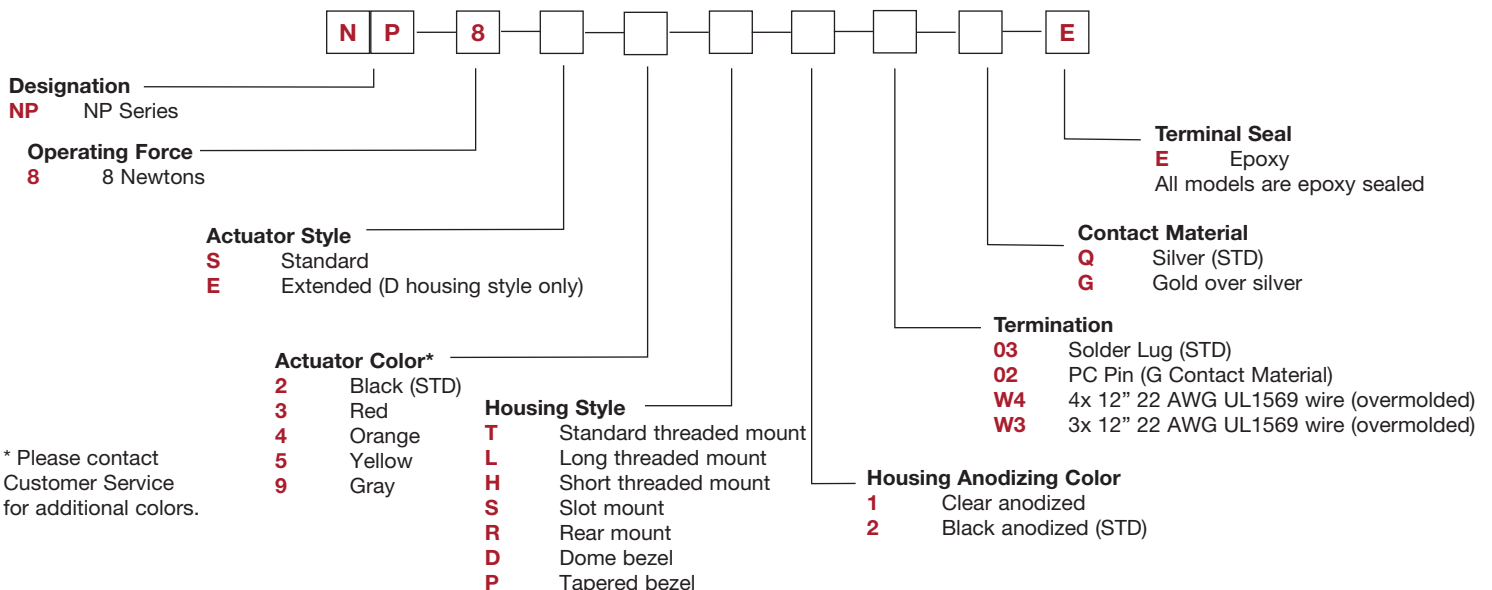
Process Environment

SEALING: IP68

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



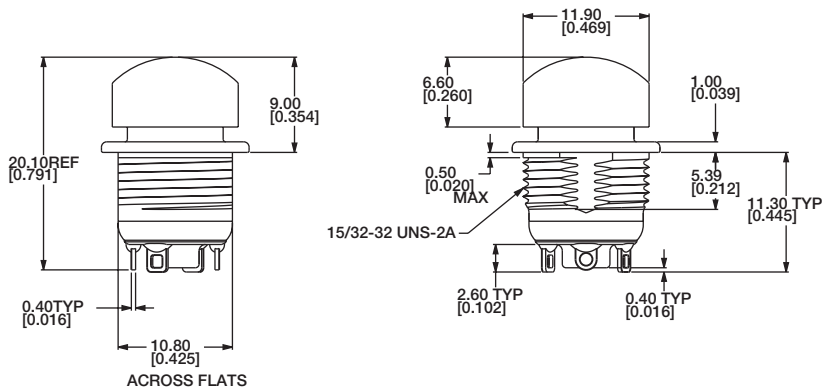
NP Series Sealed Industrial Pushbutton Switch



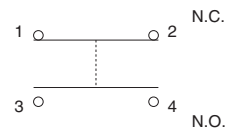
A

Pushbutton

STANDARD VIEW



ELECTRICAL SCHEMATIC



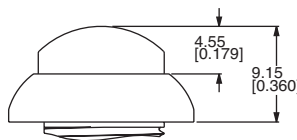
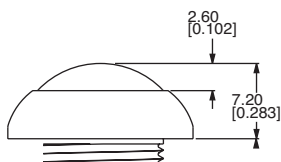
OPERATING FORCE

OPTION CODE	OPERATING FORCE
8	8 N

ACTUATOR STYLE

S STANDARD

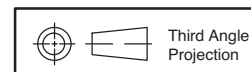
E EXTENDED (D HOUSING STYLE ONLY)



ACTUATOR COLOR

OPTION CODE	ACTUATOR COLOR
2	Black
3	Red
4	Orange
5	Yellow
9	Gray

For additional colors please contact Customer Service.



Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

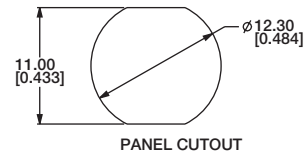
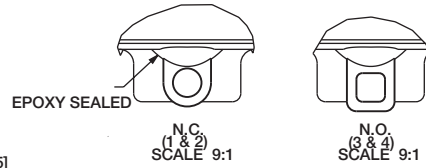
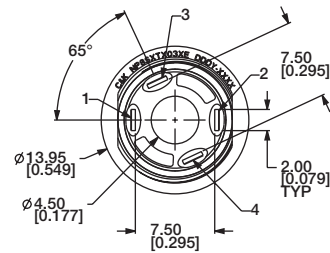
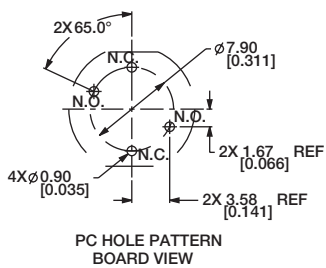
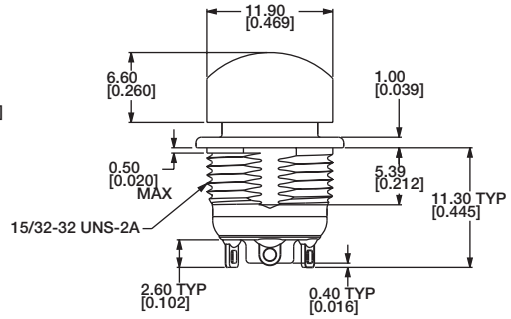
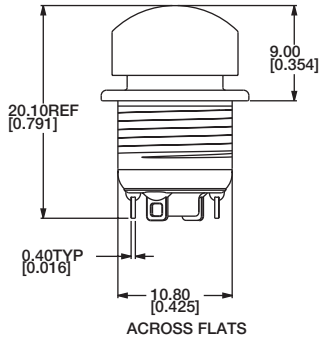
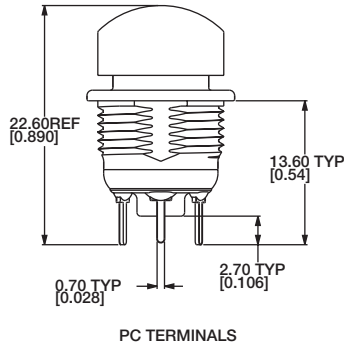


NP Series Sealed Industrial Pushbutton Switch

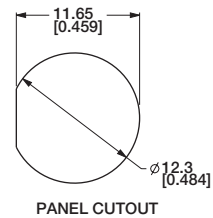
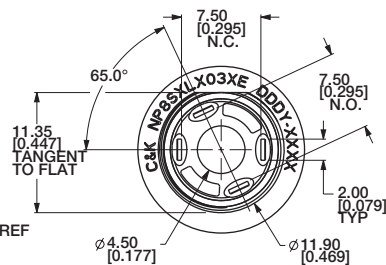
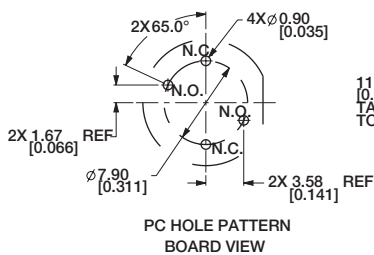
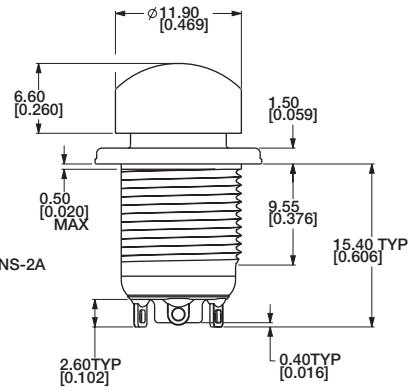
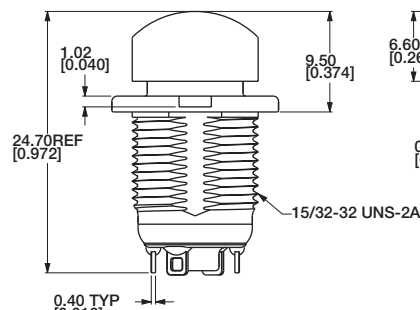
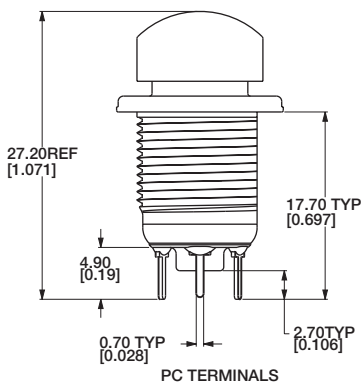
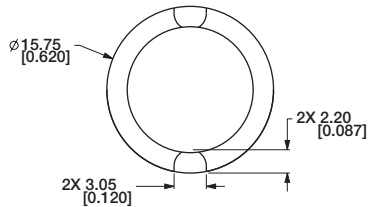
HOUSING STYLE

Pushbutton

T STANDARD THREADED MOUNT



L LONG THREADED MOUNT



Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

NP Series Sealed Industrial Pushbutton Switch

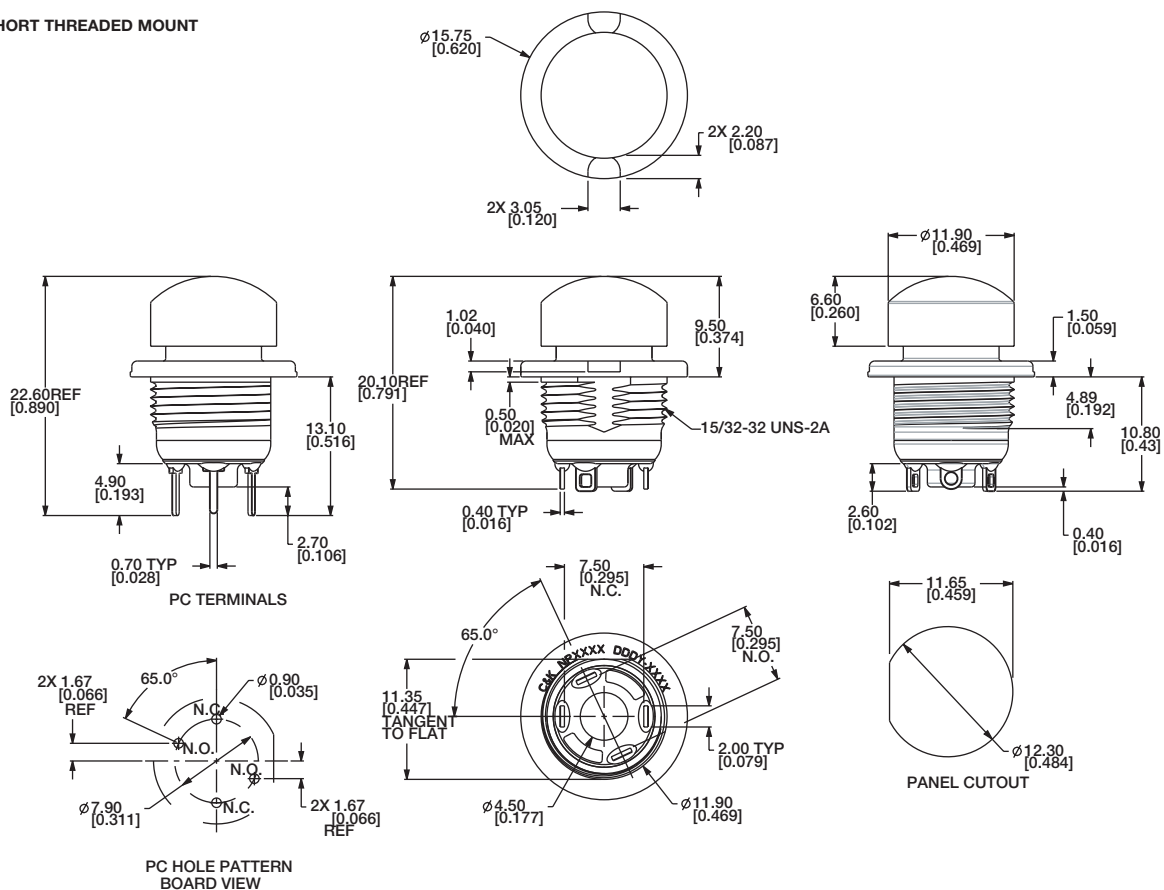


A

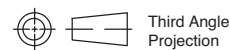
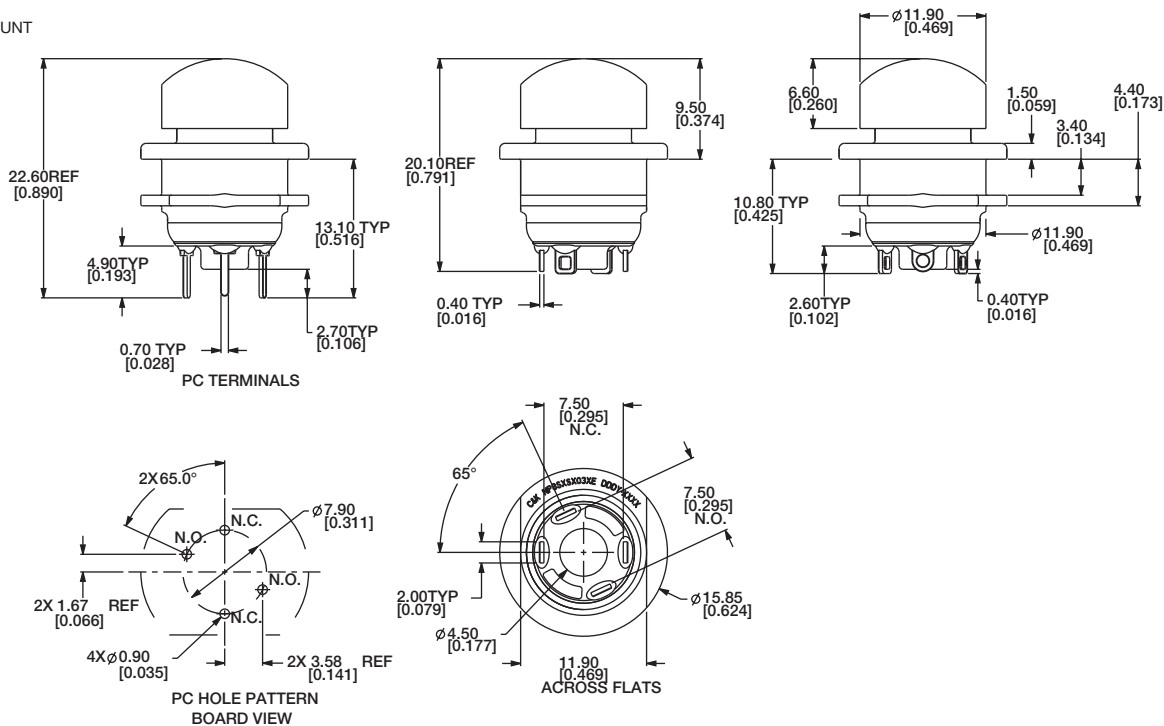
Pushbutton

HOUSING STYLE

H SHORT THREADED MOUNT



S SLOT MOUNT



Third Angle
Projection

C&K

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

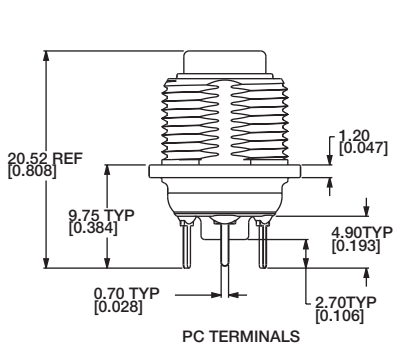
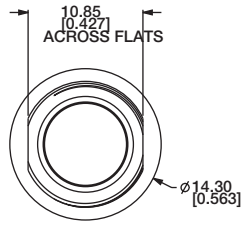


NP Series Sealed Industrial Pushbutton Switch

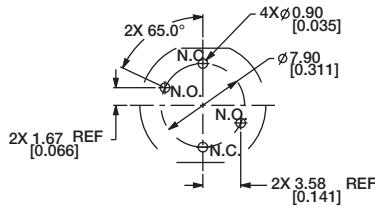
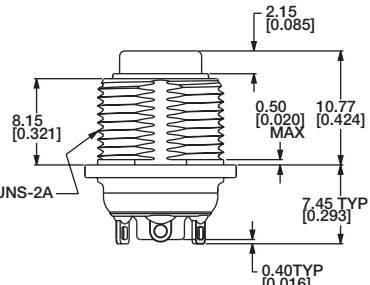
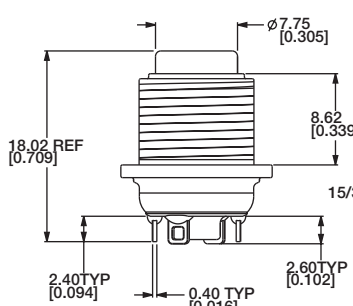
HOUSING STYLE

Pushbutton

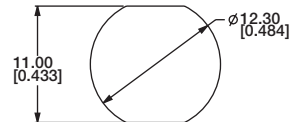
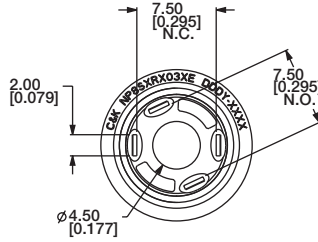
R REAR MOUNT



PC TERMINALS

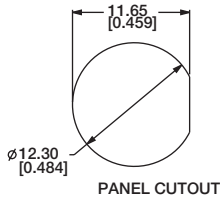


PC HOLE PATTERN
BOARD VIEW

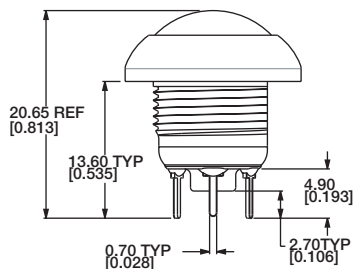
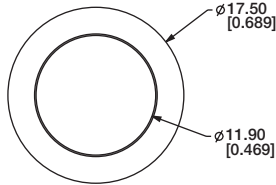


PANEL CUTOUT

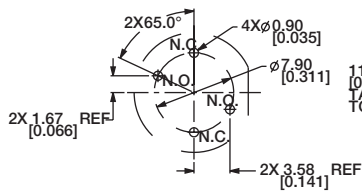
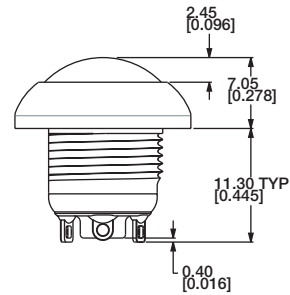
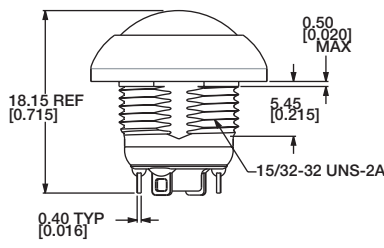
D DOME BEZEL



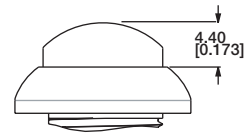
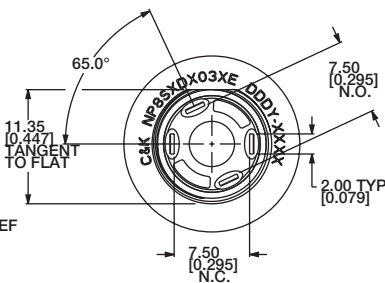
PANEL CUTOUT



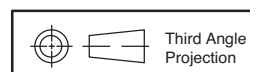
PC TERMINALS



PC HOLE PATTERN
BOARD VIEW



EXTENDED CAP



Third Angle
Projection



Dimensions are shown: Inches (mm)
Specifications and dimensions subject to change

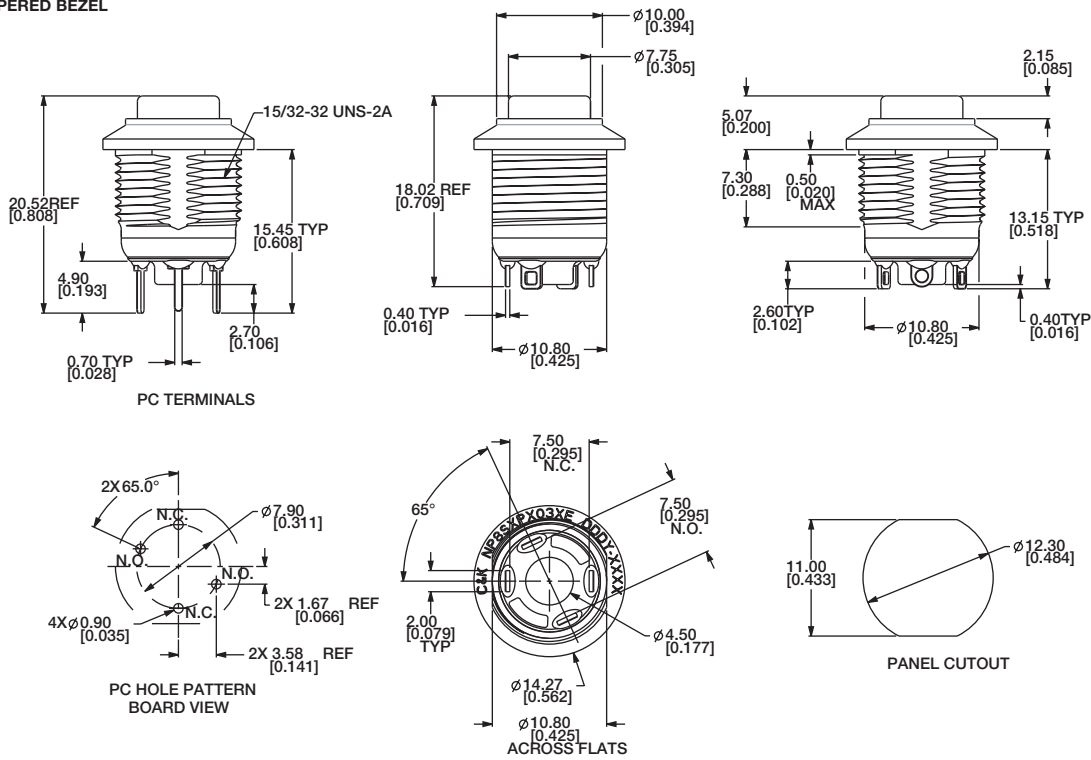
NP Series Sealed Industrial Pushbutton Switch



A
Pushbutton

HOUSING STYLE

P TAPERED BEZEL

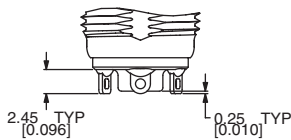


HOUSING ANODIZING COLOR

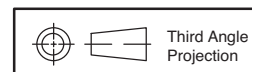
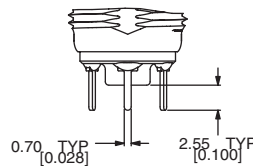
OPTION CODE	ANODIZING COLOR
1	Clear anodized
2	Black anodized (STD)

TERMINATION

03 SOLDER LUG (STD)



02 PC PIN (G CONTACT MATERIAL)

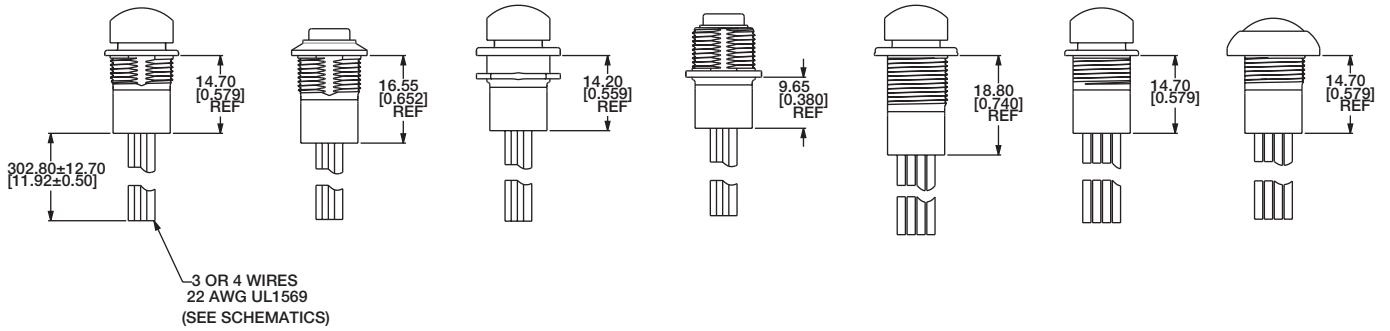




NP Series Sealed Industrial Pushbutton Switch

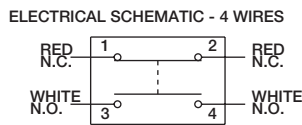
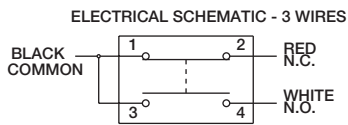
Pushbutton
A

TERMINATION



W3 3X 12" 22 AWG UL1569 WIRE (OVERMOLDED)

W4 4X 12" 22 AWG UL1569 WIRE (OVERMOLDED)



CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL
Q	Silver (STD)
G	Gold over Silver

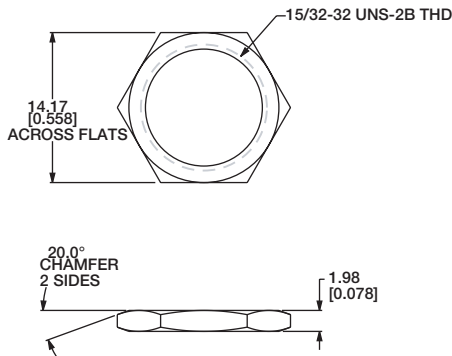
TERMINAL SEAL

E EPOXY

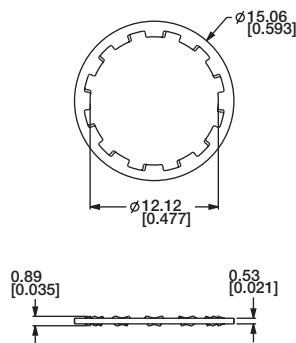
All models are epoxy sealed

HARDWARE

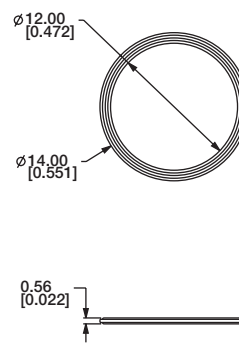
HEX NUT
707100201 Nickel-plated



LOCKWASHER
700302202



PANEL GASKET
851D02000



Third Angle
Projection

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change



NEW

PNP Series Sealed Pushbutton Switch



A
Pushbutton

Features/Benefits

- Snap-Action provides positive tactile feedback
- IP68 sealed to endure harsh environments
- 1,000,000 life cycle
- Up to 5A resistive load
- Multiple housing styles
- Various termination types and wirelead options are also available
- RoHS compliant

Typical Applications

- Control Grips
- Off-Road Panels
- Heavy Equipment
- Industrial Instruments
- Lifts
- Conveyor Controls



Specifications

FUNCTION: SPST, SPDT Double Break (Form Z) Momentary
 CONTACT ARRANGEMENT: N.O. and N.C.
 MOUNTING TYPE: Threaded front mount
 TORQUE SPEC FOR THREADED BODY: Do not exceed 10 in-lbs (1.35 N-m)

DIELECTRIC STRENGTH: 1000 V AC for 1 min.
 INSULATION RESISTANCE: 1 G Ω @ 500 VDC
 INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)
 BOUNCE TIME: <5 ms

Mechanical

OPERATING LIFE: 1,000,000 cycles
 TOTAL TRAVEL: 2 mm max.
 OPERATING POINT 0.9 ± 0.25 mm
 OVER TRAVEL: 0.25 mm min.
 OPERATING FORCE: 3N ± 1.5N
 8N ± 1.5N
 VIBRATION: 10-500 Hz 10g Max
 SHOCK: 50g 11ms sawtooth wave

Materials

HOUSING: PBT/PC
 BASE: PBT
 CAP: PBT
 ACTUATOR: PBT
 INTERNAL SEAL: Silicone rubber
 TERMINALS: Copper with silver nickel inlay, silver plating
 MOVABLE CONTACT: Copper alloy, gold over silver plating
 TERMINAL SEAL: Epoxy

Electrical

CONTACT RATING:
 Option "Q" Silver
 5A/32 VDC resistive (25,000 cycles)
 3A/32 VDC resistive (25,000 cycles)
 Option "G" Gold over Silver
 10mA/5 VDC resistive (1,000,000 cycles)

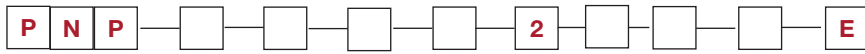
Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C
 ESD PROTECTION: 15KV min.
 SEALING: IP68

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation

PNP PNP Series

Operating Force

3 3 Newtons
8 8 Newtons

Actuator Style

S Standard
E Extended (D housing style only)
N None

Actuator Color *

0 No Cap
2 Black (STD)
3 Red
4 Orange
5 Yellow
9 Gray

Housing Style

T Standard threaded mount
D Dome bezel

Housing Color

2 Black (STD)

Terminal Seal

E Epoxy
 All models are epoxy sealed

Contact Material

Q Silver (STD)
G Gold over silver

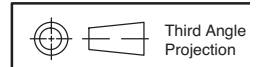
Termination

02 PC Pin (G contact material only)
03 Solder Lug (STD)
W2 2 x 12" 22 AWG UL1569 wire (overmolded)
W3 3 x 12" 22 AWG UL1569 wire (overmolded)
W4 4 x 12" 22 AWG UL1569 wire (overmolded)

Circuit

C SPDT - Double Break
W SPST NC - Double Break
Y SPST NO - Double Break

* Additional colors available, please contact Customer Service



Dimensions are shown: mm (inches)
 Specifications and dimensions subject to change





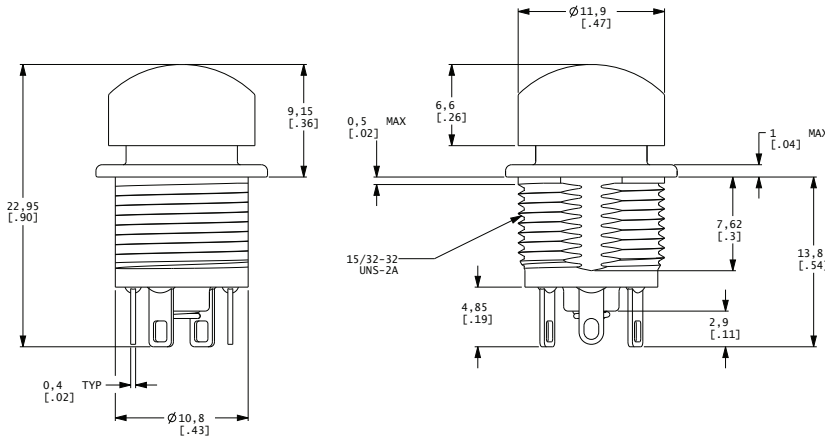
PNP Series Sealed Pushbutton Switch

NEW

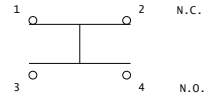
Pushbutton

A

STANDARD VIEW



ELECTRICAL SCHEMATIC



OPERATING FORCE

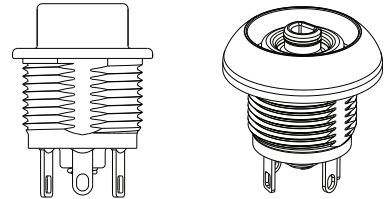
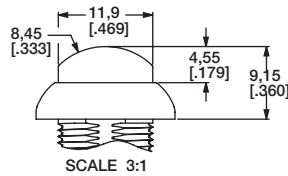
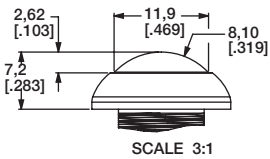
OPTION CODE	OPERATING FORCE
3	3 N
8	8 N

ACTUATOR STYLE

S STANDARD

E EXTENDED (D HOUSING STYLE ONLY)

N NO CAP



ACTUATOR COLOR

OPTION CODE	ACTUATOR COLOR
0	No color
2	Black
3	Red
4	Orange
5	Yellow
9	Gray



PART NUMBER	COLOR
285E02000	Black
285E03000	Red
285E04000	Orange
285E05000	Yellow
285E09000	Gray



824D02000	Black
824D03000	Red
824D04000	Orange
824D05000	Yellow
824D09000	Gray

* Cap may be ordered separately

NEW

PNP Series Sealed Pushbutton Switch

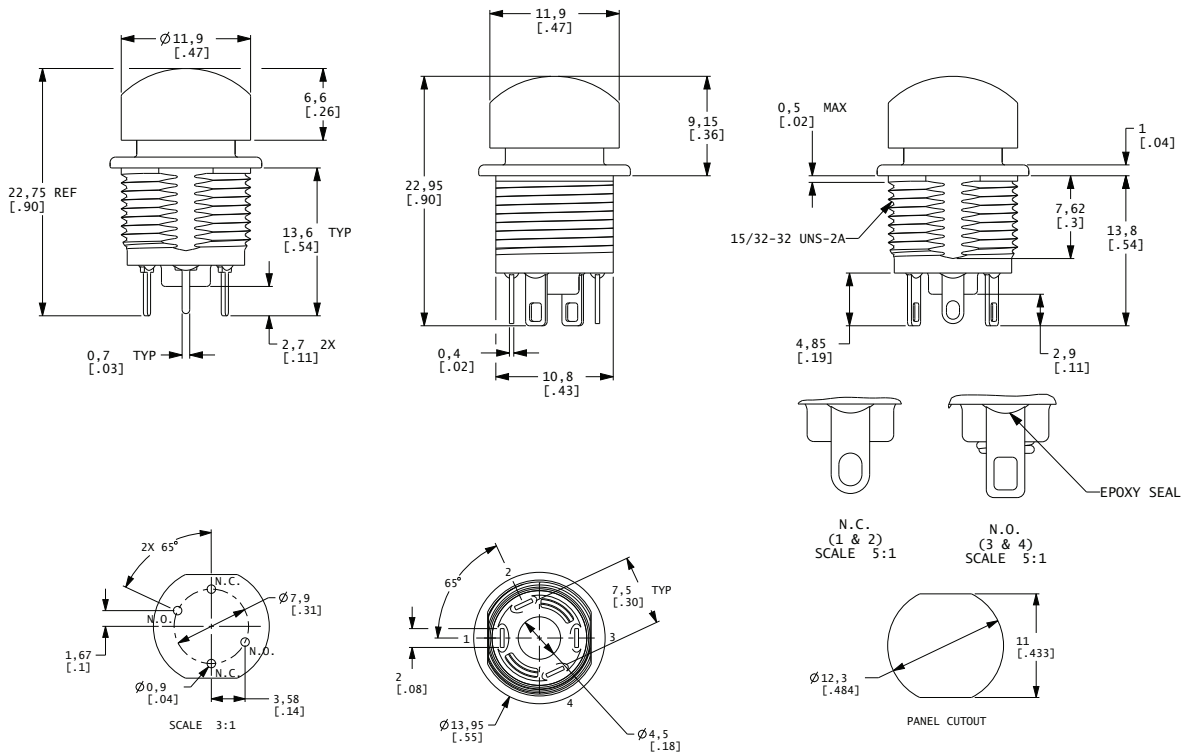


A

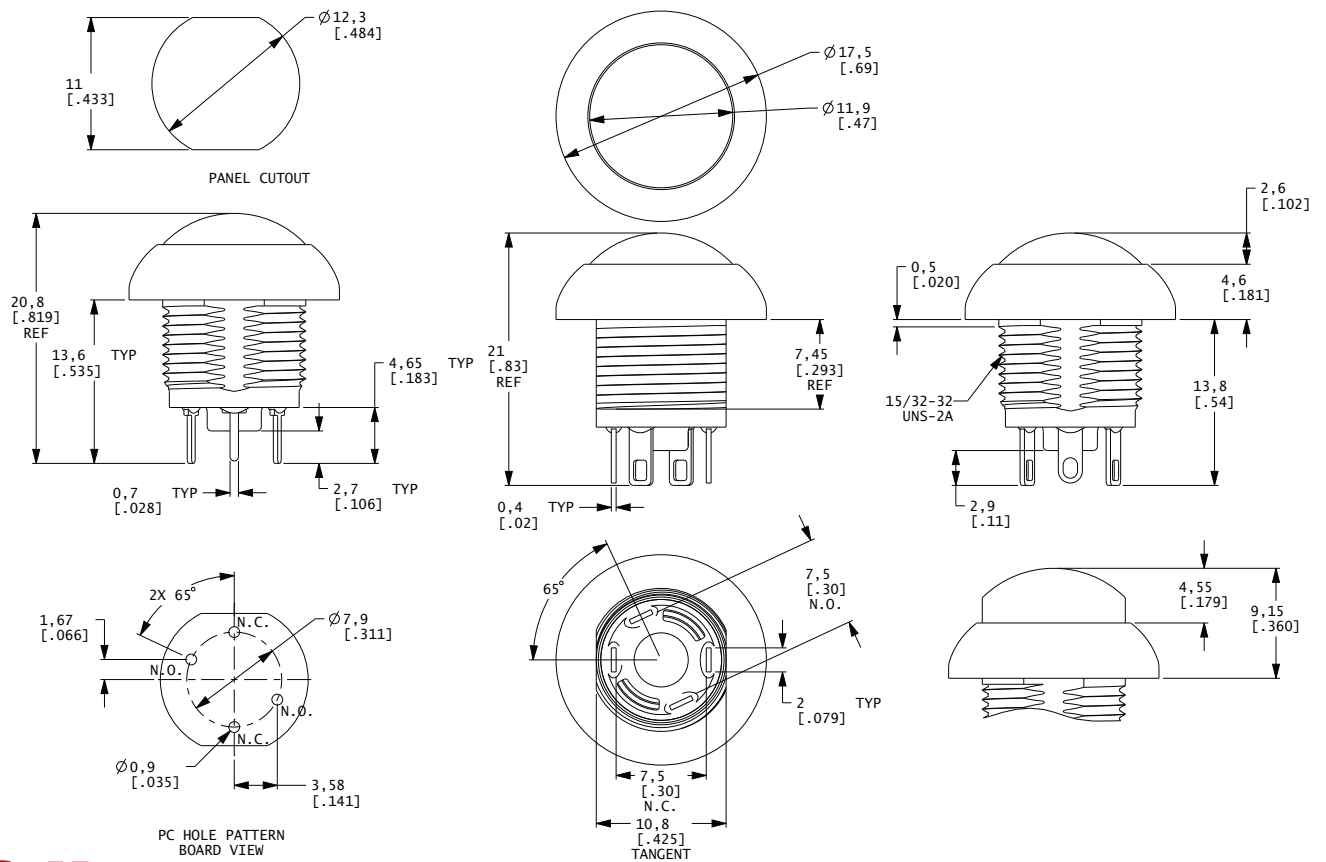
Pushbutton

HOUSING STYLE

T STANDARD THREADED MOUNT



D DOME BEZEL



11 Sep 18

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change



PNP Series Sealed Pushbutton Switch

NEW

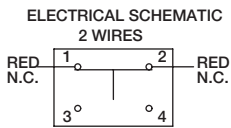
Pushbutton
A

HOUSING COLOR

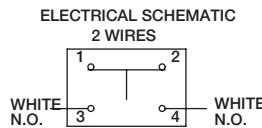
OPTION CODE	COLOR
2	Black (STD)

CIRCUIT

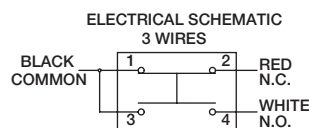
W SPST NC - Double Break



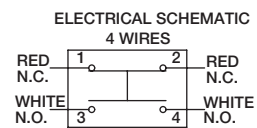
Y SPST NO - Double Break



C SPDT - Double Break

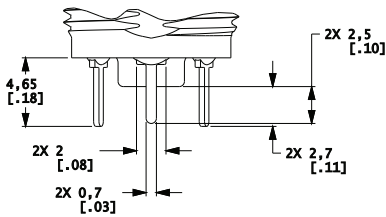


C SPDT - Double Break

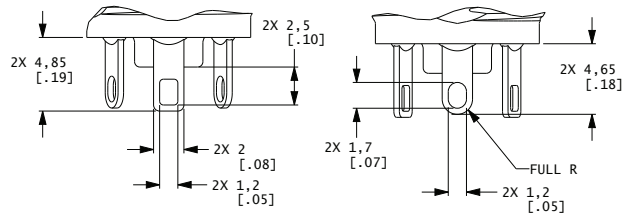


TERMINATION

02 PC PIN



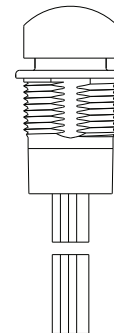
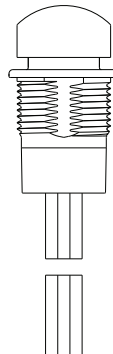
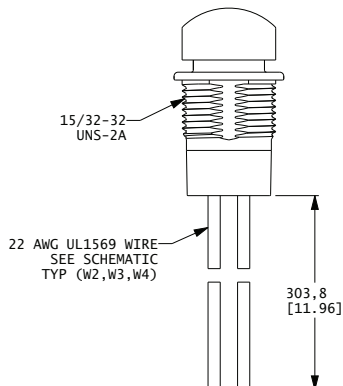
03 SOLDER LUG (STD)



W2 2 x 12" 22 AWG UL1569 wire (overmolded)

W3 3 x 12" 22 AWG UL1569 wire (overmolded)

W4 4 x 12" 22 AWG UL1569 wire (overmolded)



NEW

PNP Series Sealed Pushbutton Switch



A
Pushbutton

CONTACT MATERIAL

OPTION CODE	CONTACT MATERIAL
Q	Silver (STD)
G	Gold over silver

TERMINAL SEAL

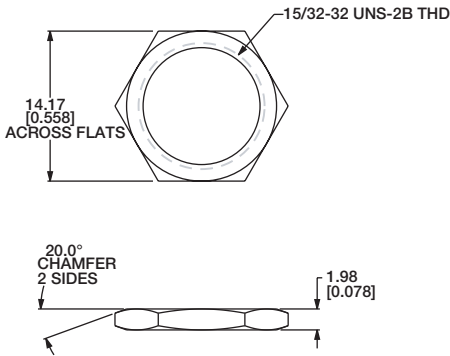
E EPOXY

All models are epoxy sealed

HARDWARE

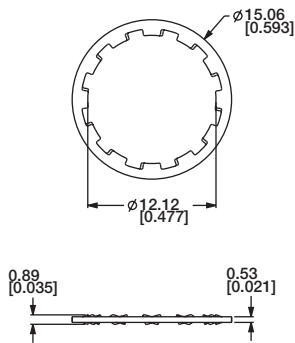
HEX NUT

707100201 Nickel-plated



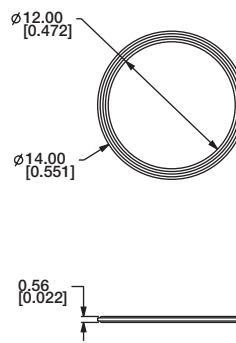
LOCKWASHER

700302202



PANEL GASKET

851D02000





ATP16 Series Anti-Vandal Sealed Pushbutton Switch

NEW

Pushbutton
A

Features/Benefits

- Momentary or Lock version
- IP67 sealed
- Rated at 2A / 36 Vdc
- 1,000,000 life cycle
- Various colors of LED illuminate indicator
- Choices of actuator with ring or power logo
- RoHS compliant

Typical Applications

- Alarm, safety and security systems
- Intercom "push-to-talk" devices
- Automatic food and drink vending machines
- Parking lot ticket machines & ticket paying stations
- Industrial Instruments



Specifications

FUNCTION: SPST
CONTACT ARRANGEMENT: N.O.
MOUNTING TYPE: Threaded front panel mount
TORQUE FOR THREADED BODY: 11.5 kgf/cm

Mechanical

OPERATING LIFE: Momentary 1,000,000 cycles
Lock 100,000 cycles
TOTAL TRAVEL: Momentary 2.0 mm; Lock 2.3 mm
OPERATING FORCE: 4.5 ± 1.5N

Electrical

CONTACT RATING: 2A / 36Vdc
OPERATING LIFE: Make-and-break cycles at full load
200,000 (Momentary)
100,000 (Lock)
DIELECTRIC STRENGTH: 2,000 V RMS @ sea level
INSULATION RESISTANCE: 1,000 MΩ min. @ 500 VDC
INITIAL CONTACT RESISTANCE : 50 mΩ max @1A 12VDC

Materials

BUSHING: Stainless steel / Aluminum alloy, anodized
BASE: PBT (UL 94-A0), Nylon 6/6 (lock version)
ACTUATOR: PC (UL 94-V2); POM (lock version)
INTERNAL ASSEMBLY: POM / PA66
SPRING: Steel
SEALING / O-ring: Silicone (Translucent) / Silicone
TERMINALS / CONTACT: Brass, Silver or gold plated
HEX NUT: Brass (Nickel plated)

Operating Environment

OPERATING TEMPERATURE: -20°C to +70°C
SEALING / PROTECTION: IP67

NOTE: Specifications and materials listed above are for switches with standard options.
For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation
ATP16 Series

Actuator Style
D Dome*
S Standard**

Actuator Indicator
L1 Ring
L5 Ring & Power logo

LED Illumination

Color	Dual color
0 Without LED	A Red & Green
2 White	R RGB***
3 Red	
4 Orange	
5 Yellow	
6 Green	
7 Blue	

LED voltage DC
00 0V without resistor
03 3V
06 6V
12 12V
24 24V

Terminal plating
G Gold flash

Termination
04 Solder lug
W1 Wire lead 500mm ****

Mechanical function
A Momentary (Double D bushing)
E Lock (D shape bushing)

Contact arrangement
S SPST

Bushing type

B3 Al alloy (Black anodized)
B4 Al alloy (Natural anodized)
M0 Stainless (Natural), Round***
M4 Stainless (Natural), Double D***

* For bushing type B3 and B4 only.

** Available on bushing type M0 & M4 only.

*** Available on momentary function only.

**** Available upon request, please consult your sales representative for details.



18 Jun 19

NEW

ATP16 Series Anti-Vandal Sealed Pushbutton Switch

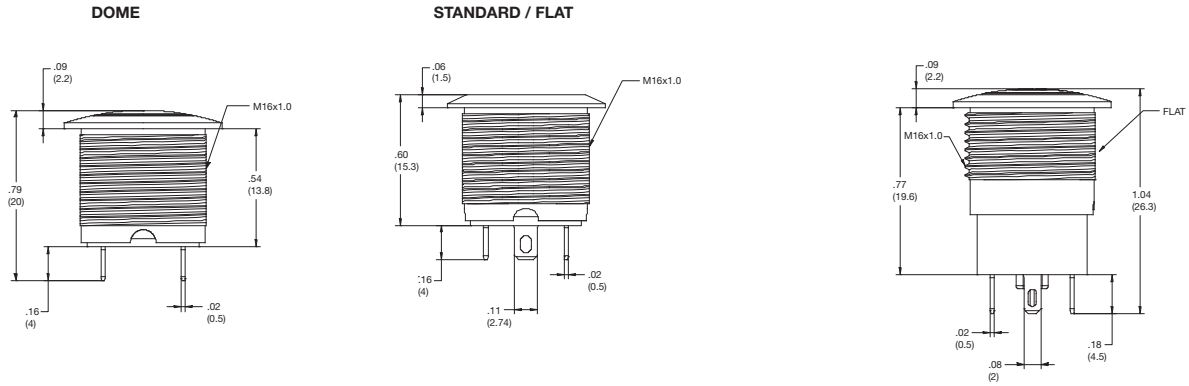


A
Pushbutton

STANDARD VIEW

MOMENTARY

LOCK



ACTUATOR STYLE

D DOME

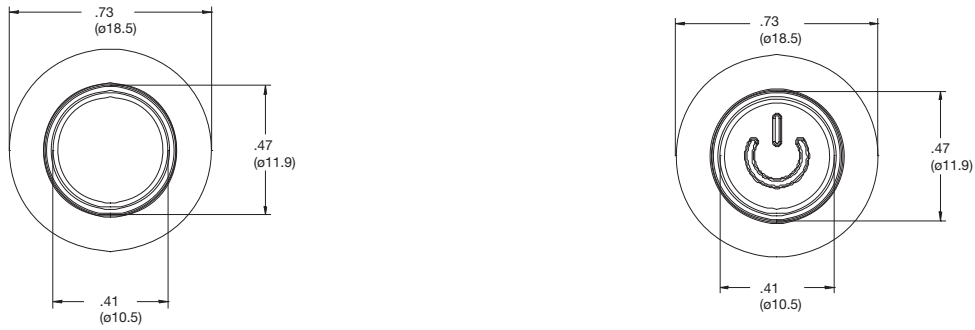
S STANDARD / FLAT



ACTUATOR INDICATOR

L1 RING

L5 RING & POWER





ATP16 Series Anti-Vandal Sealed Pushbutton Switch

NEW

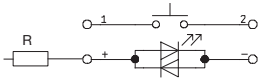
Pushbutton

A

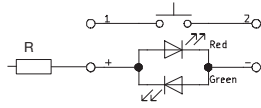
CIRCUIT

MOMENTARY

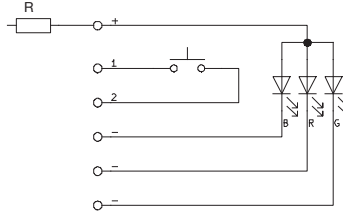
SINGLE COLOR LED



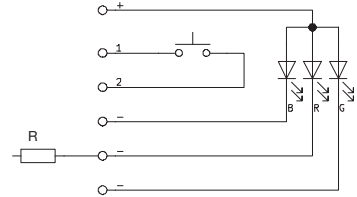
DUAL COLOR LED



RGB LED



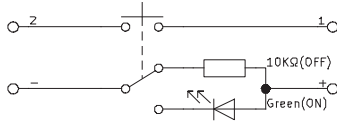
6 / 12 / 24V LED



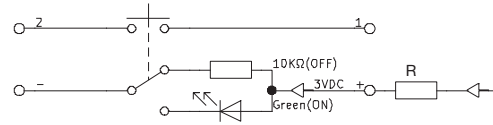
3V LED

LOCK

SINGLE COLOR LED

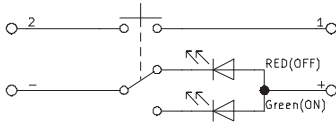


3V LED

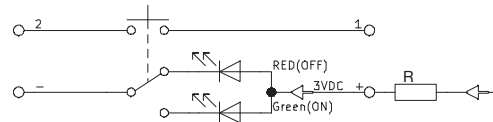


6 / 12 / 24V LED

DUAL COLOR LED



3V LED



6 / 12 / 24V LED

R: Resistor value is according to the LED voltage applied.

Resistor value (Apply LED Voltage)

LED input 3 VDC, 47 ohms (Red/Yellow/Orange LED type only)

LED input 6 VDC, 180 ohms

LED input 12 VDC, 470 ohms

LED input 24 VDC, 1000 ohms

Ohms value of resistance tolerance: ±5%

NEW

ATP16 Series Anti-Vandal Sealed Pushbutton Switch

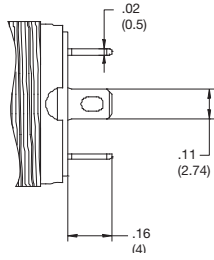


A
Pushbutton

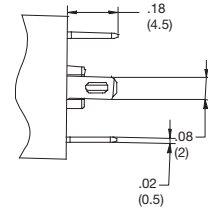
TERMINATION

04 SOLDER LUG

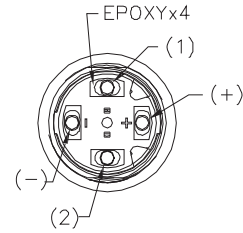
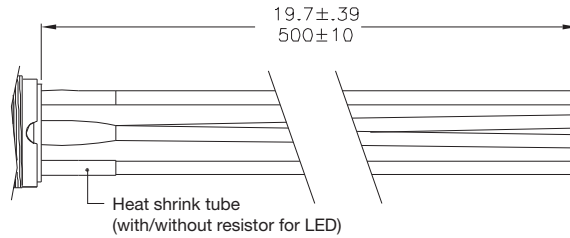
MOMENTARY



LOCK



W1 WIRE LEAD 500MM*

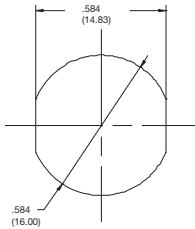


* Available upon request, please consult your sales representative for details.

PANEL CUTOUT

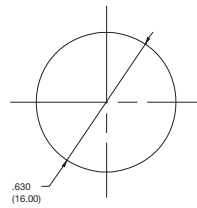
B3, B4 & M4

DOUBLE D



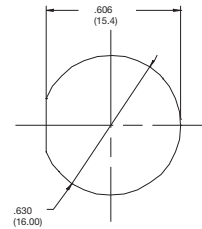
M0

ROUND



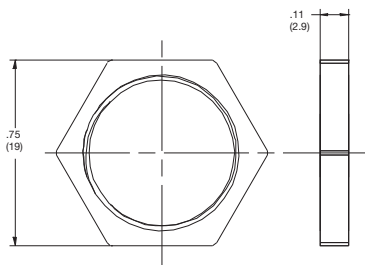
B3 & B4

D SHAPE

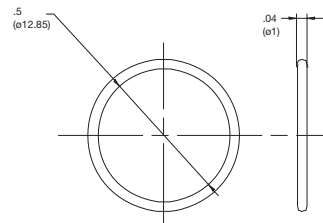


HARDWARE

HEX NUT



O RING



18 Jun 19

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change



A

Pushbutton

NEW

ATP19 Series Anti-Vandal Sealed Pushbutton Switch



A
Pushbutton

Features/Benefits

- Momentary or Lock version
- IP67 sealed & IK10 (Stainless steel bushing)
- Capable of up to 3A resistive load
- 50,000 life cycle at full load
- Various colors of LED illuminate indicator
- Choices of pushbutton with symbol on spot, ring or power logo

Typical Applications

- Control Panels including car park and traffic light
- Industrial Instruments
- Lifts / Escalator
- Communication equipment
- Alarm, safety and security systems



C&K US

Specifications

FUNCTION: Single pole and double poles
CONTACT ARRANGEMENT: N.O. and N.C.
MOUNTING TYPE: Threaded front panel mount
TORQUE FOR THREADED BODY: 5-14 Nm

Mechanical

OPERATING LIFE: Momentary 1,000,000 cycles
Self-lock 500,000 cycles
TOTAL TRAVEL: about 3.2 mm
OPERATING FORCE: 1 pole 2.5 ± 1N
2 pole 3.5 ± 1N

Electrical

CONTACT RATING: 1th 5A/250VAC
3A / 250VAC
3A / 28VDC
OPERATING LIFE: 50,000 make-and-break cycles at full load
DIELECTRIC STRENGTH: 2,000 V RMS @ sea level
INSULATION RESISTANCE: 1,000 MΩ min. @ 500 VDC
INITIAL CONTACT RESISTANCE : 50 mΩ max @1A 12VDC

Materials

BUSHING: Stainless steel / Nickel plated brass / Aluminum alloy
BASE: PBT (UL 94-A0), PC (UL 94-V2)
ACTUATOR: PC (UL 94-V2); Stainless steel / Nickel plated brass / Aluminum alloy
INTERNAL ASSEMBLY: POM / PA66
SPRING: Steel
SEALING / O-ring: Silicone
TERMINALS: Brass with silver or gold plated
CONTACT: Copper, silver plated

Operating Environment

OPERATING TEMPERATURE: -20°C to +55°C
SEALING / PROTECTION: IP67 / IK10 (Stainless steel bushing)

NOTE: Specifications and materials listed above are for switches with standard options.
For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation
ATP19 Series

- Actuator Style**
- S** Standard
 - R** Raised
 - D** Dome without LED only

- Actuator Indicator**
- L0** Without LED
 - L1** Fix ring
 - L2** Spot
 - L3** Moving ring (standard actuator only)
 - L4** Power logo*
 - L5** Moving ring & Power logo* (standard actuator only)

LED Illumination

Color	Dual color
0 Without LED	A Red & Green
2 White	B Red & Blue
3 Red	D Blue & Yellow
5 Yellow	G Red & Yellow
6 Green	H Green & Yellow
7 Blue	J Orange & Green

- LED voltage (20mA)**
- 00** Without LED
 - 03** 3V
 - 06** 6V
 - 12** 12V
 - 24** 24V
 - 36** 36V
 - A1** 110V AC
 - A2** 220V AC

- Terminal plating**
- Q** Silver
 - G** Gold

- Termination**
- 03** STD solder lug
 - 04** Short solder lug
 - W1** Wire lead 500mm **
 - W2** Wire lead 1,000mm **

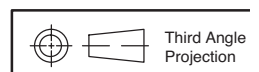
- Mechanical function**
- A** Momentary
 - E** Lock

- Contact arrangement**
- S** SPDT
 - D** DPDT

Bushing type

Round	Double D shape
B0 Stainless (Natural)	M0 Stainless (Natural)
B1 Brass (Mirror Chrome Plated)	M1 Brass (Mirror Chrome plated)
B2 Brass (Nickel plated)	M2 Brass (Nickel plated)
B3 Al alloy (Black anodized)	M3 Al alloy (Black anodized)

* Available on double D-shape bushing only.
** Available upon request, please contact your sales representative for details.



Dimensions are shown: mm (inches)
Specifications and dimensions subject to change



11 Apr 19



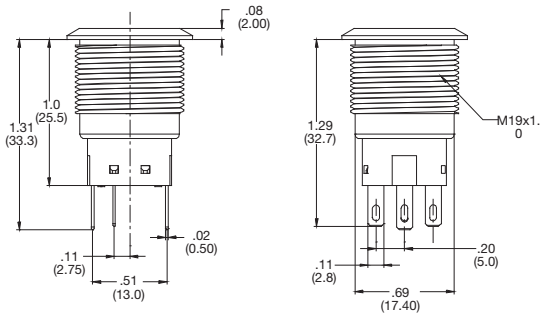
ATP19 Series Anti-Vandal Sealed Pushbutton Switch

NEW

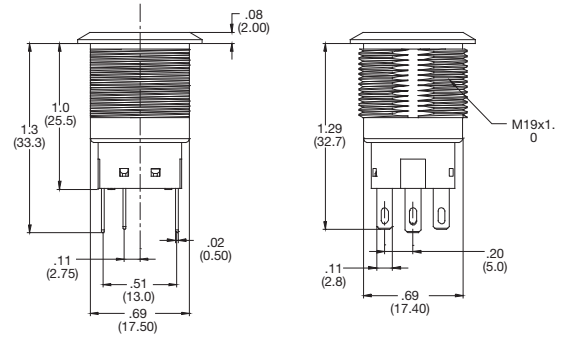
Pushbutton
A

STANDARD VIEW

ROUND BUSHING

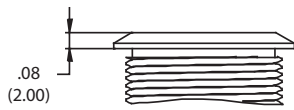


DOUBLE-D BUSHING

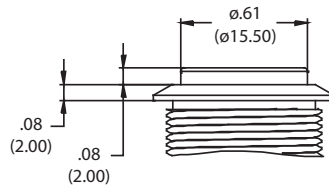


ACTUATOR STYLE

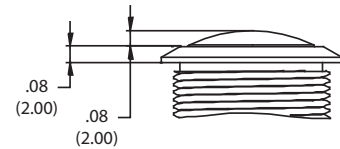
S STANDARD



R RAISED

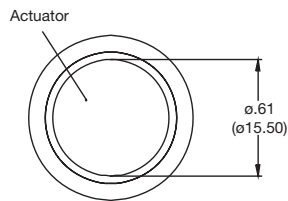


D DOME

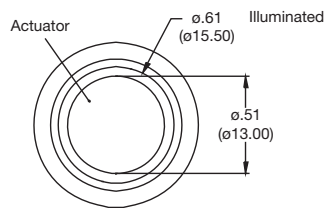


ACTUATOR INDICATOR

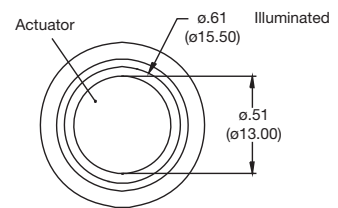
L0 WITHOUT LED



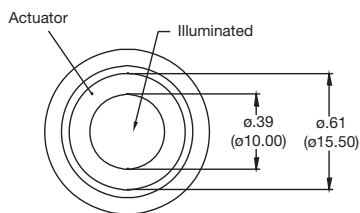
L1 FIX RING



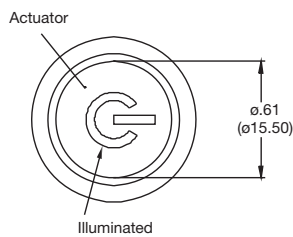
L3 MOVING RING



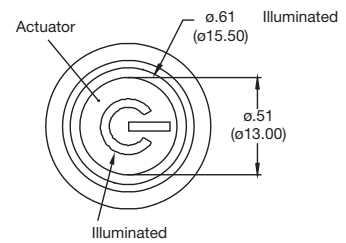
L2 SPOT



L4 POWER LOGO



L5 POWER & MOVING RING



NEW

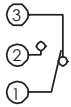
ATP19 Series Anti-Vandal Sealed Pushbutton Switch



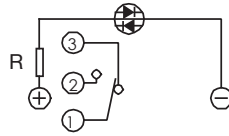
A
Pushbutton

CIRCUIT

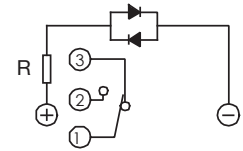
SPDT



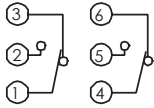
SPDT - SINGLE COLOR LED



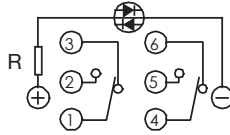
SPDT - DUAL COLOR LED



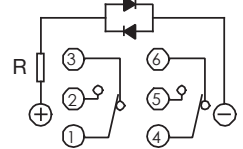
DPDT



DPDT - SINGLE COLOR LED

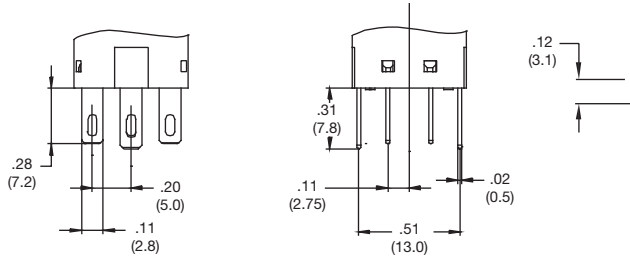


DPDT - DUAL COLOR LED

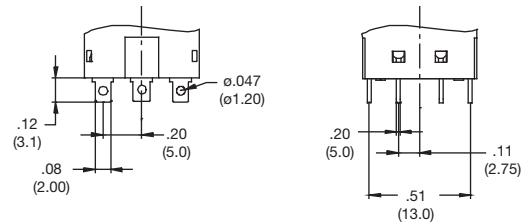


TERMINATION

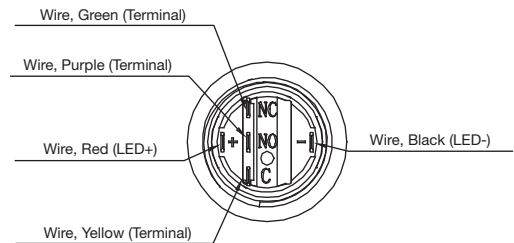
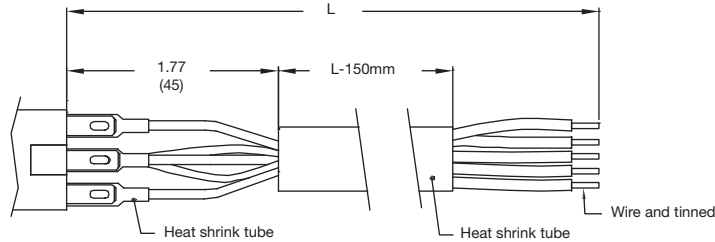
03 SOLDERLUG



04 SHORT SOLDER LUG

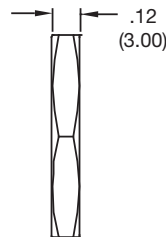
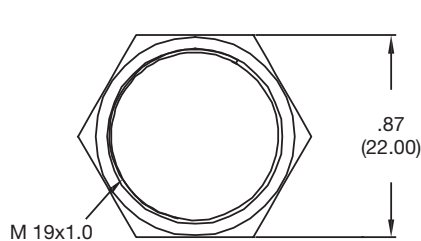


W1 OR W2 WIRE LEAD

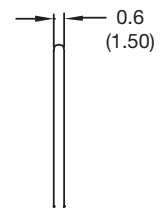
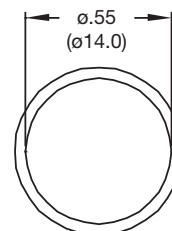


HARDWARE

HEX NUT



O - RING





ATP22 Series Anti-Vandal Sealed Pushbutton Switch

NEW

Pushbutton
A

Features/Benefits

- Momentary or Lock version
- IP67 sealed & IK10 (Stainless steel bushing)
- Capable of up to 3A resistive load
- 50,000 life cycle at full load
- Various colors of LED illuminate indicator
- Choices of pushbutton with symbol on spot, ring or power logo

Typical Applications

- Control Panels including car park and traffic light
- Industrial Instruments
- Lifts / Escalator
- Communication equipment
- Alarm, safety and security systems



C&K[®] US

Specifications

FUNCTION: Single pole and double poles
CONTACT ARRANGEMENT: N.O. and N.C.
MOUNTING TYPE: Threaded front panel mount
TORQUE FOR THREADED BODY: 5-14 Nm

Mechanical

OPERATING LIFE: Momentary 1,000,000 cycles
Self-lock 500,000 cycles
TOTAL TRAVEL: about 3.2 mm
OPERATING FORCE: 1 pole 2.5 ± 1N
2 pole 3.5 ± 1N

Electrical

CONTACT RATING: 1th 5A/250VAC
3A / 250VAC
3A / 28VDC
OPERATING LIFE: 50,000 make-and-break cycles at full load
DIELECTRIC STRENGTH: 2,000 V RMS @ sea level
INSULATION RESISTANCE: 1,000 MΩ min. @ 500 VDC
INITIAL CONTACT RESISTANCE : 50 mΩ max @1A 12VDC

Materials

BUSHING: Stainless steel / Aluminum alloy
BASE: PBT (UL 94-A0), PC (UL 94-V2)
ACTUATOR: PC; Stainless steel / Aluminum alloy
INTERNAL ASSEMBLY: POM / PA66
SPRING: Steel
SEALING / O-ring: Silicone
TERMINALS: Brass with silver or gold plated
CONTACT: Copper, silver plated

Operating Environment

OPERATING TEMPERATURE: -20°C to +55°C
SEALING / PROTECTION: IP67 / IK10 (Stainless steel bushing)

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



Designation
ATP22 Series

Actuator Style
S Standard

Actuator Indicator
L0 Without LED
L3 Moving ring
L6 Ring LED*
L7 Ring LED + power logo**
L8 Ring LED + power logo***

Illumination

Color	Dual color
0 Without LED	A Red & Green
2 White	B Red & Blue
3 Red	D Blue & Yellow
5 Yellow	G Red & Yellow
6 Green	H Green & Yellow
7 Blue	J Orange & Green

LED voltage (20mA)

00 Without LED
03 3V
06 6V
12 12V
24 24V
36 36V
A1 110V AC
A2 220V AC

Terminal plating
Q Silver
G Gold

Termination

03 STD solder lug
W1 Wire lead 500mm****
W2 Wire lead 1,000mm****

Mechanical function

A Momentary
E Lock

Contact arrangement

S SPDT
D DPDT

Bushing type

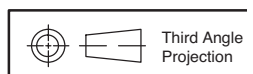
B0 Stainless (Round)
B3 Al alloy: black anodized (Round)
M0 Stainless (Double D-shape)

* Available on ring color CAP of red/green/blue only.

** Power logo and ring with clear color CAP available on double D-shape bushing only.

*** Power logo and ring with red/green/blue color CAP available on double D-shape bushing only.

**** Available upon request, please contact your sales representative for details.



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Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

NEW

ATP22 Series Anti-Vandal Sealed Pushbutton Switch

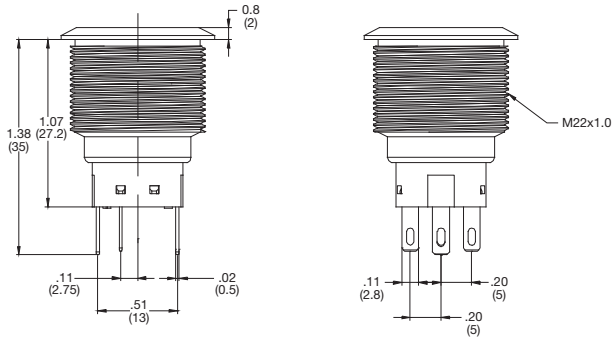


A

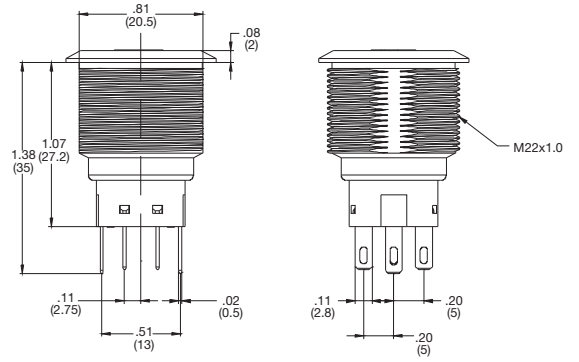
Pushbutton

STANDARD VIEW

ROUND BUSHING

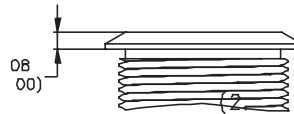


DOUBLE-D BUSHING



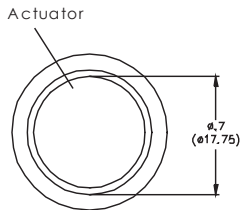
ACTUATOR STYLE

S STANDARD

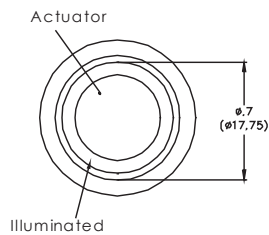


ACTUATOR INDICATOR

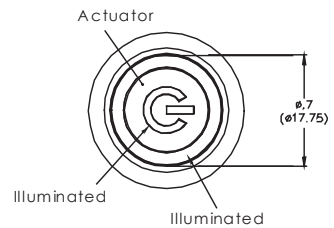
L0 WITHOUT LED



L3 & L6 RING LED



L7 & L8 POWER & RING





ATP22 Series Anti-Vandal Sealed Pushbutton Switch

NEW

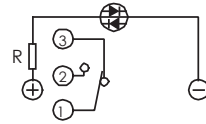
Pushbutton
A

CIRCUIT

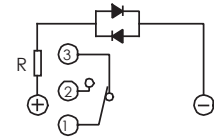
SPDT



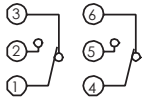
SPDT - SINGLE COLOR LED



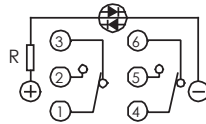
SPDT - DUAL COLOR LED



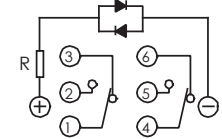
DPDT



DPDT - SINGLE COLOR LED

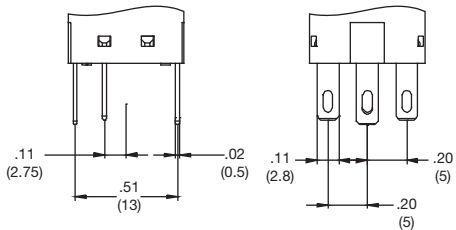


DPDT - DUAL COLOR LED

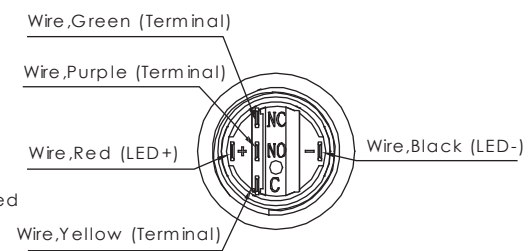
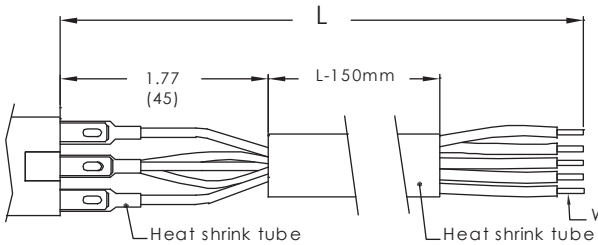


TERMINATION

03 SOLDERLUG

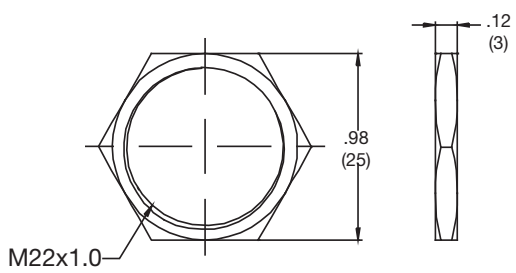


W1 OR W2 WIRE LEAD

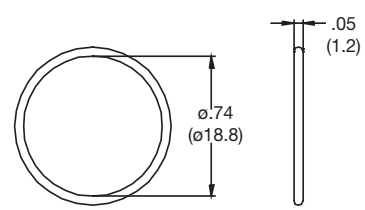


HARDWARE

HEX NUT



O - RING



11 Apr 19

Dimensions are shown: mm (inches)
Specifications and dimensions subject to change

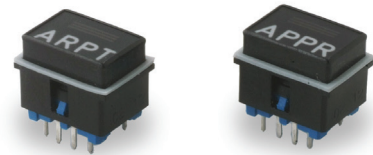


Features/Benefits

- Illuminated display
- Small size
- Cold lighting
- Tactile feed back

Typical Applications

- Avionic



Mechanical

ACTUATION FORCE: 5,5 N ± 0,5 N
 MAXIMUM FORCE: 80 N
 TRAVEL TO CONTACT: 1,2 ± 0,1 mm
 OVERTRAVEL: >0,3 mm
 TOTAL TRAVEL: 1,5 ± 0,1 mm
 LIFE EXPECTANCY: 10⁶ operations 28 V - 10 mA
 WEIGHT: 2 grams
 VIBRATION: ± 0,45mm from 33 Hz to 75 Hz
 ACCELERATION: 10 g max

Electrical

CONTACTS: Gold plated
 VOLTAGE: Max 100 V - Min 20 mV DC
 CARRYING CURRENT: Max 250 mA - Min 50 µA
 SWITCHING CURRENT: Max 50 mA - Min 50 µA
 MAX SWITCHING POWER: 1 W
 CONTACT RESISTANCE: < 50 Ω
 DIELECTRIC STRENGTH: 500 V rms
 INSULATION RESISTANCE (100 V): > 5000 M Ω
 BOUNCE: < 3 ms
 SWITCHING OF 2 POLES MATCHING: < 10 ms

Environmental Data

STORAGE TEMPERATURE: -55°C TO 85°C
 OPERATING TEMPERATURE: -30°C TO 85°C
 TEMPERATURE OF KEY TO CAP: < Ambient +25°C
 HUMIDITY TEST: 21 days (-40°C - 93% HR)
 ALTITUDE PRESSURE: From 20 hPa to 1070 hPa

Soldering Data

MANUAL SOLDERING: 250°C / 2s
 SEALING: According to IP64

Plastic Material

Housing and Cap: UL-94 V0

NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.

Designation _____

PBA PBA Series

Size

- 1 9,5 x 14
- 2 11,5 x 14
- 3 14 x 14

Marking Location

- H High
- M Middle
- L Low

Type of Marking

- T Text / Legend
- S Status Indicator

LED Color

- 0 White λ
- 1 Green λ 560 nm
- 2 Yellow Green λ 568 nm
- 3 Amber λ 590 nm
- 4 Red λ 660 nm
- 5 Other λ

P **B** **A** [] [] [] [] []

Repeat sequence for 2nd Marking

LED Supply or Type

- AC** Alternative
- DC** Direct
- XX** for each marking

1:6 LEDs in parallel for direct current

Display Type

		LED Non-Illuminated	LED Illuminated
N	Text Marking	White	LED Color
	Background	Black	Black
S	Text Marking	Not visible	LED Color
	Background	Black	Black
R	Text Marking	White	LED Color
	Background	Red	Red
G	Text Marking	Green	Green
	Background	Black	Black



PBA Series Illuminated Pushbutton

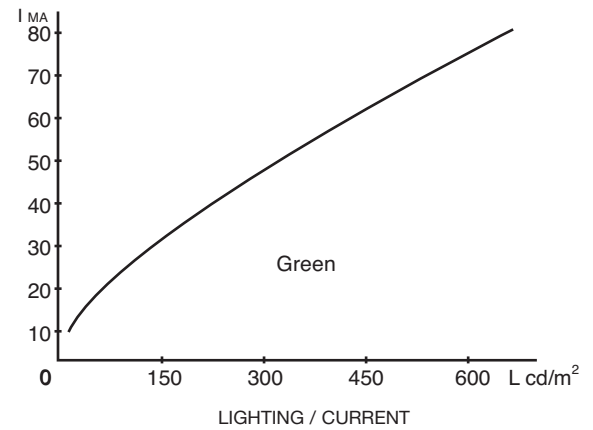
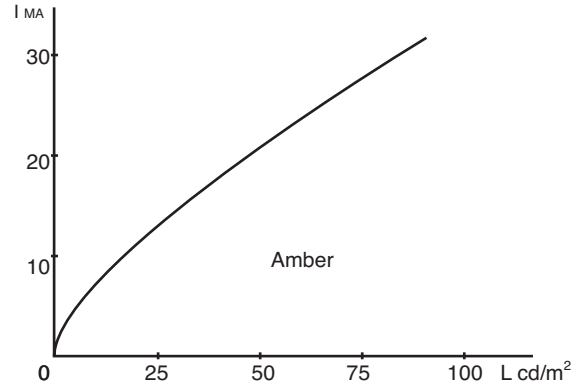
Pushbutton
A

LIGHTING DATA

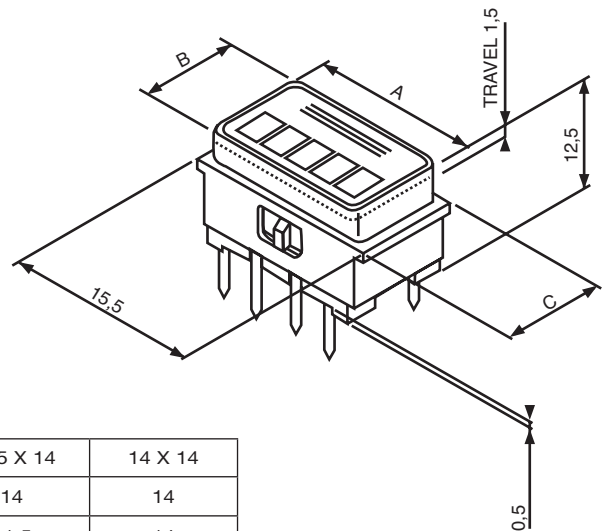
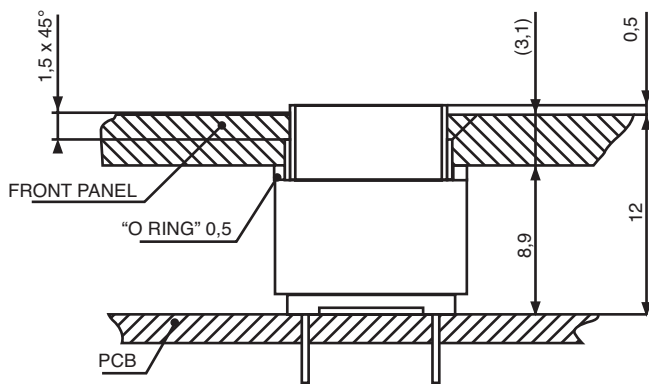
The legends of function and the status indicator can be illuminated separately.

Color		Amber	Green
Wave Length		586 < λ < 592	555 < λ < 560
Current Max		80 mA	80 mA
Chromaticity	X	0,54 < X < 0,58	0,30 < X < 0,40
	Y	0,40 < Y < 0,44	0,6 < Y
Contrast Min.		1,2	0,85

For other colors and displays, please contact Customer Service.



DIMENSIONS (applicable for any size)

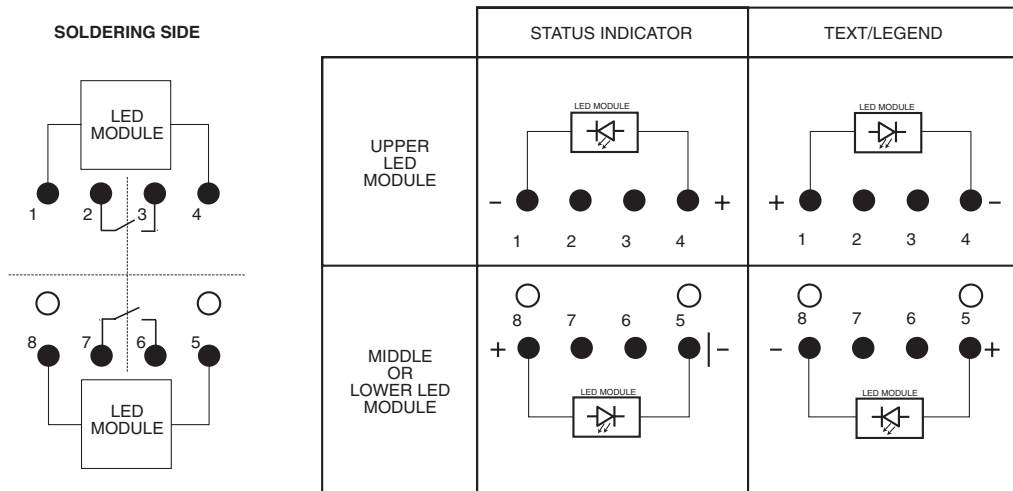


	9,5 X 14	11,5 X 14	14 X 14
A	14	14	14
B	9,5	11,5	14
C	11	11,5	15,5

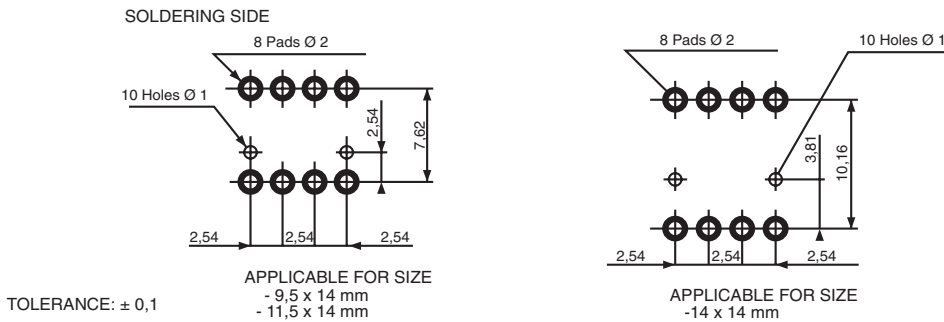
Tolerance: $\pm 0,1$ mm



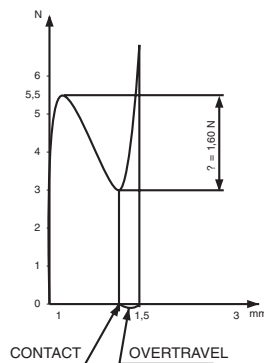
LED MODULE LAYOUT



PCB Layout



TACTILE EFFECT



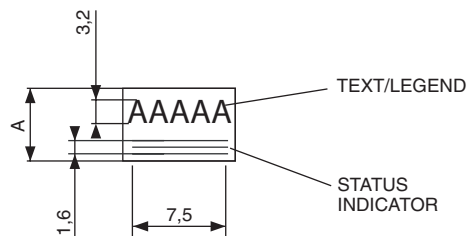
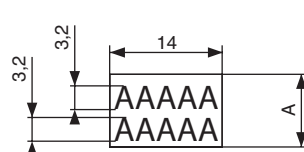
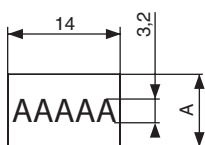
TRAVEL

- TRAVEL TO CONTACT: $1,2 \pm 0,1\text{ mm}$
- OVERTRAVEL: $> 0,3\text{ mm}$
- TOTAL TRAVEL: $1,5 \pm 0,1\text{ mm}$

FORCE

- ACTUATOR FORCE: $5,5\text{ N} \pm 0,5\text{ N}$
- TACTILE FEELING: $1,6\text{ N}$

1 or 2 markings are available in any combination of text / legend or status indicator.





A

Pushbutton

PB Series Single Pole and Multi-Key Pushbutton Switches



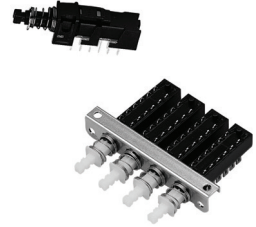
A
Pushbutton

Features/Benefits

- Momentary or latching options
- Reliable contact design
- 2, 4, and 6 pole configurations
- Long travel and extended life cycles

Typical Applications

- Appliances
- Audio and visual equipment
- Consumer electronics
- Industrial equipment



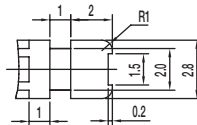
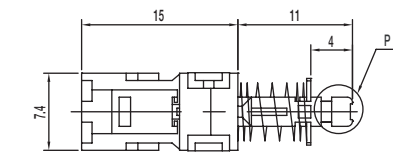
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 250 ± 100 gf (2.45 ± 0.98N)
 LOCK TRAVEL: 2 ± 0.3 mm
 TOTAL TRAVEL: 3 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

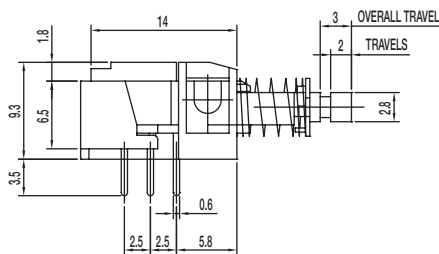
Materials

CASE: PC (UL 94HB)
 PLASTIC CLIP: POM (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated

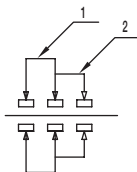
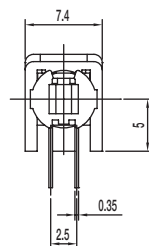
PB-22D01-L 2PDT LOCK / LATCHING



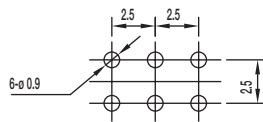
P DETAIL 2:1



2P — 2T



SCHEMATIC



PIERCING PLAN

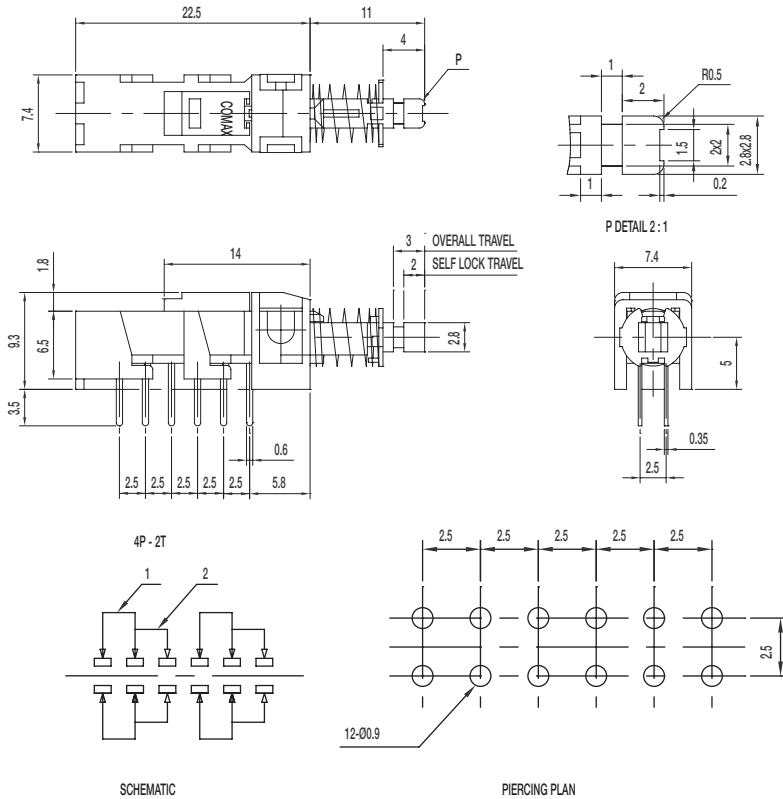


PB Series Single Pole and Multi-Key Pushbutton Switches

Pushbutton

A

PB-42D01-L 4PDT LOCK / LATCHING



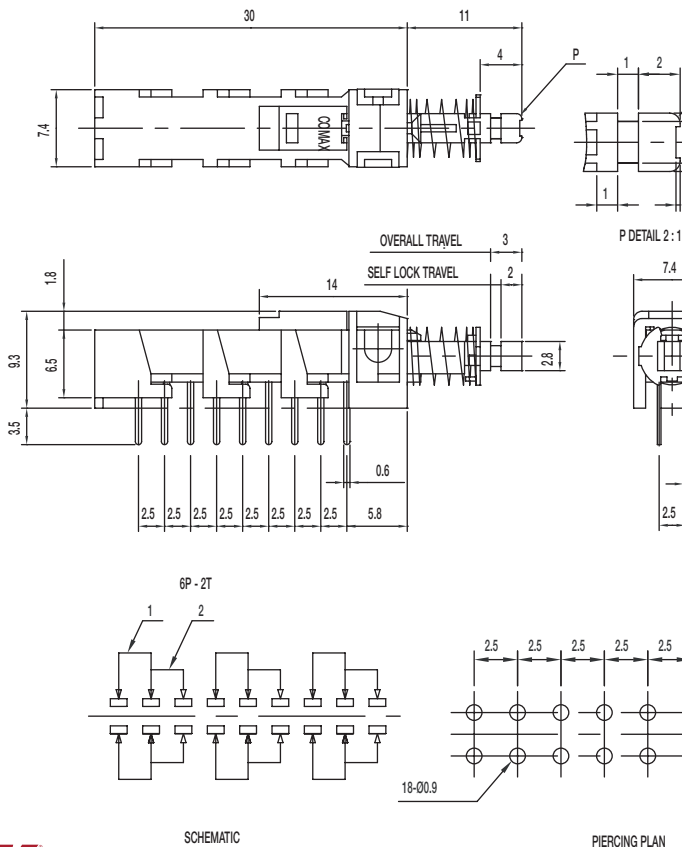
Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
280 ± 100 gf
- LOCK TRAVEL: 2 ± 0.3 mm
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

PB-62D01-L 6PDT LOCK / LATCHING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
300 ± 100 gf (2.94 ± 0.98N)
- LOCK TRAVEL: 2 ± 0.3 mm
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

Dimensions are shown: mm
Specifications and dimensions subject to change

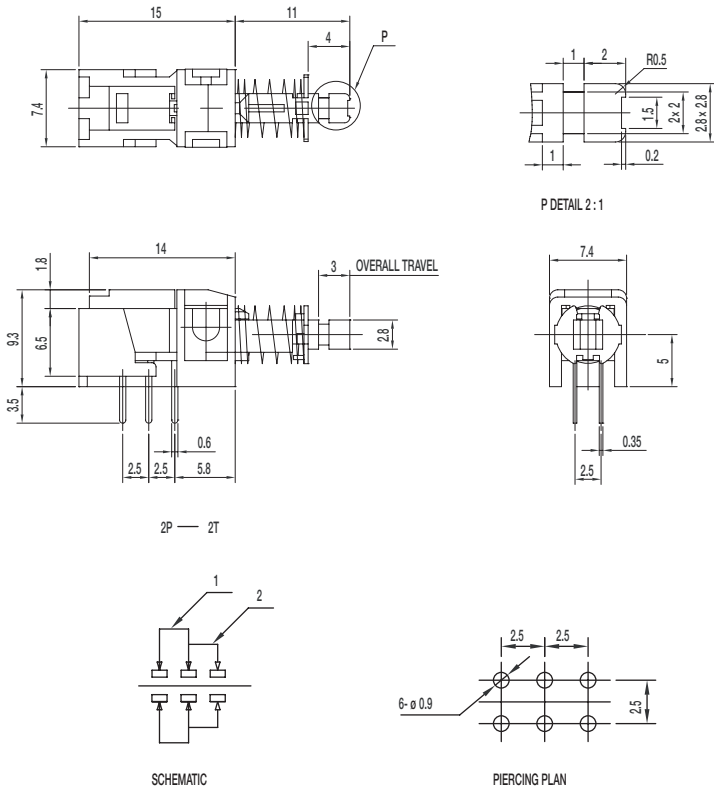


PB Series Single Pole and Multi-Key Pushbutton Switches



A
Pushbutton

PB-22D01-F 2PDT NON-LOCK / MOMENTARY



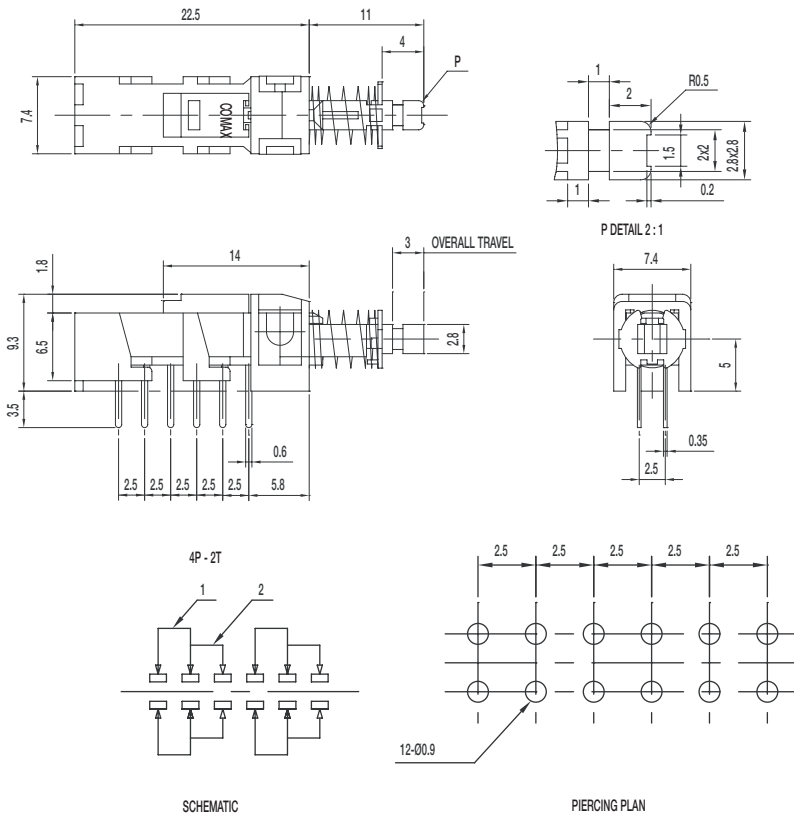
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 250 ± 100 gf (2.45 ± 0.98 N)
 TOTAL TRAVEL: 3 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

CASE: PC (UL 94HB)
 PLASTIC CLIP: POM (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated

PB-42D01-F 4PDT NON-LOCK / MOMENTARY



Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 280 ± 100 gf (2.477 ± 0.98 N)
 TOTAL TRAVEL: 3 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

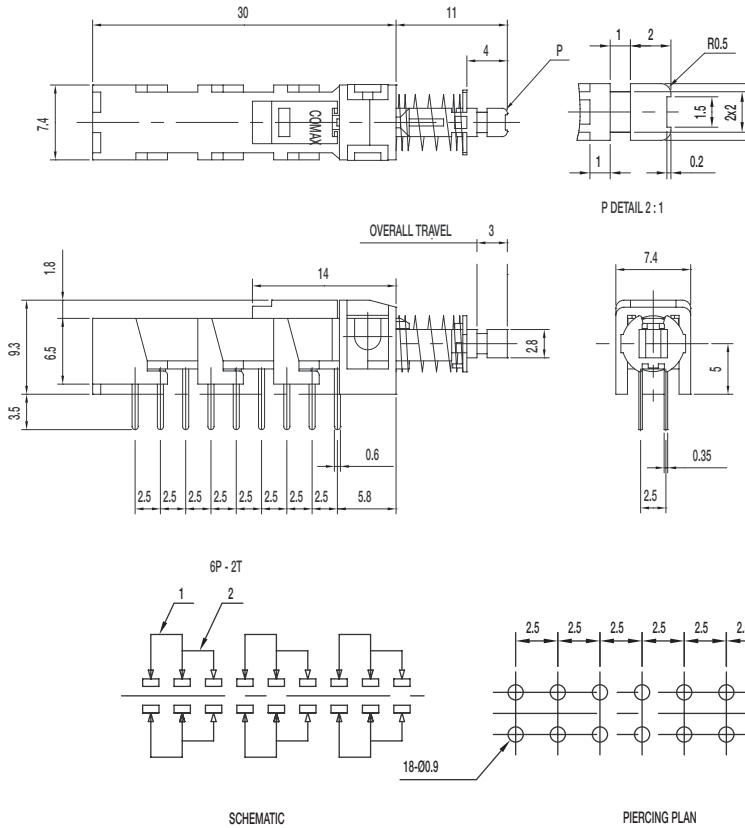
CASE: PC (UL 94HB)
 PLASTIC CLIP: POM (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated



PB Series Single Pole and Multi-Key Pushbutton Switches

Pushbutton
A

PB-62D01-F 6PDT NON-LOCK / MOMENTARY



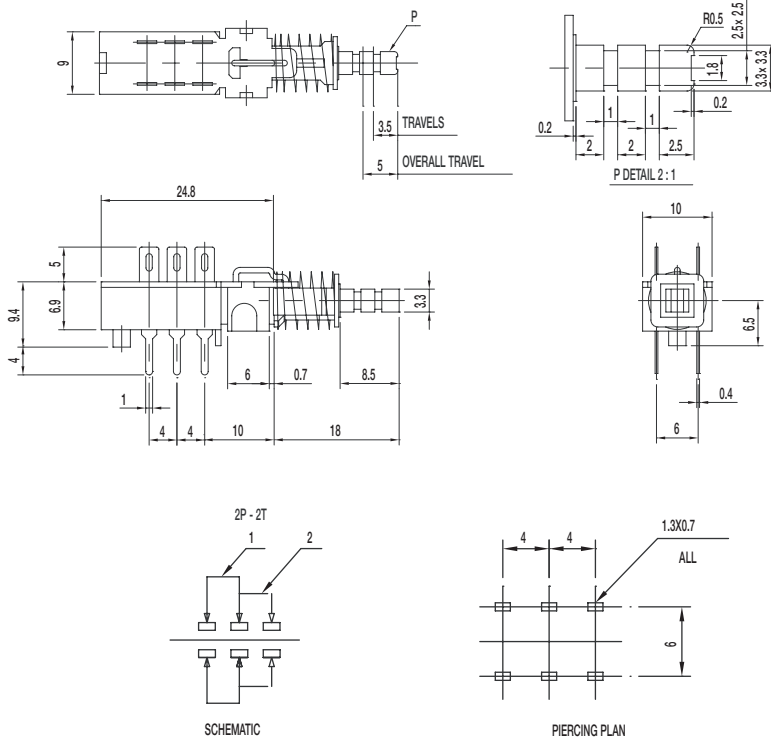
Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

PB-22G02-L 2PDT LOCK / LATCHING



Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE: 350 ± 150 gf (3.43 ± 1.47N)
- LOCK TRAVEL: 3.5 ± 0.3mm
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated



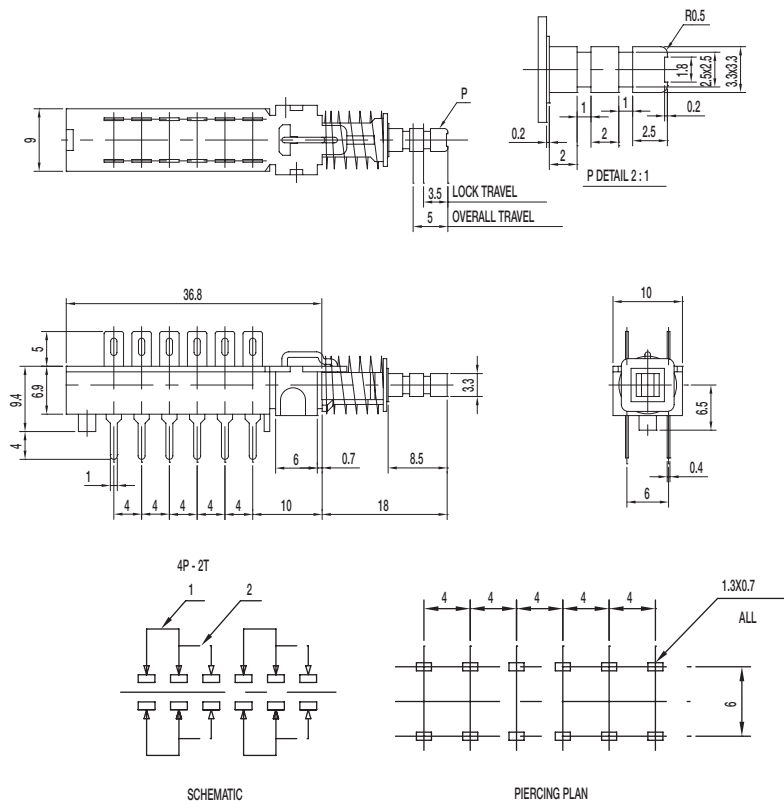
Dimensions are shown: mm
Specifications and dimensions subject to change

PB Series Single Pole and Multi-Key Pushbutton Switches



A
Pushbutton

PB-42G02-L 4PDT LOCK / LATCHING



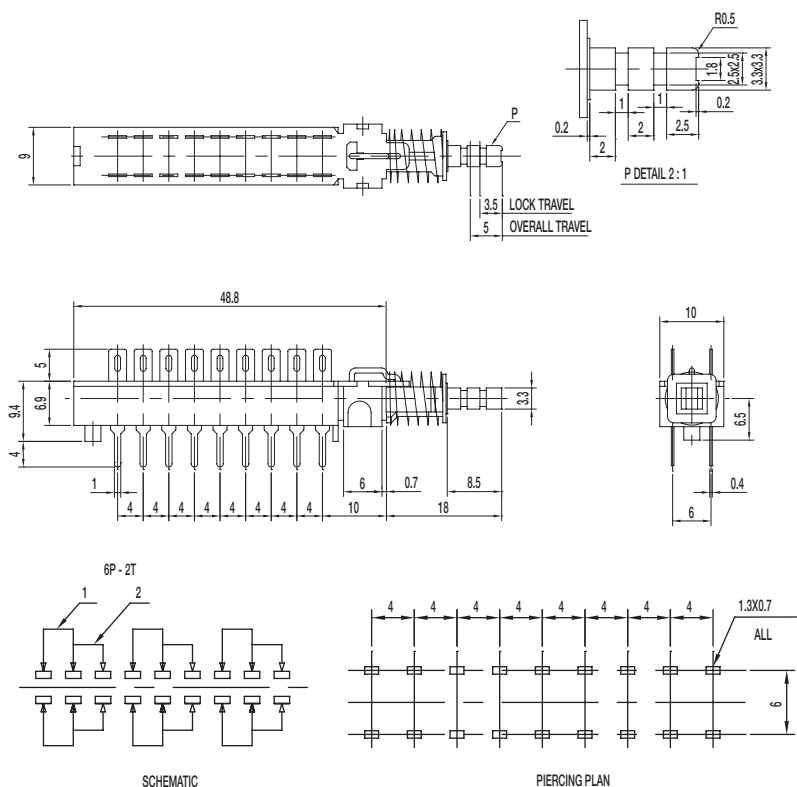
Specifications

CONTACT RATING: 1A @ 25 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 400 ± 150 gf (3.92 ± 1.47 N)
 LOCK TRAVEL: 3.5 ± 0.3 mm
 TOTAL TRAVEL: 5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

HOUSING: PC (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated

PB-62G02-L DPDT LOCK / LATCHING



Specifications

CONTACT RATING: 1A @ 25 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 450 ± 150 gf
 LOCK TRAVEL: 3.5 ± 0.3 mm
 TOTAL TRAVEL: 5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

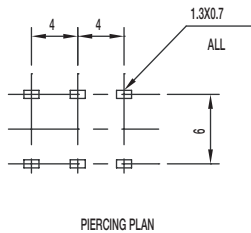
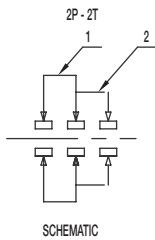
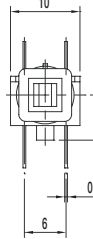
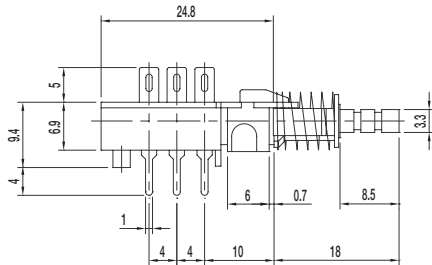
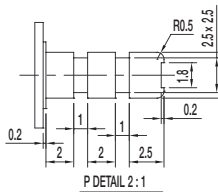
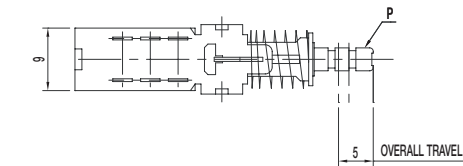
HOUSING: PC (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated



PB Series Single Pole and Multi-Key Pushbutton Switches

Pushbutton
A

PB-22G02-F DPDT NON-LOCK / MOMENTARY



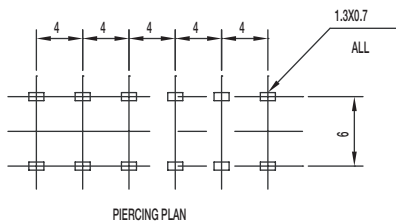
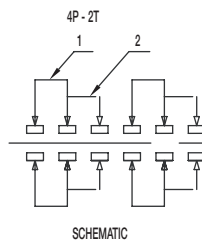
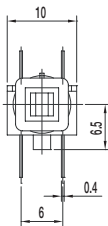
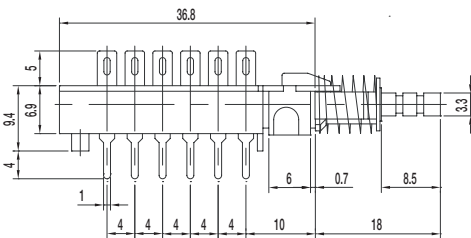
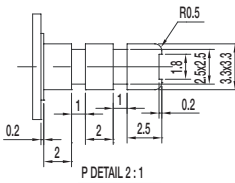
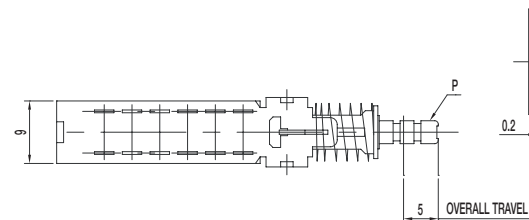
Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
350 ± 150 gf (3.43 ± 1.47N)
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

PB-42G02-F 4PDT NON-LOCK / MOMENTARY



Specifications

- CONTACT RATING: 1A @ 25 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
400 ± 150 gf (3.92 ± 1.47N)
- TOTAL TRAVEL: 5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

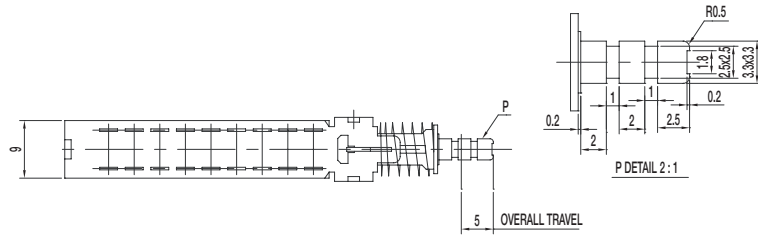
- HOUSING: PC (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

PB Series Single Pole and Multi-Key Pushbutton Switches



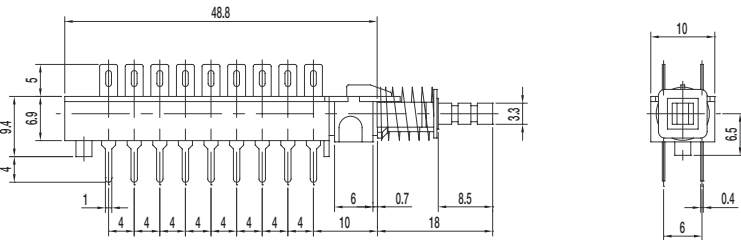
A
Pushbutton

PB-62G02-F 6PDT NON-LOCK / MOMENTARY



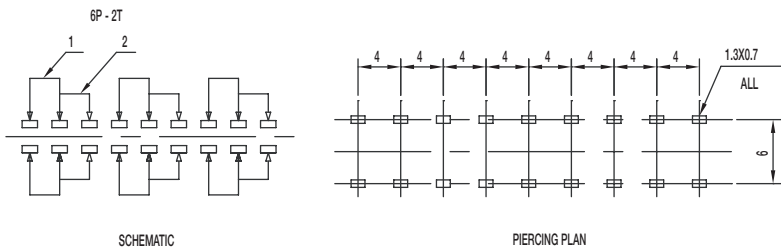
Specifications

CONTACT RATING: 1A @ 25 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles without load
 OPERATING FORCE:
 450 ± 150 gf (4.41 ± 1.47N)
 TOTAL TRAVEL: 5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

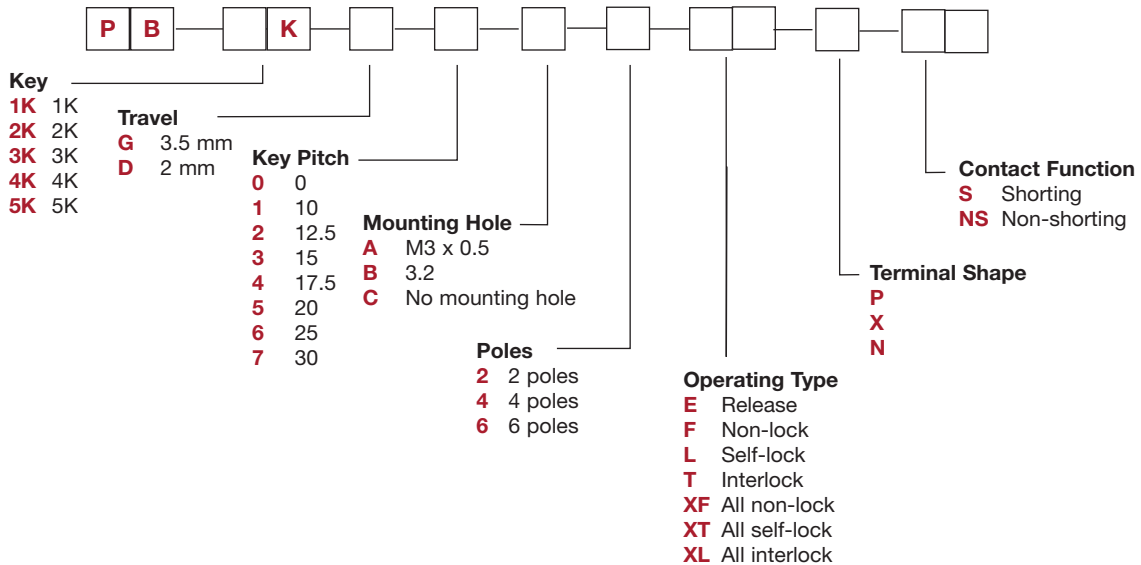


Materials

HOUSING: PC (UL 94HB)
 SPRING: SUS
 KNOB: POM
 TERMINAL: Silver plated



PB Multi-Key Series



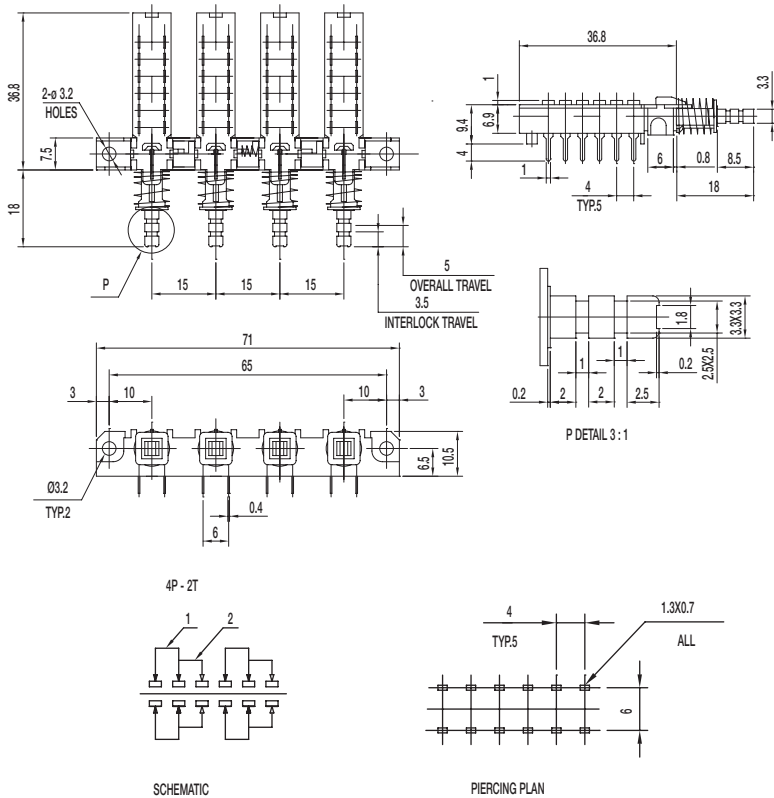
Dimensions are shown: mm
 Specifications and dimensions subject to change



PB Series Single Pole and Multi-Key Pushbutton Switches

PB Multi-Key Series

Pushbutton
A



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE:
250 ± 100 gf (2.45 ± 0.98N)
- TOTAL TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- CASE: PC (UL 94HB)
- PLASTIC CLIP: POM (UL 94HB)
- SPRING: SUS
- KNOB: POM
- TERMINAL: Silver plated

PS-12G Series Pushbutton Switches



A
Pushbutton

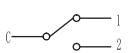
Features/Benefits

- Latching pushbutton
- Non-shorting with lock
- 5 mm travel
- SPDT

Typical Applications

- Automotive interior lighting
- Computer peripherals
- Appliances



PART NUMBER	PACKAGING	SCHEMATIC
PS-12G01	200 pieces	

Dimensions

FOOTPRINT: 14 X 16.8 mm

HEIGHT: 18 mm

Specifications

CONTACT RATING: 1A @ 14 VDC

INITIAL CONTACT RESISTANCE: 100 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 20,000 cycles with load

OPERATING FORCE: 400 ± 100 gf

OPERATING POSITION: 3.6 ± 0.2 mm

TOTAL TRAVEL: 5 ± 0.3 mm

OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM (UL 94HB)

HOUSING: PBT (UL 94V-0)

COVER: PBT (UL 94V-0)

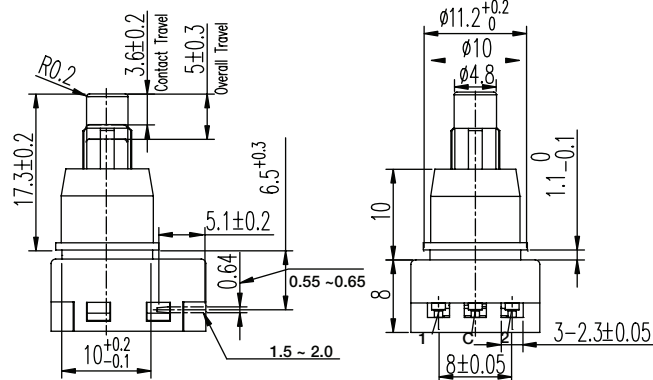
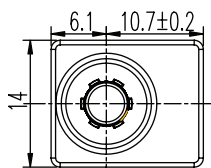
ROTOR: PBT (UL 94V-0)

SLIDER: POM (UL 94HB)

TERMINAL: Phosphor bronze, silver plated

SPRING: Stainless steel

CONTACT: Phosphor bronze, silver plated





PS-12G Series Pushbutton Switches

Pushbutton
A



PART NUMBER	PACKAGING	SCHEMATIC
PS-12G03	200 pieces	

Dimensions

FOOTPRINT: 14 X 16.8 mm

HEIGHT: 18.3 mm

Specifications

CONTACT RATING: 2.2A @ 14.5 VDC

INITIAL CONTACT RESISTANCE: 50 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 20,000 cycles with load

OPERATING FORCE: 650 ± 300 gf

OPERATING POSITION: 4.00 ± 0.2 mm

TOTAL TRAVEL: 4.5 ± 0.3 mm

OPERATING TEMPERATURE: -40°C to 85°C

Materials

KNOB: POM (UL 94HB)

HOUSING: PBT & PA (UL 94V-0)

COVER: PBT (UL 94V-0)

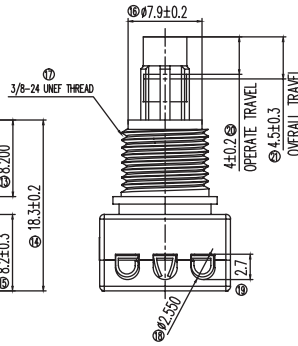
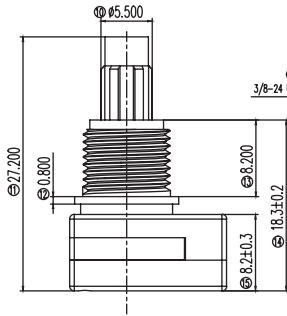
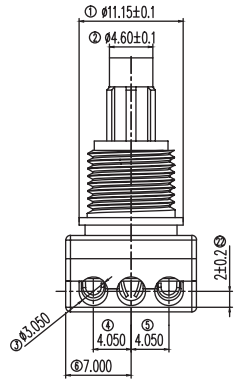
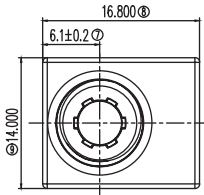
ROTOR: PBT (UL 94V-0)

SLIDER: POM (UL 94HB)

TERMINAL: Brass, silver plated

SPRING: Stainless steel

CONTACT: Phosphor bronze, silver plated



TYCO .062 Commercial Pin
and Socket Connector
PT# 770983-1

PS-22 Series Subminiature Pushbutton Switches



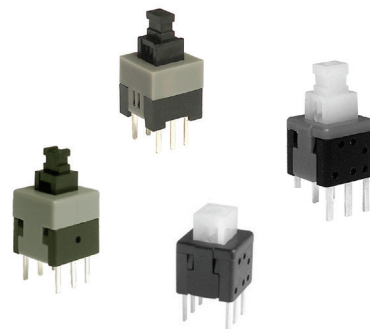
A
Pushbutton

Features/Benefits

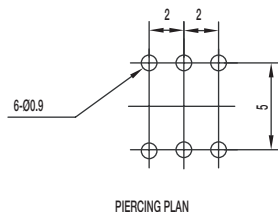
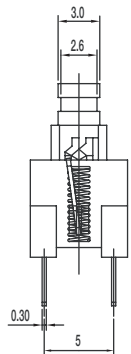
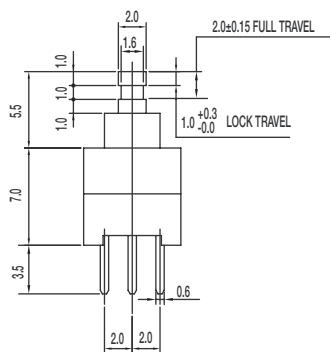
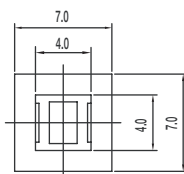
- Compact miniature push switch
- Momentary or latching options
- Shorting or non-shorting
- DPDT

Typical Applications

- Industrial
- Automotive
- Audio and visual equipment



PART NUMBER	PACKAGING	SCHEMATIC
PS-2203-L NS PA	1,000 pieces	
PS-2203-F NS PA	1,000 pieces	



Dimensions

FOOTPRINT: 7.0 x 7.0 mm

HEIGHT: 12.5 mm

Specifications

CONTACT RATING: 0.1A @ 30 VDC

INITIAL CONTACT RESISTANCE: 30 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:

200 ± 100 gf (1.96 ± 0.98N)

LOCK TRAVEL: 1 mm

TOTAL TRAVEL: 2 mm

OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM Black

HOUSING: PA Black

COVER: POM Grey (latch) / White (Mom)

TERMINAL: Brass, silver plated

CONTACT CLIP: Phosphor bronze, silver plated

SPRING: Stainless steel

HOOK LOCK: Stainless steel (latch)



PS-22 Series Subminiature Pushbutton Switches

Pushbutton
A



PART NUMBER	PACKAGING	SCHEMATIC
PS-2206-L NS PA	1,000 pieces	
PS-2206-F NS PA	1,000 pieces	

Dimensions

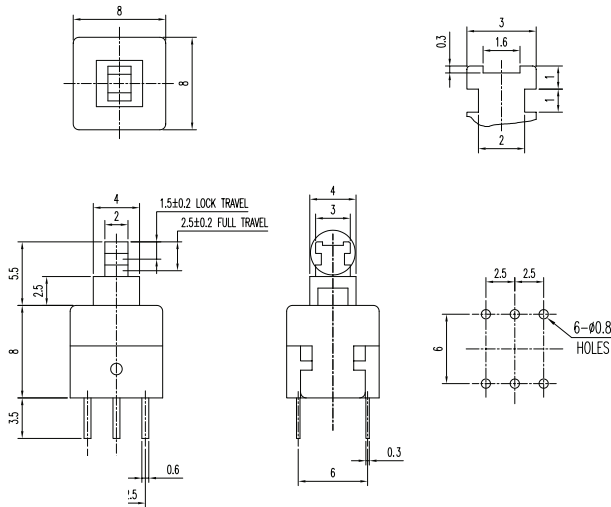
FOOTPRINT: 8.0 x 8.0 mm
HEIGHT: 13.5 mm

Specifications

CONTACT RATING: 0.1A @ 30 VDC
INITIAL CONTACT RESISTANCE: 70 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
OPERATING LIFE: 10,000 cycles with load
OPERATING FORCE:
200 ± 100 gf (1.96 ± 0.98N)
LOCK TRAVEL: 1.5 mm
TOTAL TRAVEL: 2.5 mm
OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM Black
HOUSING: PA Black
COVER: POM Grey (latch) / White (Mom)
TERMINAL: Brass, silver plated
CONTACT CLIP: Phosphor bronze., silver plated
SPRING: Stainless steel
HOOK LOCK: Stainless steel (latch)



PART NUMBER	PACKAGING	SCHEMATIC
PS-2214-L NS PA	1,000 pieces	
PS-2214-F NS PA	1,000 pieces	

Dimensions

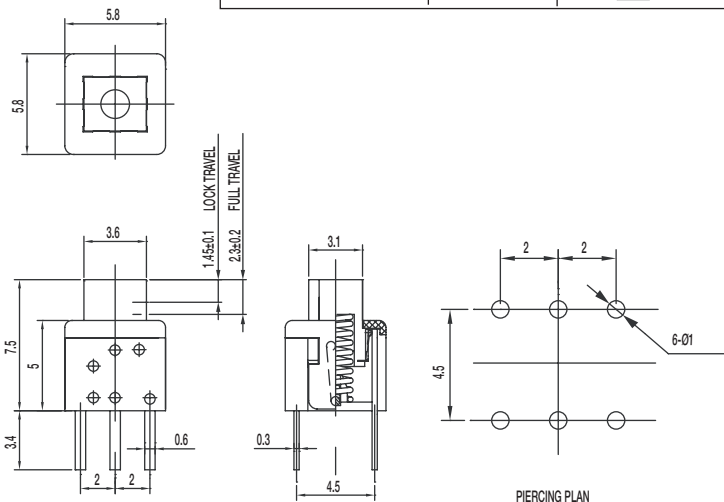
FOOTPRINT: 5.8 x 5.8 mm
HEIGHT: 7.5 mm

Specifications

CONTACT RATING: 0.1A @ 30 VDC
INITIAL CONTACT RESISTANCE: 80 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
OPERATING LIFE: 10,000 cycles with load
OPERATING FORCE:
150 ± 50 gf (1.47 ± 0.49N)
LOCK TRAVEL: 1.45 mm
TOTAL TRAVEL: 2.3 mm
OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM Natural (latch) / PA black
HOUSING: PA Black
COVER: PA Black
TERMINAL: Brass, silver plated
CONTACT CLIP: Phosphor bronze, silver clad
SPRING: Stainless steel
HOOK LOCK: Stainless steel (latch)



PS-22 Series Subminiature Pushbutton Switches



A
Pushbutton



PART NUMBER	PACKAGING	SCHEMATIC
PS-221605-L NS	1,000 pieces	
PS-221605-F NS	1,000 pieces	

Dimensions

FOOTPRINT: 5.8 x 5.8 mm

HEIGHT: 10 mm

Specifications

CONTACT RATING: 0.1A @ 30 VDC / 2A @ 2 VDC

INITIAL CONTACT RESISTANCE: 80 m ohms max.

INSULATION RESISTANCE: 100 M ohms min.

DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.

OPERATING LIFE: 10,000 cycles with load

OPERATING FORCE:
150 ± 50 gf (1.47 ± 0.49N)

LOCK TRAVEL: 1.3 mm

TOTAL TRAVEL: 2.1 mm

OPERATING TEMPERATURE: -20°C to 70°C

Materials

KNOB: POM Natural

HOUSING: PA Black

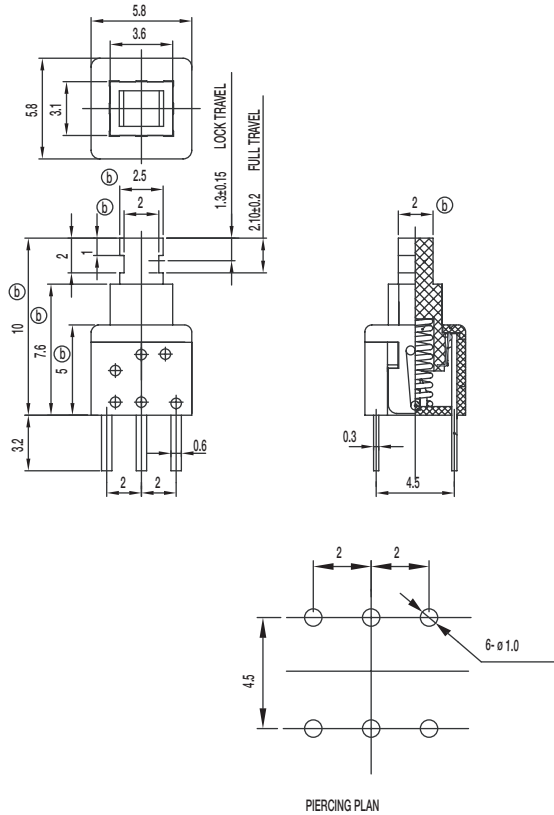
COVER: PC Grey

TERMINAL: Bras, silver plated

CONTACT CLIP: Phosphor bronze, silver clad

SPRING: Stainless steel

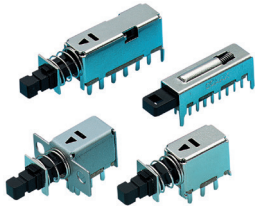
HOOK LOCK: Stainless steel (latch)





PS Series Miniature Pushbutton Switches

Pushbutton
A



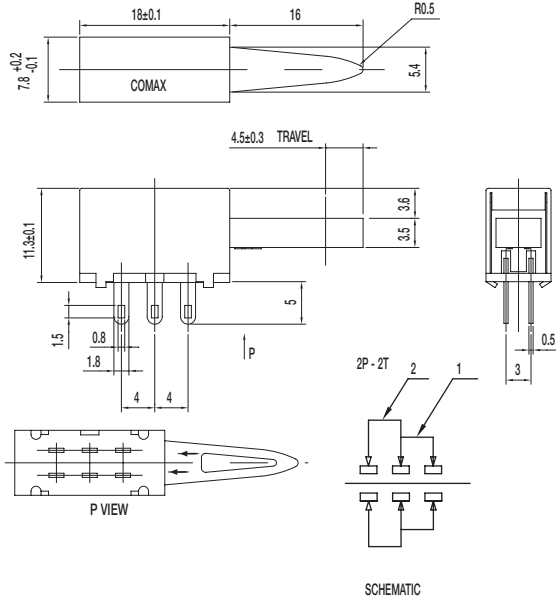
Features/Benefits

- Miniature size
- Momentary or latching options
- Broad range of products

Typical Applications

- Industrial
- Automotive
- Audio and visual equipment
- Telecommunications

PS-22105 DPDT NON-SHORTING



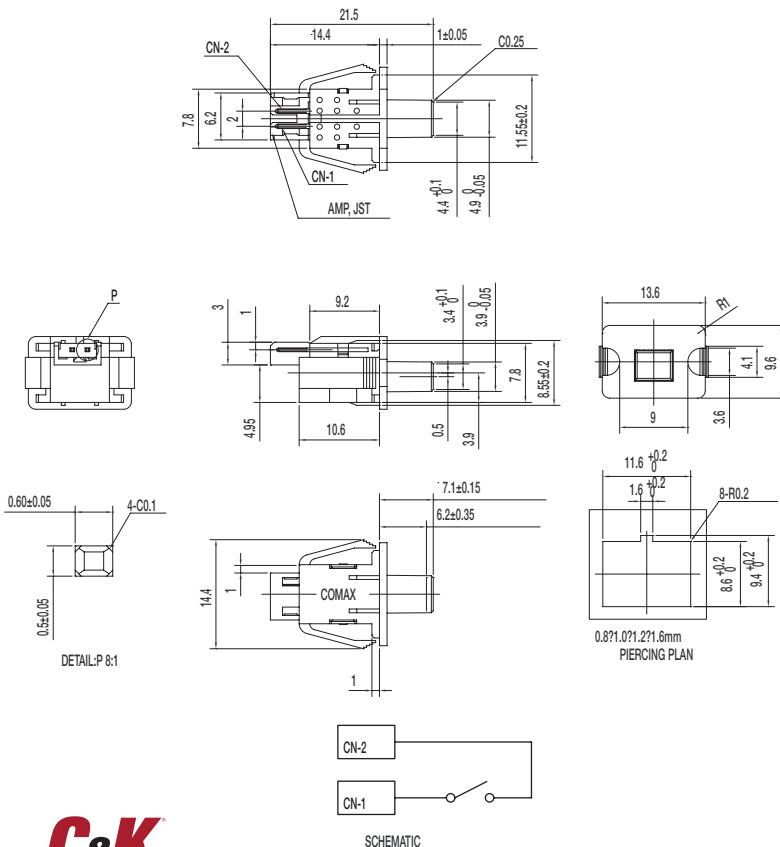
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 400 ± 150 gf (3.92 ± 1.47N)
 TOTAL TRAVEL: 4.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SECC
 KNOB: POM (UL 94HB)
 CONTACT PLATE: Silver clad
 SPRING: SUS
 TERMINAL: Silver plated

PS-12C02-F NS SPST NON-SHORTING



Specifications

CONTACT RATING: 100 μ A @ 3 VDC min. / 10mA @ 5 VDC max
 INITIAL CONTACT RESISTANCE: 100 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 100,000 cycles with load
 OPERATING FORCE: 50 ± 15 gf (0.49 ± 0.147N)
 PRE-TRAVEL: 6.20 ± 0.35 mm
 OPERATING TEMPERATURE: -40°C to 85°C

Materials

KNOB: POM (UL 94HB)
 COVER: PA (UL 94V-0)
 HOUSING: PA (UL 94V-0)
 SPRING: SUS
 TERMINAL: Silver plated



11 Jun 18

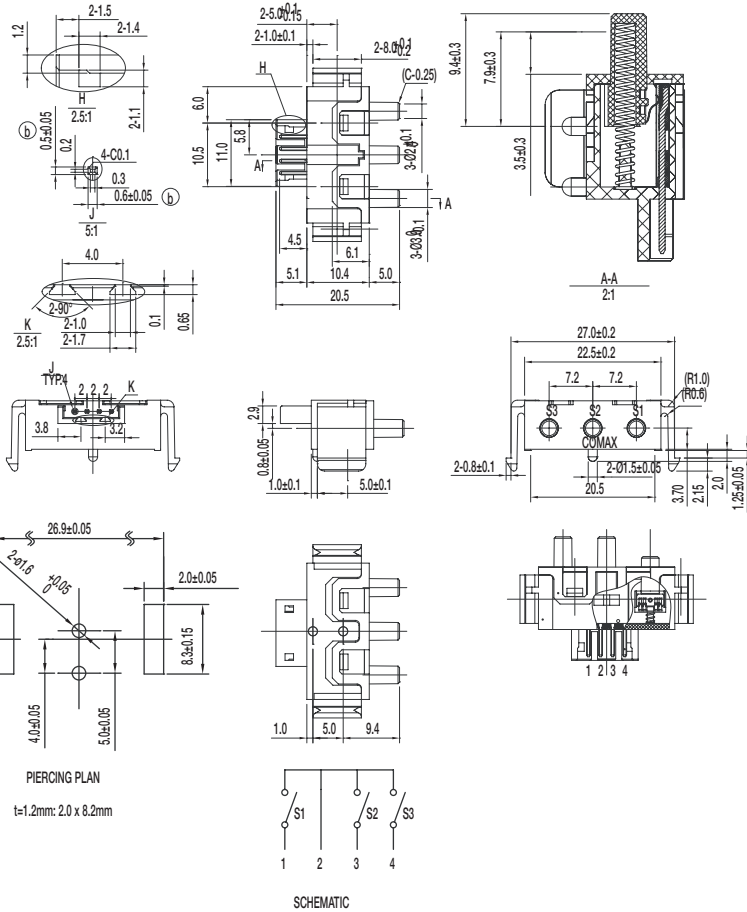
Dimensions are shown: mm
 Specifications and dimensions subject to change

PS Series Miniature Pushbutton Switches



A
Pushbutton

PS-32C02-F NS 1P3T NON-SHORTING



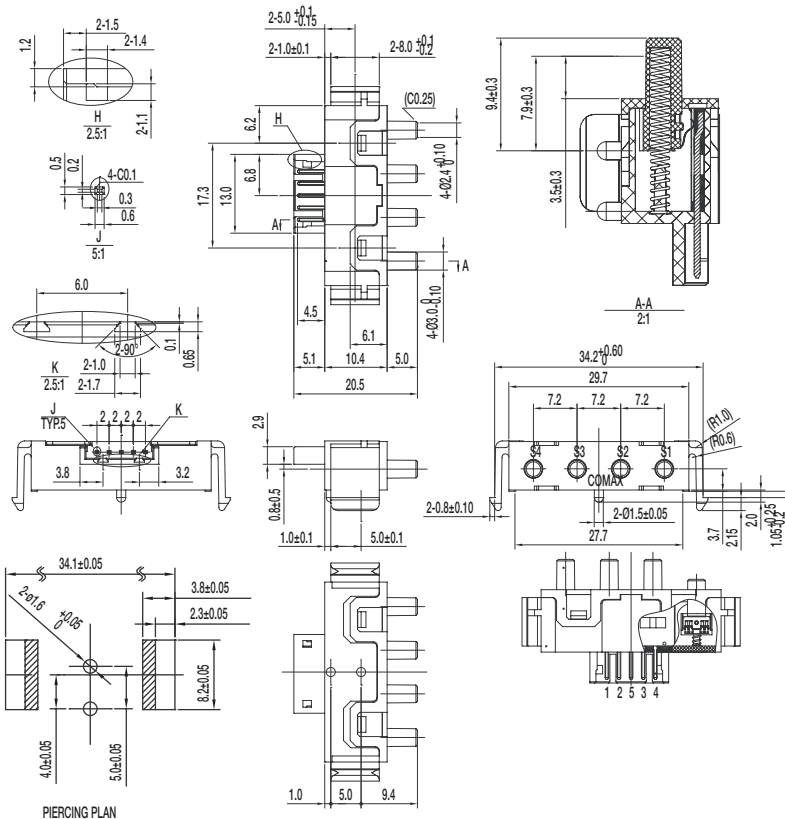
Specifications

CONTACT RATING: 100 μ A @ 3 VDC min. /
10mA @ 5 VDC max
INITIAL CONTACT RESISTANCE: 100 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 250 V AC (50-60 Hz)
between open terminals and between the
frame and terminal.
OPERATING LIFE: 100,000 cycles with load
OPERATING FORCE: 80 \pm 20 gf (0.784 \pm 0.196N)
PRE-TRAVEL: 1.5 \pm 0.3 mm
OVER-TRAVEL: 3.5 \pm 0.3 mm
TOTAL TRAVEL: 5 \pm 0.3 mm
OPERATING TEMPERATURE: -20°C to 65°C

Materials

KNOB: POM (UL 94HB)
COVER: PA (UL 94V-0)
HOUSING: PA (UL 94V-0)
SPRING: SUS
TERMINAL: Silver plated

PS-42C02-F NS 1P4T NON-SHORTING



Specifications

CONTACT RATING: 100 μ A @ 3 VDC min. /
10mA @ 5 VDC max
INITIAL CONTACT RESISTANCE: 100 m ohms max.
INSULATION RESISTANCE: 100 M ohms min.
DIELECTRIC STRENGTH: 250 V AC (50-60 Hz) between
open terminals and between the frame and terminal.
OPERATING LIFE: 100,000 cycles with load
OPERATING FORCE: 80 \pm 20 gf (0.784 \pm 0.196N)
PRE-TRAVEL: 1.5 \pm 0.3 mm
OVER-TRAVEL: 3.5 \pm 0.3 mm
TOTAL TRAVEL: 5 \pm 0.3 mm
OPERATING TEMPERATURE: -20°C to 65°C

Materials

KNOB: POM (UL 94HB)
COVER: PA (UL 94V-0)
HOUSING: PA (UL 94V-0)
SPRING: SUS
TERMINAL: Silver plated

11 Jun 18

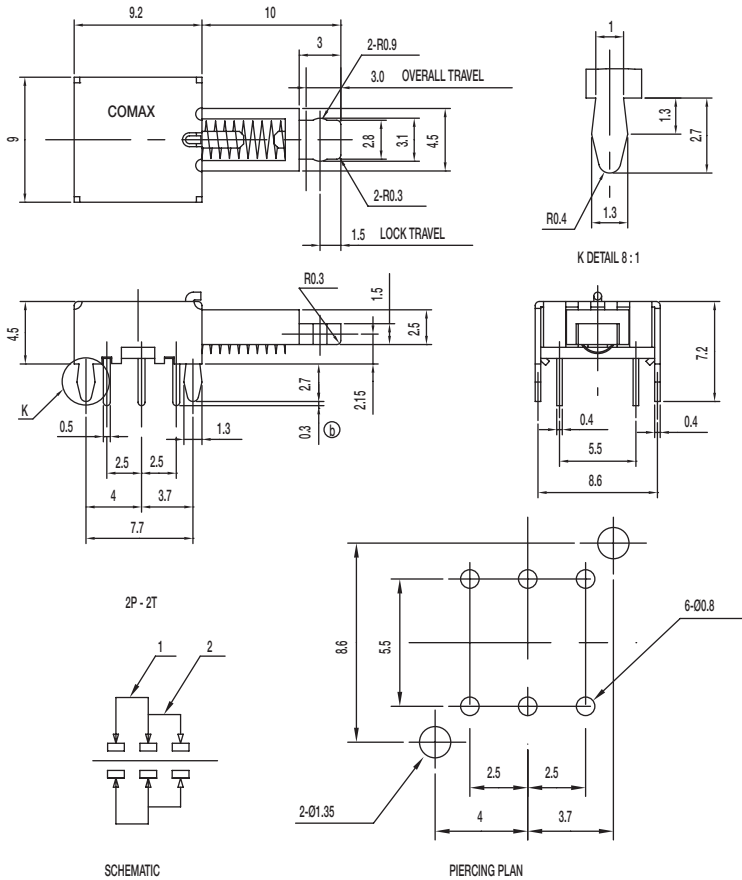
Dimensions are shown: mm
Specifications and dimensions subject to change



PS Series Miniature Pushbutton Switches

Pushbutton A

PS-22C08-G10 NS DPDT NON-SHORTING



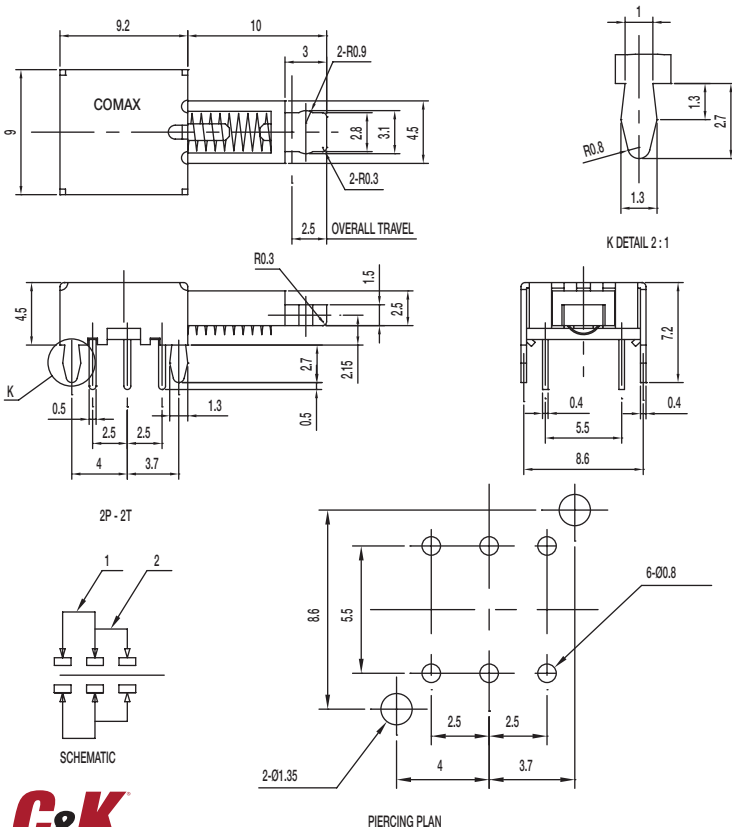
Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
- LOCK TRAVEL: 1.5 ± 0.3 mm
- OVER-TRAVEL: 3 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: SUS
- TERMINAL: Silver plated

PS-22E08-G10 NS DPDT NON-SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles without load
- OPERATING FORCE: 200 ± 100 gf (1.96 ± 0.98N)
- TOTAL TRAVEL: 2.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: SUS
- TERMINAL: Silver plated



11 Jun 18

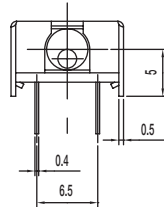
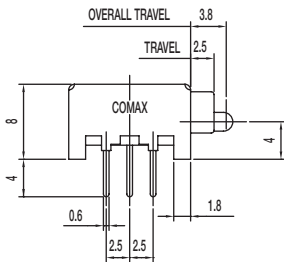
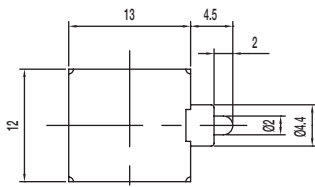
Dimensions are shown: mm
Specifications and dimensions subject to change

PS Series Miniature Pushbutton Switches

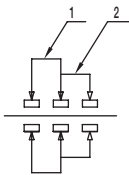


A
Pushbutton

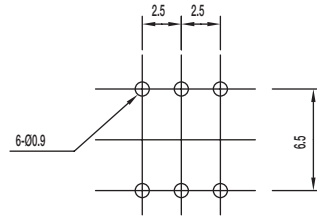
PS-22E09-G 4.5 NS DPDT NON-SHORTING



2P - 2T



SCHEMATIC



PIERCING PLAN

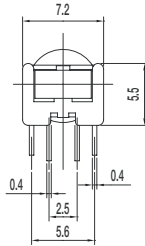
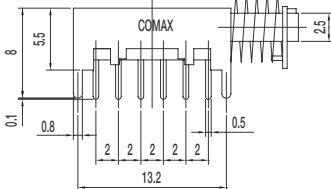
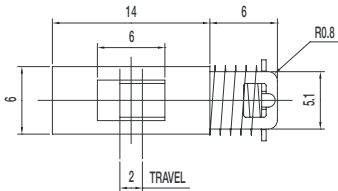
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 70 ± 20 gf (0.686 ± 0.196 N)
 TRAVEL: 2.5 ± 0.3 mm
 TOTAL TRAVEL: 3.8 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

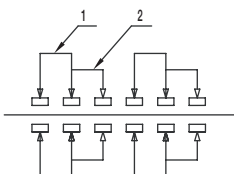
Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: SUS
 TERMINAL: Silver plated

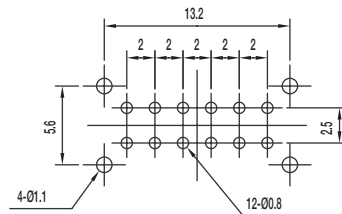
PS-42D09-NS 4P2T NON-SHORTING



4P - 2T



SCHEMATIC



PIERCING PLAN

Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98 N)
 TRAVEL: 2 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

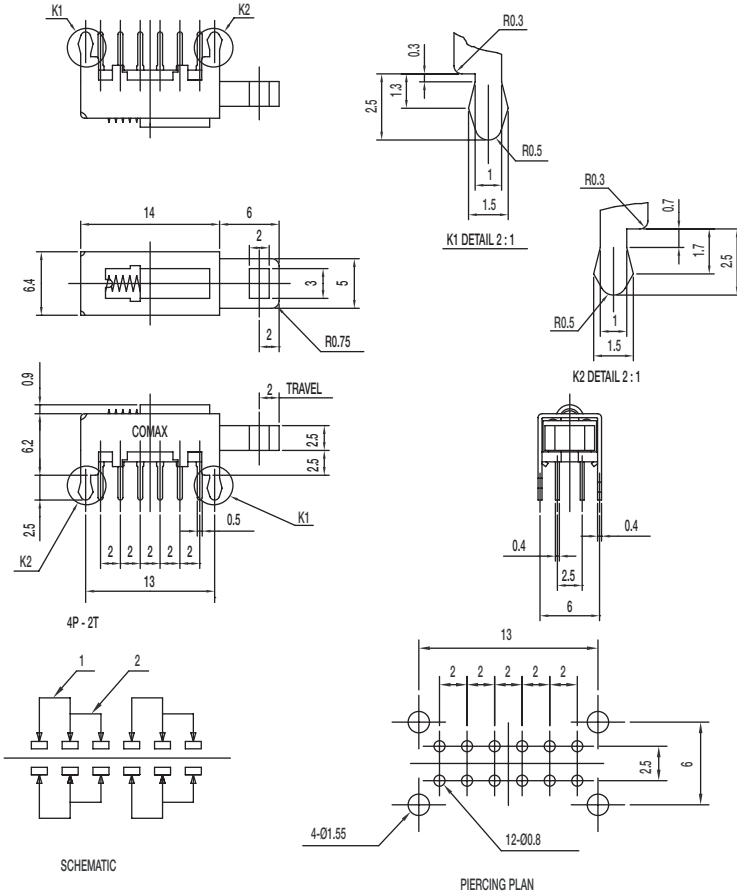
FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT PLATE: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated



PS Series Miniature Pushbutton Switches

Pushbutton
A

PS-42D13-NS 4P2T NON-SHORTING



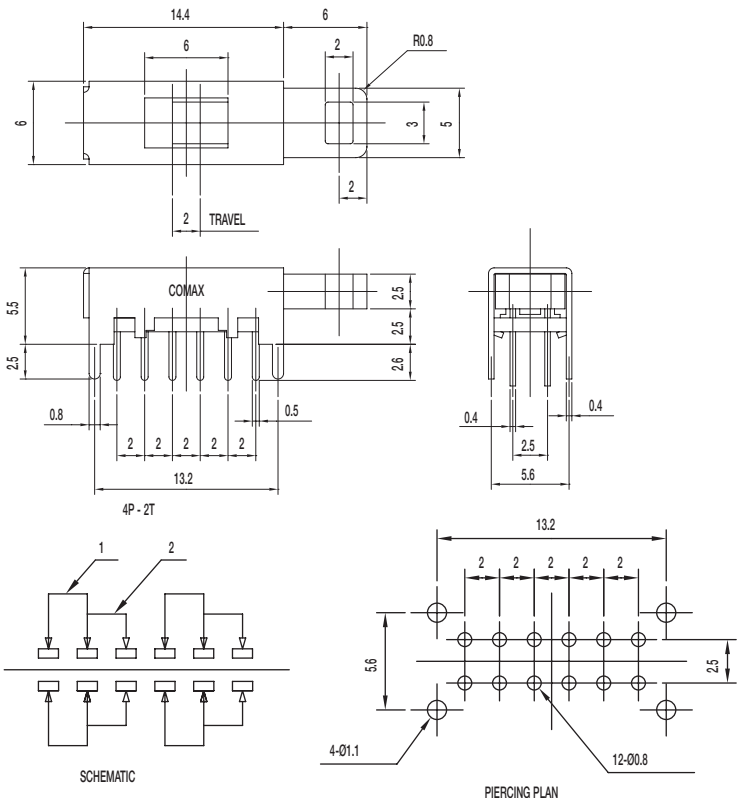
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
 TRAVEL: 2 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated

PS-42D16-S 4P2T SHORTING



Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 60 ± 30 gf (0.59 ± 0.29N)
 TRAVEL: 2 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 TERMINAL: Silver plated

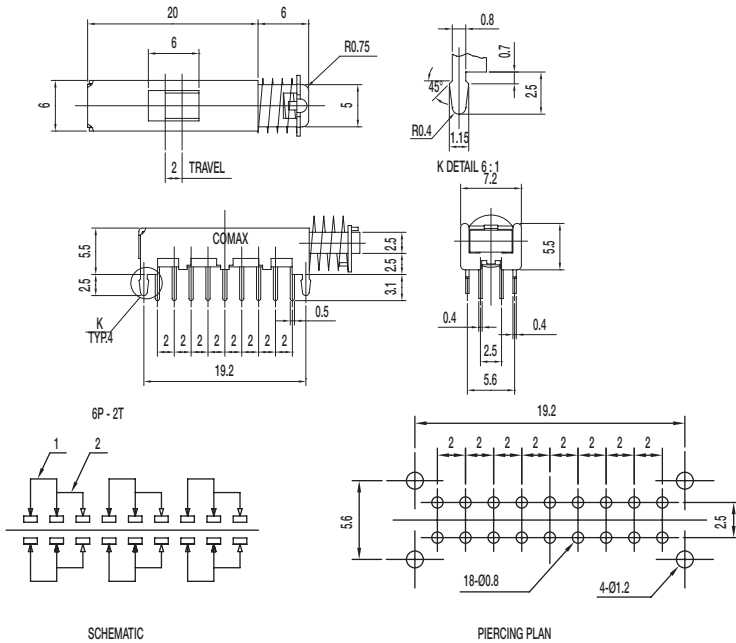


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Dimensions are shown: mm
 Specifications and dimensions subject to change



PS-62D10-S 6P2T SHORTING



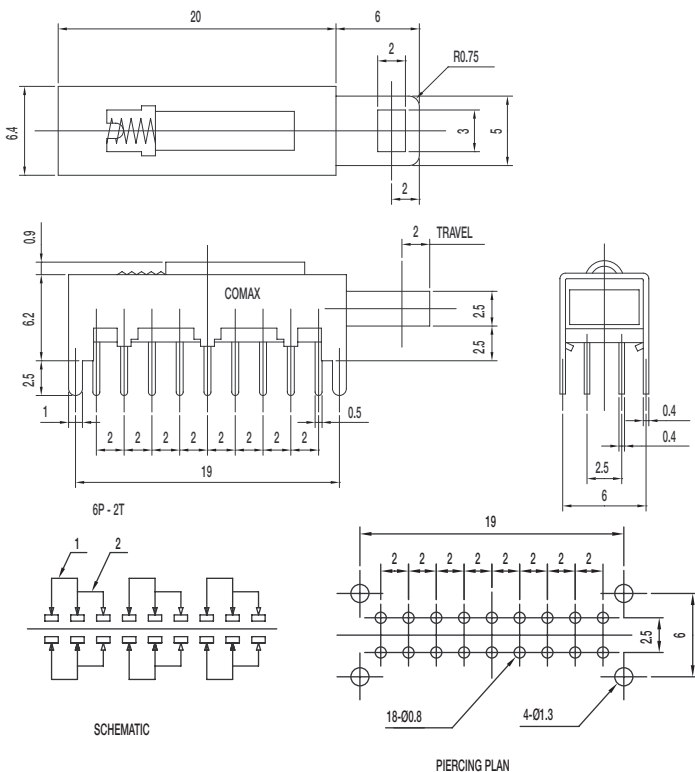
Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

PS-62D13-S 6P2T SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

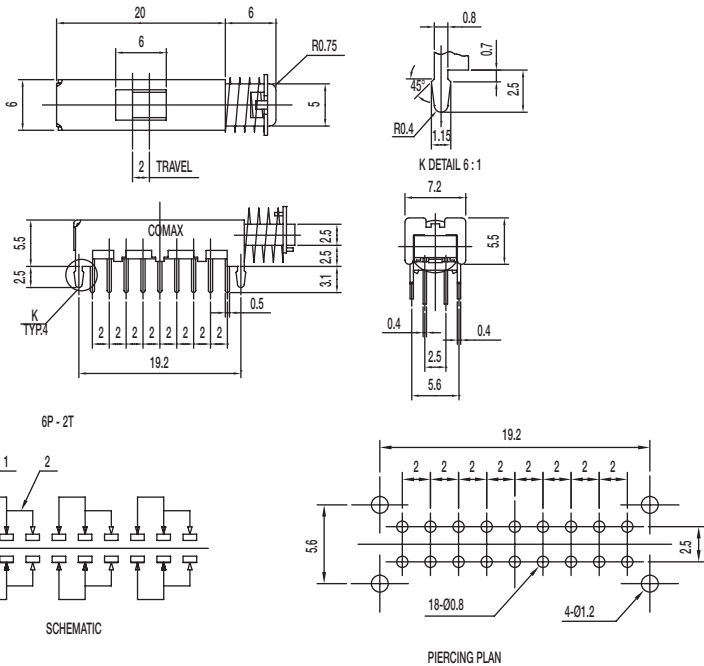
- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT PLATE: Silver plated
- SPRING: Steel
- TERMINAL: SUS



PS Series Miniature Pushbutton Switches

Pushbutton
A

PS-62D15-S 6P2T SHORTING



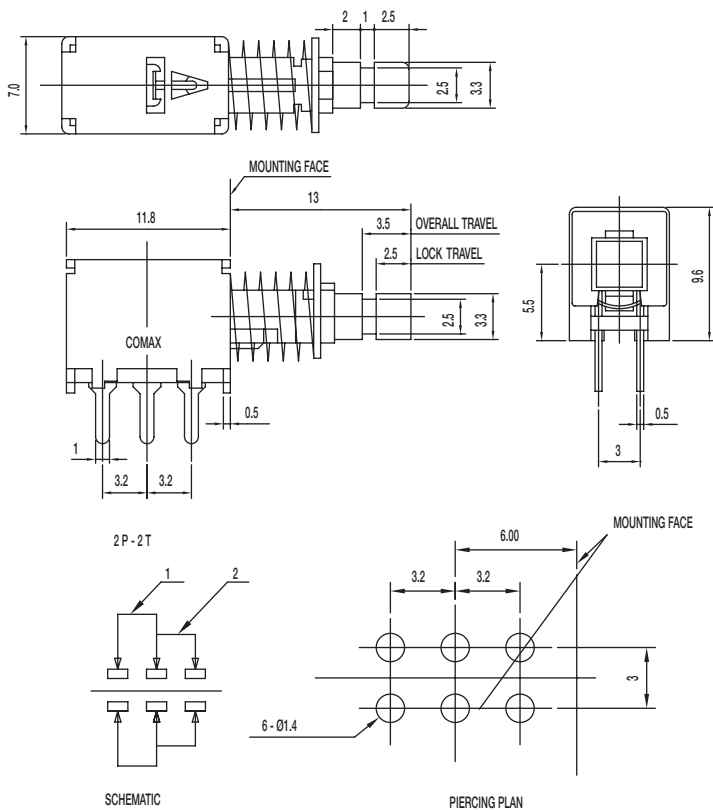
Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 250 ± 100 gf (2.45 ± 0.98N)
- TRAVEL: 2 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

PS-22E02-G13 S DPDT SHORTING WITH LOCK



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
- LOCK TRAVEL: 2.5 ± 0.3 mm
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

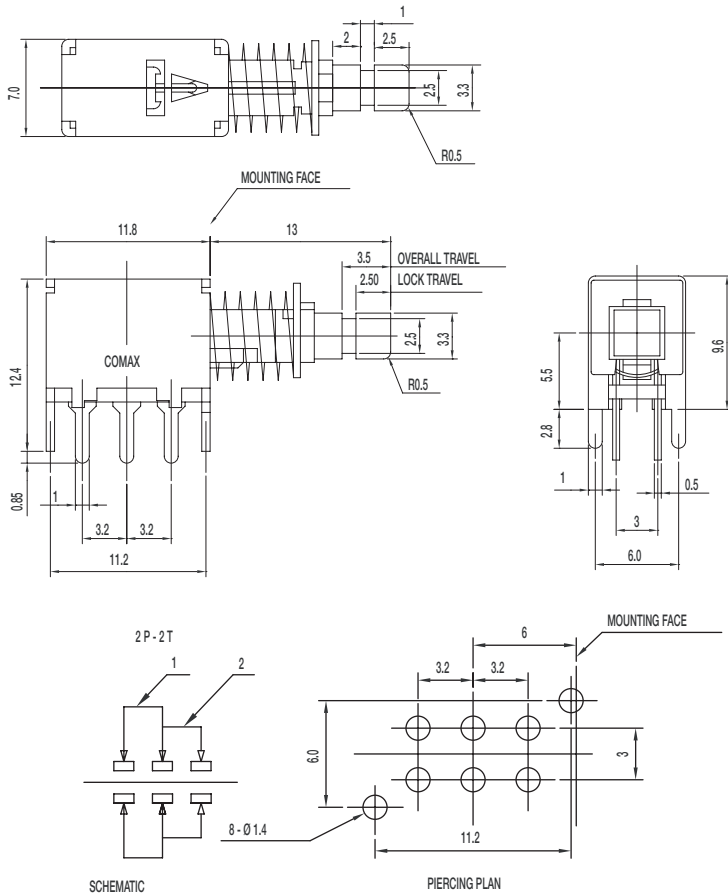


PS Series Miniature Pushbutton Switches



A
Pushbutton

PS-22E04-G13 NS DPDT NON-SHORTING WITH LOCK



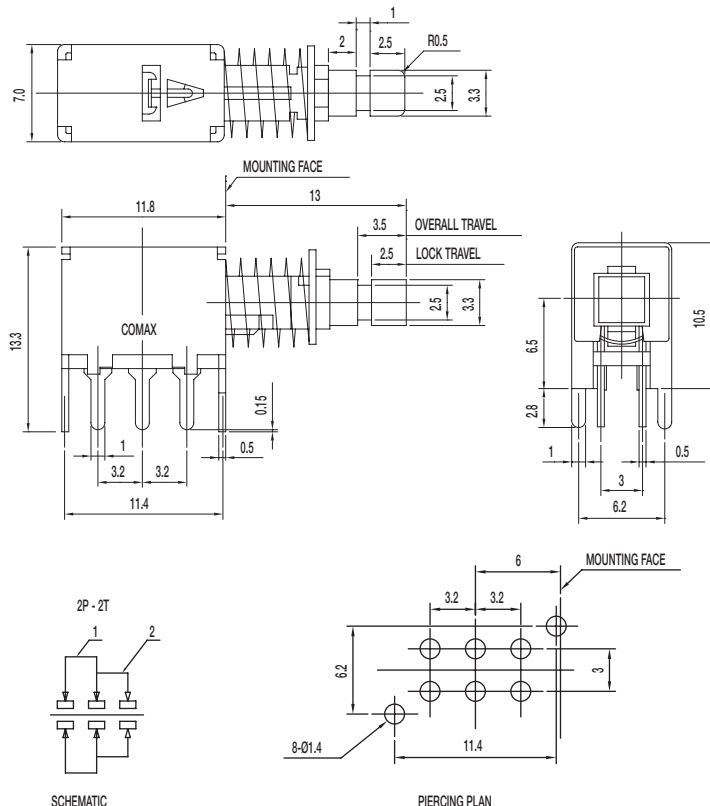
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
 LOCK TRAVEL: 2.5 ± 0.3 mm
 TOTAL TRAVEL: 3.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated

PS-22E44-G13 NS DPDT NON-SHORTING WITH LOCK



Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
 LOCK TRAVEL: 2.5 ± 0.3 mm
 TOTAL TRAVEL: 3.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated



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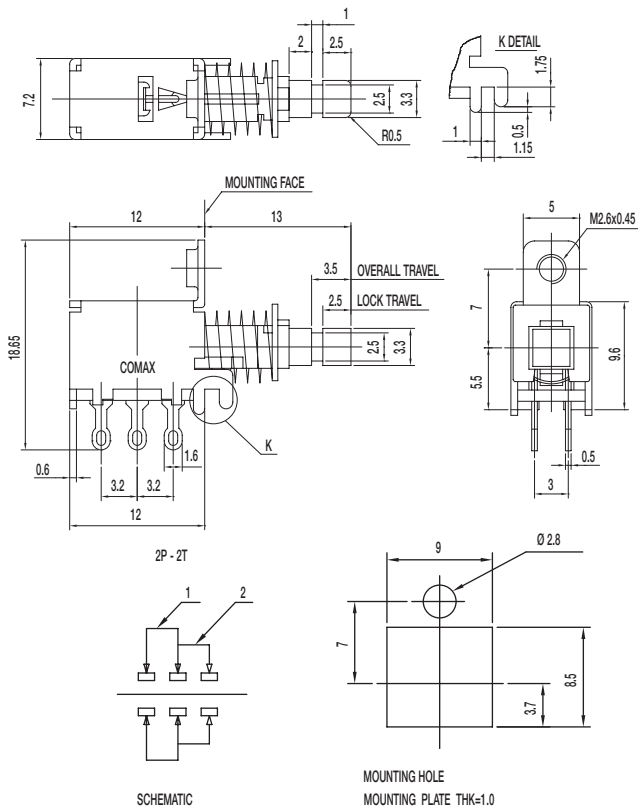
Dimensions are shown: mm
 Specifications and dimensions subject to change



PS Series Miniature Pushbutton Switches

Pushbutton

PS-22E75-G13 NS DPDT NON-SHORTING WITH LOCK



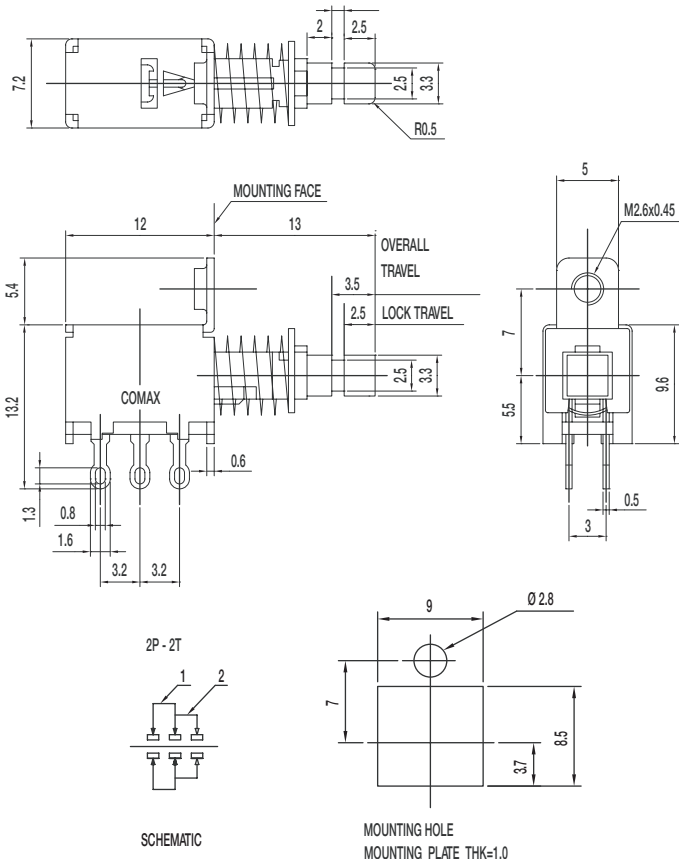
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
 LOCK TRAVEL: 2.5 ± 0.3 mm
 TOTAL TRAVEL: 3.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated

PS-22E95-G13 NS DPDT NON-SHORTING WITH LOCK



Specifications

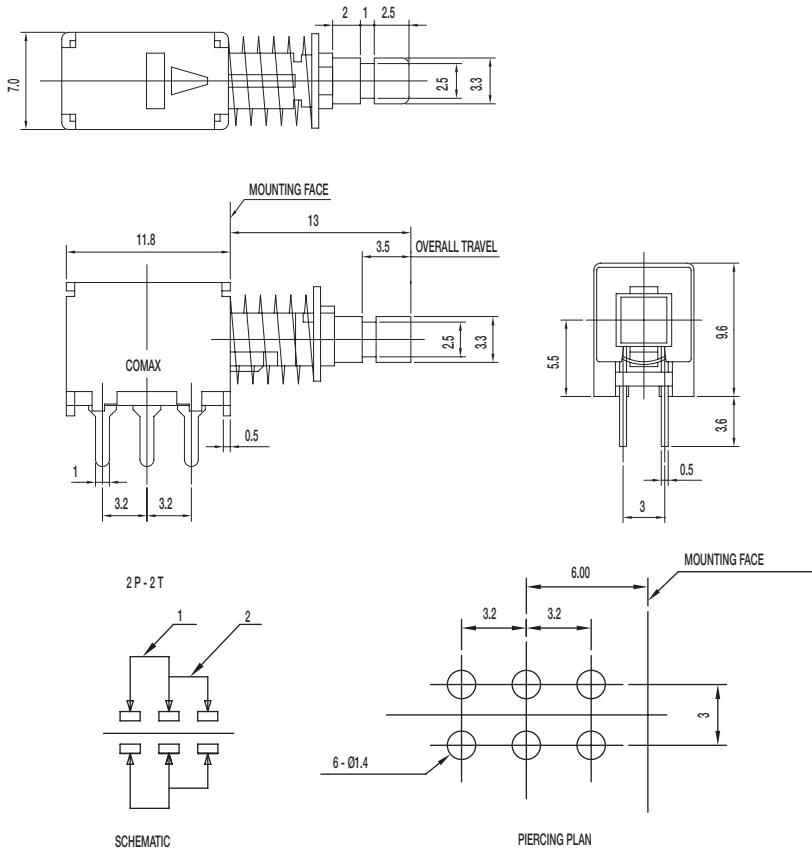
CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
 LOCK TRAVEL: 2.5 ± 0.3 mm
 TOTAL TRAVEL: 3.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated



PS-22F02-G13 S DPTT SHORTING



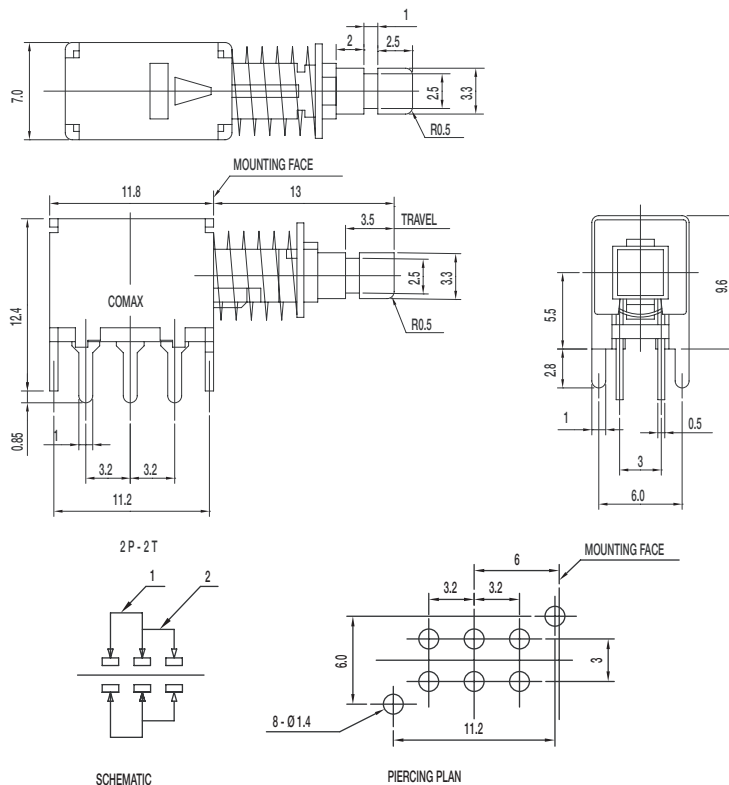
Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz)
 between openterminals and between the frame
 and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
 TOTAL TRAVEL: 3.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated

PS-22F04-G13 NS DPTT NON_SHORTING



Specifications

CONTACT RATING: 0.3A @ 30 VDC
 INITIAL CONTACT RESISTANCE: 30 m ohms max.
 INSULATION RESISTANCE: 100 M ohms min.
 DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open
 terminals and between the frame and terminal.
 OPERATING LIFE: 10,000 cycles with load
 OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98N)
 TOTAL TRAVEL: 3.5 ± 0.3 mm
 OPERATING TEMPERATURE: -20°C to 70°C

Materials

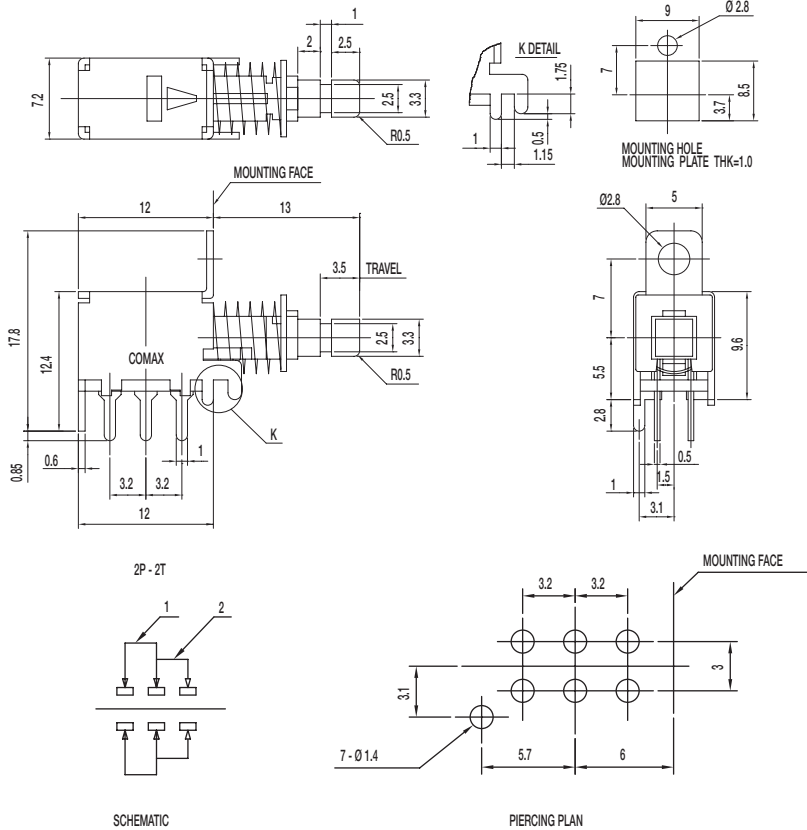
FRAME: SPCC
 KNOB: POM (UL 94HB)
 CONTACT: Silver plated
 SPRING: Steel
 TERMINAL: Silver plated



PS Series Miniature Pushbutton Switches

Pushbutton

PS-22F24-G13 NS DPDT NON_SHORTING



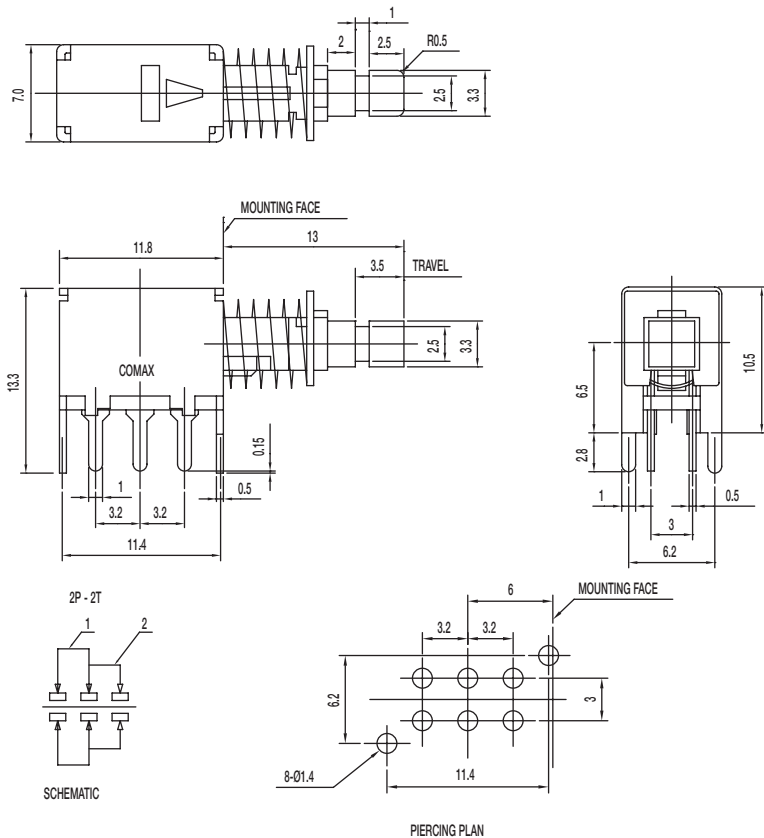
Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98 N)
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

PS-22F44-G13 NS DPDT NON_SHORTING



Specifications

- CONTACT RATING: 0.3A @ 30 VDC
- INITIAL CONTACT RESISTANCE: 30 m ohms max.
- INSULATION RESISTANCE: 100 M ohms min.
- DIELECTRIC STRENGTH: 500 V AC (50-60 Hz) between open terminals and between the frame and terminal.
- OPERATING LIFE: 10,000 cycles with load
- OPERATING FORCE: 300 ± 100 gf (2.94 ± 0.98 N)
- TOTAL TRAVEL: 3.5 ± 0.3 mm
- OPERATING TEMPERATURE: -20°C to 70°C

Materials

- FRAME: SPCC
- KNOB: POM (UL 94HB)
- CONTACT: Silver plated
- SPRING: Steel
- TERMINAL: Silver plated

PVA Short Stroke Key Switches



A Pushbutton

Features/Benefits

- Compact design
- Short stroke to latch
- Wide variety of actuator heights
- Adapted for medium power applications
- RoHS compliant and compatible

Typical Applications

- Automotive (air conditioning, lighting)
- Industrial
- Control panel



Construction

FUNCTION: Momentary, Push-Push
 CONTACT ARRANGEMENT:
 PVA1: 2 make contacts (DPST)
 PVA2: 2 change over contacts (DPDT)
 SWITCHING MODE: Non-shorting
 TERMINALS: PC pins¹

Mechanical

TOTAL TRAVEL / LATCHING TRAVEL:
 OA: 2,4 mm
 EE: 2,4 / 1,5 mm
 ELECTRICAL TRAVEL: 0.8 mm (1.1 for PVA2 OA H5)
 OPERATING FORCE: 1,2N; 1,7N; 3,5N

Process

SOLDERABILITY:
 Wave soldering, compatible with lead free soldering profile
 Hand soldering, 350°C for 3 seconds

Note: Specifications listed above are for switches with standard options.
 For information on specific and custom switches, please contact technical support using the "Ask a Specialist" option on the PVA product web page.v

Electrical

SWITCHING POWER MAX.: 3 W DC
 SWITCHING VOLTAGE MAX.: 32 V DC
 SWITCHING CURRENT MAX.: 100 mA DC*
 DIELECTRIC STRENGTH (50 Hz / 1 min):
 1000 V between open contacts, PVA2: 750 V
 OPERATING LIFE:
 OA (momentary): $\geq 1 \times 10^5$ operations
 EE (push-push): $\geq 1 \times 10^6$ operations
 CONTACT RESISTANCE: Initial $\leq 100 \text{ m}\Omega$
 INSULATION RESISTANCE: $\geq 10^{10} \Omega$
 BOUNCE TIME: $\leq 3 \text{ ms}$

Environmental

OPERATING TEMPERATURE: -40°C to 85°C.²

- 1) "Snap-in" contacts on request, Version SNA with pins bent inside (standard)
- 2) With button +70°C

How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box. **Some of the configurations may not be available or could require some development.**

Switch



Button

Buttons must be ordered separately.
 Shipped in bulk.



*Compatible with H1 and H3 actuator models only.



PVA Short Stroke Key Switches

A

SERIES



Pushbutton

PVA1 (DPST)



PVA2 (DPDT)



MECHANICAL FUNCTION

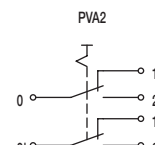


OPTION CODE	FUNCTION
OA	Momentary
EE	Push-Push

OA



EE



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Dimensions are shown: mm
Specifications and dimensions subject to change

PVA Short Stroke Key Switches



A

Pushbutton

TOTAL HEIGHT



H1 17,5 MM



H2 23 MM



H3 20,5 MM



H4 15 MM



H5 13 MM
(MOMENTARY ONLY)



OPERATING FORCE



- 1.2N** PVA1 ONLY
- 1.7N** PVA2 ONLY
- 3.5N**

TERMINATION



SNA with PVA1



SNA with PVA2



BUTTONS



BUTTONS MUST BE ORDERED SEPARATELY. SHIPPED IN BULK.

PE



PV



OPTION CODE	COLOR
RD	Red
GY	Gray
BK	Black
WH	White