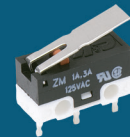
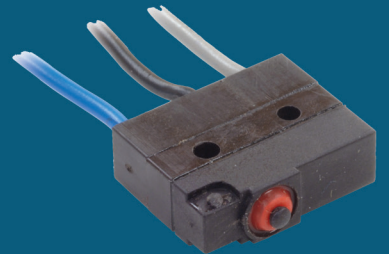
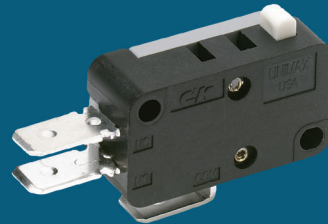
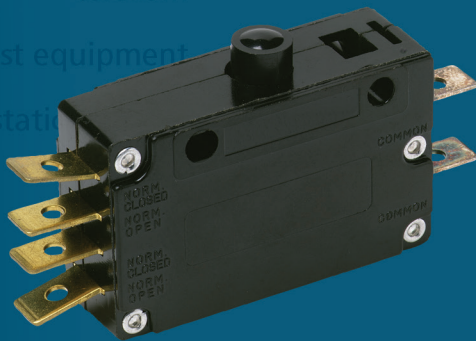
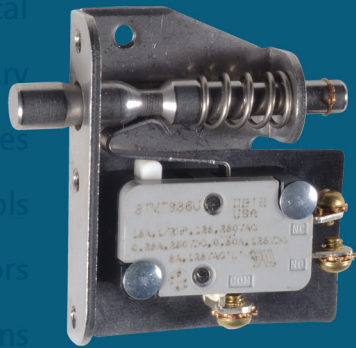
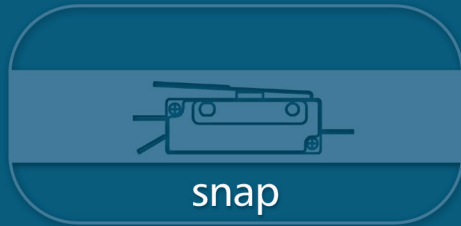










audio
automotive
aerospace
communication devices
consumer appliances
consumer electronics
datacom
data storage
handheld devices
industrial
industrial equipment
instrumentation
medical
military
mobile phones
portable tools
pumps & motors
security alarms
telecom
test equipment
thermostats



snap





Snap-acting Product Selection Guide

Snap-acting

Snap-acting								
Series	TF	TFS	TF2	TM	LC	LCA	LCS	LCW
Switch Type	Miniature	Sealed Miniature	Sealed Miniature	Miniature	Subminiature Precision	Subminiature	Sealed Subminiature	Sealed Subminiature
Poles/Throws	SPST, SPDT	SPDT	SPDT	SPST, SPDT	SPST, SPDT	SPDT	SPST	SPST
Maximum Current	21 Amps	10 Amps	10 Amps	15 Amps	10.1 Amps	10 Amps	6 Amps	0.1 Amps
Terminations								
Solder	•		•	•	•	•	•	•
Turret								
Quick Connect	•	•	•	•	•	•	•	•
Screw			•	•				
Wire Leads		•			•		•	•
PC					•	•	•	•
Formed PC					•	•		
Extended Operations	•	•		•	•	•		
Sealed		•					•	•
Page No.	J-6	J-12 / J-16	J-20	J-26	J-32	J-36	J-40	J-44

Snap-acting								
Series	MM	MS	ZM	ZMA	ZMB	ZMS	ZMSM	MDS
Switch Type	Subminiature Precision	Subminiature	Subminiature	Subminiature	Subminiature	Sealed Subminiature	Sealed Subminiature	Subminiature
Poles/Throws	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT	SPDT
Maximum Current	7 Amps	3 Amps	3 Amps	3 Amps	0.1 Amps	3 Amps	3 Amps	300 m Amps
Terminations								
Solder				•	•	•	•	•
Quick Connect								
Wire Leads						•	•	
Screw								
PCB Thru-hole	•	•	•	•	•	•	•	•
Flat & Step Base								
Bushing								
Sealed						•	•	
Page No.	J-48	J-51	J-51	J-54	J-58	J-61	J-65	J-69

Snap-acting Product Selection Guide

Snap-acting				
Series	HB	A	TL	DS
Switch Type	Standard Precision	General Purpose	Door Interlock	Door Interlock
Poles/Throws	SPST, SPDT	SPST, SPDT, DP	SPDT	SPDT, DPDT
Maximum Current	20 Amps	30.1 Amps	15 Amps	0.1, 10, 16A
Terminations				
Solder	•			
Quick Connect	•	•	•	•
Wire Leads				
Screw	•		•	
PCB Thru-hole				
Flat & Step Base	•			
Bushing	15/32-32	3/8-23		
Page No.	J-81	J-81	J-86	J-89



Snap-acting






Snap-acting Technical Data

HOW TO CHOOSE PRECISION SNAP-ACTING SWITCHES AND ACTUATORS

This catalog describes electric switches that satisfy the following definition: "A precision snap-acting switch is a mechanically operated electric switch having predetermined and accurately controlled characteristics and having contacts other than blade-and-jaw, or mercury-type, where the maximum separation between any butting contacts is 1/8 inch."

In choosing a switch, the first thing to consider is its electrical rating. As a basic part of an electric control system, the switch must be able to carry the full load current in the system, to interrupt this current, and to handle any surge of current that may occur when the switch contacts close or any transients that occur when contacts open.

The method of applying mechanical force to operate the switch influences the choice of actuator. Basic switches are provided with leaf spring, levers, or other linkages between the switch plunger and the actuating device, which are typically used to provide additional overtravel and reduce the operating force. The differential travel measured at the free end of the leaf or lever is considerably greater than that measured at the switch plunger and max. operating force is adequately smaller. Table 1 relates types of actuators to means of applying operating force.

MOTION OF APPLIED OPERATING FORCES	ACTUATOR								
	Pin	Overtravel Plunger	Roller Plunger	Leaf	Roller Leaf	Hinged Lever	Hinged Roller Lever	Reverse-Acting Hinged Lever	Reverse-Acting Hinged Roller Lever
	Basic	D, Q, J	R	L	W	T	A	Y	F
 CAM Rotary			✓	✓	✓	✓	✓	✓ ¹	✓ ¹
 LEVER Angular	✓	✓ ²	✓ ²	✓	✓	✓	✓	✓	✓
 SLIDE Wedge			✓		✓		✓		✓
 PLUNGER In-Line	✓ ³	✓		✓		✓		✓	
 BI-METAL or BELLOWS Slow In-Line	✓	✓							

✓ Suitable for this actuating method.

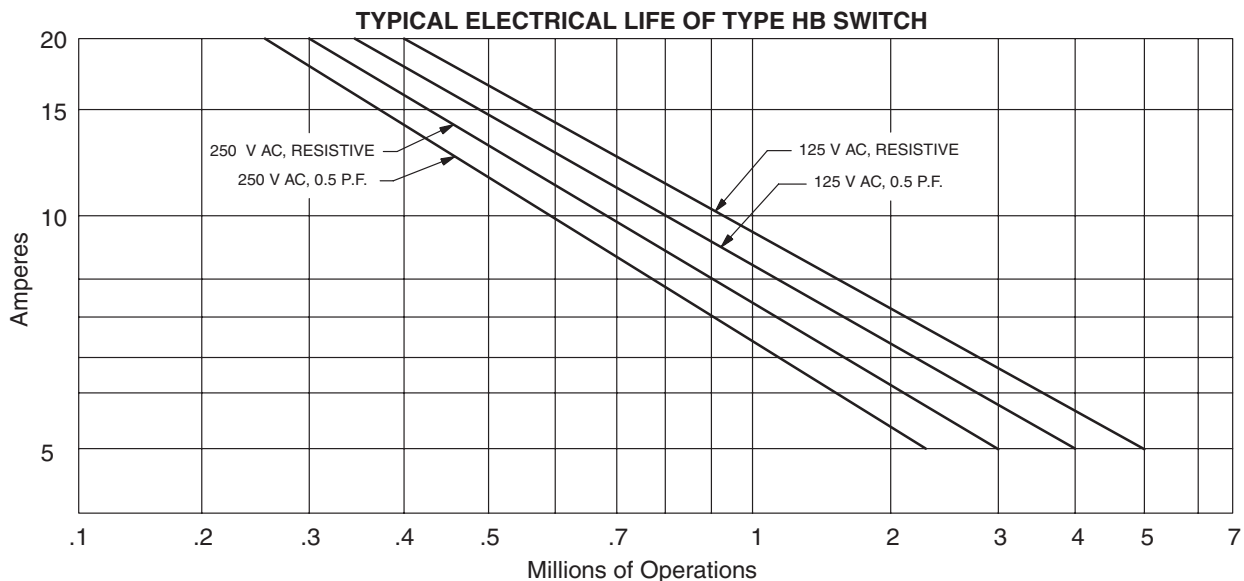
¹ Where large overtravel is required.

² Do not use when there is side thrust.

³ Use only where the actuating device contains provisions for absorbing excess over travel.

ELECTRICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

The primary limitation to electrical life of a switch is wear of the contacts. In general, contacts wear out more quickly as current or voltage is increased and as power-factor is decreased. This is indicated by the graph below, which shows electrical life of switches tested under ordinary atmospheric conditions, operated 60 times a minute, with AC power handled on both the normally open and the normally closed contacts. The high inrush current encountered in lamp loads and in motor or other inductive loads is responsible for decreased contact life under such loading.



MECHANICAL LIFE CHARACTERISTICS FOR SNAP-ACTING SWITCHES

Fatigue of the internal spring blade is the limiting factor in the mechanical life of a switch. This fatigue can often be reduced and the life thereby extended, by reducing overtravel. One method is to use a leaf or lever actuator or a plunger containing an overtravel-absorbing spring. Tests on switches of the types covered in this catalog indicate that the mechanical life of a lever actuated switch is more than double that of a switch having the operating force applied directly on the pin.

Mechanical life is also affected by the combination of total travel and operating force. Thus a high-sensitivity switch which has small travel and light force, has about twice the life expectancy of a high current type switch, in which the travel/ force combination is relatively high. Experience indicates that million of operations is a reasonable mechanical life expectancy for a basic snap switch.

For the best mechanical life, the applied overtravel force should not exceed three times the operating force.

AC RATINGS FOR SNAP-ACTING SWITCHES

Switches used to control alternating current loads, up to the ratings shown in this catalog, will maintain repeatability of characteristics and provide long electrical life (refer to graph on page K-3). In special circumstances, higher currents or voltages may be controlled, but changes in performance must be anticipated.

Switches used to control "dry circuits" can be furnished, but factory recommendations should be secured.

DC RATINGS FOR SNAP-ACTING SWITCHES

To use the table below, determine the contact separation of the switch and select the ratings from the appropriate line. The maximum current rating must be limited to the current value listed for that switch type in the body of the catalog.

CONTACT SEPARATION	DIRECT CURRENT VOLTAGE	ACTUATOR				INDUCTIVE			
		Heater Load		Lamp Load (tungsten)		Motor, Relay, or Solenoid Load			
		Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact	Sea Level		50,000 Feet	
						Normally Open Contact	Normally Closed Contact	Normally Open Contact	Normally Closed Contact
Inches	Volts	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes	Amperes
.010	6-8	15.0	20.0	1.5	3.0	8.0	8.0	7.0	7.0
	12-14	15.0	20.0	1.5	3.0	5.0	5.0	5.0	5.0
	24-30	2.0	2.0	1.5	2.0	1.0	1.0	1.0	1.0
	110-115	0.4	0.4	0.4	0.4	0.03	0.03	0.02	0.02
	220-230	0.2	0.2	0.2	0.2	0.02	0.02	0.01	0.01
.020	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	10.0	10.0	8.0	8.0
	24-30	6.0	6.0	1.5	2.0	5.0	5.0	2.0	2.0
	110-115	0.4	0.4	0.4	0.4	0.05	0.05	0.03	0.03
	220-230	0.2	0.2	0.2	0.2	0.03	0.03	0.02	0.02
.040	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	10.0	10.0	1.5	2.0	10.0	10.0	5.0	5.0
	110-115	0.6	0.6	0.6	0.6	0.1	0.1	0.05	0.05
	220-230	0.3	0.3	0.3	0.3	0.05	0.05	0.03	0.03
.070	6-8	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	12-14	15.0	20.0	1.5	3.0	15.0	20.0	15.0	15.0
	24-30	15.0	20.0	1.5	2.0	10.0	10.0	7.5	7.5
	110-115	0.75	0.75	0.75	0.75	0.4	0.4	0.2	0.2
	220-230	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1

TF Series Miniature Snap-acting Switches



Features/Benefits

- Broad range of operating forces
- Ratings up to 21 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Typical Applications

- Motor controls
- Thermostatics
- Portable tools



Specifications

CONTACT RATING: From low level* to 21 AMPS @ 277 V AC.

ELECTRICAL LIFE: 300,000 cycles at 10 AMPS @ 250 V AC, consult Customer Service Center for typical life of higher rated switches.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -40°F to 185°F (-40°C to 85°C).

OPERATING FORCE: From 15 to 400 grams at actuator button available.

MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Materials

SWITCH HOUSING: Thermoplastic (UL 94V-0).

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings greater than 1 AMP up to 15 AMPS.

Precious metal alloy for ratings greater than 15 AMPS.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings greater than 1 AMP.

TERMINALS: Brass alloy for ratings up to 10 AMPS.

Copper alloy for ratings greater than 10 AMPS.

NOTE: Specifications and materials listed above are 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 J-6 through J-11. For additional options not shown in catalog, consult Customer Service Center.



Series

TF SP, Mom.

Operating Force

CJ 5.29 oz./150 grams

CC .53 oz./15 grams

CD .88 oz./25 grams

CF 1.76 oz./50 grams

CG 2.65 oz./75 grams

EC 7.94 oz./225 grams

EE 14.11 oz./400 grams

Electrical Rating

J6 15 A, 277 V AC; 1/2 HP, 125, 250 V AC;
5 A, 125 V AC "L", 0.5 A, 125 V DC;
0.25 A, 250 V DC

F5 1 A, 125 V AC; 1 A, 30 V DC

H8 5 A, 277 V AC; 1/10 HP, 125, 250 V AC

J3 21 A, 277 V AC; 1 HP, 125 V AC; 2 HP,
250 V AC; 5 A, 125 V AC "L"

K6 11 A, 277 V AC; 1/3 HP, 125, 250 V AC;
0.5 A, 125 V DC; 0.25 A, 250 V DC

L3 20 A, 250 V AC; 1 HP, 125 V AC;
2 HP 250 V AC

Mounting Style

S Standard

V Metric

Actuator

P00 Pin plunger

A10 .81" lever roller, high force

A15 1.34" lever roller, high force

A20 1.05" lever roller, low force

A25 1.56" lever roller, low force

T10 .84" lever, high force

T13 1.34" simulated roller, high force

T14 1.29" simulated roller, high force

T15 1.40" lever, high force

T16 2.34" lever, high force

T18 2.75" lever, high force

T20 1.10" lever, low force

T23 1.56" simulated roller, low force

T24 1.50" simulated roller, low force

T25 1.62" lever, low force

T26 2.57" lever, low force

T28 2.97" lever, low force

WPO Wide pin plunger

Circuitry

C SPDT

W SPST N.C.

Y SPST N.O.

Terminations

40 .187" quick connect

4A .250" quick connect

5A .250" offset quick connect

5B .187" offset quick connect



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

TF Series Miniature Snap-acting Switches

ELECTRICAL RATING

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (15)	CD (25)	CF (50)	CG (75)	CJ (150)	EC (225)	EE (400)
F5	1	•	•	•	•	•	•	
H8	5	•	•	•	•	•	•	•
J3	21	X	X	X	X	•	•	•
J6	15	X	X	X	X	•	•	•
K6	11	X	•	•	•	•	•	•
L3	20	X	X	X	X	•	•	•

• AVAILABLE

X NOT AVAILABLE

** Available with 4A & 5A terminations only, see page J-10.

All models  US

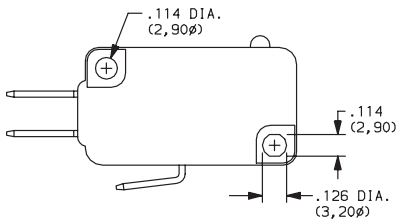
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

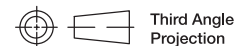
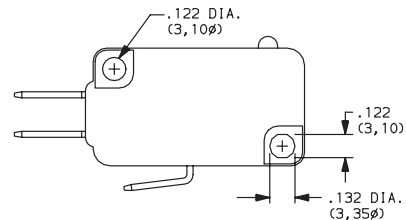
Snap-acting

MOUNTING STYLE

S STANDARD
For 4-40 screw size



V Metric
For 3 mm screw size



Third Angle Projection

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

TF Series Miniature Snap-acting Switches

ACTUATOR

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
P00	1	.80 (20,3)	—	.578 ± .015 (14,68 ± 0,38)	—
A10	2	.81 (20,6)	.32 (8,1)	.810 ± .020 (20,57 ± 0,51)	.19 dia. (4,8Ø)
A15	2	1.34 (34,0)	.32 (8,1)	.810 ± .030 (20,57 ± 0,76)	.19 dia. (4,8Ø)
A20	2	1.05 (26,7)	.54 (13,7)	.810 ± .050 (20,57) ± 1,27	.19 dia. (4,8Ø)
A25	2	1.56 (39,6)	.54 (13,7)	.810 ± .075 (20,57 ± 1,91)	.19 dia. (4,8Ø)
T10	3	.84 (21,3)	.32 (8,1)	.600 ± .020 (15,24 ± 0,51)	—
T15	3	1.40 (35,6)	.32 (8,1)	.600 ± .040 (15,24 ± 1,02)	—
T16	3	2.34 (59,4)	.32 (8,1)	.600 ± .065 (15,24 ± 1,65)	—
T18	3	2.75 (69,9)	.32 (8,1)	.600 ± .080 (15,24 ± 2,03)	—
T20	3	1.10 (27,9)	.54 (13,7)	.600 ± .050 (15,24 ± 1,27)	—
T25	3	1.62 (41,1)	.54 (13,7)	.600 ± .070 (15,24 ± 1,78)	—
T26	3	2.57 (65,3)	.54 (13,7)	.600 ± .150 (15,24 ± 3,81)	—
T28	3	2.97 (75,4)	.54 (13,7)	.600 ± .187 (15,24 ± 4,75)	—
T13	4	1.34 (34,0)	.32 (8,1)	.810 ± .030 (20,57 ± 0,76)	.19 dia. (4,8Ø)
T14	4	1.29 (32,8)	.32 (8,1)	.730 ± .030 (18,54 ± 0,76)	.19 dia. (6,4Ø)
T23	4	1.56 (39,6)	.54 (13,7)	.810 ± .065 (20,57 ± 1,65)	.19 dia. (4,8Ø)
T24	4	1.50 (38,1)	.54 (13,7)	.730 ± .060 (18,54) ± 1,52	.25 dia. (6,4Ø)
WP0	5	.80 (20,3)	—	.635 ± .015 (16,13 ± 0,38)	—

NOTE: Switch characteristics chart on following page.

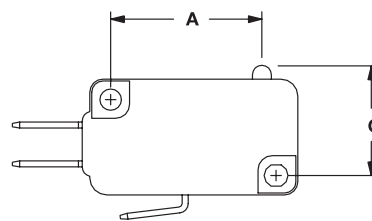


FIG. 1
Pin Plunger

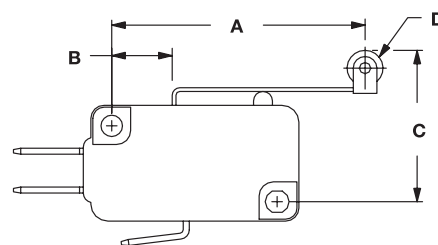


FIG. 2
Lever Roller

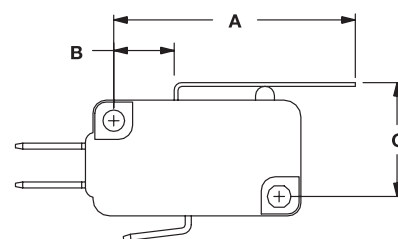


FIG. 3
Lever

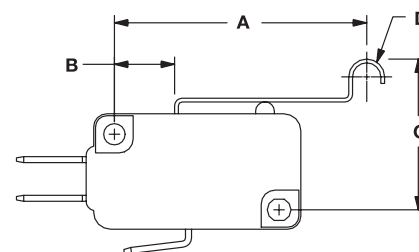


FIG. 4
Simulated Roller

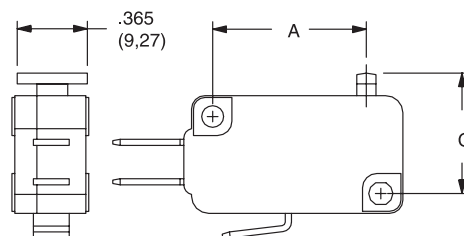


FIG. 5
Wide Pin



Third Angle
Projection

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

TF Series Miniature Snap-acting Switches

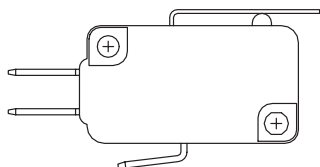
ACTUATOR

SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)							MINIMUM RELEASE FORCE (OZ./GRAMS)							MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	CC	CD	CF	CG	CJ	EC	EE	CC	CD	CF	CG	CJ	EC	EE	ALL FORCES	ALL FORCES	ALL FORCES
	(15)	(25)	(50)	(75)	(150)	(225)	(400)	(15)	(25)	(50)	(75)	(150)	(225)	(400)			
A10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
A15	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
A20	0.53 15	0.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	0.07 2	0.11 3	0.11 3	0.18 5	0.42 12	0.71 20	1.41 40	0.025 (0,64)	0.12 (3,05)	0.055 (1,40)
A25	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
P00	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.98 56	3.88 110	.010 (0,25)	.047 (1,19)	.050 (1,27)
T10	.63 18	1.06 30	2.29 65	3.17 90	6.35 180	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.015 (0,38)	.060 (1,52)	.030 (0,76)
T13	.28 8	.42 12	1.06 30	1.59 45	3 85	4.59 130	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.065 (1,65)
T14	.28 8	.42 12	1.23 35	1.76 50	3.17 90	4.76 135	7.94 225	.07 2	.14 4	.14 4	.18 5	.35 10	.71 20	2.82 80	.030 (0,76)	.100 (2,54)	.060 (1,52)
T15	.25 7	.42 12	1.06 30	1.41 40	2.82 80	4.41 125	7.94 225	.07 2	.14 4	.14 4	.18 5	.28 8	.63 18	2.82 80	.030 (0,76)	.110 (2,79)	.065 (1,65)
T16	.18 5	.28 8	.53 15	.78 22	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.28 8	.35 10	.71 20	.045 (1,14)	.250 (6,35)	.125 (3,18)
T18	N/A	.21 6	.42 12	.71 20	1.41 40	2.12 60	3.53 100	N/A	.04 1	.04 1	.07 2	.18 5	.28 8	.56 16	.062 (1,57)	.300 (7,62)	.155 (3,94)
T20	.53 15	.71 20	1.41 40	2.12 60	4.23 120	6 170	9.7 275	.21 6	.35 10	.35 10	.53 15	.71 20	1.98 56	3.88 110	.030 (0,76)	.140 (3,56)	.060 (1,52)
T23	.18 5	.28 8	.56 16	.85 24	1.69 48	2.65 75	4.41 125	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.71 20	.050 (1,27)	.250 (6,35)	.120 (3,05)
T24	0.18 5	0.28 8	0.56 16	0.88 25	1.76 50	2.65 75	4.76 135	0.04 1	0.07 2	0.07 2	0.11 3	0.21 6	0.35 10	0.71 20	.005 (1,27)	0.23 (5,84)	0.11 (2,79)
T25	.18 5	.28 8	.53 15	.88 25	1.59 45	2.47 70	4.23 120	.04 1	.07 2	.07 2	.07 2	.21 6	.35 10	.99 28	.055 (1,40)	.250 (6,35)	.125 (3,18)
T26	N/A	.14 4	.28 8	.42 12	.85 24	1.27 36	2.26 64	N/A	.04 1	.04 1	.05 1.5	.12 3.5	.21 6	.39 11	.100 (2,54)	.500 (12,70)	.235 (5,97)
T28	N/A	N/A	N/A	0.42 12	0.71 20	1.06 30	1.94 55	N/A	N/A	N/A	0.04 1	0.11 3	0.18 5	0.32 9	0.12 (3,05)	.0560 (14,22)	0.285 (7,24)
WP0	.53 15	.88 25	1.76 50	2.65 75	5.29 150	7.94 225	14.11 400	.21 6	.35 10	.35 10	.53 15	1.23 35	1.97 56	3.88 110	.010 (0,25)	.047 (1,19)	.030 (0,51)

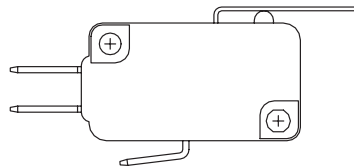
NOTE: For basic switch operating forces, see page J-6.

HIGH FORCE, LOW MOTION PIVOT POSITION



Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

NOTE: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Third Angle Projection

Dimensions are shown: Inch (mm)

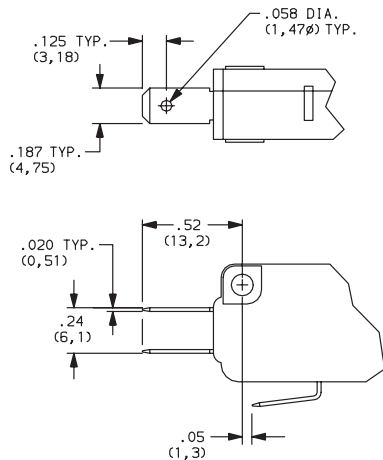
Specifications and dimensions subject to change



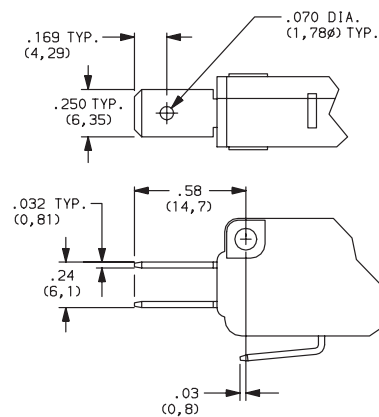
Snap-acting

TERMINATIONS

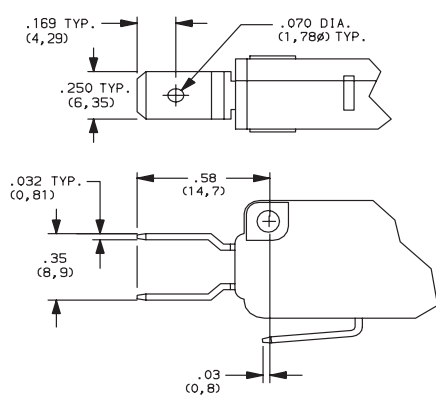
40 .187" QUICK CONNECT



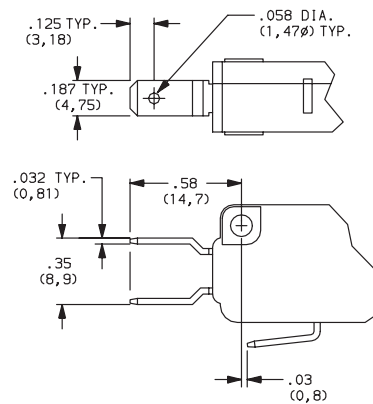
4A .250" QUICK CONNECT



5A OFFSET .250" QUICK CONNECT



5B OFFSET .187" QUICK CONNECT

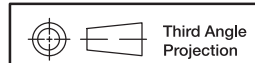


CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Snap-acting



Third Angle Projection

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

TFS Series Splash Proof Miniature Snap-acting Switches



Features/Benefits

- Reliable snap action mechanism
- Low cost - high performance
- RoHS compatible

Typical Applications

- Alarm devices / Home security
- Air conditioner
- Food processor
- Water heaters
- Industrial
- Forklifts

UL61058-1  

Specifications

CONTACT RATING / ELECTRICAL LIFE:
 0.1A @ 125/250 V AC / 10,000 operations
 3A @ 125/250 VAC / 10,000 operations
 6A @ 125/250 VAC / 10,000 operations
 10A @ 125/250 VAC / 10,000 operations
 ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.
 MECHANICAL LIFE: 1,000,000 operations
 MECHANICAL OPERATING FREQUENCY: 120 operations per min.
 INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.
 DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)
 OPERATING TEMPERATURE: -40°C to 85°C (with no icing)
 OPERATING FORCE: 200 grams.

Materials

CASE: Nylon
 COVER: PBT
 ACTUATOR: PBT
 MOVABLE CONTACTS: Silver alloy
 TERMINALS: Brass
 LEVER: Stainless steel
 WIRE: PVC+CU

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

Snap-acting

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 J-12 thru J-15. For additional options not shown in catalog, consult Customer Service Center.



Electrical Rating

ELECTRICAL RATING	AMPS (GRAMS)	OPERATING FORCE				
		S (200)	D (50)	J (100)	L (150)	H (300)
01	0.1	•	•	•	•	•
03	3	•	•	•	•	•
06	6	•	•	•	•	•
10	10	•	X	X	X	•

• Available
 X Not available

Operating Force

- S** 200 grams
- D** 50 grams
- J** 100 grams
- L** 150 grams
- H** 300 grams

Actuator Lever Fixed

- P00** Button
- T10** Lever - high force
- T20** Lever - low force
- A05** Lever roller - High force, short lever
- A10** Lever roller - high force
- A20** Lever roller - low force
- A25** Lever roller - Low force, short lever

Circuit Arrangement

- C** SPDT
- Y** SPST N.O.
- W** SPST N.C.

Mounting Hole Size

- NONE** 3.1 mm (3 mm screw clearance hole)
- S** 2.9 mm (4-40 screw clearance hole)

Terminal Type

- 40** .187" quick connect

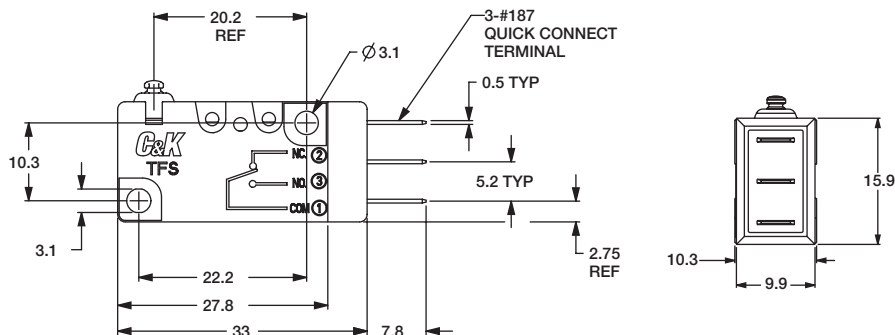


Dimensions are shown: mm
 Specifications and dimensions subject to change

TFS Series Splash Proof Miniature Snap-acting Switches

SERIES

TFS SUB-MINIATURE SNAP-ACTING SWITCHES

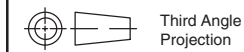


ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
06	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
03	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
01	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
S	200 GRAMS
D	50 grams
J	100 grams
L	150 grams
H	300 grams



Third Angle
Projection

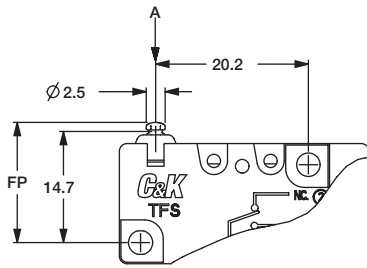
Dimensions are shown: mm
Specifications and dimensions subject to change



TFS Series Splash Proof Miniature Snap-acting Switches

ACTUATOR

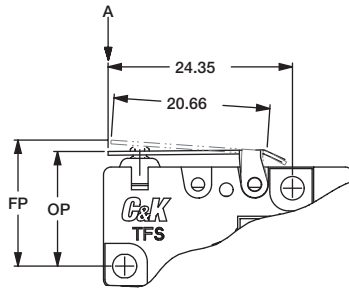
P00 BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

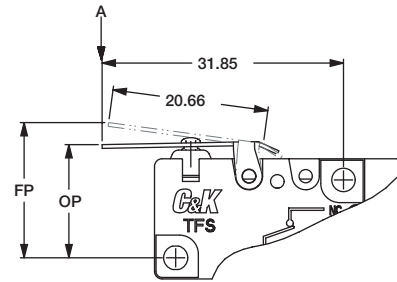
T10 LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

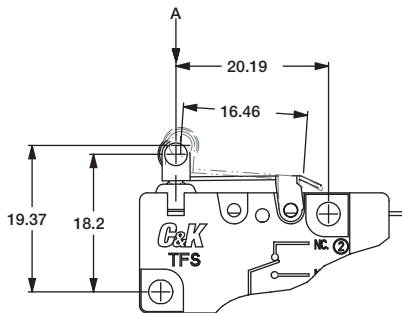
T20 LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

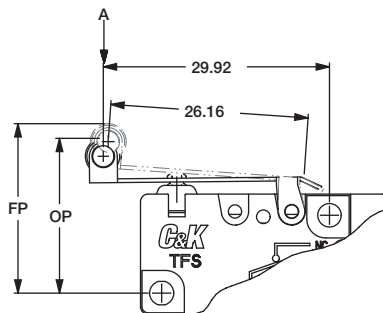
A05 LEVER ROLLER
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

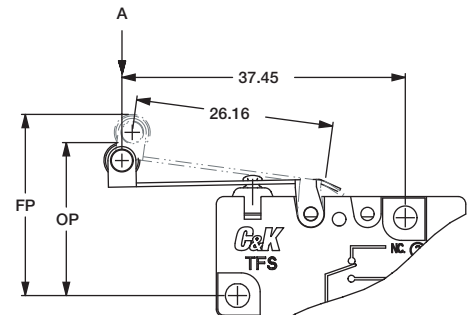
A10 LEVER ROLLER
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

A20 LEVER ROLLER
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting



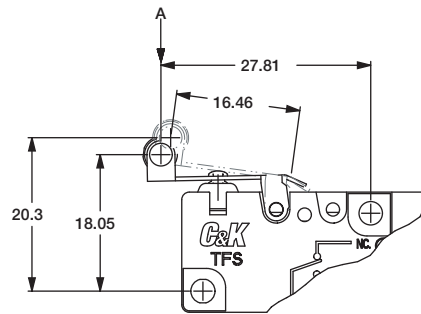
Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

TFS Series Splash Proof Miniature Snap-acting Switches

ACTUATOR

A25 LEVER ROLLER
LOW FORCE, SHORT LEVER

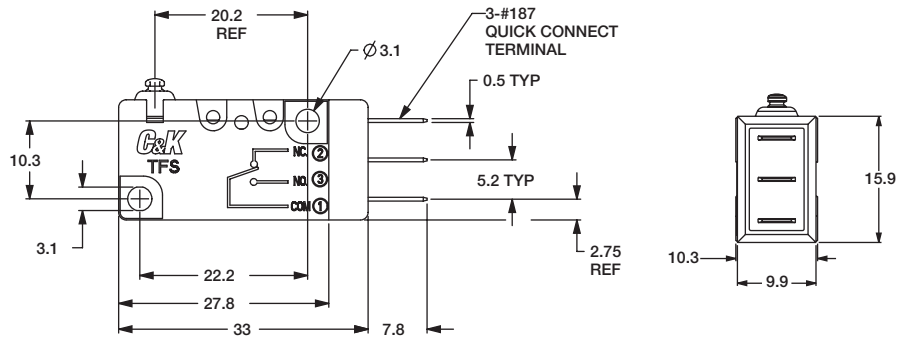


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

TERMINAL TYPE

40 .187" QUICK CONNECT



Snap-acting

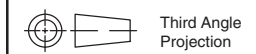
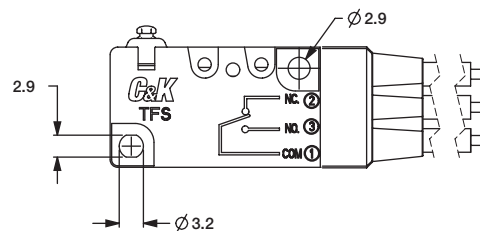
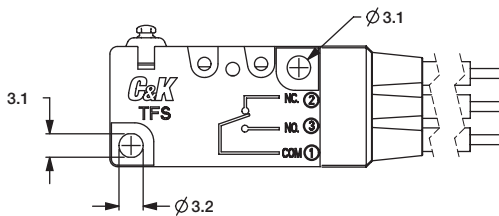
CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

MOUNTING HOLE SIZE

NONE 3.1 mm (3mm SCREW CLEARANCE HOLE)

S 2.9 mm (4-40 SCREW CLEARANCE HOLE)



Dimensions are shown: mm
Specifications and dimensions subject to change

G&K

TFS Series

Sealed Miniature Snap-acting Switches (Water Proof)



Features/Benefits

- IP67
- Reliable snap action mechanism
- Low cost - high performance
- RoHS compatible

Typical Applications

- Alarm devices / Home security
- Air conditioner
- Food processor
- Water heaters
- Industrial
- Forklifts

UL61058-1



Specifications

CONTACT RATING / ELECTRICAL LIFE:

- 0.1A @ 125/250 V AC / 10,000 operations
- 3A @ 125/250 VAC / 10,000 operations
- 6A @ 125/250 VAC / 10,000 operations
- 10A @ 125/250 VAC / 10,000 operations

ELECTRICAL OPERATING FREQUENCY: 10-30 operations per min.

MECHANICAL LIFE: 1,000,000 operations

MECHANICAL OPERATING FREQUENCY: 120 operations per min.

INSULATION RESISTANCE: (at 500 VDC/minute) 100 M ohm min.

DIELECTRIC STRENGTH: 1500 VAC (50 -60 Hz)

OPERATING TEMPERATURE: see wire type

OPERATING FORCE: 200 grams.

Materials

CASE: Nylon

COVER: PBT

ACTUATOR:PBT

MOVABLE CONTACTS: Silver alloy.

TERMINALS: Brass.

LEVER: Stainless steel

WIRE: PVC+CU

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

Snap-acting

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 J-17 thru J-19. For additional options not shown in catalog, consult Customer Service Center.

Electrical Rating
see chart below

Operating Force

- S** 200 grams
- D** 50 grams
- J** 100 grams
- L** 150 grams
- H** 300 grams

Actuator Lever Fixed

- P00** Button
- T10** Lever - high force
- T20** Lever - low force
- A05** Lever roller - High force , short lever
- A10** Lever roller - high force
- A20** Lever roller - low force
- A25** Lever roller - Low force, short lever

Circuit Arrangement

- C** SPDT
- Y** SPST N.O.
- W** SPST N.C.

Wire UL #

- B** UL1015 (T55)

Mounting Hole Size

- NONE** 3.1 mm (3 mm screw clearance hole)
- S** 2.9 mm (4-40 screw clearance hole)

Terminal Type

- W** Wire

Wire Type

- C** 16 AWG
- D** 18 AWG
- E** 20 AWG
- F** 22 AWG
- G** 24 AWG
- H** 26 AWG

OPERATING TEMPERATURE

-40°C to + 85°C (with UL1015 wire)

ELECTRICAL RATING	AMPS	WIRE TYPE				
		C 16AWG	D 18AWG	E 20AWG	F 22AWG	G 24AWG H 26AWG
01	0.1	•	•	•	•	•
03	3	•	•	•	X	X
06	6	•	•	X	X	X
10	10	•	X	X	X	X

• Available
X Not available

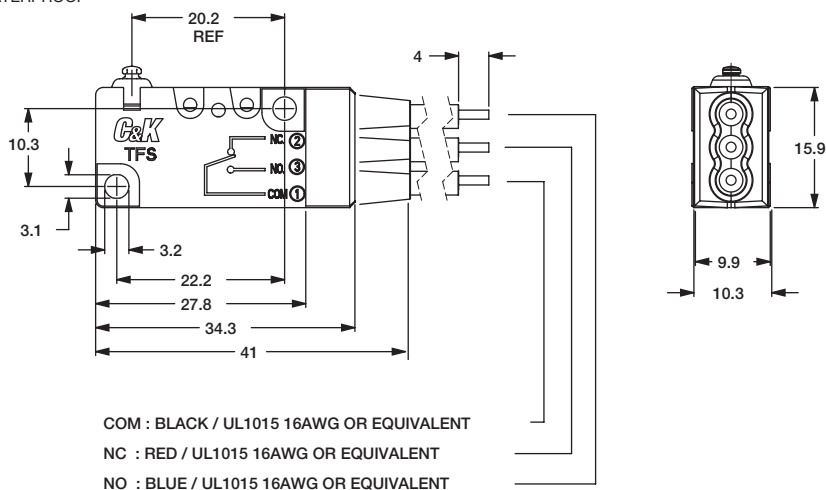


Dimensions are shown: mm
Specifications and dimensions subject to change

TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

SERIES

TFS SUB-MINIATURE SNAP-ACTING SWITCHES – WATERPROOF

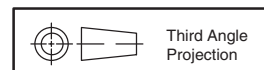


ELECTRICAL RATING

OPTION CODE	RoHS COMPLIANT	RoHS COMPATIBLE	ELECTRICAL RATING
10	Yes	Yes	10A @ 125/250 V AC / 10,000 operations
06	Yes	Yes	6A @ 125/250 VAC / 10,000 operations
03	Yes	Yes	3A @ 125/250 VAC / 10,000 operations
01	Yes	Yes	0.1A @ 125/250 VAC / 10,000 operations

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE
S	200 GRAMS
D	50 grams
J	100 grams
L	150 grams
H	300 grams



Dimensions are shown: mm
 Specifications and dimensions subject to change

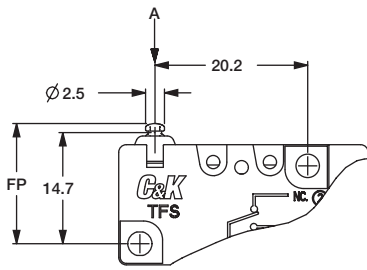


Snap-acting

TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

ACTUATOR

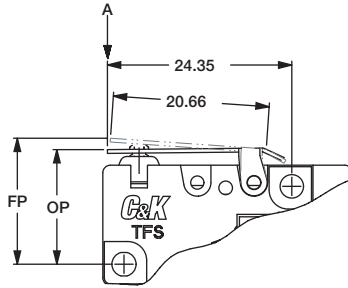
P00 BUTTON



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	14.7 ± 0.4 mm
Max. movement differential	0.4 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	1.2 mm

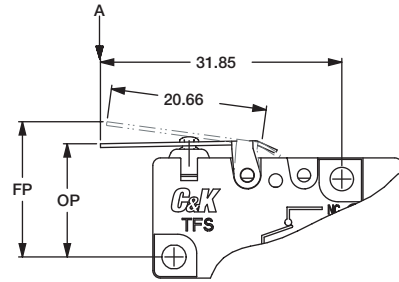
T10 LEVER, HIGH FORCE



Measure at Point "A"

Max. operating force	160 grams
Min. release force	25 grams
Operating position OP	15.1 ± 0.6 mm
Max. movement differential	0.6 mm
Min. over travel OT	1.1 mm
Max. pre-travel PT	2.6 mm

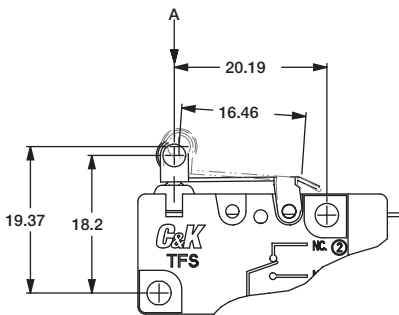
T20 LEVER, LOW FORCE



Measure at Point "A"

Max. operating force	90 grams
Min. release force	10 grams
Operating position OP	15 ± 1.1 mm
Max. movement differential	1.1 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	5.1 mm

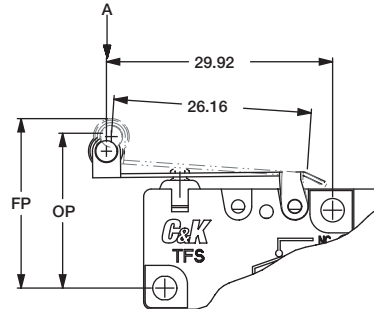
A05 LEVER ROLLER
HIGH FORCE, SHORT LEVER



Measure at Point "A"

Max. operating force	200 grams
Min. release force	30 grams
Operating position OP	20.6 ± 0.5 mm
Max. movement differential	0.5 mm
Min. over travel OT	1.0 mm
Max. pre-travel PT	2.1 mm

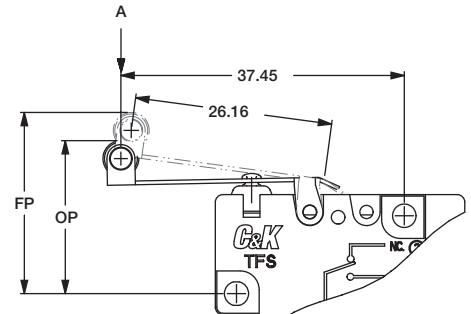
A10 LEVER ROLLER
HIGH FORCE



Measure at Point "A"

Max. operating force	130 grams
Min. release force	20 grams
Operating position OP	20.4 ± 0.7 mm
Max. movement differential	0.7 mm
Min. over travel OT	1.3 mm
Max. pre-travel PT	3.3 mm

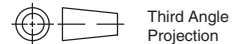
A20 LEVER ROLLER
LOW FORCE



Measure at Point "A"

Max. operating force	70 grams
Min. release force	10 grams
Operating position OP	20.2 ± 1.2 mm
Max. movement differential	1.4 mm
Min. over travel OT	1.5 mm
Max. pre-travel PT	6.5 mm

Snap-acting



Third Angle
Projection

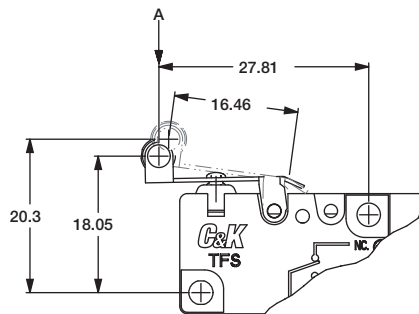
Dimensions are shown: (mm)

Specifications and dimensions subject to change

TFS Series Sealed Miniature Snap-acting Switches (Water Proof)

ACTUATOR

A25 LEVER ROLLER
LOW FORCE, SHORT LEVER

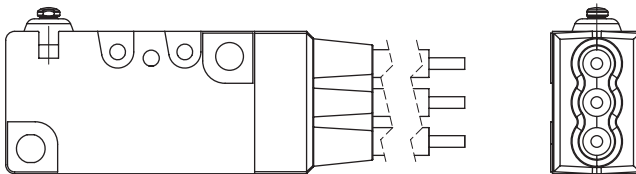


Measure at Point "A"

Max. operating force	150 grams
Min. release force	15 grams
Operating position OP	20.4 ± 0.9 mm
Max. movement differential	0.9 mm
Min. over travel OT	1.2 mm
Max. pre-travel PT	4.2 mm

TERMINAL TYPE

W WIRE UL1015



CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)

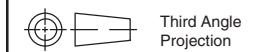
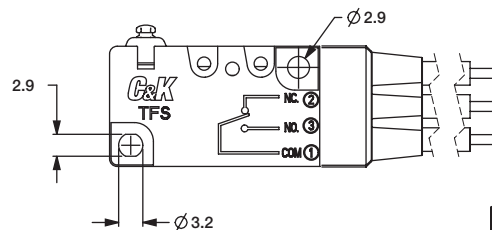
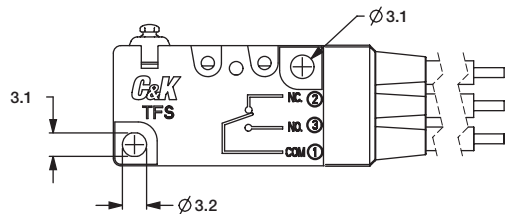
WIRE TYPE

- C** 16 AWG
- D** 18 AWG
- E** 20 AWG
- F** 22 AWG
- G** 24 AWG
- H** 26 AWG

MOUNTING HOLE SIZE

NONE 3.1 mm (3mm SCREW CLEARANCE HOLE)

S 2.9 mm (4-40 SCREW CLEARANCE HOLE)



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



TF2 Series Miniature Snap-acting Switches



Features/Benefits

- Broad range of operating forces
- Ratings up to 10 AMPS
- Wide variety of actuator styles
- Quick connect terminations

Typical Applications

- Motor controls
- Thermostatics
- Portable tools
- Air Conditioner



Specifications

CONTACT RATING: From low level* to 10 AMPS @125/250 V AC.
 ELECTRICAL LIFE: 10,000 cycles
 MECHANICAL LIFE: 1,000,000 cycles at 0.1A and 6A
 400,000 cycles at 10A
 INSULATION RESISTANCE: 1,000 M ohm min.
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -40°C to 125°C (-40°C to 85°C).
 OPERATING FORCE: From 18 to 330 grams at actuator button available.
 MOUNTING: Torque screws 2-5 in/lbs.

Materials

SWITCH HOUSING: Nylon 6/6
 ACTUATOR BUTTON: Nylon 6/6
 SPRING: Stainless Steel
 PIVOT: Brass Alloy
 MOVABLE CONTACTS: See electric rating page J-21
 MOVABLE BLADE: BeCu
 STATIONARY CONTACTS: See electric rating page J-21
 TERMINALS: Brass Alloy

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

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max. Standard electrical life per UL 1054, rated for 6,000 operations.

Snap-acting

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 J-21 through J-25. For additional options not shown in catalog, consult Customer Service Center.



Series

TF2 SP, Mom.

Operating Force

- CC** 18 grams
- CF** 45 grams
- CG** 75 grams
- CH** 110 grams
- CJ** 170 grams
- EC** 230 grams
- EE** 330 grams

Electrical Rating Chart

OPTION CODE	61058-1	
F5	0.1A 125/250 V AC (T85) Min. 10,000 operations	0.1A 125/250 V AC μT125, 1E4
H8	6A 125/250 V AC (T85) Min. 10,000 operations	6A 125/250 V AC μT125, 1E4
K6	10A 125/250 V AC (T85) Min. 10,000 operations	10(4)A 125/250 V AC μT125, 1E4

Mounting Style

- S** Standard
- V** Metric

Actuator

- P00** Pin plunger
- A10** Lever roller 12.5 mm
- A15** Lever roller 25.9 mm
- A20** Lever roller 12.5 mm
- A25** Lever roller 25.9 mm
- T10** Lever 14 mm
- T14** Simulated roller 24.5 mm
- T15** Lever 27.5 mm
- T16** Lever 31.7 mm
- T17** Lever 35 mm
- T20** Lever 14 mm
- T24** Simulated lever 24.5 mm
- T25** Lever 27.5 mm
- T26** Lever 31.7 mm
- T27** Lever 35 mm

Circuitry

- C** SPDT
- W** SPST N.C.
- Y** SPST N.O.

Terminations

- 40** .187" quick connect
- 4A** .250" quick connect
- 5A** .250" off set quick connect
- 5B** .187" off set quick connect
- 60** Screw style *
- 10** Solder

* Note: No UL & ENEC 15 safety for Termination option "60"

see chart on following pages for detailed information

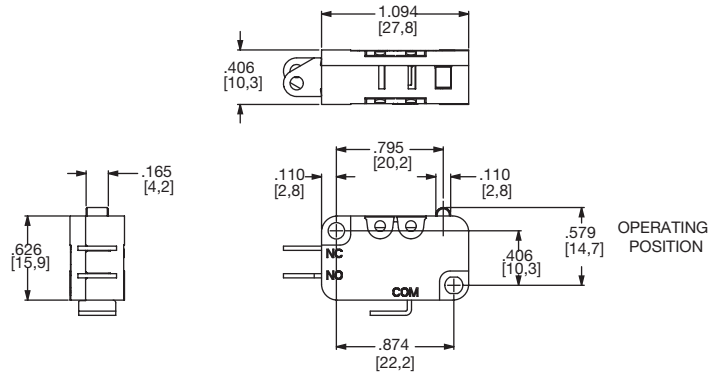


Dimensions are shown: mm
 Specifications and dimensions subject to change

TF2 Series Miniature Snap-acting Switches

SERIES ■■■■■■■■■■

TF2 MINIATURE SNAP-ACTING SWITCHES



OPERATING FORCE ■■■■■■■■■■

OPTION CODE	BASIC SWITCH OPERATING FORCE (grams)
CC	18
CF	45
CG	75
CH	110
CJ	170
EC	230
EE*	330

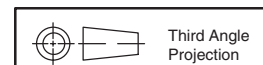
*Minimums may apply, consult Customer Service Center.

ELECTRICAL RATING ■■■■■■■■■■

OPTION CODE	CONTACT MATERIAL		MOVABLE CONTACT	STATIONARY CONTACT
	RoHS COMPLIANT *	RoHS COMPATIBLE *		
F5	Yes	Yes	Silver alloy	Silver alloy
H8	Yes	Yes		
K6	Yes	Yes		

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

All models  



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

TF2 Series Miniature Snap-acting Switches

ELECTRICAL RATING

INTERNATIONAL RATING SYMBOLS	
μ	Microgap construction (less than 3 mm).
~	Alternating current.
T__	Maximum rated use temperature.
50E3	Cycles over 50,000 at rated current.
10E3	Cycles over 10,000 at rated current.
10(3)	Current Rating: First number represents resistive rating; second number represents inductive (motor) rating.

ELECTRICAL RATING	AMPS (REF.)	OPERATING FORCE						
		CC (18)	CF (45)	CG (75)	CH (110)	CJ (170)	EC (230)	EE (330)
F5	0.1	•	•	•	•	•	•	X
H8	6	X	•	•	•	•	•	•
K6	10	X	X	X	•	•	•	•

• AVAILABLE
X NOT AVAILABLE

Snap-acting

All models  

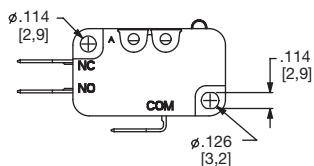
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

MOUNTING STYLE

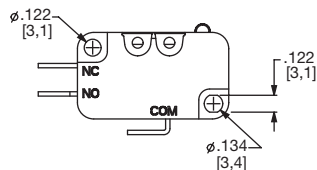
S STANDARD
For 4-40 screw size

V Metric
For 3 mm screw size



TF2 SWITCH WITH TYPE 40 (.187 QC) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.



TF2 SWITCH WITH TYPE 10 (SOLDER) TERMINALS AND P00 ACTUATOR SHOWN

NOTE: TORQUE MOUNTING SCREWS 2-5 IN/LBS.

TF2 Series Miniature Snap-acting Switches

ACTUATOR

OPTION CODE	FIG	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E
P00	2	.795 (20,2)	-	.578 ± .019 (14,70 ± 0,05)	0.068 (1,72)	-
A10	1	.822 (20,9)	.33 (8,4)	.816 ± .050 (20,73 ± 1,27)	.106 (2,70)	∅.19 (∅ 4,8)
A15	1	1.35 (34,3)	.33 (8,4)	.816 ± .059 (20,73 ± 1,5)	.165 (4,20)	∅.19 (∅ 4,8)
A20	1	1.05 (26,8)	.56 (14,3)	.816 ± .050 (20,73 ± 1,27)	.183 (4,65)	∅.19 (∅ 4,8)
A25	1	1.58 (40,2)	.56 (14,3)	.816 ± .086 (20,73 ± 2,2)	.366 (9,30)	∅.19 (∅ 4,8)
T10	3	.882 (22,39)	.33 (8,4)	.602 ± .020 (15,3 ± 0,50)	.110 (2,80)	-
T14	4	1.295 (32,9)	.33 (8,4)	.737 ± .059 (18,72 ± 1,5)	.216 (5,50)	∅.275 (∅ 7,0)
T15	3	1.405 (35,69)	.33 (8,4)	.600 ± .059 (15,24 ± 1,5)	.232 (5,90)	-
T16	3	1.58 (40,01)	.33 (8,4)	.604 ± .068 (15,35 ± 1,75)	.196 (5,0)	-
T17	3	1.708 (43,39)	.33 (8,4)	.603 ± .062 (15,33 ± 1,57)	.216 (5,50)	-
T20	3	1.11 (28,3)	.56 (14,3)	.604 ± .045 (15,34 ± 1,14)	.204 (5,20)	-
T24	4	1.527 (38,8)	.56 (14,3)	.742 ± .090 (18,84 ± 2,29)	.342 (8,70)	∅.275 (∅ 7,0)
T25	3	1.631 (41,43)	.56 (14,3)	.609 ± .090 (15,47 ± 2,3)	.381 (9,70)	-
T26	3	1.811 (46,00)	.56 (14,3)	.616 ± .125 (15,65 ± 3,18)	.389 (9,90)	-
T27	3	1.94 (49,3)	.56 (14,3)	.598 ± .150 (15,2 ± 3,8)	.433 (11,0)	-

NOTE: Switch characteristics chart on following page.

Lever Roller

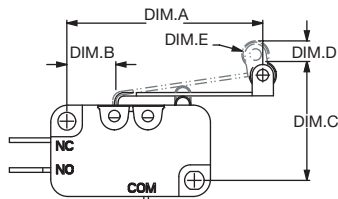


FIG. 1
LEVER ROLLER
TF2XXXXMA1510C

Pin Roller

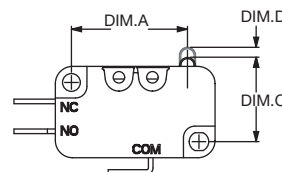


FIG. 2
PIN ROLLER
TF2XXXXMP0010C

Lever

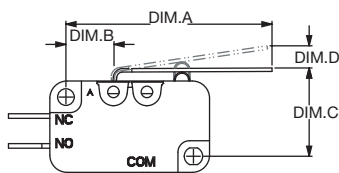


FIG. 3
LEVER
TF2XXXXST1510C SHOWN

Simulated Roller

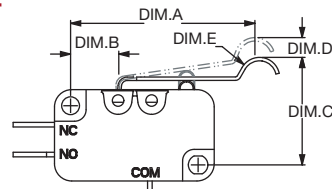


FIG. 4
SIMULATED ROLLER
TF2XXXXST1410C



Third Angle
Projection

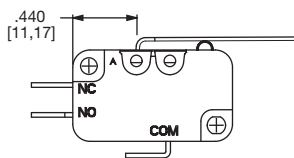
Dimensions are shown: inches (mm)
Specifications and dimensions subject to change

TF2 Series Miniature Snap-acting Switches

ACTUATOR 

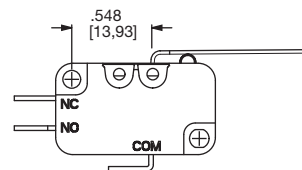
Lever Type		CC	CF	CG	CH Grams	CJ	EC	EE	Pre-Travel max. mm	Max Differential max. mm	Over Travel Min. mm
P00	OF	18	45	75	110	170	230	330	1.72	0.4	0.8
	RF	3	7	14	20	34	42	60			
T10	OF	18	45	75	110	170	230	330	2.8	0.5	0.6
	RF	-	6	11	17	25	35	50			
T20	OF	8	27	43	50	85	120	175	5.2	0.9	1.55
	RF	-	3	5	7	13	17	25			
T14	OF	10	28	43	65	110	140	205	5.5	1.1	1.4
	RF	-	3	5	8	14	17	31			
T24	OF	7	16	24	35	56	70	100	8.7	1.7	3.2
	RF	-	-	-	4	5	9	12			
A10	OF	20	55	80	110	170	230	330	2.7	0.45	0.6
	RF	-	5	11	16	28	31	45			
A20	OF	8	35	55	70	100	120	175	4.65	0.8	1.4
	RF	-	3	5	7	14	18	28			
A15	OF	8	30	45	65	100	125	180	4.2	1.25	1.6
	RF	-	-	5	7	12	16	25			
A25	OF	7	20	30	40	51	65	90	9.3	1.8	2.8
	RF	-	-	-	-	6	8	9			
T17	OF	16	25	35	50	80	100	140	5.5	1.2	0.55
	RF	-	2	4	6	11	14	20			
T27	OF	13	18	24	32	45	55	90	11	2.3	3.6
	RF	-	-	2	3	5	7	10			
T16	OF	15	17	32	55	85	110	150	5	1.05	1.8
	RF	-	-	4	6	12	15	22			
T26	OF	10	12	18	35	45	65	90	9.9	2.05	3.6
	RF	-	-	2	4	6	8	11			
T15	OF	18	22	37	50	86	125	180	5.9	1	1.6
	RF	-	3	5	9	14	17	24			
T25	OF	5	16	25	30	51	65	90	9.7	2.2	3.1
	RF	-	-	3	4	6	8	11			

HIGH FORCE, LOW MOTION PIVOT POSITION



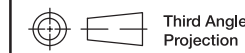
Available with actuators A10, A15, T10, T13, T14, T15, T16 and T18.

LOW FORCE, HIGH MOTION PIVOT POSITION



Available with actuators A20, A25, T20, T23, T24, T25, T26, and T28.

NOTE: Lever actuator options are available in either of two pivot positions. Levers located in the forward pivot position have lower forces and higher motions. Levers located in the rear pivot position have higher forces and lower motions.



Third Angle
Projection

Dimensions are shown: mm

Specifications and dimensions subject to change



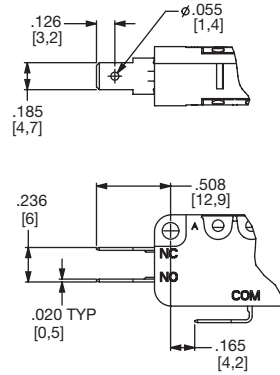
Snap-acting



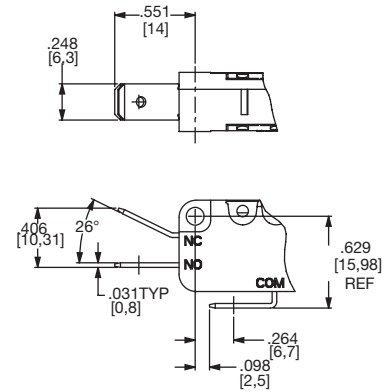
TF2 Series Miniature Snap-acting Switches

TERMINATIONS

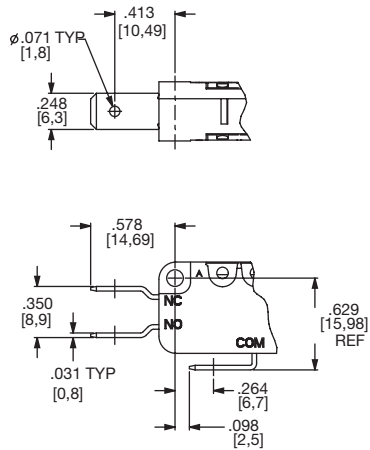
40 .187" QUICK CONNECT



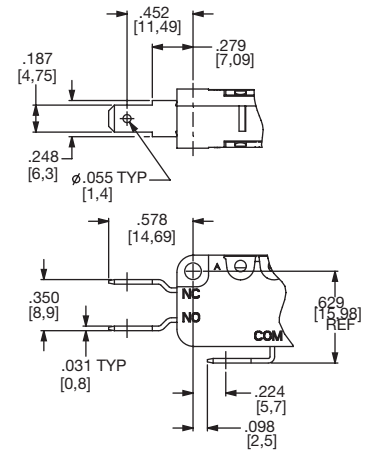
4A .250" QUICK CONNECT



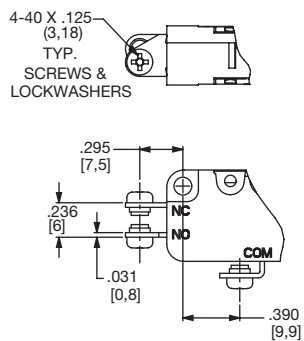
5A .250" OFF SET QUICK CONNECT



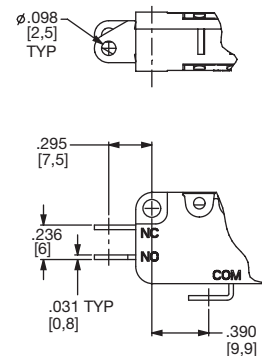
5B .187" OFF SET QUICK CONNECT



60 SCREW STYLE



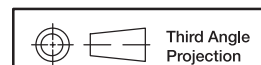
10 SOLDER



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



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



TM Series Miniature Snap-acting Switches



Features/Benefits

- Broad range of operating forces available
- Wide variety of actuator and terminal styles
- Cost-effective solution

Typical Applications

- Pumps and motors
- White goods
- Consumer appliances



Specifications

CONTACT RATING: From low level* to 15 AMPS @ 250 V AC.
 ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC, models with 150 grams operating force. 350,000 cycles at 10 AMPS @ 250 V AC, models with 75 grams operating force.
 INSULATION RESISTANCE: 1,000 M ohms min.
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).
 OPERATING FORCE: 50, 75 and 150 grams at actuator available; refer to chart for lever style forces.
 MOUNTING: Torque screws 2-5 in/lbs.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).
 ACTUATOR BUTTON: Thermoplastic (UL 94V-0).
 SPRING: Copper alloy.
 PIVOT: Brass alloy.
 MOVABLE CONTACTS: Gold alloy for ratings 1 AMP @ 125 V AC or less. Fine silver for ratings greater than 1 AMP @ 125 V AC.
 STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP.
 TERMINALS: Brass alloy for ratings up to 10 AMPS @ 250 V AC. Copper alloy for 15 AMPS @ 250 V AC ratings.

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

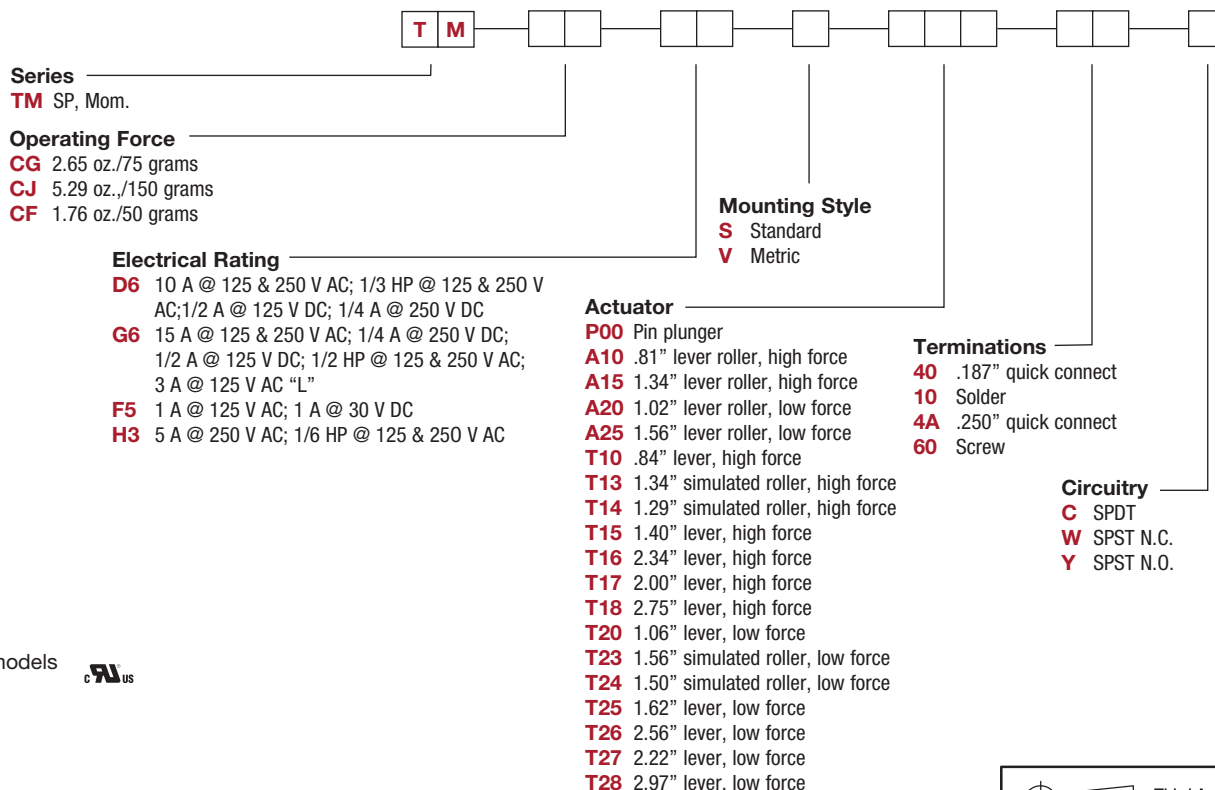


Snap-acting

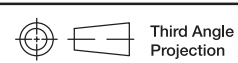
Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-26 through J-31. For additional options not shown in catalog, consult Customer Service Center.

Available extended electrical life per UL 1054, rated for 100,000 operations, consult factory.



* All models



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



TM Series Miniature Snap-acting Switches

ELECTRICAL RATING

AVAILABLE COMBINATIONS

ELECTRICAL RATING	MAXIMUM OPERATING FORCE (OZ./GRAMS)		
	1.76/50 CF	2.65/75 CG	5.29/150 CJ
D6	•	•	•
F5	•	•	•
G6	X	X	•
H3	•	•	•

• AVAILABLE
X NOT AVAILABLE



* All models 

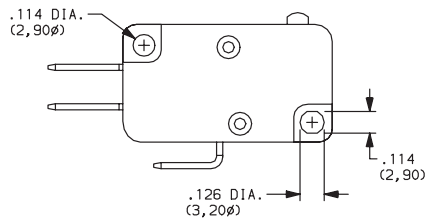
Contact Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

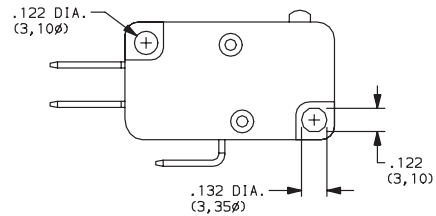
MOUNTING STYLE

S Standard

V Metric



Recommended maximum screw size: 4-40.



Recommended maximum screw size: 3 mm.

NOTE: Torque mounting screws 2-5 in/lbs.

Snap-acting



Third Angle Projection

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

TM Series Miniature Snap-acting Switches

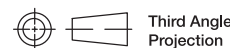
ACTUATOR 

SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)			MINIMUM RELEASE FORCE (OZ./GRAMS)			MINIMUM RETURN FORCE (OZ./GRAMS)			MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
	CF (50)	CG (75)	CJ (150)	CF (50)	CG (75)	CJ (150)	CF (50)	CG (75)	CJ (150)	ALL FORCES	ALL FORCES	ALL FORCES
T10	2.12 60	3.17 90	6.35 180	.49 14	.99 28	1.69 48	.25 7	.53 15	1.06 30	.013 (0,33)	.080 (2,03)	.035 (0,89)
T13	1.06 30	1.59 45	2.82 80	.21 6	.35 10	.71 20	.11 3	.14 4	.35 10	.030 (0,76)	.160 (4,06)	.065 (1,65)
T13	1.06 30	1.76 50	3.17 90	.25 7	.35 10	.71 20	.11 3	.14 4	.35 10	.050 (1,27)	.140 (3,56)	.062 (1,57)
T15	1.06 30	1.59 45	2.28 80	.21 6	.32 9	.71 20	.11 3	.14 4	.35 10	.032 (0,81)	.160 (4,06)	.075 (1,90)
T16	.53 15	.71 20	1.41 40	.11 3	.18 5	.35 10	.05 1.5	.07 2	.18 5	.090 (2,29)	.312 (7,92)	.140 (3,56)
T17	.71 20	.88 25	1.76 50	.14 4	.21 6	.42 12	.07 2	.07 2	.21 6	.062 (1,57)	.220 (5,59)	.110 (2,79)
T18	N/A	.71 20	1.23 35	N/A	.14 4	.28 8	N/A	.04 1	.14 4	.078 (1,98)	.375 (9,52)	.160 (4,06)
T20	1.06 30	1.59 45	3.17 90	.21 6	.32 9	.71 20	.11 3	.18 5	.35 10	.030 (0,76)	.160 (4,06)	.065 (1,65)
T23	.53 15	1.06 30	1.59 45	.11 3	.18 5	.35 10	.04 1	.07 2	.18 5	.070 (1,78)	.312 (7,92)	.125 (3,18)
T24	.53 15	1.23 35	1.76 50	.11 3	.18 5	.35 10	.05 1.5	.07 2	.18 5	.080 (2,03)	.312 (7,92)	.110 (2,79)
T25	.71 20	1.06 30	1.41 40	.07 2	.14 4	.32 9	.04 1	.07 2	.16 4.5	.070 (1,78)	.330 (8,38)	.100 (2,54)
T26	N/A	.35 10	.71 20	N/A	.07 2	.18 5	N/A	.04 1	.07 2	.110 (2,79)	.500 (12,7)	.250 (6,35)
T27	N/A	.60 17	.88 25	N/A	.11 3	.21 6	N/A	.04 1	.11 3	.125 (3,18)	.500 (12,70)	.200 (5,08)
T28	N/A	.42 12	.63 18	N/A	.07 2	.14 4	N/A	.04 1	.07 2	.187 (4,75)	.750 (19,05)	.280 (7,11)
A10	2.12 60	3.17 90	6.35 180	.49 14	.99 28	1.69 48	.25 7	.53 15	1.06 30	.013 (0,33)	.070 (1,78)	.035 (0,89)
A15	1.06 30	1.59 45	2.82 80	.21 6	.35 10	.71 20	.11 3	.14 4	.35 10	.030 (0,76)	.160 (4,06)	.065 (1,65)
A20	1.06 30	1.76 50	3.17 90	.25 7	.35 10	.71 20	.11 3	.18 5	.35 10	.025 (0,64)	.140 (3,56)	.060 (1,52)
A25	.53 15	1.06 30	1.59 45	.11 3	.18 5	.35 10	.04 1	.07 2	.18 5	.070 (1,78)	.312 (7,92)	.125 (3,18)
P00	1.76 50	2.65 75	5.29 150	.71 20	.99 28	2.12 60	.35 10	.53 15	1.06 30	.013 (0,33)	.056 (1,42)	.035 (0,89)

NOTE: For basic switch operating forces, see page J-26.

Snap-acting



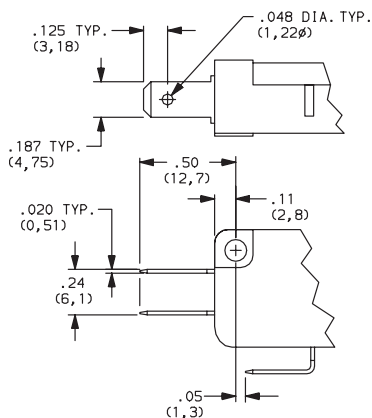
Third Angle Projection

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

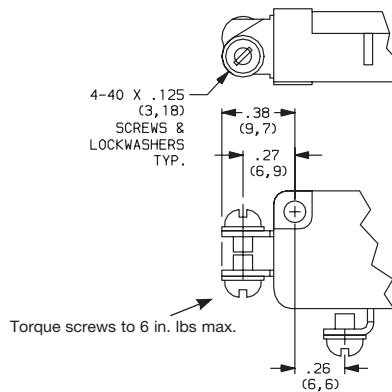


TERMINATIONS

40 .187" QUICK CONNECT

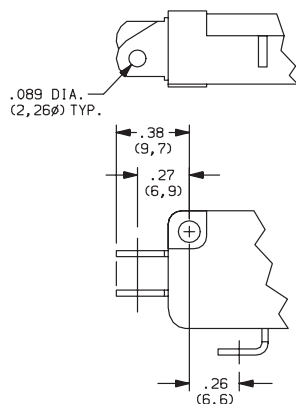


60 SCREW TERMINALS



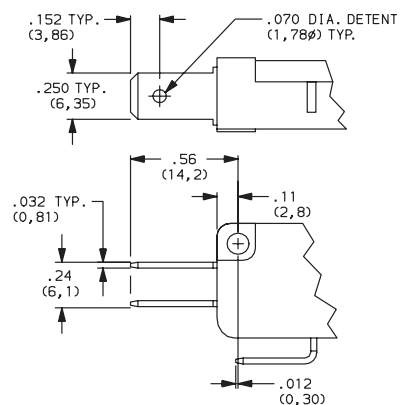
Not available with 'F5' rating option.

10 SOLDER



Not available with 'F5' rating option.

4A .250" QUICK CONNECT



Not available with 'F5' rating option.



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Third Angle
Projection

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

LC Series Subminiature Precision Snap-acting Switches



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, wire lead or PC mounting
- Wide variety of actuator styles

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1



Specifications

CONTACT RATING: From low level* to 10.1 AMPS @ 250 V AC.
 ELECTRICAL LIFE: 100,000 cycles
 INSULATION RESISTANCE: 1,000 M Ω min.
 DIELECTRIC STRENGTH: 1,000 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -17°F to 185°F (-25°C to 85°C).
 OPERATING FORCE: From 142 to 170 grams at actuator button.
 Forces are less at free end of lever actuators; (see OPERATING FORCE and ACTUATOR option sections).
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

* Low Level—conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

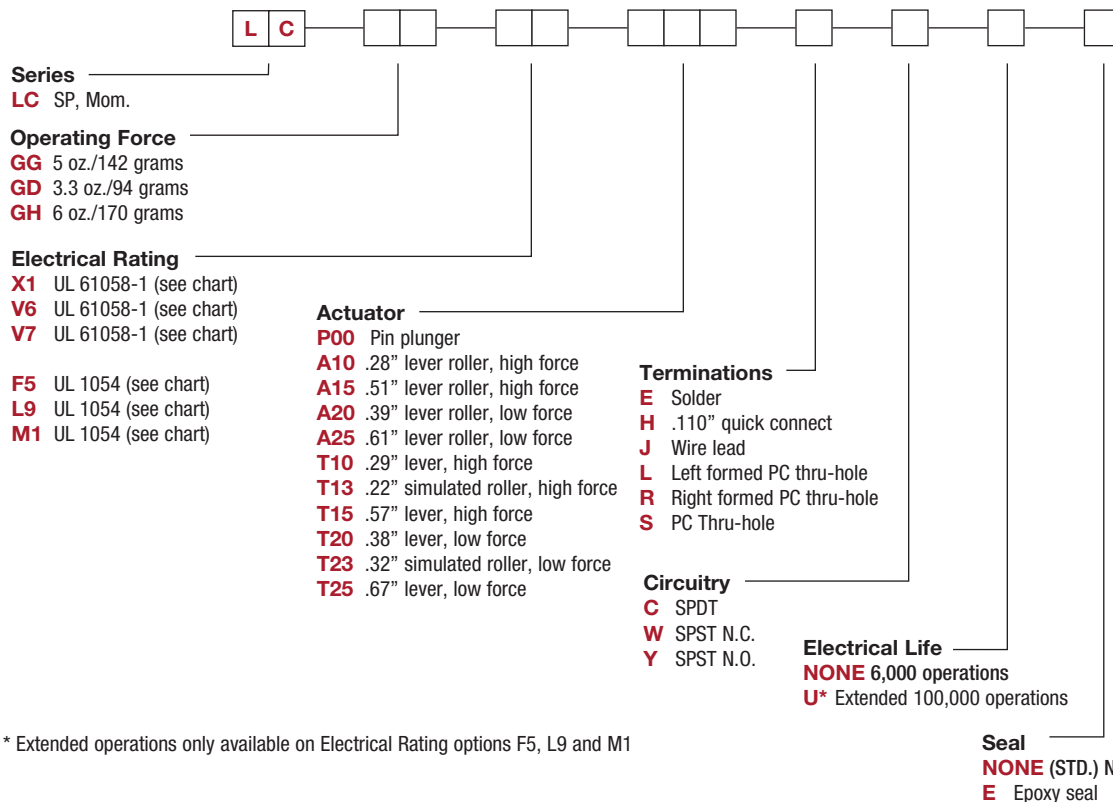
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service center.

Materials

SWITCH HOUSING: Thermoplastic polyester or high temperature thermoplastic (PTS) (UL 94V-0).
 ACTUATOR BUTTON: Thermoplastic polyester (UL 94V-0).
 SPRING: Copper alloy.
 PIVOT: Copper alloy.
 MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. Fine silver with 24K gold plate for 1 AMP @ 125 V AC or less.
 STATIONARY CONTACTS: Fine silver welded on copper alloy for ratings greater than 1 AMP @ 125 V AC. Gold alloy welded on copper alloy for ratings less than 1 AMP @ 125 V AC.
 TERMINALS: Copper alloy.
 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 J-33 through J-35. For additional options not shown in catalog, consult Customer Service Center.



* Extended operations only available on Electrical Rating options F5, L9 and M1

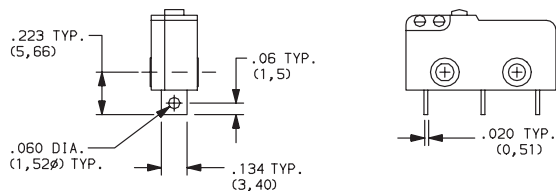


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

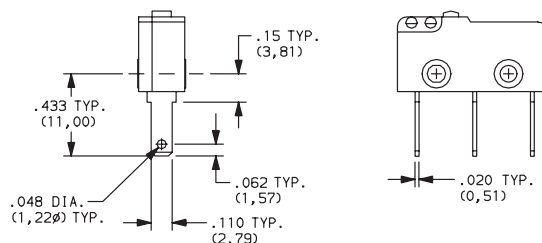
LC Series Subminiature Precision Snap-acting Switches

TERMINATIONS

E SOLDER

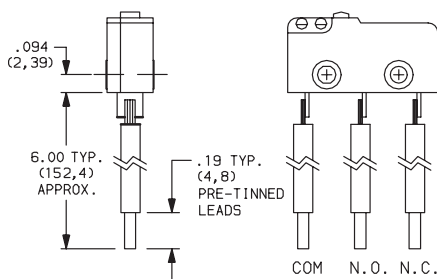


H .110" QUICK CONNECT



NOTE: Use Amp Quick Connect Part No. 640932-1.

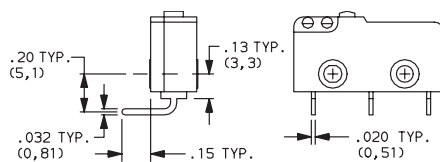
J WIRE LEAD



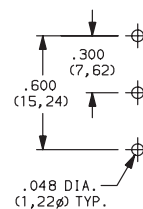
RATING	WIRE SIZE
1 AMP	22 AWG
5 AMPS	20 AWG
10.1 AMPS	18 AWG

TERMINAL	WIRE COLOR
COMMON	BLACK
NORMALLY OPEN	WHITE
NORMALLY CLOSED	RED

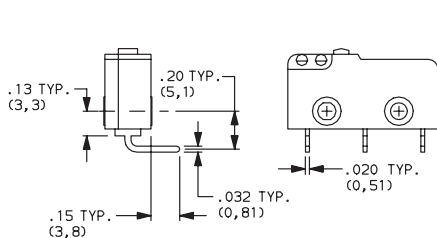
L LEFT FORMED PC THRU-HOLE



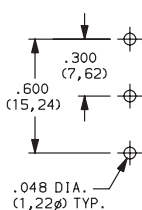
PC MOUNTING



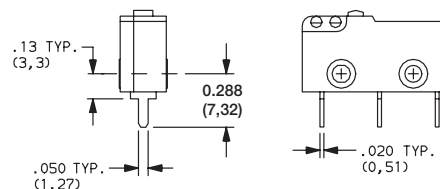
R RIGHT FORMED PC THRU-HOLE



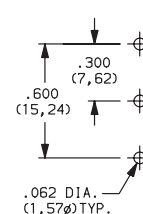
PC MOUNTING



S PC THRU-HOLE



PC MOUNTING



CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)

ELECTRICAL LIFE

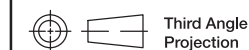
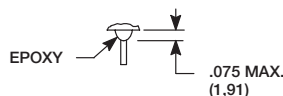
NONE 6,000 OPERATIONS

U EXTENDED 100,000 OPERATIONS

SEAL

NONE NO SEAL

E EPOXY SEAL



Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change



Snap-acting

LCA Series Subminiature Snap-acting Switches



Features/Benefits

- Compact design
- Long life and high electrical capacity
- Quick connect, solder terminals, PC terminals
- Wide variety of actuator styles
- RoHS compatible

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls

UL61058-1



Specifications

CONTACT RATING: From low level to 10.1 AMPS @ 125/250 V AC
 ELECTRICAL LIFE: see chart below
 MECHANICAL LIFE: 300,000 cycles.
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.
 OPERATING TEMPERATURE: -40°C to +125°C
 OPERATING FORCE: 150 grams at actuator button MAX.
 Forces are less at free end of lever actuators; (see ACTUATOR'S option sections).
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

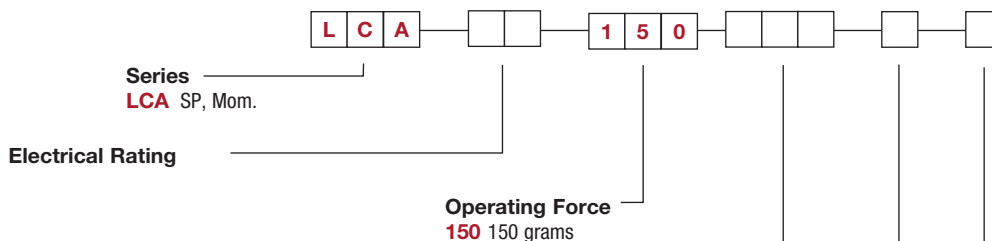
Materials

SWITCH HOUSING: Thermoplastic polyester
 ACTUATOR BUTTON: Thermoplastic polyester.
 SPRING: Copper alloy.
 PIVOT: Copper alloy.
 MOVABLE CONTACTS: Silver alloy
 STATIONARY CONTACTS: Silver alloy
 TERMINALS: Copper alloy.
 ACTUATOR LEVER: Stainless steel.

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 J-36 thru J-39. For additional options not shown in catalog, consult Customer Service Center.



Option Code	UL 1054	UL 61058-1	RoHS
01	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4	0.1 A 125/250 V AC 1E4
06	6 A 125/250 V AC 1E4	6 A 125/250 V AC 1E4	6 (2)A 125/250 V AC 1E4
10	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4	10.1 A 125/250 V AC 1E4
S5	NA	5 A 125/250 V AC 1E5	NA

Actuator

- P00** Pin plunger
- T05** 4.8 mm short lever
- T06** 6.8 mm lever
- T09** 8.8 mm lever
- T12** 12.9 mm lever
- T16** 15.2 mm lever
- T18** 18.1 mm lever
- T21** 20.1 mm lever
- T23** 23.4 mm lever
- T43** 43.5 mm lever
- S06** 6.0 mm simulated lever
- S09** 9.2 mm simulated lever
- A05** 5.0 mm lever roller

Terminations

- S** Solder
- Q** .110 Quick Connect
- P** PC Thru Hole
- L** Left Form PC
- R** Right Form PC

Circuitry

- C** SPDT
- W** SPST N.C.
- Y** SPST N.O.



Dimensions are shown: mm

Specifications and dimensions subject to change

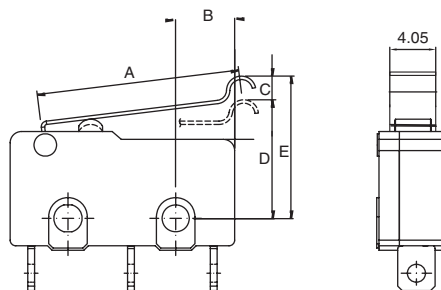
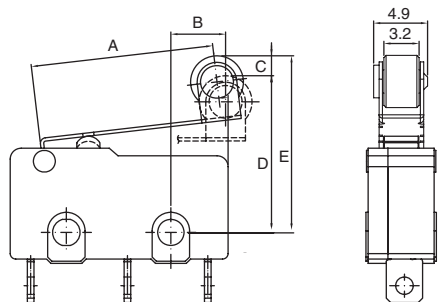


LCA Series Subminiature Snap-acting Switches

ACTUATOR 

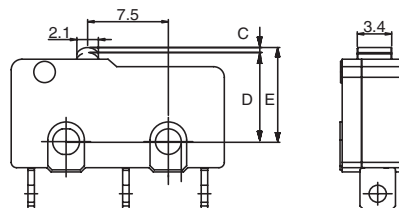
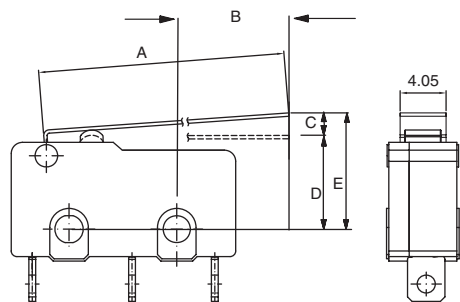
A05 LEVER ROLLER

SXX SIMULATED ROLLER



TXX LEVER

P00



ACTUATOR OPTION CODE	A mm	B ref. mm	C mm	D mm	E mm	Diff. Motion mm	Oper. Force max. grams	Release Force min. grams	Over Travel min.
	LENGTH OF LEVER	Lever length for front mtg. hole to OP	PRE TRAVEL (MAX)	OPERATING POSITION	FREE POSITION (MAX)	max			
P00	NA	NA	1.10	8.55 ± 0.3	9.35	0.20	150	25	0.4
T05	16.70	4.80	3.60	8.95 ± 0.8	11.75	0.80	50	6	0.6
T06	18.70	6.80	4.03	8.9 ± 0.9	12.09	0.90	45	5	0.67
T09	20.60	9.10	5.64	9.15 ± 1.35	13.45	1.83	33	2	0.75
T12	24.80	12.90	3.35	8.95 ± 1.5	13.10	1.19	34	2	0.89
T16	27.10	15.20	7.20	9.15 ± 1.7	15.15	1.30	40	1	0.70
T18	30.00	18.10	7.70	8.95 ± 1.9	14.65	1.50	32	1	1.2
T21	32.00	20.10	8.00	8.15 ± 1.85	15.55	1.60	35	1	1.0
T23	35.20	23.40	8.60	8.95 ± 2.0	15.55	1.80	25	1	1.5
T43	55.20	43.50	10.45	8.95 ± 3.0	19.25	2.90	15	1	1.0
S06	17.90	6.00	3.86	10.85 ± 0.9	17.81	0.86	47	5	0.64
S09	21.10	9.20	5.7	16.15 ± 1.5	20.35	1.00	42	2	1.0
A05	16.60	5.00	3.8	14.65 ± 0.8	17.65	0.80	50	6	0.6



Third Angle
Projection

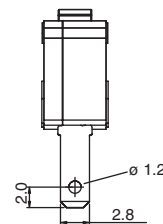
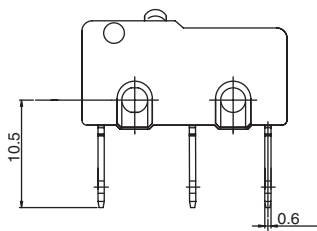
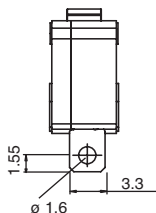
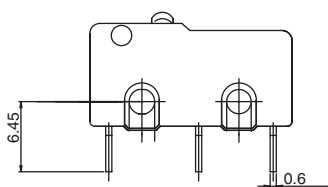
Dimensions are shown: mm
Specifications and dimensions subject to change

LCA Series Subminiature Snap-acting Switches

TERMINATIONS

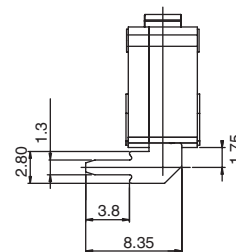
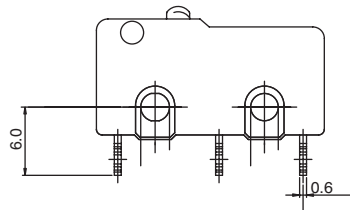
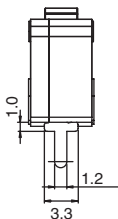
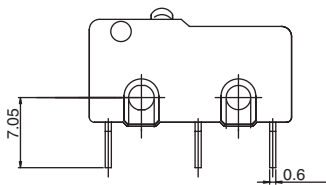
S SOLDER

Q QUICK CONNECT

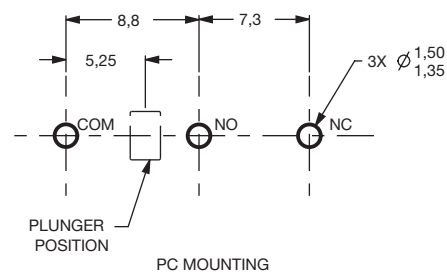
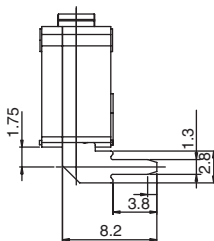
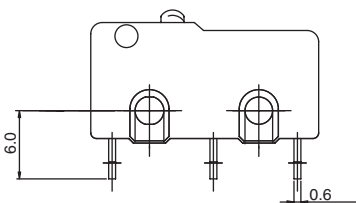


P PC THRU HOLE

L LEFT FORM PC



R RIGHT FORM PC



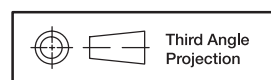
Snap-acting

CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)



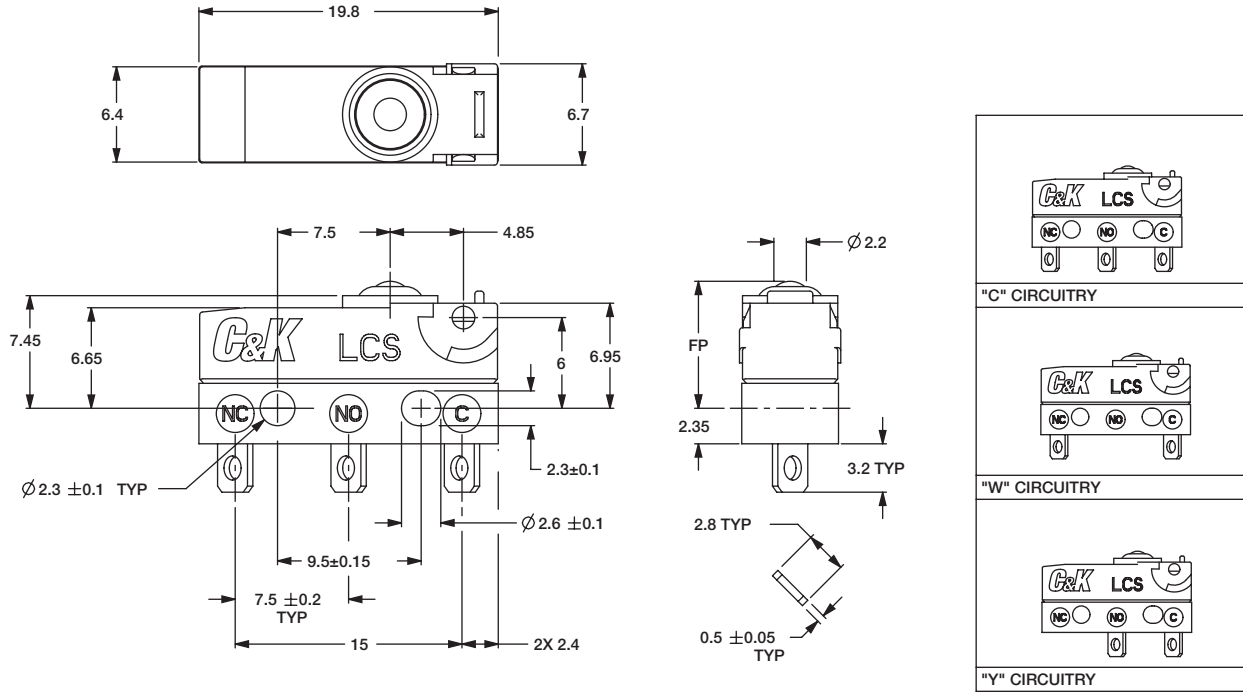
Dimensions are shown: mm
Specifications and dimensions subject to change



LCS Series Subminiature Sealed Snap-acting Switches

SERIES

LCS



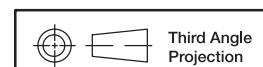
Snap-acting

ELECTRICAL RATING

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	05	5 AMP, 125/250 V AC
YES	YES	01	0.1 AMP, 125/250 V AC

OPERATING FORCE

OPTION CODE	OPERATING FORCES (grams)
2	203 g. max.

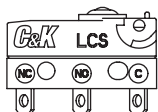


Dimensions are shown: mm
Specifications and dimensions subject to change

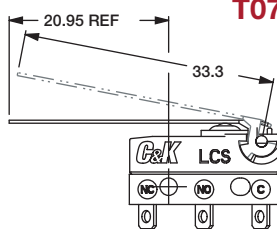
LCS Series Subminiature Sealed Snap-acting Switches

ACTUATOR

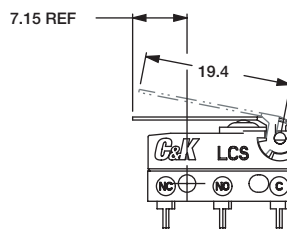
P00



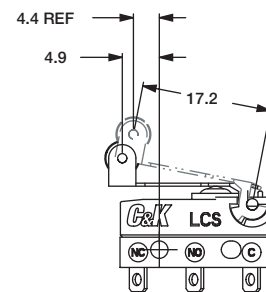
T19



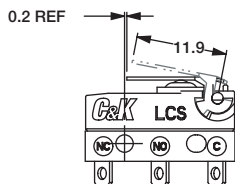
T07



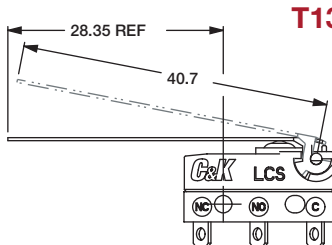
A05



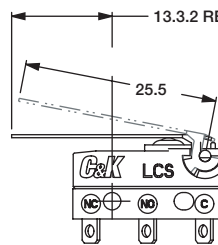
T00



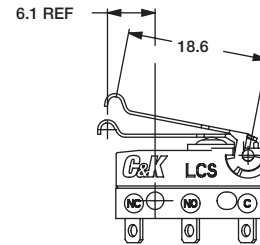
T28



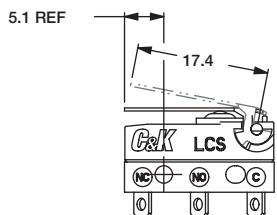
T13



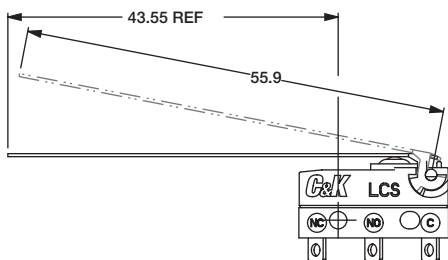
S26



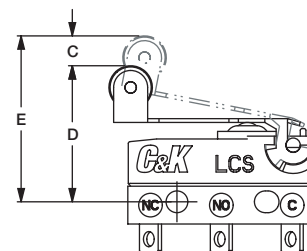
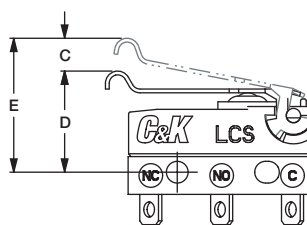
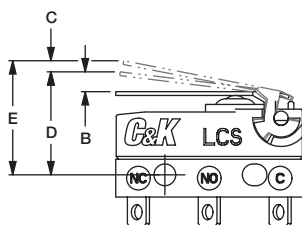
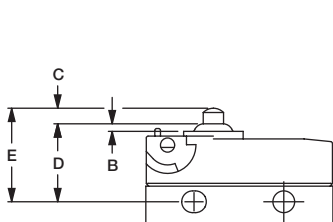
T05



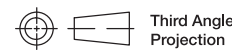
T43



Snap-acting



ACTUATOR OPTION CODE	A LENGTH OF LEVER	B OVER TRAVEL (MIN)	C PRE TRAVEL (MAX)	D OPERATING POSITION	E FREE POSITION (MAX)	DIFFERENTIAL MOTION (MAX)	OPERATING FORCE (MAX)	RELEASE FORCE (MIN)
P00	N/A	0.6	1.2	8.4 ± 0.3	9.9	0.2	203	50
T00	11.9	0.6	3.2	8.8 ± 0.9	11.1	0.5	98	21
T05	17.40	0.9	4.3	8.8 ± 1.1	12	0.6	82	16
T07	19.40	1	4.8	8.8 ± 1.2	12.4	0.7	66	13
T13	25.5	1.6	6.3	8.8 ± 1.6	13.5	0.9	54	11
T19	33.3	1.95	8	8.8 ± 2.0	15	1.75	40	5
T28	40.7	2.1	10.1	8.8 ± 2.6	16.3	2.3	39	8
T43	55.9	2.9	13.8	8.8 ± 3.5	19.1	3.6	33	7
S26	18.6	1	4.6	10.7 ± 1.2	14.1	0.65	68	14
A05	17.20	0.9	4.3	14.5 ± 1.1	17.7	0.6	72	15



Third Angle Projection

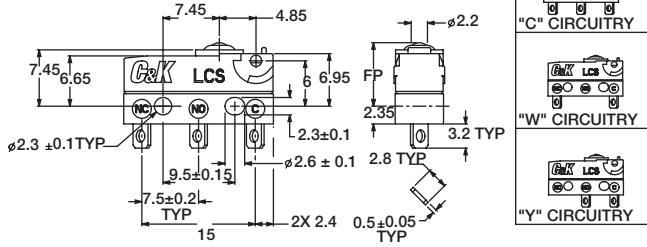
Dimensions are shown: mm
Specifications and dimensions subject to change



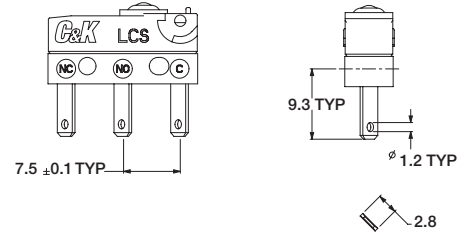
LCS Series Subminiature Sealed Snap-acting Switches

TERMINATIONS

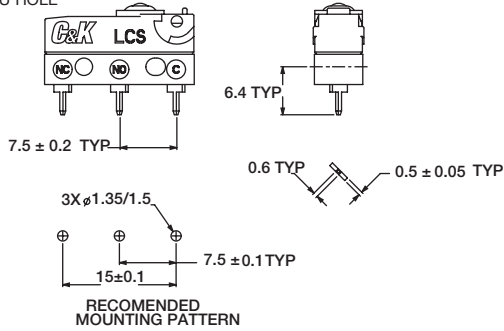
S SOLDER



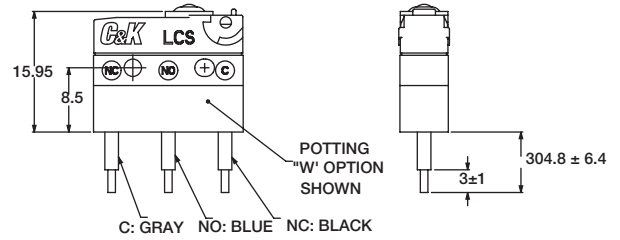
Q QUICK CONNECT 2.8mm / 0.110"



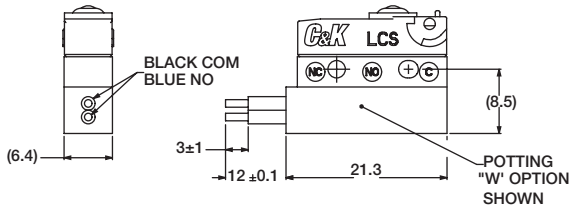
P PC THRU HOLE



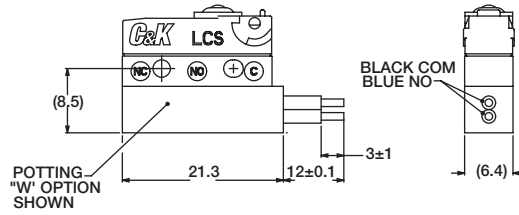
Z or W "A" WIRE ORIENTATION



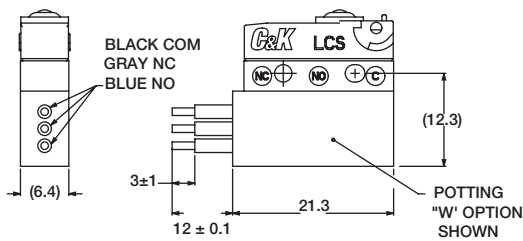
Z or W "B" WIRE ORIENTATION "Y" OR "W" CIRCUITRY



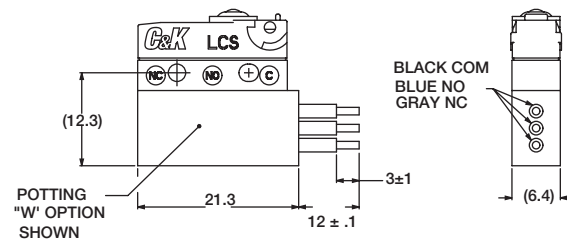
Z or W "C" WIRE ORIENTATION "Y" OR "W" CIRCUITRY



Z or W "B" WIRE ORIENTATION "C" CIRCUITRY



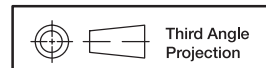
Z or W "C" WIRE ORIENTATION "C" CIRCUITRY



Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST N.C. (Single Pole, Single Throw, Normally Closed)
- Y** SPST N.O. (Single Pole, Single Throw, Normally Open)



Dimensions are shown: mm
Specifications and dimensions subject to change



LCW Series Subminiature Sealed Snap-acting Switches

NEW



UL61058-1

Features/Benefits

- Compact design
- Quick connect, solder terminals, PC terminals, wire leads
- Wide variety of actuator styles
- RoHS compatible, RoHS compliant
- IP67
- New generation price competitive

Typical Applications

- Motorized equipment
- Sump pump
- Thermostatic controls
- Computers
- Air conditioners

Specifications

CONTACT RATING: from low level to 0.1 Amp
 ELECTRICAL LIFE: 10,000 cycles
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 1,000 VAC
 OPERATING TEMPERATURE:
 -40°C to +120°C
 OPERATING FORCE: (see ACTUATOR'S option sections).
 MOUNTING: 2-56 screws, torque 2.3 in/lbs max.

Materials

SWITCH HOUSING: PBT
 SWITCH COVER: PBT
 ACTUATOR BUTTON: PBT
 SPRING: SUS
 MOVABLE CONTACTS: Copper
 STATIONARY CONTACTS: AgNi10
 TERMINALS: Brass.
 ACTUATOR LEVEL: SUS
 RUBBER: Silicone

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

Snap-acting

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 J-44 thru J-47. For additional options not shown in catalog, consult Customer Service Center.

Option Code	UL 61058-1	
01	0.1 A 125/250 V AC	NA

Series
LCW

Electrical Rating

Operating Force
2 203 grams

Actuator
P00 Pin plunger
T00 12 mm short lever
T05 17.5 mm short lever
T07 19.5 mm short lever
T13 25.6 mm lever
S26 18.6 mm simulated lever

Terminations
S Solder
Q 0.110 Quick Connect
P PC Thru Hole
W Wire leads potted

Circuitry
C SPDT
W SPST N.C.
Y SPST N.O.

Wire Side
A Wire out the bottom (check if available)
B Wire out the right side (check if available)
D None (Default)



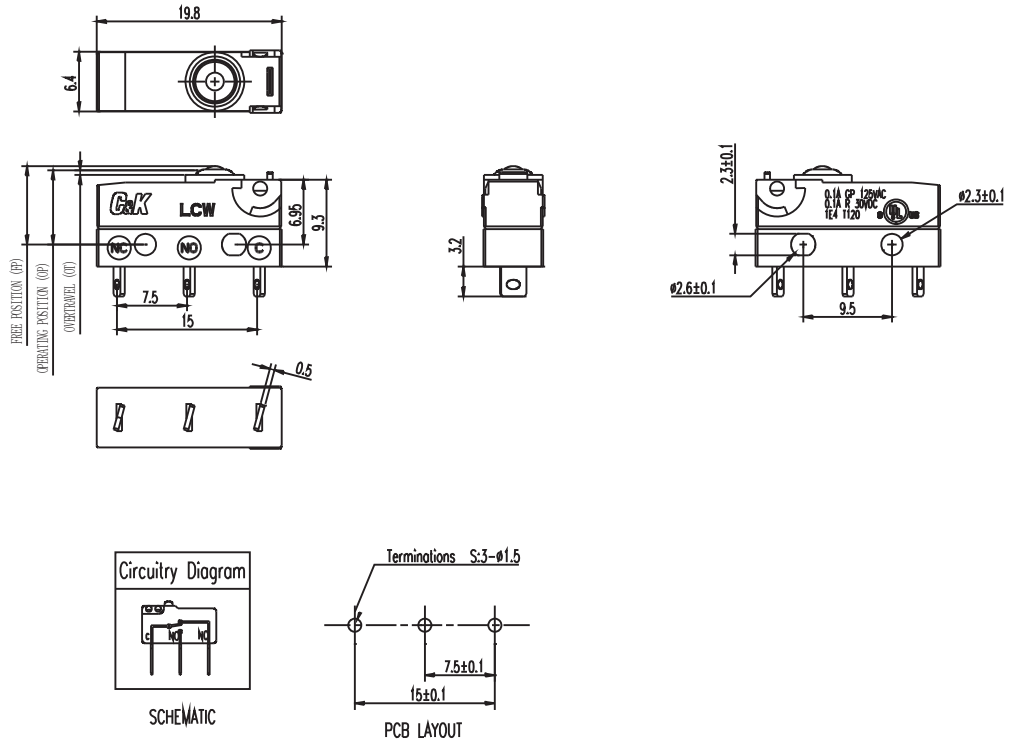
26 Feb 19

NEW

LCW Series Subminiature Sealed Snap-acting Switches

SERIES

LCW



Snap-acting

ELECTRICAL RATING

RoHS COMPLIANT *	RoHS COMPATIBLE *	OPTION CODE	ELECTRICAL RATING
YES	YES	01	0.1 AMP, 125/250 V AC

OPERATING FORCE

OPTION CODE	OPERATING FORCES (grams)
2	203 g. max.



Dimensions are shown: mm
Specifications and dimensions subject to change



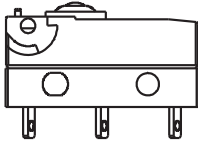
26 Feb 19

LCW Series Subminiature Sealed Snap-acting Switches

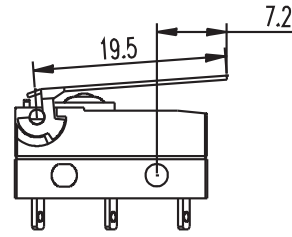
NEW

ACTUATOR 

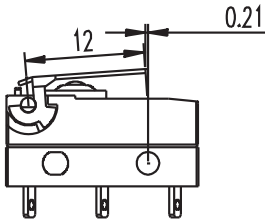
P00



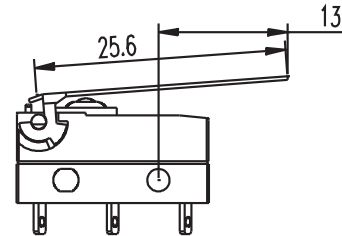
T07



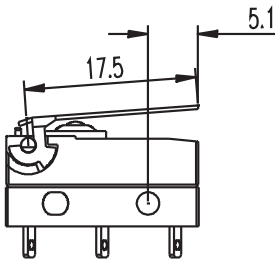
T00



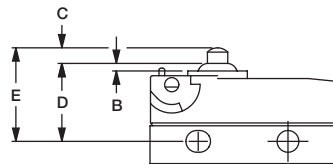
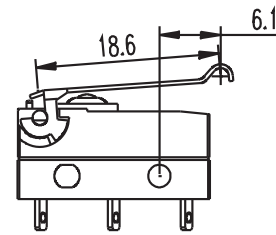
T13



T05



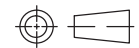
S26



Snap-acting

Actuator Option Code	A	B	C	D	E	Differential Motion (max)	Operating Force (Max)	Release Force (Min)
	Length of Lever	Overtravel (min)	Pretravel (max)	Operating Position	Free Position (max)			
P00	Not Appli- cable	0.6	1	8.7±0.3	9.4	0.9	203	30
T00	12	0.6	4.9	8.8±1.2	12.5	1	100	15
T05	17.5	0.6	5.7	8.8±1.5	13	1.2	90	10
T07	19.5	0.6	6.2	8.8±1.5	13.5	1.2	70	10
T13	25.6	1	4.7	8.8-11.24	13.5	1.5	54	5
S26	18.6	0.6	4.6	10.7±1.2	14.1	1.5	68	5

Dimensions are in mm and force in grams



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

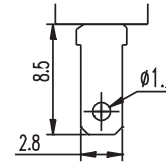
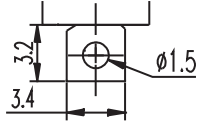
NEW

LCW Series Subminiature Sealed Snap-acting Switches

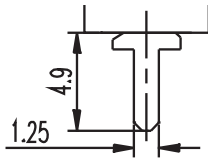
TERMINATIONS

S SOLDER

Q QUICK CONNECT 2.8mm / 0.110"



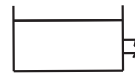
P PC THRU HOLE



W "A" WIRE ORIENTATION OUT THE BOTTOM
"W" CIRCUITRY



W "B" WIRE ORIENTATION OUT THE RIGHT SIDE
"W" CIRCUITRY



Snap-acting

CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST N.C. (Single Pole, Single Throw, Normally Closed)

Y SPST N.O. (Single Pole, Single Throw, Normally Open)



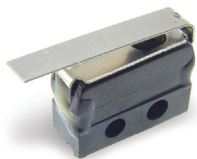
Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change



26 Feb 19

MM Series Subminiature Precision Snap-acting Switches



Features/Benefits

- Low level and power switching
- Long electrical and mechanical life
- Increased overtravel
- Reliable snap-acting mechanism

Typical Applications

- Limited space constraints
- Communication devices

Specifications

CONTACT RATING: From low level* to 7 AMPS @ 250 V AC.
 ELECTRICAL LIFE: 100,000 cycles at full rated load.
 INSULATION RESISTANCE: 1,000 ohm min.
 DIELECTRIC STRENGTH: 1,000 V RMS min. @ sea level.
 OPERATING TEMPERATURE: -67 F to 275 F (-55 C to 135 C).
 OPERATING FORCE: 5 oz. (142 grams) max. at actuator button.
 MOUNTING: 2-56 screws, torque 2 in/lbs max.

*Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

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

Materials

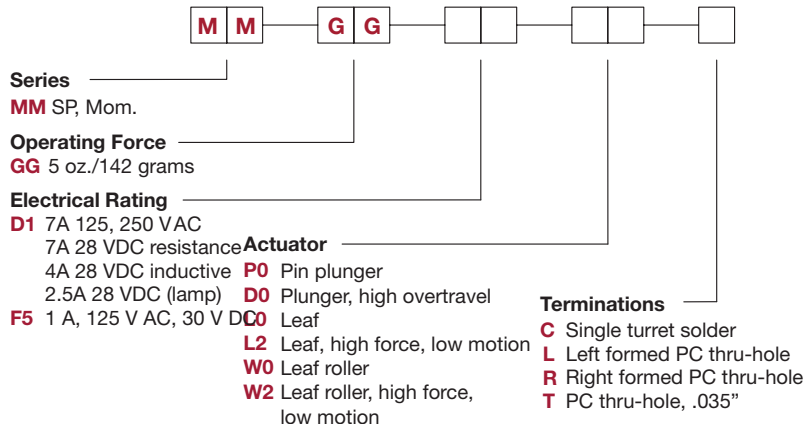
SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).
 ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).
 SPRING: Beryllium copper CDA alloy C17200.
 PIVOT: Brass CDA alloy 260.
 MOVABLE CONTACTS: Fine silver for ratings greater than 1 AMP @ 125 V AC. 24K gold for 1 AMP @ 125 V AC or less.
 STATIONARY CONTACTS: Fine silver inlay on copper CDA alloy C10200 for ratings greater than 1 AMP @ 125 V AC. 24K gold on copper CDA alloy C10200 for 1 AMP @ 125 V AC or less.
 TERMINALS: Copper CDA alloy C18700.



Snap-acting

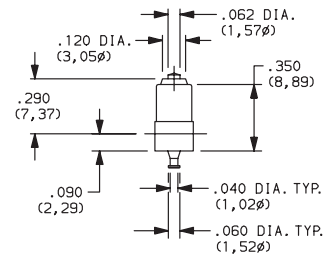
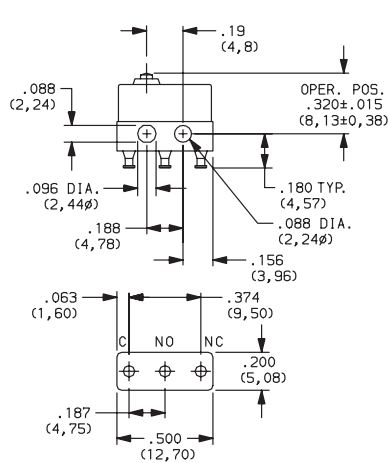
Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-44 through J-49. For additional options not shown in catalog, consult Customer Service Center.



MM Series Subminiature Precision Snap-acting Switches

SWITCH WITH STANDARD OPTIONS



PART NUMBER	BASIC OPERATING FORCE (OZ./GRAMS)	ELECTRICAL RATING
MMGGD1P0C	5 142	7 AMPS @ 250 V AC.

SERIES ■■■■■■

MM SPDT MOMENTARY

OPERATING FORCE ■■■■■■

OPTION CODE	BASIC SWITCH OPERATING FORCE
GG	5 oz. (142 grams) maximum for basic switch with pin plunger actuator (*'PO' actuator option).

NOTE : Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING ■■■■■■

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
D1	Yes	Yes	Fine silver.	Fine silver inlay on copper alloy.	7A 125, 250 VAC; 7A 28 VDC resistance 4A 28 VDC inductive; 2.5A 28 VDC (lamp)
F5	Yes	Yes	24K Gold.	24K Gold on copper alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

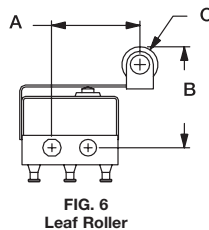
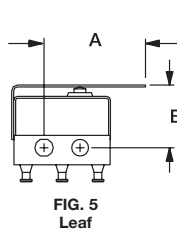
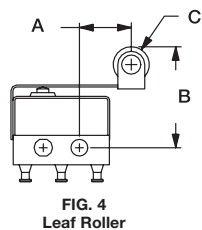
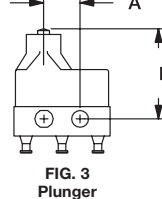
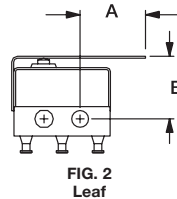
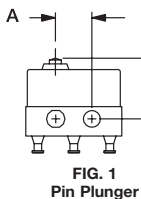
Note: See Technical Data section of this catalog for RoHS compliant and compatible definition and specifications.

All models **C&K** US with all options.

Consult Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

ACTUATOR ■■■■■■



OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C
P0	1	.19 (4,8)	.320 ± .015 (8,13 ± 0,38)	—
D0	3	.19 (4,8)	.475 ± .031 (12,07 ± 0,79)	—
L0	2	.34 (8,6)	.330 ± .015 (8,38 ± 0,38)	—
L2	5	.53 (13,5)	.330 ± .015 (8,38 ± 0,38)	—
W0	4	.27 (6,9)	.532 ± .025 (13,51 ± 0,64)	.188 dia. (4,78φ)
W2	6	.46 (11,7)	.532 ± .025 (13,51 ± 0,64)	.188 dia. (4,78φ)



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



MM Series Subminiature Precision Snap-acting Switches

ACTUATOR

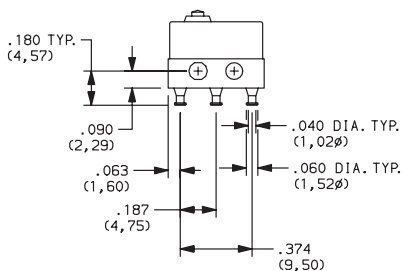
SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	MINIMUM RELEASE FORCE (OZ./GRAMS)	MAXIMUM DIFFERENTIAL TRAVEL	MAXIMUM PRETRAVEL	MINIMUM OVERTRAVEL
D0	5 142	.7 20	.004 (0,10)	.030 (0,76)	.040 (1,02)
L0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
L2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)
P0	5 142	1 28	.002 (0,05)	.020 (0,51)	.004 (0,10)
W0	4 115	.7 20	.025 (0,64)	.090 (2,29)	.045 (1,14)
W2	6 170	.7 20	.012 (0,30)	.075 (1,90)	.015 (0,38)

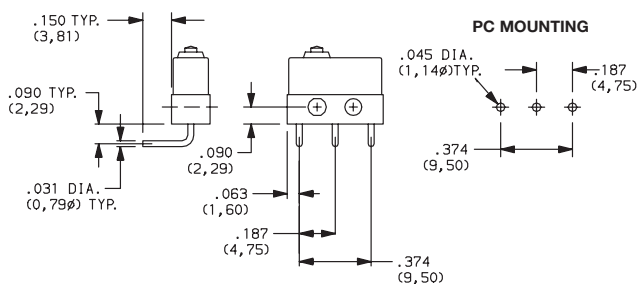
NOTE : For basic switch operating forces, see page J-44

TERMINATIONS

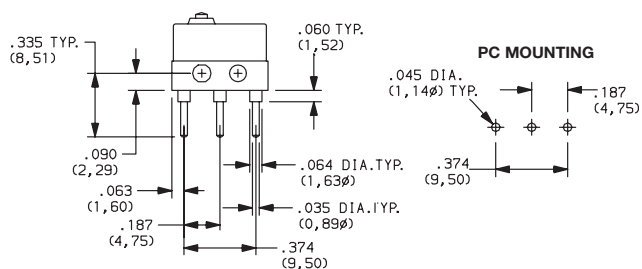
C SINGLE TURRET SOLDER



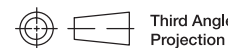
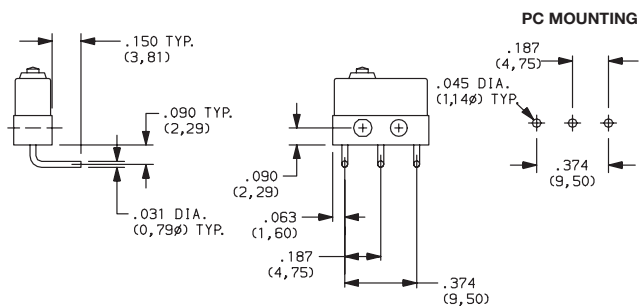
L LEFT FORMED PC THRU-HOLE



T PC THRU-HOLE, .035"



R RIGHT FORMED PC THRU-HOLE



Third Angle
Projection

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

MS Series Subminiature Snap-acting Switches

Features/Benefits

- Detect interlock and movement
- Different lever options
- Various operating forces
- Extended mechanical life
- UL approval on some designs
- Customization available

Typical Applications

- Office equipment
- Consumer electronics
- Appliances
- Audio & visual equipment
- Medical
- Industrial meters



Specifications

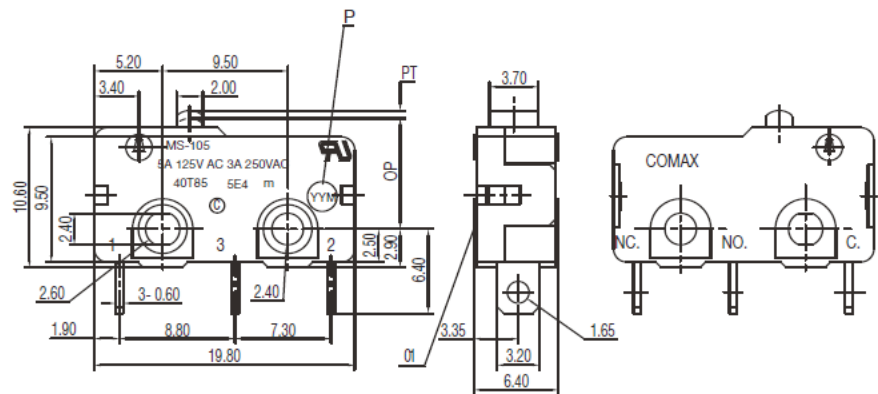
CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 5 A @ 125 VAC / 3 A @ 250 VAC
 OPERATING LIFE: 1,000,000 cycles without load
 6,000 cycles with load UL
 INITIAL CONTACT RESISTANCE: 100 mΩ max.
 INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -40°C to + 85°C
 OPERATING FORCE: 130 ± 30 gf
 PRE-TRAVEL (PT): 0.6 mm max.
 OVERTRAVEL: 0.5 mm max.
 OPERATING POSITION (OP): 8.40 ± 0.40 mm

Materials

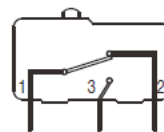
COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

PART NUMBER
MS-105A01

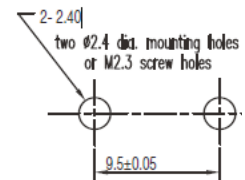


Circuit Diagram



SCHEMATIC

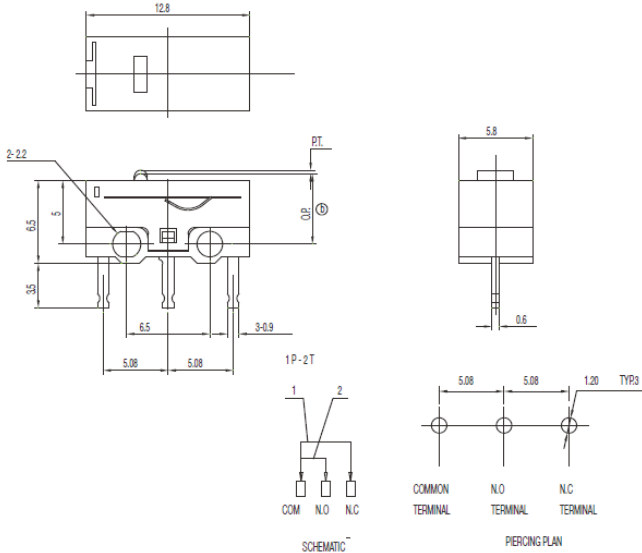
Mounting Holes



PIERCING PLAN

MS Series Subminiature Snap-acting Switches

PART NUMBER
MS-118305



Specifications

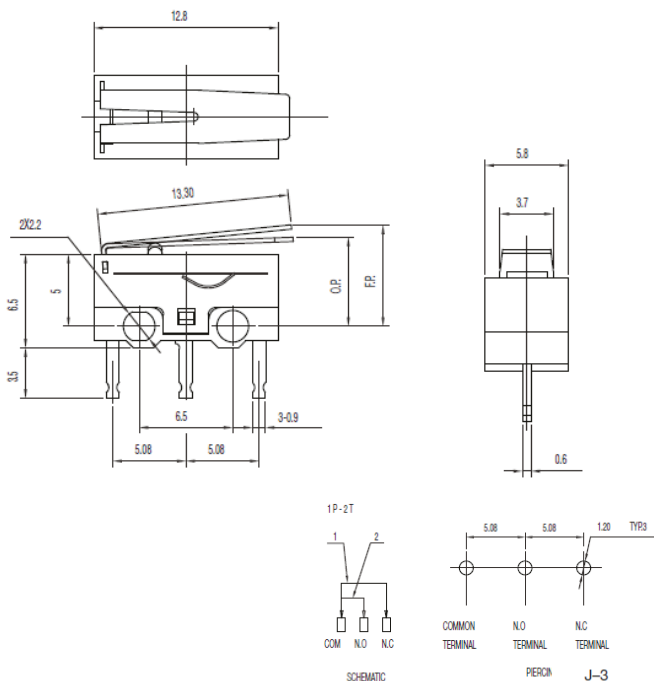
CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 VDC
 OPERATING LIFE: 500,000 cycles without load
 50,000 cycles with load
 INITIAL CONTACT RESISTANCE: 50 mΩ max.
 INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to + 70°C
 OPERATING FORCE: 70 ± 40 gf
 PRE-TRAVEL (PT): 0.50 mm max.
 OVERTRAVEL: 0.5 mm min.
 OPERATING POSITION (OP): 5.50 ± 0.30 mm

Materials

COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

PART NUMBER
MS-118305-A



Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 VDC
 OPERATING LIFE: 500,000 cycles without load
 50,000 cycles with load
 INITIAL CONTACT RESISTANCE: 50 mΩ max.
 INSULATION RESISTANCE: 100 MΩ min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to + 70°C
 OPERATING FORCE: 25 ± 15 gf
 OVERTRAVEL: 0.5 mm min.
 OPERATING POSITION (OP): 6.0 ± 0.80 mm
 FREE POSITION (FP): 8.5mm max.

Materials

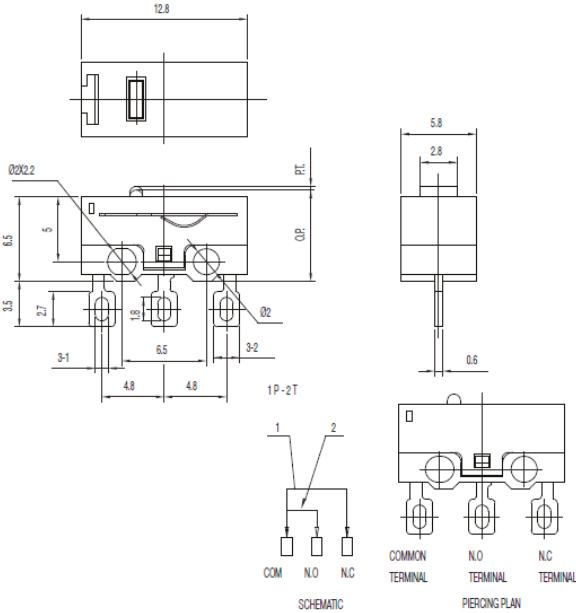
COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

MS Series Subminiature Snap-acting Switches

PART NUMBER

MS-118405



Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 VDC
 OPERATING LIFE: 500,000 cycles without load
 50,000 cycles with load
 INITIAL CONTACT RESISTANCE: 50 m Ω max.
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to + 70°C
 OPERATING FORCE: 70 \pm 40 gf
 PRE-TRAVEL (PT): 0.50 mm max.
 OVERTRAVEL: 0.5 mm min.
 OPERATING POSITION (OP): 7.0 \pm 0.30 mm

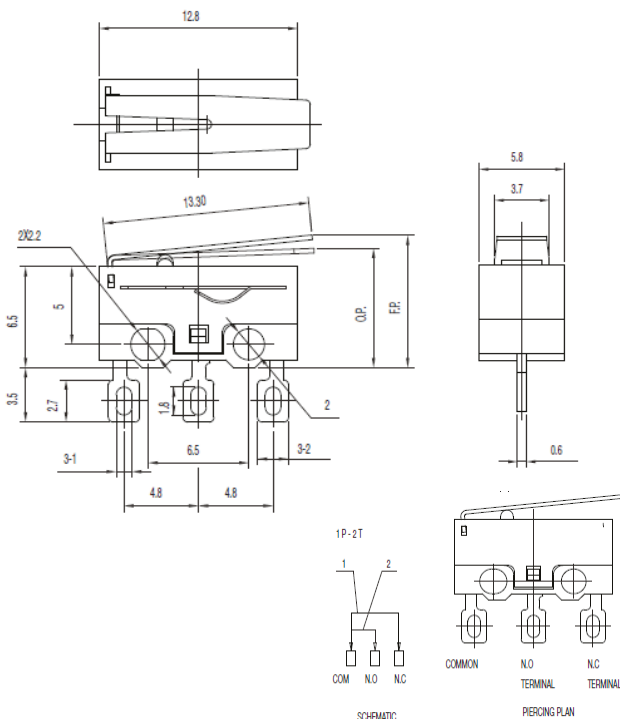
Materials

COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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

PART NUMBER

MS-118405-A



Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 VDC
 OPERATING LIFE: 500,000 cycles without load
 50,000 cycles with load
 INITIAL CONTACT RESISTANCE: 50 m Ω max.
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 OPERATING TEMPERATURE: -20°C to + 70°C
 OPERATING FORCE: 25 \pm 15 gf
 OVERTRAVEL: 0.5 mm min.
 OPERATING POSITION (OP): 7.5 \pm 0.80 mm
 FREE POSITION (FP): 10 mm max.

Materials

COVER: PBT (UL94V-0)
 HOUSING: PBT (UL94V-0)
 KNOB: PBT (UL94V-0)
 TERMINALS: Silver plated

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



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

Snap-acting

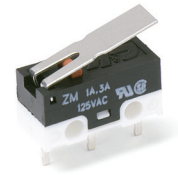
ZM Series Subminiature Snap-acting Switches

Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compliant / compatible**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**



UL61058-1  

Specifications

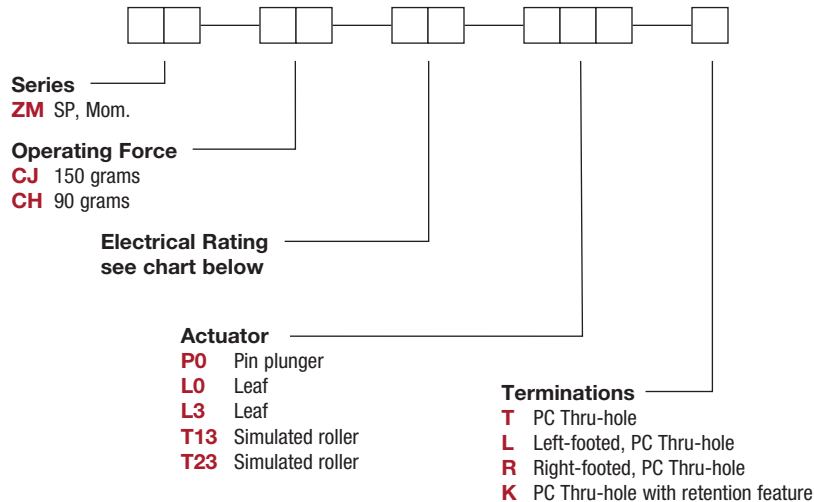
CONTACT RATING: F7: 3A @ 125 VAC
M9: 0.2A @ 60 VDC.
ELECTRICAL LIFE: 10,000 Cycles. @ 3A
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 1000 Vrms.
OPERATING TEMPERATURE: -30°C to 85°C.
OPERATING FORCE: CJ: 150 grams, CH: 90 grams.
* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.




Materials

COVER: Nylon 6/6
ACTUATOR BUTTON: Nylon 6/6
CASE: Nylon 6/6
SPRING: SUS
MOVABLE BLADE: BeCu
MOVABLE CONTACT: Silver alloy (M9 option gold plated)
FIXED CONTACTS: Silver alloy (M9 option gold plated)
FIXED TERMINALS: Brass - Ag plated.
ACTUATOR (Leaf / Roller options): SUS
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 J-48 and J-49. For additional options not shown in catalog, consult Customer Service Center.

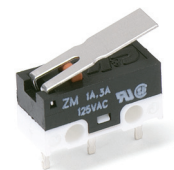
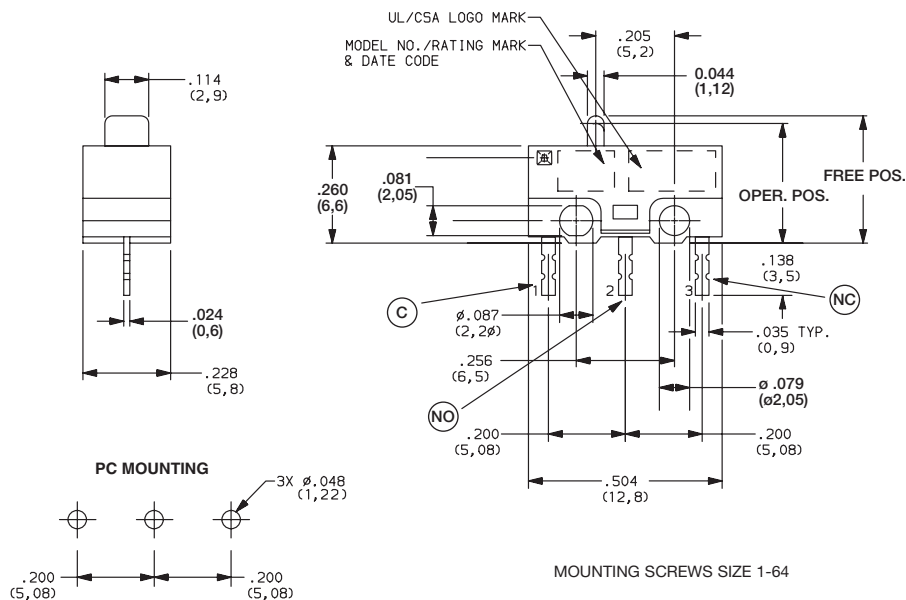


Option Code	 1054	 61058-1	
F7	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
M9	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC

ZM Series Subminiature Snap-acting Switches

SERIES **ZM** ■ ■ ■ ■ ■ ■ ■ ■

ZM SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMCJF7L0T
SPDT

Snap-acting

OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
CJ	5.29 150
CH	3.15 90

ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
F7	Yes	Yes	Silver alloy		see chart
M9	Yes	Yes	Gold plating or silver alloy		see chart

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

All models with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

Option Code	US 1054	US 61058-1	
F7	3 A 125 V AC	3 A 125 V AC 3 A 30 V DC	3 A 125 V AC
M9	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC	0.1 A 48 V DC 0.2 A 60 V DC 0.1 A 125 V AC



Third Angle
Projection

Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change



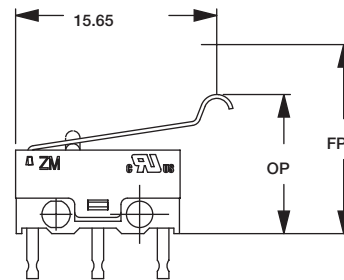
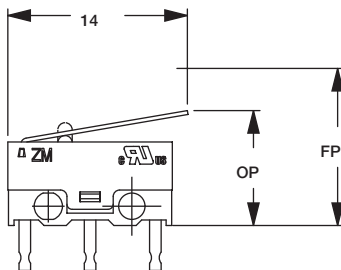
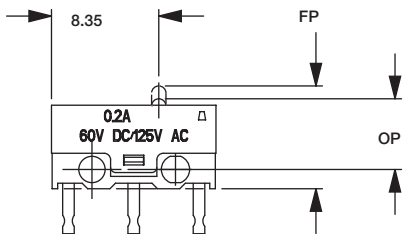
ZM Series Subminiature Snap-acting Switches

ACTUATOR

P0 PIN PLUNGER

L0 LEAF, 50 GRAMS (CJ ONLY)
L3 LEAF, 30 GRAMS (CH ONLY)

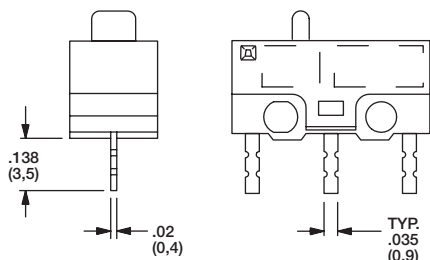
T13 SIMULATED ROLLER, 40 GRAMS (CJ ONLY)
T23 SIMULATED ROLLER, 25 GRAMS (CH ONLY)



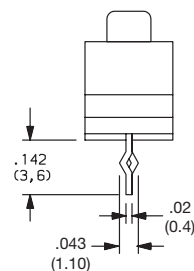
ACTUATOR OPTION CODE	A (mm)	B Ref (mm)	C (mm)	D (mm)	E (mm)	DIFF. MOTION mm MAX	OPER. FORCE grams MAX		RELEASED FORCE Grams MAX	OVER TRAVEL MIN
	LENGTH OF LEVER	LEVER LENGTH MTG. HOLE TO OP	PRE- TRAVEL MAX	OPERATING POSITION	FREE POSITION MAX		CJ	CH		
P0 PIN PLUNGER	NA	NA	1.3	7.0 ±0.3	8.0	0.3	150	90	15-20	0.2
L0 LEAF	13.0	4.03	3.4	8.4 ±0.8	11.0	1.3	50	-	8	0.6
L3 LEAF	13.0	4.03	3.4	8.4 ±0.8	11.0	1.3	-	30	5	0.6
T13 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ±0.8	13.0	1.5	40	-	7	0.6
T23 SIMULATED ROLLER	15.0	5.36	3.8	10.5 ±0.8	13.0	1.5	-	25	4	0.6

TERMINATIONS

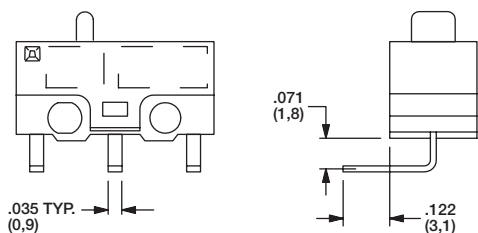
T (STD.) PC THRU-HOLE



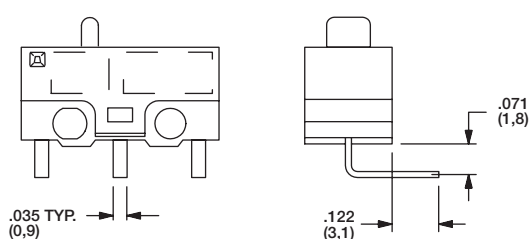
K PC THRU-HOLE WITH RETENTION FEATURE



L LEFT FOOTED, PC THRU-HOLE



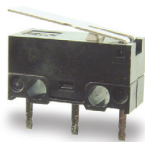
R RIGHT FOOTED, PC THRU-HOLE



Third Angle
Projection

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

ZMA Series Subminiature Snap-acting Switches



Features/Benefits

- **Reliable snap-acting mechanism**
- **Long electrical and mechanical life**
- **Compact size—Ideal when space is limited**
- **Various PCB terminals and actuators**
- **RoHS compatible & compliant**

Typical Applications

- **PCB detection switch**
- **Communication devices**
- **Testing equipment**
- **Security/Alarm systems**
- **Consumer electronics**

UL61058-1



Specifications

CONTACT RATING: 3A @ 125 V AC 24 V DC
 1 A @125 / 250 V AC 24 V DC
 0.1A @ 125 V AC 60 V DC

ELECTRICAL LIFE: 300,000 cycles @ 0.1A / 10,000 cycles @ 3A.
 MECHANICAL LIFE: 1,000,000 cycles.
 INSULATION RESISTANCE: 100 M ohm min.
 DIELECTRIC STRENGTH: 500 Vrms.
 OPERATING TEMPERATURE: -40°C to 85°C
 OPERATING FORCE: 80 or 150 grams.

Materials

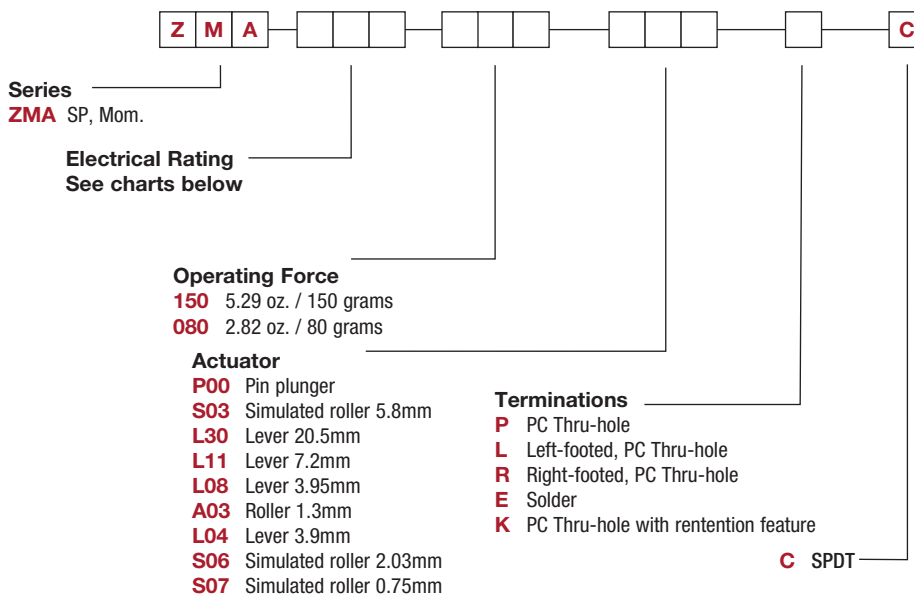
CASE/COVER: PBT
 ACTUATOR: Button nylon 6/6
 MOVABLE CONTACTS: Silver alloy or gold plated
 STATIONARY CONTACTS: Silver alloy or gold plated
 TERMINALS: Brass, silver plated.

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

* Low Level—conditions where no arcing occurs during switching, i.e., 0.4 VA max.
 @ 20 V AC or DC max.

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 J-51 and J-53. For additional options not shown in catalog, consult Customer Service Center.



Silver Contacts

Option Code	UL 1054	UL 61058-1	4	15
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

Gold Plated Contacts

Option Code	UL 1054	UL 61058-1	4	15
G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

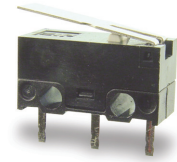
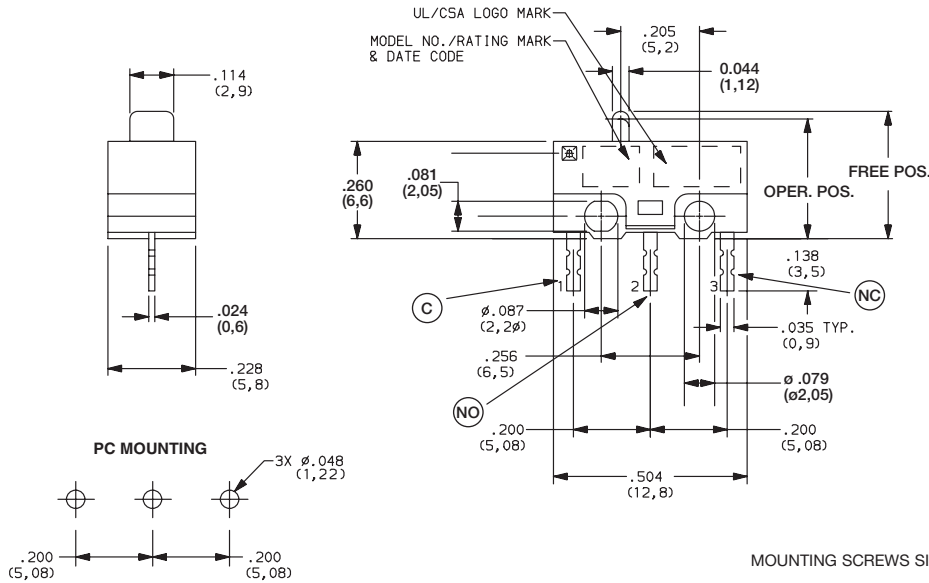


Dimensions are shown: Inch (mm)
 Specifications and dimensions subject to change

ZMA Series Subminiature Snap-acting Switches

SERIES **Z M** ■ ■ ■ ■ ■ ■ ■ ■

ZMA SUBMINIATURE SNAP-ACTING SWITCHES – SP MOMENTARY



ZMA03A150L04PC
SPDT

ELECTRICAL RATING ■ ■ ■ ■ ■ ■ ■ ■

Silver Contacts

Option Code	UL c US 1054	UL c US 61058-1		
00A	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
03A	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
01A		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

Gold Plated Contacts

Option Code	UL c US 1054	UL c US 61058-1		
G00	0.1A 60 V DC 0.1A 125 V AC	0.1A 60 V DC 0.1A 125 V AC	0.1A 125 V AC	
G03	3 A 125 V AC	3 A 125 V AC 3 A 24 V DC	3A 125 V AC	
G01		1 A 24 V DC 1 A 125 / 250 V AC		1 A 24 V DC 1 A 125 / 250 V AC

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

All models US with all options.

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE ■ ■ ■ ■ ■ ■ ■ ■

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
080	2.82 80
150	5.29 150

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

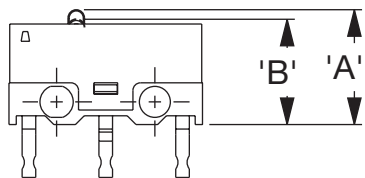


Snap-acting

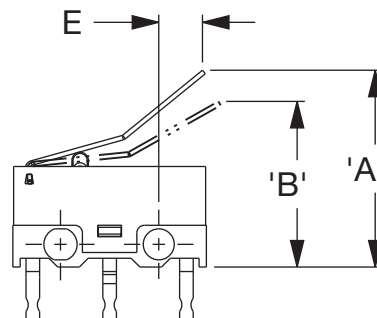
ZMA Series Subminiature Snap-acting Switches

ACTUATOR

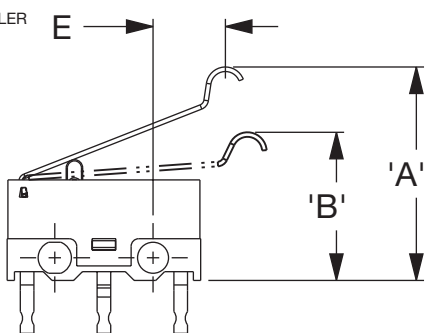
P00 PIN PLUNGER



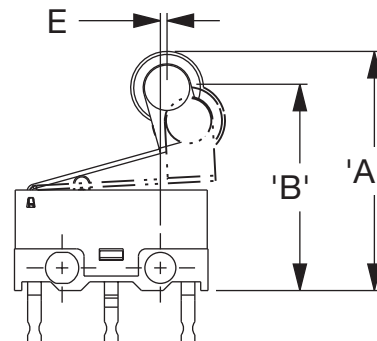
L08 LEVER
3.95MM



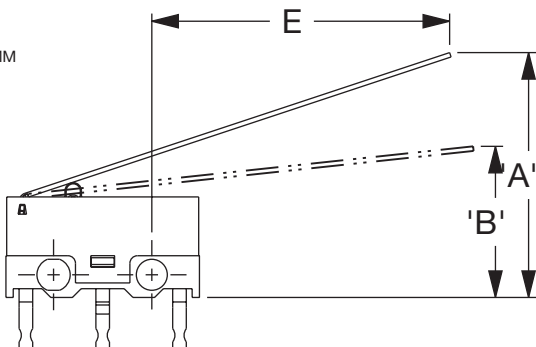
S03 SIMULATED ROLLER
5.8MM



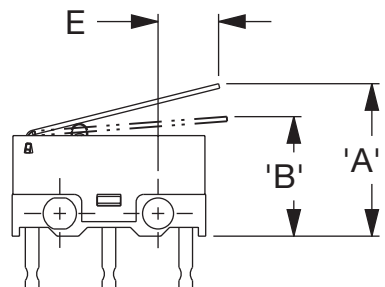
A03 ROLLER
1.3MM



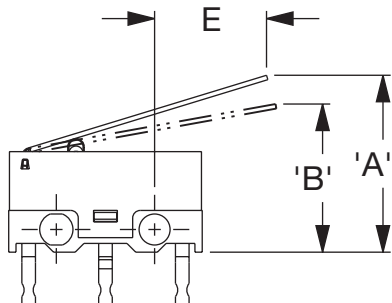
L30 LEVER
20.5MM



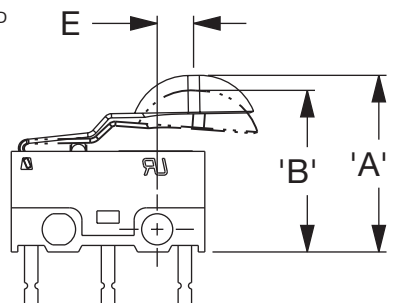
L04 LEVER
3.49MM



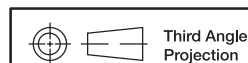
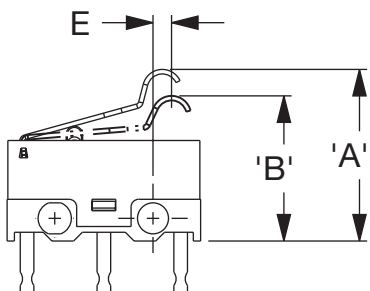
L11 LEVER
7.2MM



S06 SIMULATED ROLLER
2.03MM



S07 SIMULATED ROLLER
0.75MM



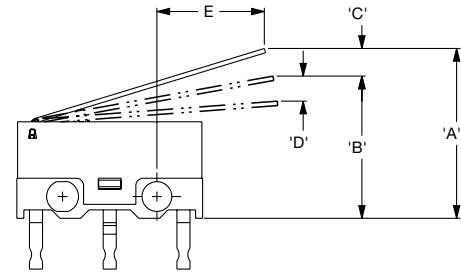
Third Angle
Projection

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

ZMA Series Subminiature Snap-acting Switches

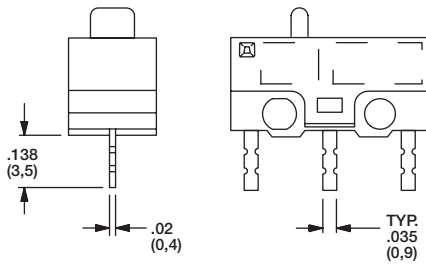
SWITCH CHARACTERISTICS

CODE	OPER. FORCE MAX. (GRAMS)		REL. FORCE MIN. (GRAMS)		'A' FP MAX. (MM)	'B' OP MAX. (MM)	'C' PT MAX. (MM)	'D' OT MIN. (MM)	'E' MIN. (MM)
P00	80	150	21	35	7.35	6.9 ±0.3	0.62	0.2	
S03	25	43	5	7	14.2	9.8 ±0.9	3.5	0.7	5.41
L30 (80gf)	13	21	2	3	16.8	9.5 ±1.9	6.9	0.55	20.15
L30 (150 gf)	13	21	2	3	16.8	9.75 ±1.9	6.9	0.55	20.15
L11	25	39	4	6	11.7	8.68 ±1	4.4	0.6	7.33
L08	27	48	3	8	13.5	10.75 ±0.8	3.5	0.3	3.82
A03	34	65	6	10	16.55	13.65 ±1	3.9	0.5	0.56
L04	30	50	5	8	10.1	7.9 ±0.8	3.0	0.5	3.49
S06	33	49	5	11	12.43	10.7 ±0.8	1.43	1.25	1.97
S07	40	65	2	5	13.0	9.7 ±1	4.3	0.5	0.49

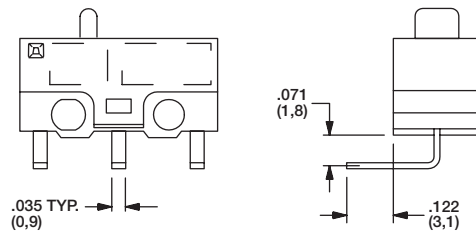


TERMINATIONS

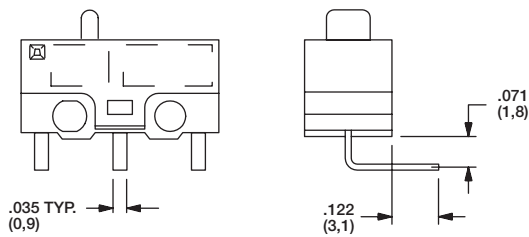
P PC THRU-HOLE



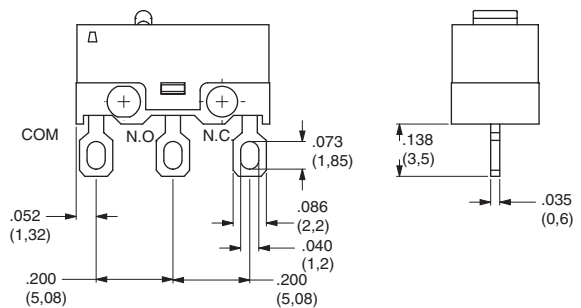
L LEFT FOOTED, PC THRU-HOLE



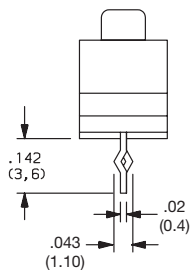
R RIGHT FOOTED, PC THRU-HOLE



E SOLDER



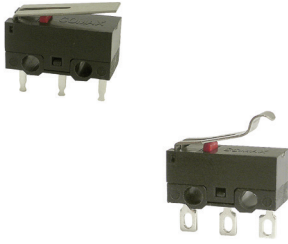
K PC THRU-HOLE WITH RETENTION FEATURE



Third Angle
Projection

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

ZMB Series Subminiature Snap-acting Switches



Features/Benefits

- Compact design
- Various operating forces
- Different lever options
- PCB or solder terminal options
- Detect interlock and movement

Typical Applications

- Consumer electronics
- Communications
- Industrial meters
- Security systems
- Office equipment

Specifications

CONTACT ARRANGEMENT: SPDT
 CONTACT RATING: 0.1 A @ 30 V DC
 INITIAL CONTACT RESISTANCE: 50 mΩ max.
 INSULATION RESISTANCE: 100 M Ω min. @ 500 VDC
 DIELECTRIC STRENGTH: 1000 VAC (50-60 Hz)
 MECHANICAL LIFE: 500,000 cycles
 ELECTRICAL LIFE: 50,000 cycles
 PRE-TRAVEL: 0.5 mm max.
 OVER-TRAVEL: 0.5 mm min.
 OPERATING TEMPERATURE: -20°C to + 70°C

Materials

COVER / HOUSING: PBT (black)
 KNOB: PBT (red)
 CONTACT: Copper alloy, silver plated
 TERMINALS: Copper alloy, silver plated
 LEVER: Stainless steel

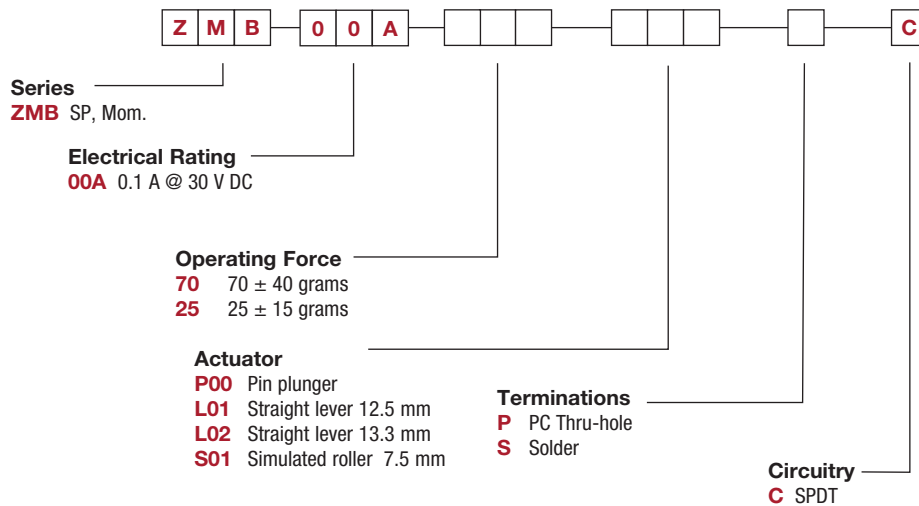
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

Build-A-Switch

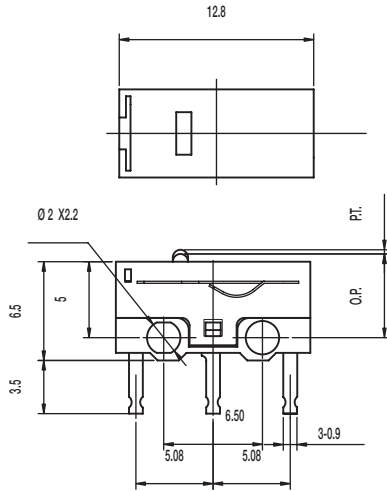
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-55 and J-56. For additional options not shown in catalog, consult Customer Service Center.



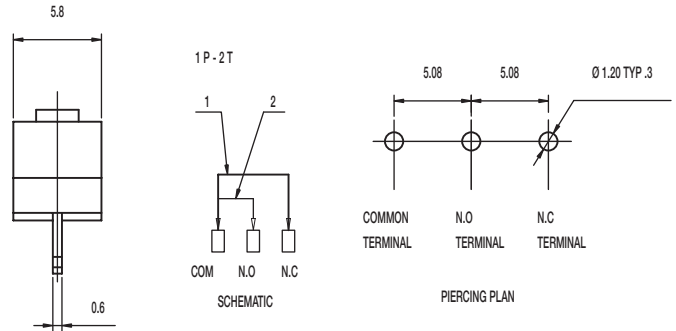
ZMB Series Subminiature Snap-acting Switches

ZMB00A70P00PC

PIN PLUNGER, PC THRU-HOLE

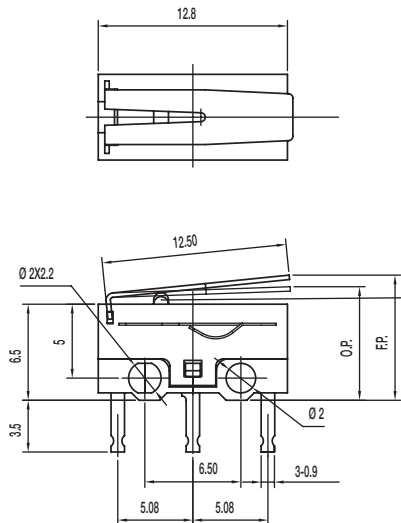


OPERATING FORCE: 70 ± 40 gf
 OPERATING POSITION (OP): 5.5 ± 0.30 mm
 FREE POSITION (FP): N/A

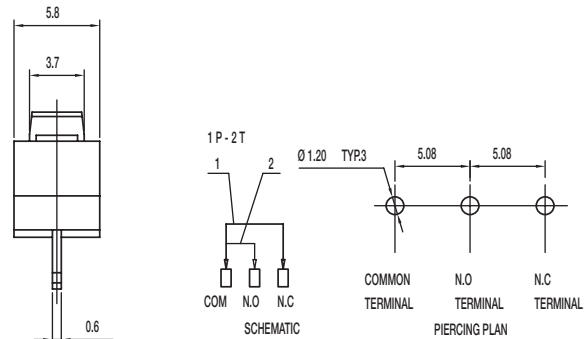


ZMB00A25L01PC

STRAIGHT LEVER 12.5 MM, PC THRU-HOLE

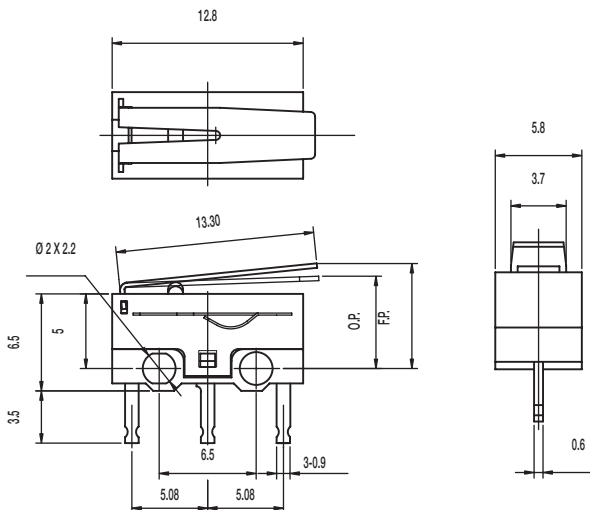


OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 7.2 ± 0.8 mm
 FREE POSITION (FP): 10 mm max.

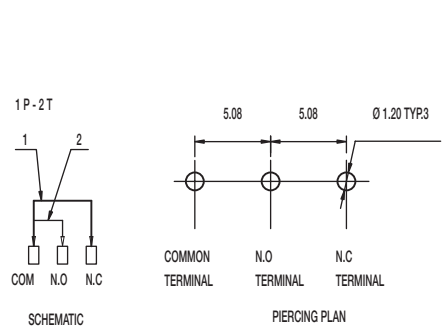


ZMB00A25L02PC

STRAIGHT LEVER 13.3 MM, PC THRU-HOLE



OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 6.0 ± 0.8 mm
 FREE POSITION (FP): 8.5 mm max.

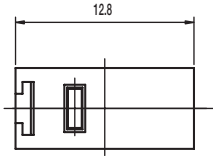


Snap-acting

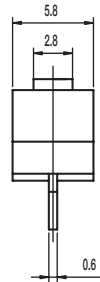
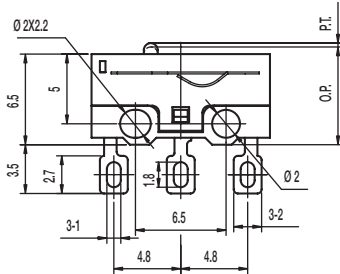
ZMB Series Subminiature Snap-acting Switches

ZMB00A70P00SC

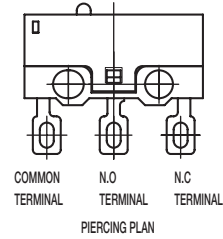
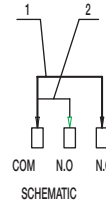
PIN PLUNGER, SOLDER



OPERATING FORCE: 70 ± 40 gf
 OPERATING POSITION (OP): 7.0 ± 0.30 mm
 FREE POSITION (FP): N/A

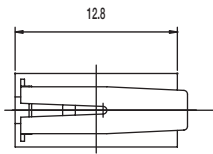


1P-2T

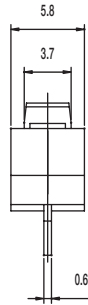
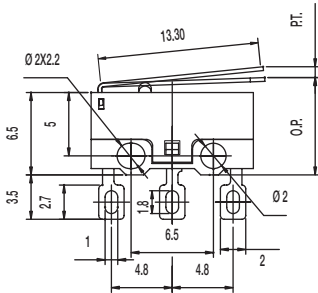


ZMB00A25L02SC

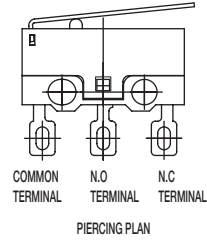
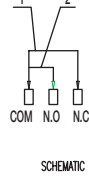
STRAIGHT LEVER 13.3 MM, SOLDER



OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 7.5 ± 0.8 mm
 FREE POSITION (FP): 10 mm max.



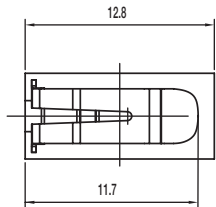
1P-2T



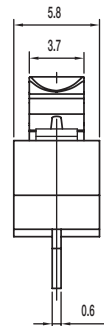
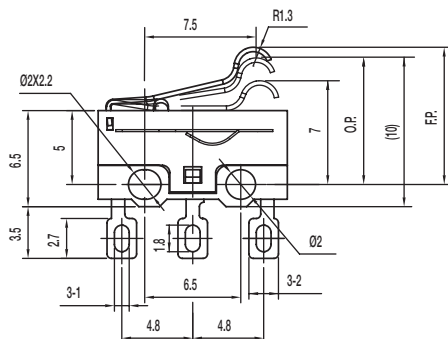
Snap-acting

ZMB00A25S01SC

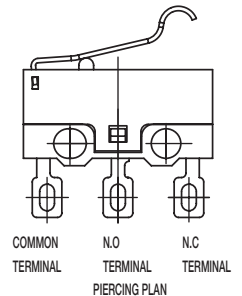
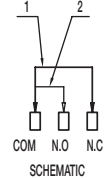
SIMULATED ROLLER 7.5 MM, SOLDER



OPERATING FORCE: 25 ± 15 gf
 OPERATING POSITION (OP): 8.5 ± 0.8 mm
 FREE POSITION (FP): 9.5 mm max.



1P-2T



ZMS Series Subminiature Snap-acting Switches (IP65)

Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Compact size—Ideal when space is limited
- Various PCB terminals and actuators
- RoHS compatible
- IP67 with potted wires only

Typical Applications

- PCB detection switch
- Communication devices
- Testing equipment
- Security/Alarm systems
- Consumer electronics



UL61058-1
UL1054



Specifications

CONTACT RATING: 3A@ 125 V AC/ 3A@ 12 V DC, 0.01A @ 12 V DC
ELECTRICAL LIFE: 100,000 cycles @ 0.01A 12V DC
100,000 cycles @ 3A 12 V DC
6,000 cycles @ 3A 125 V AC
MECHANICAL LIFE: 500,000 cycles
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 500 Vrms.
OPERATING TEMPERATURE: -40°C + 85°C.
OPERATING FORCE: 130 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

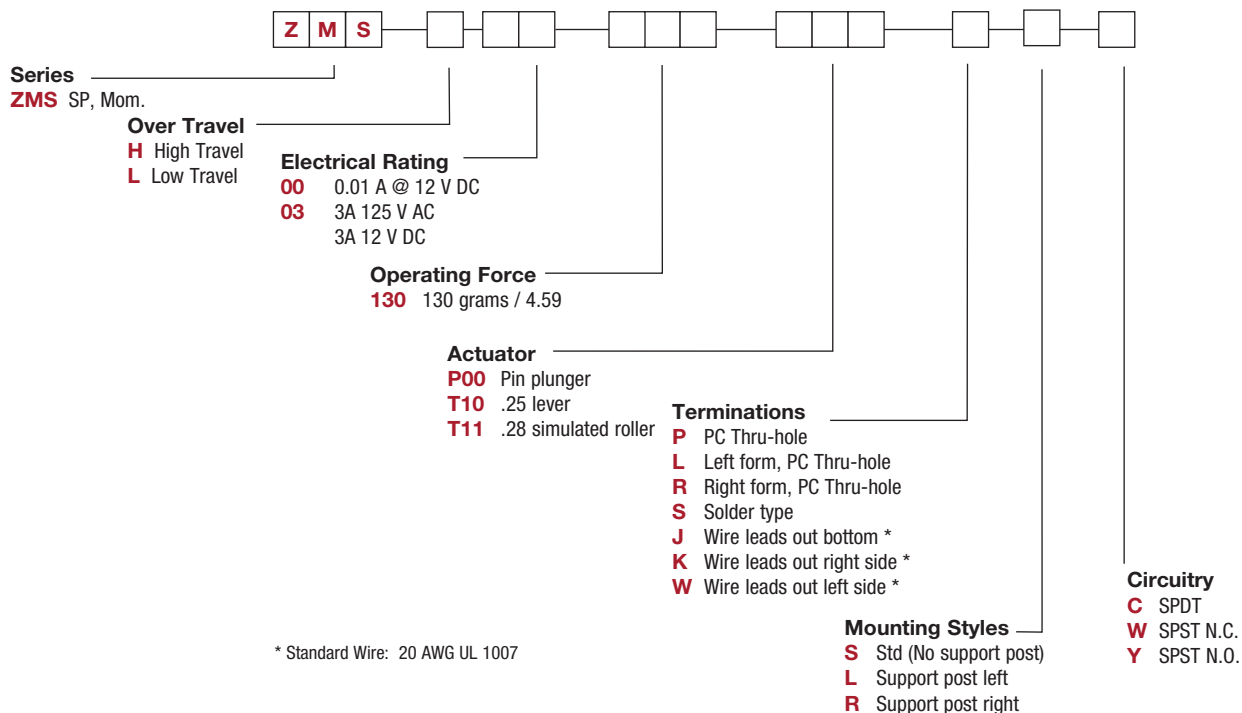
Materials

CASE: Nylon
COVER/ACTUATOR: PBT
MOVABLE CONTACTS: 3 Amp silver alloy, 0.01A gold plating over silver alloy
STATIONARY CONTACTS: 3 Amp silver alloy, 0.01 A gold plating over silver alloy
TERMINALS: Brass, silver plated
LEVER: Stainless steel

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 J-58 through J-60. For additional options not shown in catalog, consult Customer Service Center.

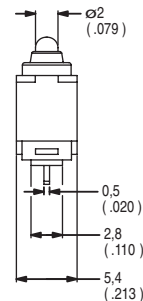
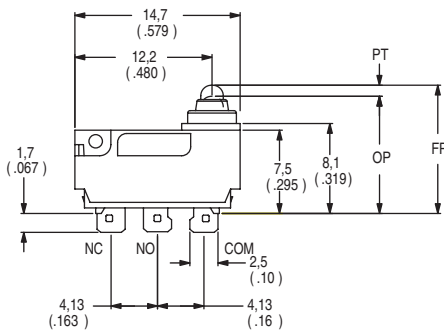


Snap-acting

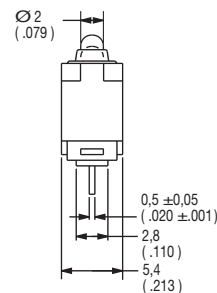
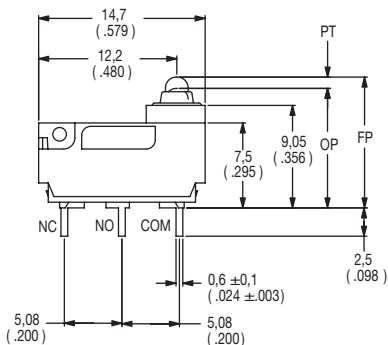
ZMS Series Subminiature Snap-acting Switches (IP65)

SERIES **ZMS** ■ ■ ■ ■ ■ ■ ■ ■

ZMSH HIGH OVER TRAVEL
Switch option shown: ZMSH00P00SSC



ZMSL LOW OVER TRAVEL
Switch option shown: ZMSL00P00PSC



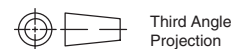
ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL	UL61058-1 UL1054	ENEC
	MOVABLE CONTACT / STATIONARY CONTACT	ELECTRICAL RATING	ELECTRICAL RATING
00	Gold plating over silver alloy	0.01 AMP @ 12 V DC 0.1 AMP @ 12 V DC	10m AMP @ 12 V DC 5E5
03	Silver alloy	3 AMPS @ 125 V AC 3 AMPS @ 12 V DC	3 AMPS @ 12 V DC 1E5

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
130	130 4.59



Third Angle Projection

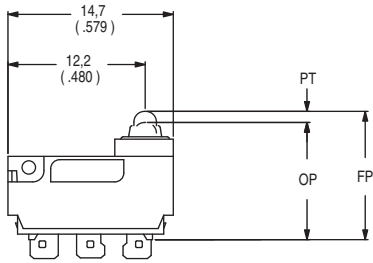
Dimensions are shown: Inch (mm)
Specifications and dimensions subject to change



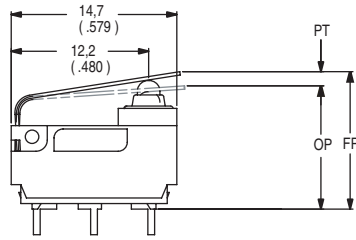
ZMS Series Subminiature Snap-acting Switches (IP65)

ACTUATOR

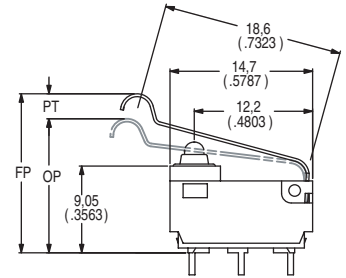
P00 PIN PLUNGER (IP65)



T10 .25 LEVER (IP65)



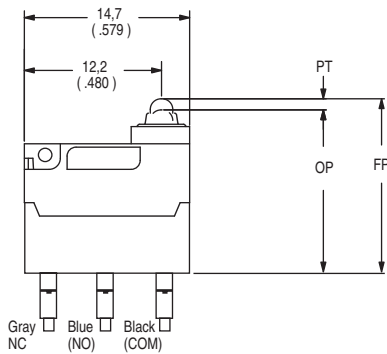
T11 LEVER (IP65)



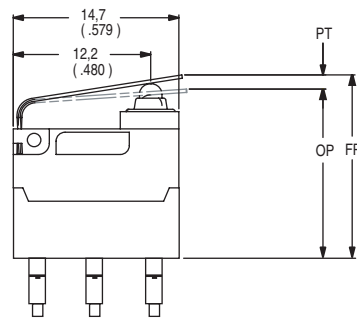
SWITCH CHARACTERISTICS

Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max	Maximum Pre-travel	Operate Position	Maximum Differential	Low Overtravel min. (L)	High Overtravel min. (H)
P00	130 4.59	13 0.45	.472 (12)	0.032 (0.8)	.415 ± .012 (10.55 ± .3)	.012 (0.3)	0.031 (0.8)	0.068 (1.72)
T10	195 6.88	55 1.93	.604 (15.35)	0.152 (3.85)	.440 ± .020 (11.2 ± .5)	0.020 (0.5)	0.053 (1.35)	0.084 (2.14)
T11	160 5.64	45 1.58	.726 (18.45)	0.186 (4.8)	.539 ± .032 (13.7 ± .8)	0.030 (0.7)	0.062 (1.65)	0.101 (2.57)

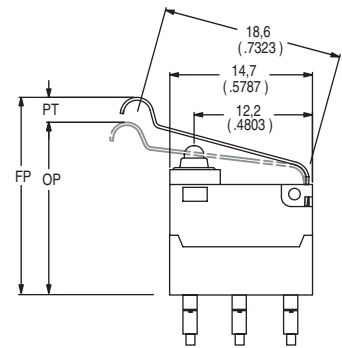
P00 PIN PLUNGER (IP67)



T10 .25 LEVER (IP67)



T11 .28 LEVER (IP67)



SWITCH CHARACTERISTICS "J" TERMINATION ONLY

Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max	Maximum Pre-travel	Operate Position	Maximum Differential	Low Overtravel min. (L)	High Overtravel min. (H)
P00	130 4.59	13 0.45	.650 (16.50)	0.032 (0.8)	.593 ± .020 (15.05 ± 0.5)	.012 (0.3)	0.031 (0.8)	0.068 (1.72)
T10	195 6.88	55 1.93	.781 (19.85)	0.152 (3.85)	.618 ± .028 (15.7 ± .7)	0.020 (0.5)	0.053 (1.35)	0.084 (2.14)
T11	160 5.64	45 1.58	.904 (22.95)	0.188 (4.8)	.717 ± .039 (18.2 ± 1.0)	0.030 (0.7)	0.062 (1.65)	0.101 (2.57)



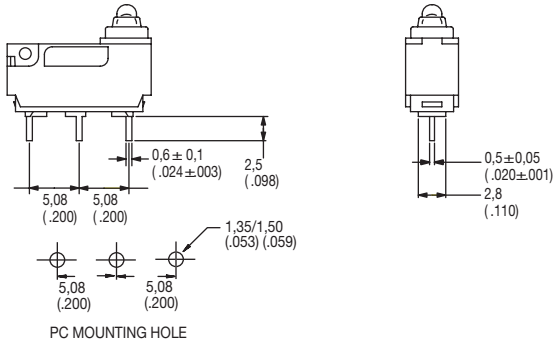
Dimensions are shown: mm (inch)
Specifications and dimensions subject to change



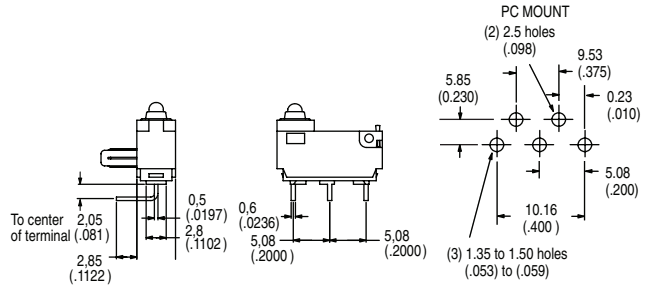
ZMS Series Subminiature Snap-acting Switches (IP65)

TERMINATIONS

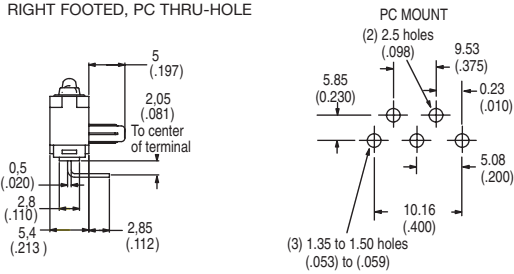
P PC THRU-HOLE



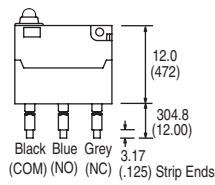
L LEFT FOOTED, PC THRU-HOLE



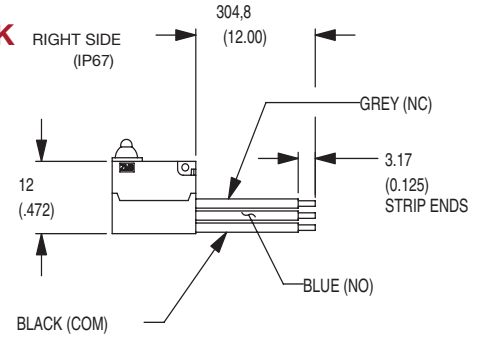
R RIGHT FOOTED, PC THRU-HOLE



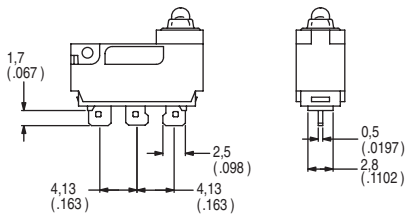
J WIRE LEADS BOTTOM (IP67)



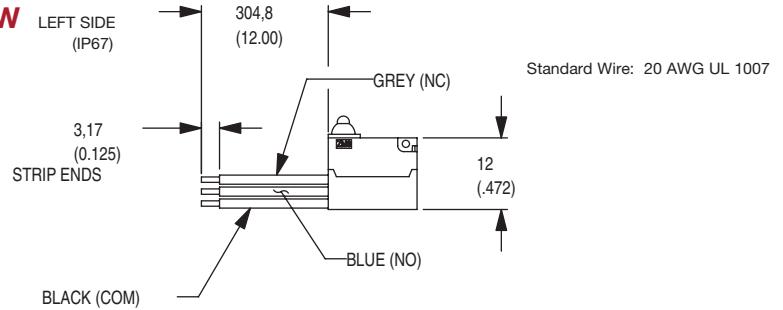
K RIGHT SIDE (IP67)



S SOLDER TYPE



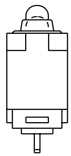
W LEFT SIDE (IP67)



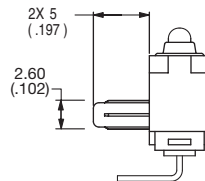
Snap-acting

MOUNTING STYLES

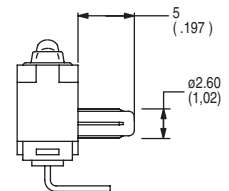
S STD (NO SUPPORT POST)



L SUPPORT POST LEFT



R SUPPORT POST RIGHT

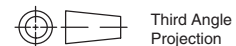


CIRCUITRY

C SPDT (Single Pole, Double Throw)

W SPST, NC (Single Pole, Single Throw, Normally Closed)

Y SPST, NO (Single Pole, Single Throw, Normally Open)



Third Angle
Projection

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

C&K

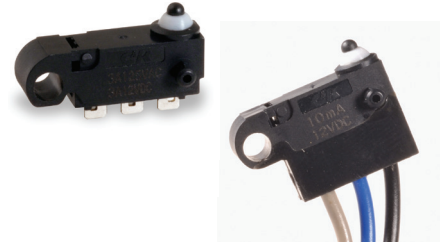
ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

Features/Benefits

- Reliable snap-acting mechanism
- Long electrical and mechanical life
- Various PCB terminals and actuators
- RoHS compatible
- IP67 with potted wires only

Typical Applications

- Communication devices
- Testing equipment
- Security/Alarm systems



UL61058-1



Specifications

CONTACT RATING: 3A@ 125 V AC / 3A@ 12 V DC, 0.01 A@ 12 V DC.
ELECTRICAL LIFE: 100,000 cycles @ 0.01 A, 12 V DC / 100,000 cycles @ 3A, 12 V DC, 6,000 cycles @ 3A, 125 VAC
INSULATION RESISTANCE: 100 M ohm min.
DIELECTRIC STRENGTH: 500 Vrms.
OPERATING TEMPERATURE: see chart below.
OPERATING FORCE: 130 grams.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max.
@ 20 V AC or DC max.

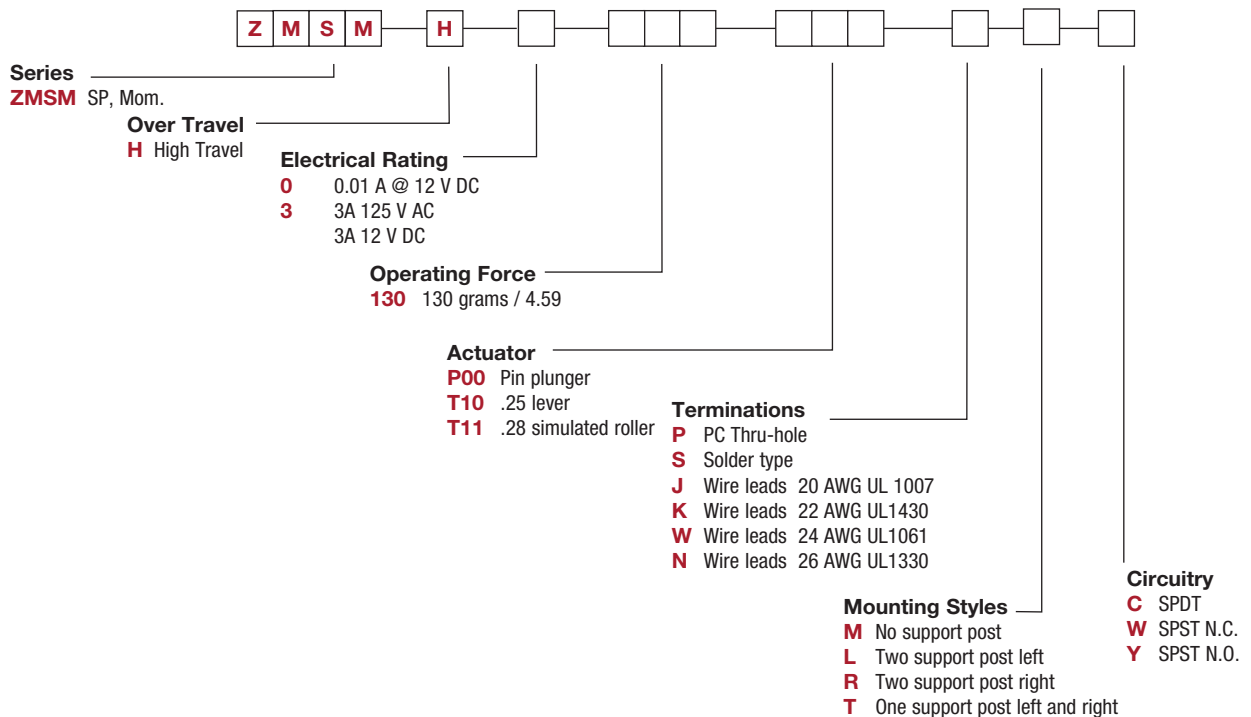
Materials

CASE: Nylon
COVER/ACTUATOR: PBT
MOVABLE CONTACTS: 3 Amp silver, 0.01A gold
STATIONARY CONTACTS: 3 Amp silver, 0.01A gold
TERMINALS: Brass, Pre-plated with silver
LEVER: Stainless steel

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

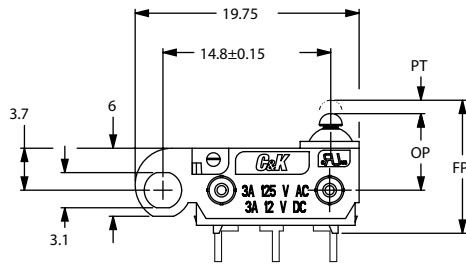
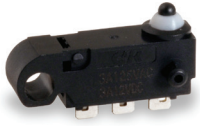
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-62 through J-64. For additional options not shown in catalog, consult Customer Service Center.



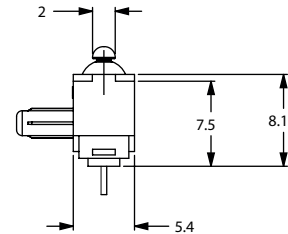
ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

SERIES

ZMSMH HIGH OVER TRAVEL



MODEL SHOWN: ZMSMHXXXP00PLC



Snap-acting

ELECTRICAL RATING

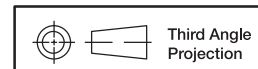
OPTION CODE	RoHS COMPLIANT*	RoHS COMPATIBLE*	CONTACT MATERIAL		ELECTRICAL RATING
			MOVABLE CONTACT	STATIONARY CONTACT	
0	Yes	Yes	Gold alloy		0.01 A @ 12 V DC
3	Yes	Yes	Silver alloy		3 AMPS @ 125 V AC 3 AMPS @ 12 V DC

Model **C&K** US with option "S" (solder type) only.

Consult Customer Service center for availability and delivery of nonstandard ratings.

OPERATING FORCE

OPTION CODE	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
130	130 4.59



Third Angle Projection

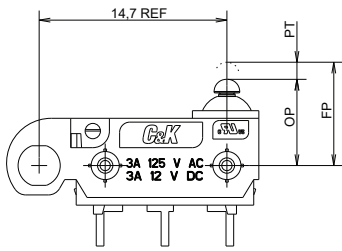
Dimensions are shown: mm
Specifications and dimensions subject to change



ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

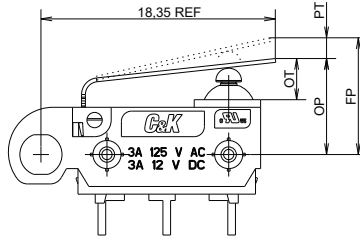
ACTUATOR

P00 PIN PLUNGER (IP65)



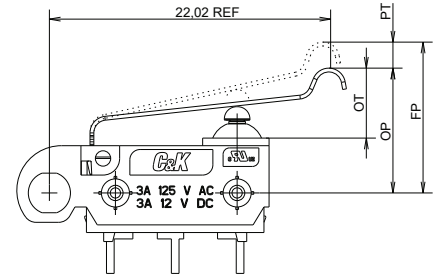
MODEL SHOWN: ZMSMHXXXXP00PLC

T10 .25 LEVER (IP65)



MODEL SHOWN: ZMSMHXXXXT10PLC

T11 LEVER (IP65)



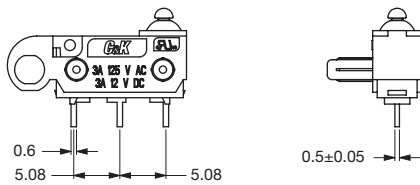
MODEL SHOWN: ZMSMHXXXXT11PLC

SWITCH CHARACTERISTICS

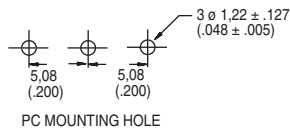
Actuator code	Maximum Operate Force (grams/oz.)	Minimum Release Force (grams/oz.)	Free Position Max (mm)	Maximum Pre-travel (mm)	Operate Position (mm)	Maximum Differential (mm)	Overtravel min. (mm)
P00	130 4.59	13 0.45	7.35	0.8	6.75 ± 0.3	0.3	1.75
T10	195 6.88	55 1.93	10.70	3.85	7.40 ± 0.8	0.5	2.3
T11	160 5.64	45 1.58	13.80	4.8	9.90 ± 0.8	0.7	2.6

TERMINATIONS

P PC THRU-HOLE (IP65)

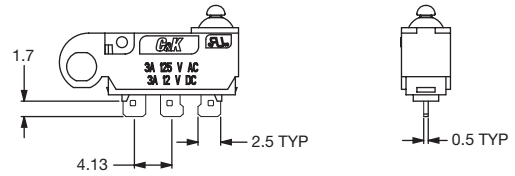


MODEL SHOWN: ZMSMHXXXXP00PLC



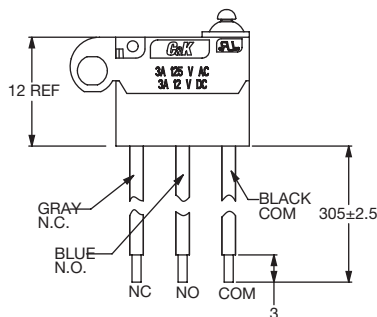
PC MOUNTING HOLE

S SOLDER TYPE (IP65)



MODEL SHOWN: ZMSMHXXXXP00SMC

J, K, W, N WIRE LEADS BOTTOM (IP67)



Standard Wire: 20 AWG UL 1007

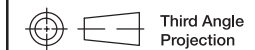
Available options - must specify

J - 20AWG UL1007 (Standard)

K - 22AWG UL1430

W - 24AWG UL1061

N - 26AWG UL1330



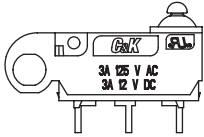
Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

ZMSM Series with Mounting Hole Subminiature Snap-acting Switches (IP65)

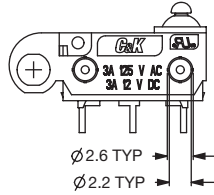
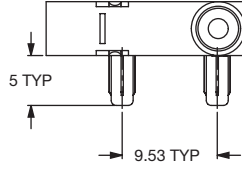
MOUNTING STYLES

M NO SUPPORT POSTS



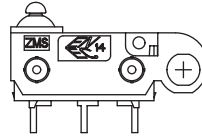
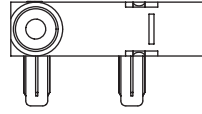
MODEL SHOWN:
ZMSMHXXXP00PMC

L TWO SUPPORT POSTS LEFT



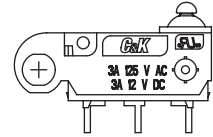
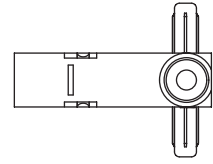
POSTS LEFT
MODEL SHOWN:
ZMSMHXXXP00PLC

R TWO SUPPORT POSTS RIGHT



POSTS RIGHT
MODEL SHOWN:
ZMSMHXXXP00PRC

T ONE SUPPORT POST
LEFT & RIGHT

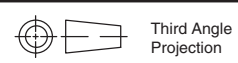


LEFT & RIGHT
MODEL SHOWN:
ZMSMHXXXP00PTC

Snap-acting

CIRCUITRY

- C** SPDT (Single Pole, Double Throw)
- W** SPST, NC (Single Pole, Single Throw, Normally Closed)
- Y** SPST, NO (Single Pole, Single Throw, Normally Open)



Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

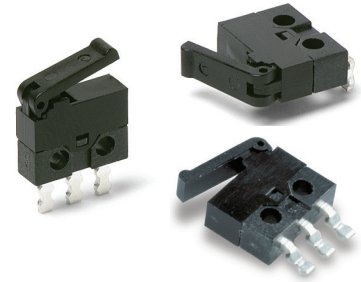
MDS Series Micro Snap-acting Detect Switches

Features/Benefits

- Snap-acting tactile feel
- Small package size
- Available in vertical or right angle PCB mount
- RoHS compliant and compatible

Typical Applications

- Detect the presence of a mechanical device
- Medical devices
- Consumer electronic devices
- ATCA applications



Specifications

CONTACT RATING: 300mA @ 30 VDC.
 MECHANICAL & ELECTRICAL LIFE: 30,000 operations.
 CONTACT RESISTANCE: 100 m Ω max. initial
 OPERATING TEMPERATURE: -25°C to +70°C.
 SOLDERABILITY: According to lead free solder profiles.
 PACKAGING: Available in bulk or tape and reel.
 OPERATING FORCE: 50g Max.
 RELEASE FORCE: 3g Min.

Materials

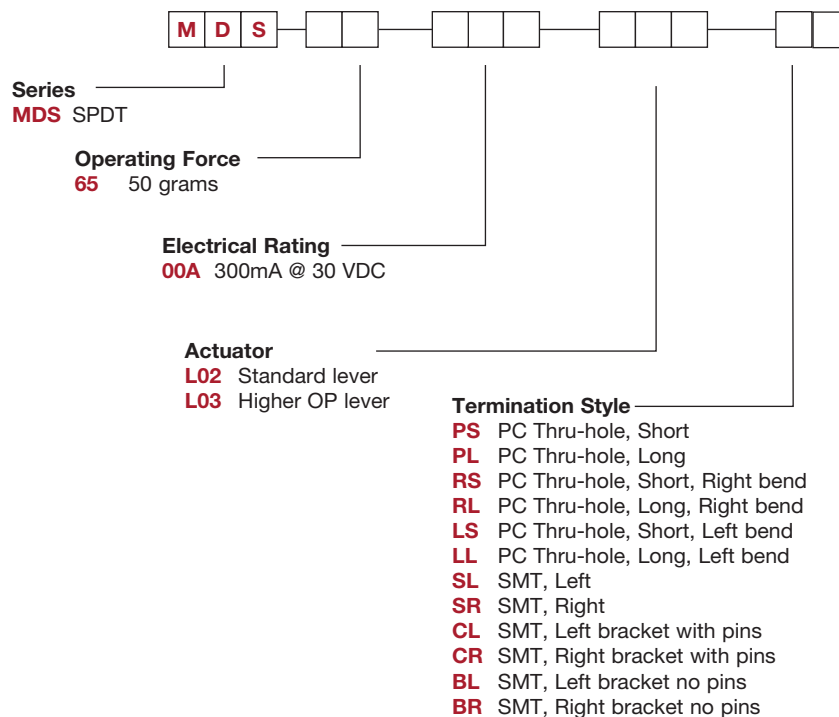
BASE: PA9T
 COVER & ACTUATOR: PA9T
 MOVABLE CONTACT: Copper alloy, silver plated.
 STATIONARY CONTACTS: Copper alloy, silver plated.
 TERMINALS: Copper alloy, silver plated.

NOTE: MDS series is RoHS compliant, and compatible. See technical data section of this catalog for RoHS compliant and compatible definitions and specifications.

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

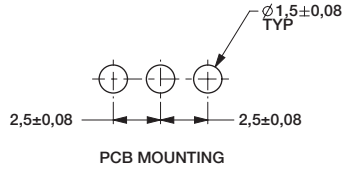
Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-66 through J-70. For additional options not shown in catalog, consult Customer Service Center.

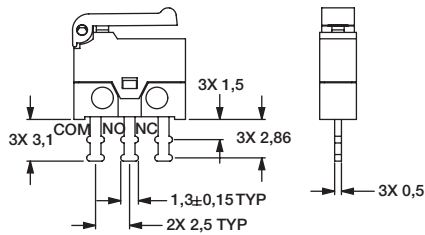


TERMINATIONS

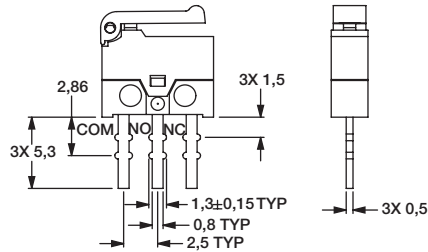
PCB Mounting Pattern



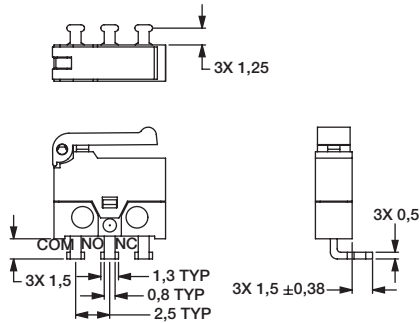
PS PC THRU-HOLE, SHORT STRAIGHT



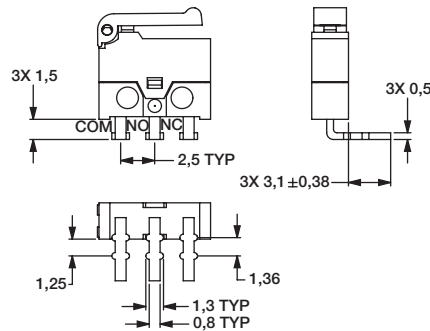
PL PC THRU-HOLE, LONG STRAIGHT



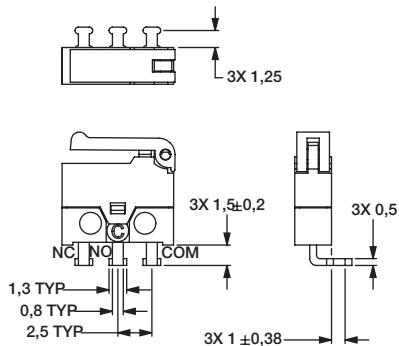
RS PC THRU-HOLE, SHORT RIGHT BEND



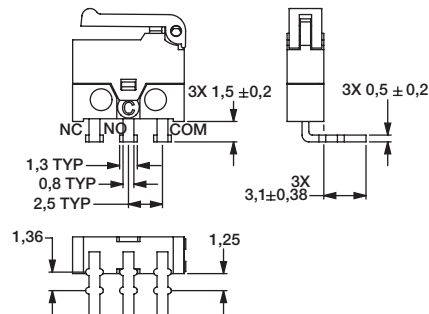
RL PC THRU-HOLE, LONG RIGHT BEND



LS PC THRU-HOLE, SHORT LEFT BEND



LL PC THRU-HOLE, LONG LEFT BEND



Snap-acting



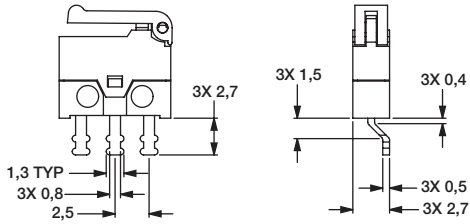
Third Angle Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

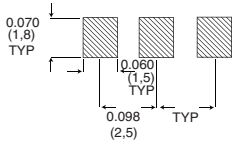
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

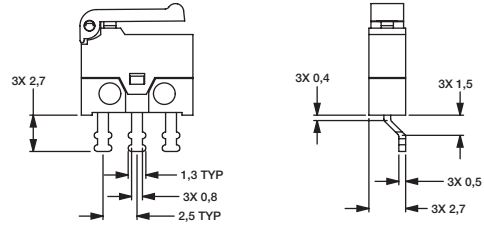
SL SMT, LEFT MOUNT



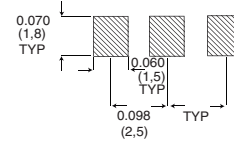
SMT Mounting Pattern



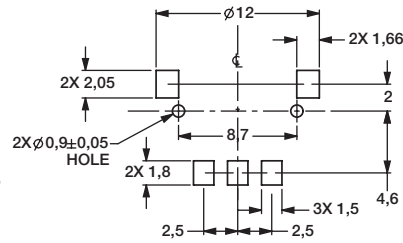
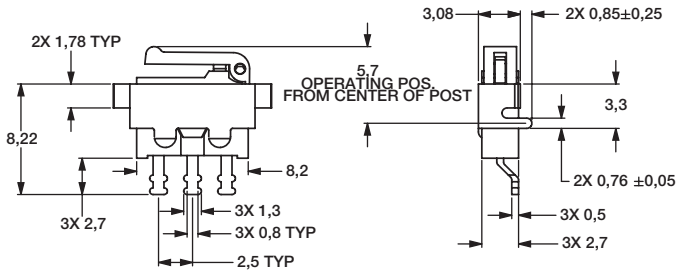
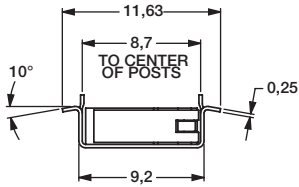
SR SMT, RIGHT MOUNT



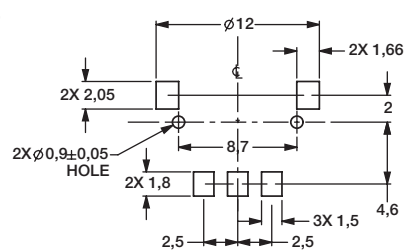
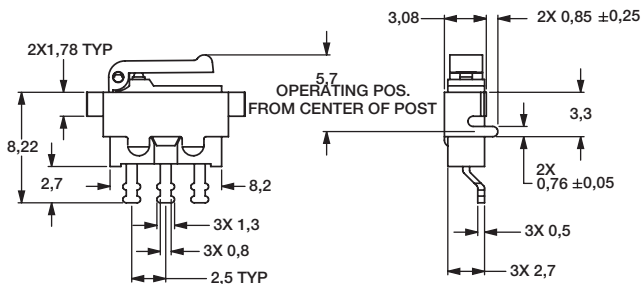
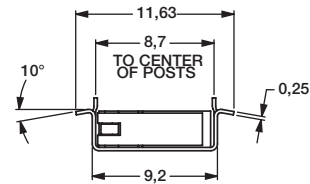
SMT Mounting Pattern



CL SMT, LEFT BRACKET WITH PINS



CR SMT, RIGHT BRACKET WITH PINS



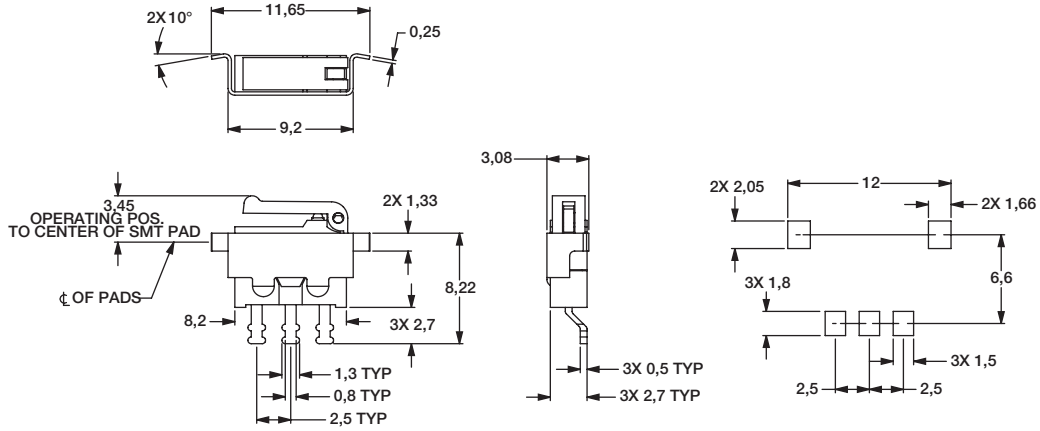
Third Angle
Projection

Dimensions are shown: mm
Specifications and dimensions subject to change

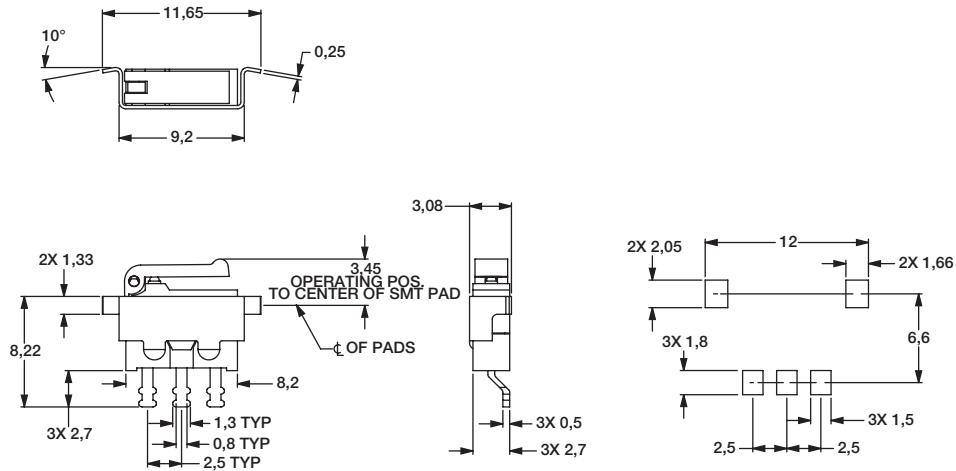
MDS Series Micro Snap-acting Detect Switches

TERMINATIONS

BL SMT, LEFT BRACKET NO PINS



BR SMT, RIGHT BRACKET NO PINS



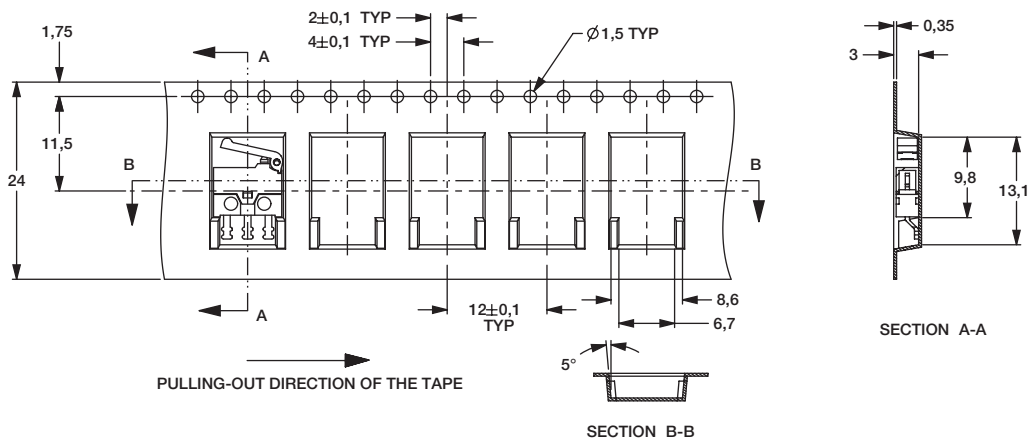
Snap-acting

MDS Series Micro Snap-acting Detect Switches

TAPE AND REEL

SL SMT, LEFT MOUNT

SR SMT, RIGHT MOUNT

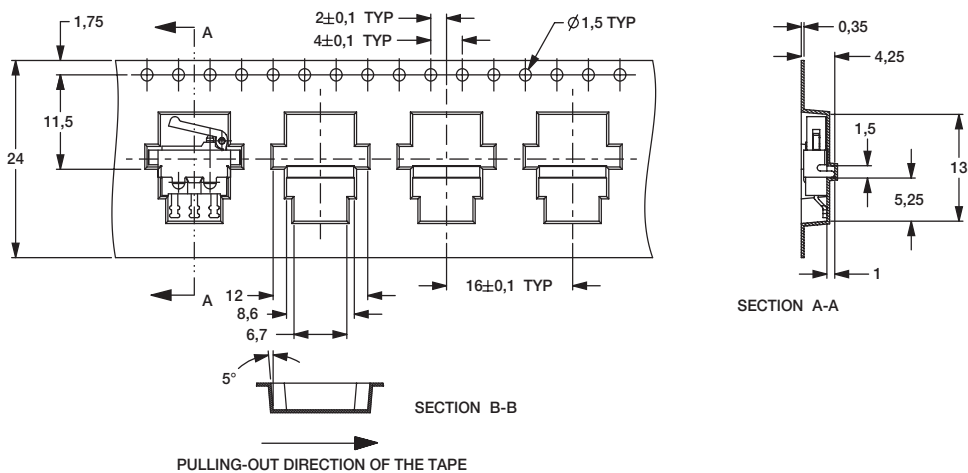


CL SMT, LEFT MOUNT

CR SMT, RIGHT MOUNT

BL SMT, LEFT MOUNT

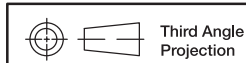
BR SMT, RIGHT MOUNT



Supplied in carrier tape meeting the EIA-481-2 standard for 24mm tape.

Packaging quantity: SL and SR; 1,600 pieces per reel
CL, CR, BL and BR; 1,000 pieces per reel

Snap-acting



Dimensions are shown: mm
Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

HB Series

Features/Benefits

- Low differential travel, high repeatability
- Long life—150,000 cycles typical
- Single and double pole circuitry
- Sealed actuator and case

Typical Applications

- Thermostats
- Motors
- Industrial controls



Specifications

CONTACT RATING: From low level* to 20 AMPS @ 480 V AC; see ELECTRICAL RATING option section for complete listings.

ELECTRICAL LIFE: 150,000 cycles at 20 AMPS @ 250 V AC. consult Customer Service Center for typical life at other ratings.

INSULATION RESISTANCE: 1,000 M ohm min.

DIELECTRIC STRENGTH: 1,500 Vrms min. @ sea level.

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

OPERATING FORCE: From 4 oz. to 26 oz. max. at actuator button available.

MOUNTING SCREWS: Torque 3 in/lbs max. (Note: Exceeding 3 in/lbs torque may change operating characteristics and increase the possibility of cracking switch case).

TERMINAL SCREWS: Torque 4 in/lbs max.

PANEL MOUNTING BUSHING: Torque 4-6 in/lbs max.

DEGREE OF PROTECTION: IP65; Dust-proof, water splash and dew condensation.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

Materials

SWITCH HOUSING: Heat resistant/electrical grade phenolic.

INSERTS: Brass alloy.

ACTUATOR BUTTON: Moisture resistant phenolic.

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver for ratings greater than 1 AMP and motor load ratings less than 1/2 HP @ 125 V AC. Silver alloy for motor load ratings 1/2 HP @ 125 V AC or greater.

STATIONARY CONTACTS: Gold alloy for ratings 1 AMP or less. Fine silver welded to copper base for ratings greater than 1 AMP and motor load ratings less than 1/2 HP @ 125 V AC. Silver alloy on copper base for motor load ratings 1/2 HP @ 125 V AC or greater.

TERMINALS: Brass alloy, bright tin plated.

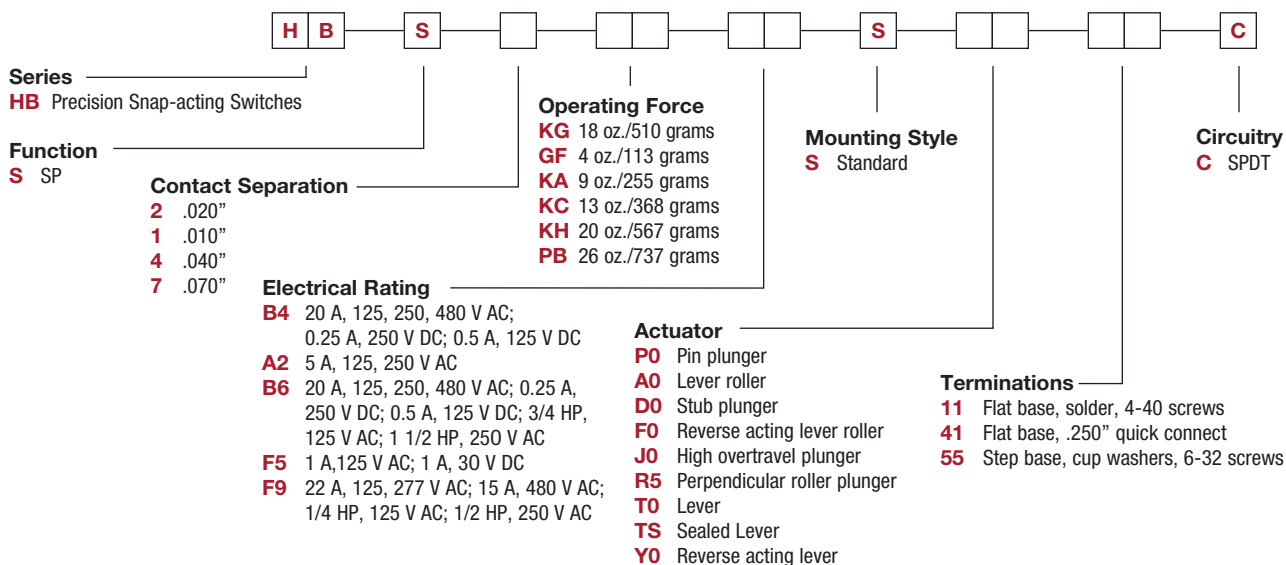
NOTE: Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, consult Customer Service Center.



Snap-acting

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 J-72 through J-76. For additional options not shown in catalog, consult Customer Service Center.



Dimensions are shown: mm
Specifications and dimensions subject to change

HB Series Single Pole Standard Precision Snap-acting Switches

Sealed Actuator and Case

To provide reliable service under environmental conditions that might damage standard precision switches, various HB Series switch models are sealed against the entrance of airborne contaminants and/or splashing liquids. The clearance between the operating plunger and the cover is sealed with a silicone boot and the base cover joint is sealed with an epoxy adhesive. These models are designed to meet requirements of IP65 (dust proof, water splash and dew condensation). For additional information on sealed switches, consult our Customer Service Center.

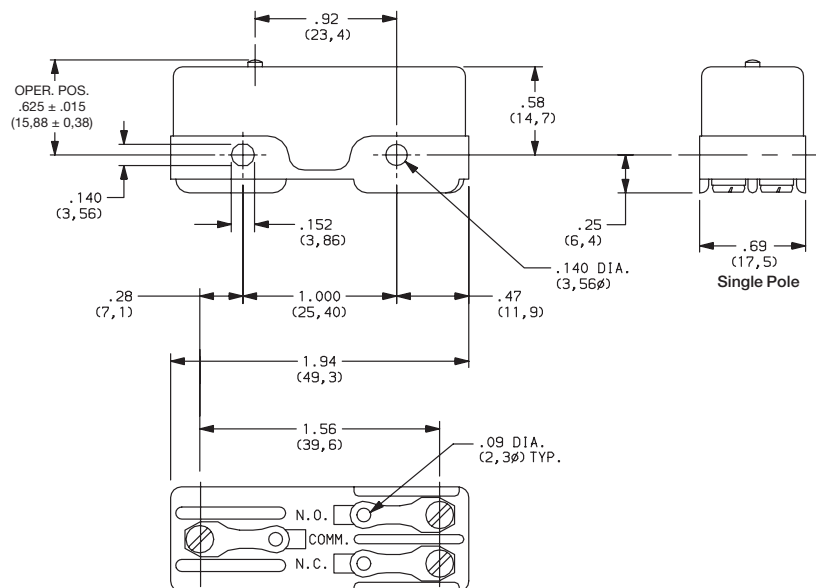
SERIES

HB PRECISION SNAP-ACTING SWITCHES

FUNCTION

S SINGLE POLE SWITCH

Snap-acting



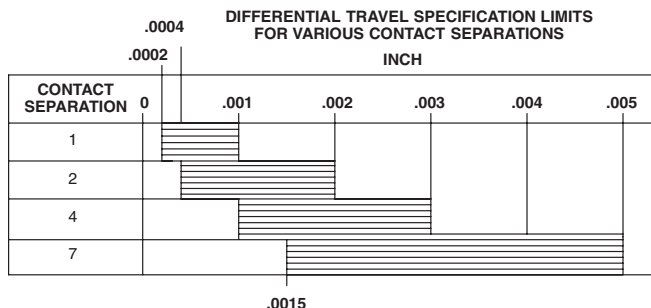
NOTE: To select switching function, see CIRCUITRY section, page J-52.

CONTACT SEPARATION

OPTION CODE	NOMINAL CONTACT SEPARATION (in./mm)
2	.020 (0,51)
1	.010 (0,25)
4	.040 (1,02)
7	.070 (1,78)

Switches with 1 AMP rating (option code 'F5') are available only with .020 contact separation (option '2').

Switches with 1/2 HP, 125 V AC rating or greater (option codes 'B5 and B6') are not available with .010 contact separation (option code '1').



Dimensions are shown: Inch (mm)

Specifications and dimensions subject to change

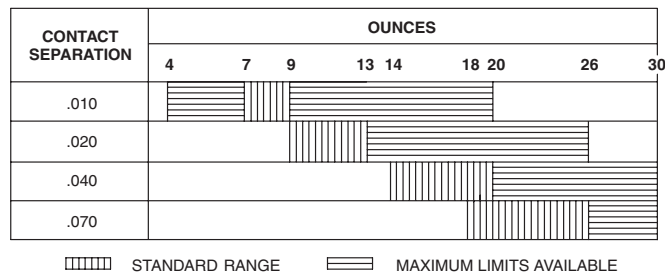


HB Series Single Pole Standard Precision Snap-acting Switches

OPERATING FORCE

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)	STANDARD CONTACT SEPARATION (inch)
KG	18 510	.020
GF	4 115	.010
KA	9 255	.010
KC	13 370	.020
KH	20 570	.040
PB	26 740	.070

OPERATING FORCE SPECIFICATION LIMITS
FOR VARIOUS CONTACT SEPARATIONS



NOTE: All listed differential travel characteristics are based on standard operating force and contact separation. For any other force or contact separation, consult Customer Service Center.
Operating force varies with actuator option, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	MOVABLE CONTACT	STATIONARY CONTACT	ELECTRICAL RATING
B4	Fine silver.	Fine silver welded to copper base.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMPS @ 250 V DC; 0.5 AMPS @ 125 V DC (UL).
A2			5 AMPS @ 125 & 250 V AC (UL).
B6	Precious metal alloy.	Precious metal alloy.	20 AMPS @ 125, 250 & 480 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 3/4 HP @ 125 V AC; 1 1/2 HP @ 250 V AC (UL).
F5	Gold alloy.	Gold alloy.	Low level* to 1 AMP @ 125 V AC; 1 AMP @ 30 V DC (UL).
F9	Fine silver.	Fine silver welded to copper base.	22 AMPS @ 125 & 277 V AC; 15 AMPS @ 480 V AC; 1/4 HP @ 125 V AC; 1/2 HP @ 250 V AC; 277 V AC (UL).

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

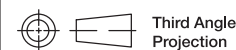
AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (oz.)					
	4 GF	9 KA	13 KC	18 KG	20 KH	26 PB
A2	•	•	•	•	•	•
B4	x	•	•	•	•	•
B6	x	x	x	•	•	•
F5	x	x	•	•	•	•
F9	x	x	x	•	•	•

• AVAILABLE
x NOT AVAILABLE

All models with all options
Consult Customer Service center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.



Third Angle Projection

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

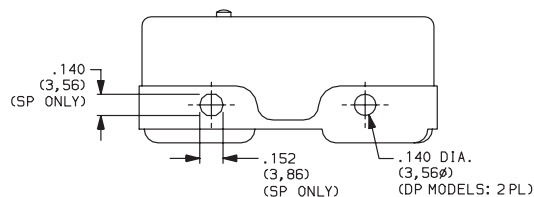


Snap-acting

HB Series Single Pole Standard Precision Snap-acting Switches

MOUNTING STYLE

S Standard



NOTE: Mounting holes will accept pins or screws of .139 dia. (3,53) max. on 1.000 ± .002 (25,4 ± 0,05) centers.

NOTE: Torque mounting screws 3 inlbs max.

ACTUATOR

OPTION CODE	NO. POLES	FIG.	DIM. A	DIM. B	DIM. C	DIM. D
A0	SP	1	.86 (21,8)	1.120 ± .060 (28,45 ± 1,52)	.38 dia. (9,70)	1.03 (26,2)
D0	SP	3	.92 (23,4)	.844 ± .020 (21,44 ± 0,51)	—	—
F0	SP	2	.09 (2,3)	1.120 ± .050 (28,45 ± 1,27)	.38 dia. (9,70)	.74 (18,8)
J0	SP	4	.86 (21,8)	.860 ± .030 (21,84 ± 0,76)	—	—
P0	SP	5	.92 (23,4)	.625 ± .010 (15,88 ± 0,25)	—	—
R5	SP	6	.92 (23,4)	.62 (15,7)	.50 dia. (12,70)	0.61 (15,5)
T0	SP	7	1.310 (33,27)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
TS*	SP	7	1.47 (37,3)	.720 ± .060 (18,28 ± 1,52)	1.03 dia. (26,20)	—
Y0	SP	8	.05 (1,3)	.720 ± .030 (18,29 ± 0,76)	.74 dia. (18,80)	2.65 (6,73)

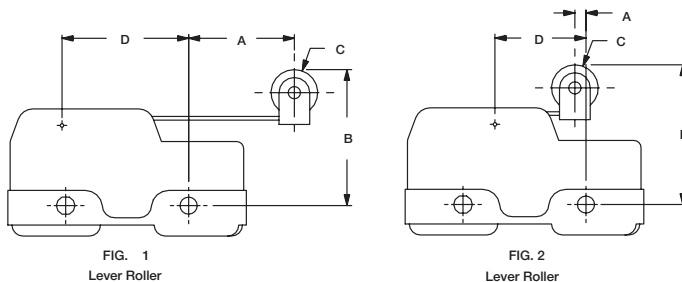


FIG. 1
Lever Roller

FIG. 2
Lever Roller

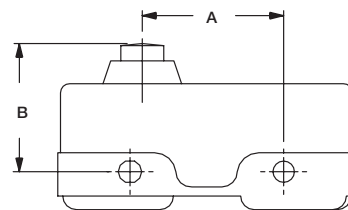


FIG. 3
Stub Plunger

* Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

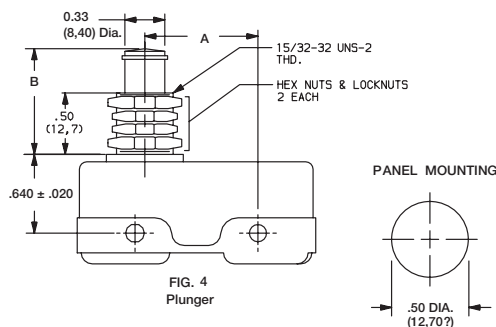


FIG. 4
Plunger

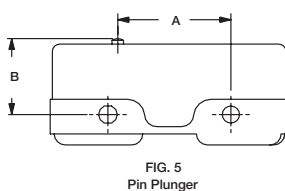


FIG. 5
Pin Plunger

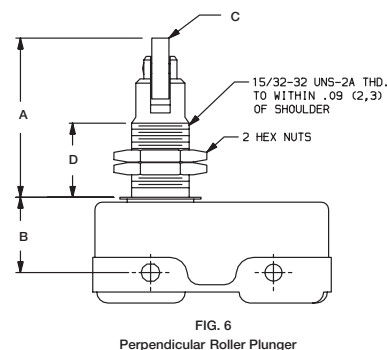


FIG. 6
Perpendicular Roller Plunger

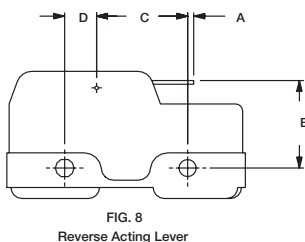


FIG. 8
Reverse Acting Lever

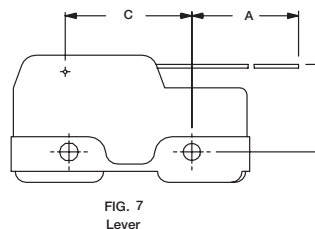
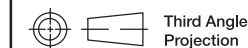


FIG. 7
Lever



Third Angle Projection

Dimensions are shown: Inches (mm)

Specifications and dimensions subject to change

HB Series

Single Pole Standard Precision Snap-acting Switches

ACTUATOR

	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM OPERATING FORCE (OZ./GRAMS)	GF	—	—	—	—	4 115	—	—	—	—
	KA	3 85	9.5 269	10 284	10 284	9 255	10 284	2 60	10 284	2 56
	KC	—	13 370	10 284	13 370	13 370	13 370	—	10 284	—
	KG	3.5 100	—	—	—	18 510	—	2.5 71	—	2.5 71
	KH	4 115	20 570	20 570	20 570	20 570	20 570	3 85	20 570	3 85
	PB	4.5 130	26 740	20 570	26 740	26 740	26 740	3.5 100	20 570	3.5 100
MINIMUM RELEASE FORCE (OZ./GRAMS)	GF	—	—	—	—	1 28	—	—	—	—
	KA	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	KC	1.7 48	4 110	3 85	4 110	4 110	4 110	—	3 85	—
	KG	.75 21	—	—	—	4 110	—	.5 14	—	.5 14
	KH	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14
	PB	.75 21	4 110	3 85	4 110	4 110	4 110	.5 14	3 85	.5 14

NOTE: For basic switch operating forces, see page J-71. * Actuators sealed against the entrance of airborne contaminants and/or splashing liquids.

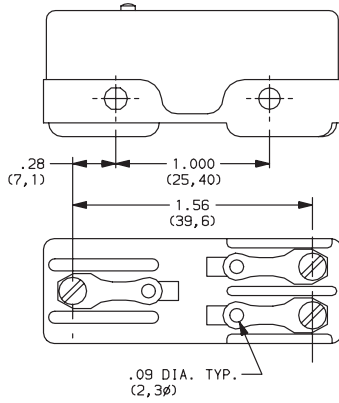
	OPTION CODE	ACTUATOR								* SEALED ACTUATOR
		A0	D0	F0	J0	P0	R5	T0	Y0	TS
MAXIMUM DIFFERENTIAL TRAVEL (IN/MM)	GF	—	—	—	—	.0005 (0,013)	—	—	—	—
	KA	.020 (0,51)	.0005 (0,013)	.005 (0,13)	—	.0005 (0,013)	—	.047 (1,19)	.005 (0,13)	.047 (1,19)
	KC	—	.002 (0,05)	.008 (0,20)	—	.002 (0,05)	—	—	.009 (0,23)	—
	KG	.062 (1,57)	—	—	—	.003 (0,08)	—	.078 (1,98)	—	.078 (1,98)
	KH	.080 (2,03)	.003 (0,76)	.020 (0,51)	—	.003 (0,08)	—	.093 (2,36)	.020 (0,51)	.093 (2,36)
	PB	.125 (3,18)	.007 (0,18)	.030 (0,76)	—	.005 (0,13)	—	.156 (3,96)	.031 (0,79)	.156 (3,96)
MAXIMUM PRETRAVEL (IN/MM)	GF	—	—	—	—	.020 (0,51)	—	—	—	—
	KA	.312 (7,92)	.020 (0,51)	0.8 (2,0)	.015 (0,38)	.015 (0,38)	.015 (0,38)	.38 (9,7)	.09 (2,3)	.38 (9,7)
	KC	—	.020 (0,51)	0.8 (2,0)	.020 (0,51)	.020 (0,51)	.020 (0,51)	—	.09 (2,3)	—
	KG	.312 (7,92)	—	—	—	.025 (0,64)	—	.38 (9,7)	—	.38 (9,7)
	KH	.38 (9,7)	.025 (0,64)	0.9 (2,3)	.025 (0,64)	.025 (0,64)	.025 (0,64)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
	PB	.38 (9,7)	.030 (0,76)	0.9 (2,3)	.030 (0,76)	.030 (0,76)	.030 (0,76)	.38 (9,7)	0.9 (2,3)	.38 (9,7)
MINIMUM OVERTRAVEL (IN/MM)	GF	—	—	—	—	.005 (0,13)	—	—	—	—
	KA	.156 (3,96)	.055 (1,40)	.06 (1,5)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	.06 (1,5)	.19 (4,8)
	KC	—	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	—	0.9 (2,3)	—
	KG	.156 (3,96)	—	—	—	.005 (0,13)	—	.19 (4,8)	—	.19 (4,8)
	KH	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)
	PB	.156 (3,96)	.055 (1,40)	0.9 (2,3)	.22 (5,6)	.005 (0,13)	.141 (3,58)	.19 (4,8)	0.9 (2,3)	.19 (4,8)



HB Series Single Pole Standard Precision Snap-acting Switches

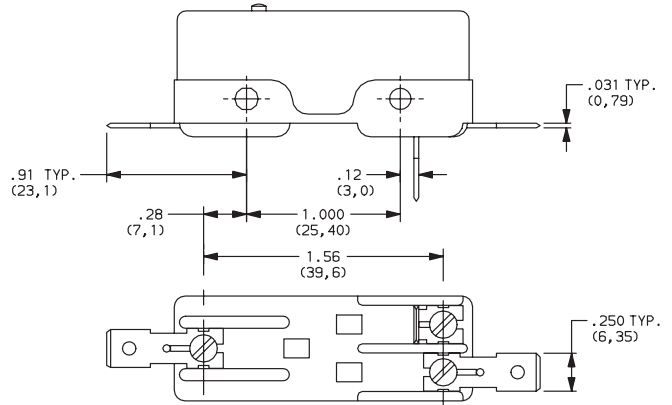
TERMINATIONS

11 FLAT BASE, SOLDER TERMINALS AND 4-40 SCREWS

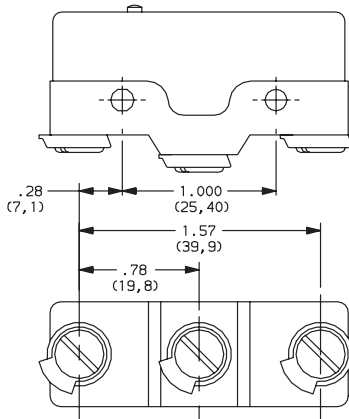


NOTE: Switches with flat base option have molded ribs that provide increased creep distance.

41 FLAT BASE, .250" QUICK CONNECT TERMINALS



55 STEP BASE, 6-32 SCREWS AND CUP WASHERS



NOTE: Switches with step base option provide wide electrical clearance for screw terminal options.

Snap-acting

CIRCUITRY

C DT (Double Throw, Normally Closed & Normally Open)



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

A Series General Purpose Snap-acting Switches

Features/Benefits

- Low cost—high performance
- Long electrical life
- Single and double pole
- Sealed actuator option available

Typical Applications

- Enclosure equipment
- Garage door openers
- Vending machines



Specifications

CONTACT RATING: From low level* to 25 AMPS @ 277 V AC.

ELECTRICAL LIFE: 75,000 cycles at 25 AMPS @ 250 V AC,
200,000 cycles at 15 AMPS @ 250 V AC.

INSULATION RESISTANCE: 1,000 M ohm min.

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

OPERATING TEMPERATURE: -67°F to 185°F (-55°C to 85°C).

OPERATING FORCE: 20 oz. (567 grams) max. SP models.

40 oz. (1134 grams) max. DP models at actuator button.

MOUNTING: Torque screws 3 in/lbs max.

MOUNTING NUT: 20 in/lbs max. torque

* Low Level=conditions where no arcing occurs during switching, i.e., 0.4 VA max. @ 20 V AC or DC max.

NOTE: Specifications and materials listed above are for switches with standard options. C&K does provide specific and custom switches at 30 AMPS @ 277 VAC. Please consult Customer Service Center.

Materials

SWITCH HOUSING: Heat resistant phenolic (UL 94V-0).

ACTUATOR BUTTON: Heat resistant phenolic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy for models up to 15 AMPS.

Copper for 25 AMP models.

MOVABLE CONTACTS: Gold alloy for ratings 1 AMP or less.

Fine silver for ratings up to 15 AMPS. Silver alloy for ratings of 25 AMPS.

STATIONARY CONTACTS: Gold alloy on brass base alloy

for ratings 1 AMP or less. Fine silver welded on brass base alloy for ratings greater than 1 AMP up to 15 AMPS.

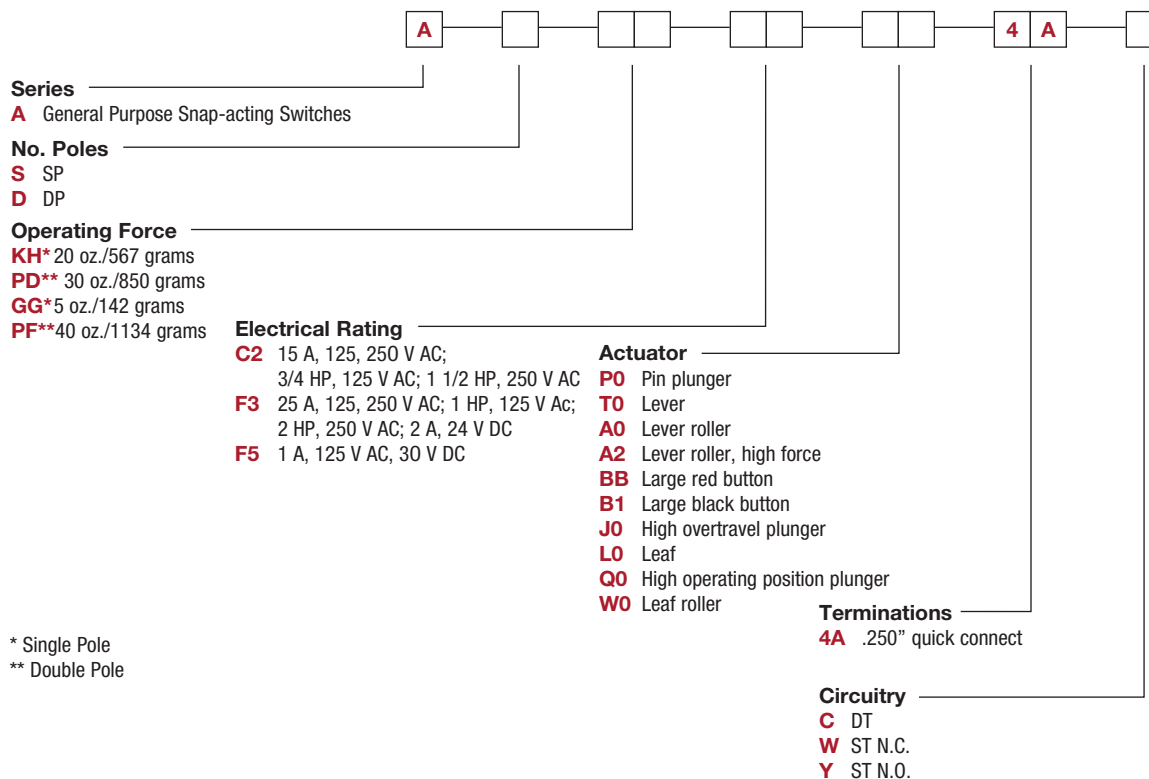
Fine silver welded on copper alloy for ratings 25 AMPS.

TERMINALS: Brass alloy for 1 AMP up to 15 AMPS.

Copper alloy for 25 AMPS.

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 J-78 through J-81. For additional options not shown in catalog, consult Customer Service Center.



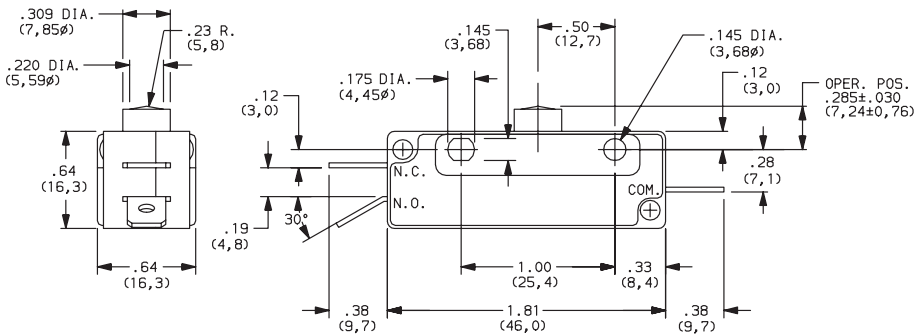
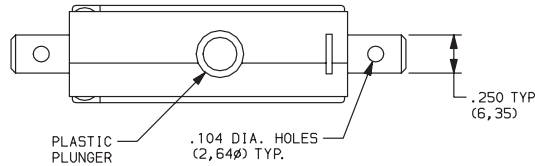
A Series General Purpose Snap-acting Switches

SERIES ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

A GENERAL PURPOSE SNAP-ACTING SWITCHES

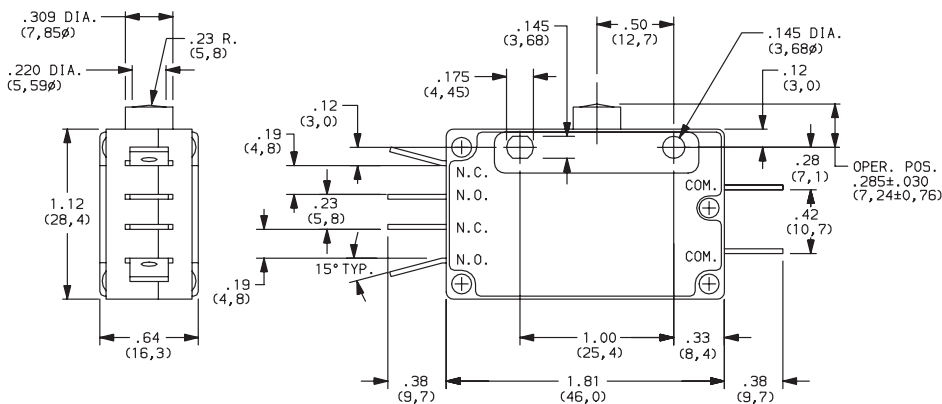
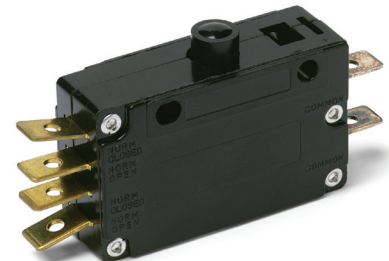
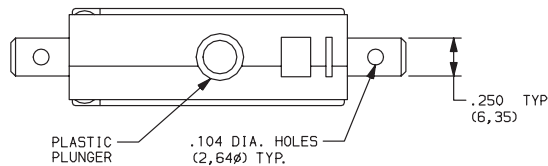
NO. POLES ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

S SINGLE POLE SWITCH



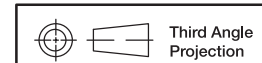
Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

D DOUBLE POLE SWITCH



Mounting holes will accept pins or screws of .139 dia. (3,53) max., on 1.000 (25,40) centers.

NOTE: To select switching function, see CIRCUITRY section, page J-81.



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

Snap-acting



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A Series General Purpose Snap-acting Switches

OPERATING FORCE

OPTION CODE	NO. POLES	BASIC SWITCH OPERATING FORCE (OZ./GRAMS)
KH	SP	20 567
PD	DP	30 850
GG	SP	5 142
PF	DP	40 1134

NOTE: Operating force varies with actuator, see ACTUATOR option section.

ELECTRICAL RATING

OPTION CODE	CONTACT MATERIAL		ELECTRICAL RATING
	MOVABLE CONTACT	STATIONARY CONTACT	
C2	Fine silver.	Fine silver welded on brass base alloy.	15 AMPS @ 125 & 250 V AC; 3/4 HP @ 125 V AC; 1-1/2 HP @ 250 V AC.
F3	Silver alloy.	Silver welded on copper base alloy.	25 AMPS @ 125 & 250 V AC; 1 HP @ 125 V AC; 2 HP @ 250 V AC; 2 AMPS @ 24 V DC.
F5	Gold alloy.	Gold alloy on brass base alloy.	From low level* to 1 AMP @ 125 V AC, 30 V DC.

All models  with all options.

Contact Customer Service Center for availability and delivery of nonstandard ratings.

* Low Level=conditions where no arcing occurs during switching,

i.e., 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.

AVAILABLE COMBINATIONS

ELECTRICAL RATING	OPERATING FORCE (OZ./GRAMS)			
	GG 5 142	KH 20 567	PD 30 850	PF 40 1134
C2	•	•	•	•
F3	X	•	•	•
F5	•	•	•	•

• AVAILABLE

X NOT AVAILABLE

A Series General Purpose Snap-acting Switches

ACTUATOR 

OPTION CODE	FIG.	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F
P0	1	.50 (12,7)	.285 ± .030 (7,24 ± 0,76)	—	—	—	—
A0	3	1.38 (35,1)	.718 ± .062 (18,24 ± 1,57)	.375 dia. (9,53Ø)	.50 (12,7)	.50 (12,7)	—
A2	4	1.25 (31,8)	.718 ± .062 (18,24 ± 1,57)	.375 dia. (9,53Ø)	.50 (12,7)	—	—
B1	6	1.50 (38,1)	.40 ± 0.1 (10,2 ± 2,54)	.98 dia. (24,9Ø)	—	—	—
BB	6	1.50 (38,1)	.40 ± 0.1 (10,2 ± 2,54)	.98 dia. (24,9Ø)	—	—	—
J0	5	.50 (12,7)	.810 ± .030 (20,6 ± 0,8)	.38 (9,7)	.25 dia. (6,4Ø)	—	—
L0	2	1.62 (41,1)	.312 ± .062 (7,92 ± 1,57)	.50 (12,7)	—	—	—
Q0	5	.50 (12,7)	.670 ± .030 (17,02 ± 0,76)	.38 (9,6)	.25 dia. (6,4Ø)	—	—
T0	7	1.50 (38,1)	.318 ± .062 (8,08 ± 1,57)	.50 (12,7)	.50 (12,7)	—	—
W0	8	1.50 (38,1)	.801 ± .062 (20,34 ± 1,57)	.375 dia. (9,53Ø)	.50 (12,7)	—	—

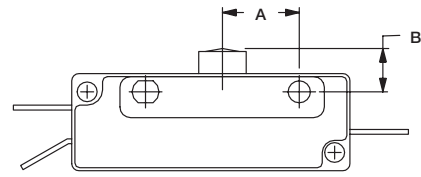


FIG. 1
High Overtravel Plunger

NOTE: The "H0" high overtravel plunger option provides .100 (2,54) min. overtravel and longer mechanical life (1,000,000 operations typical).

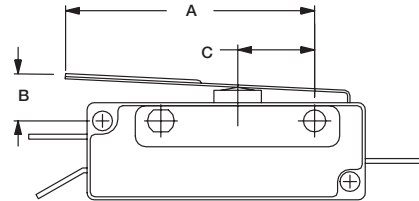


FIG. 2
Leaf

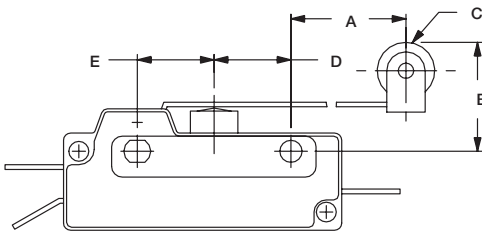


FIG. 3
Lever Roller

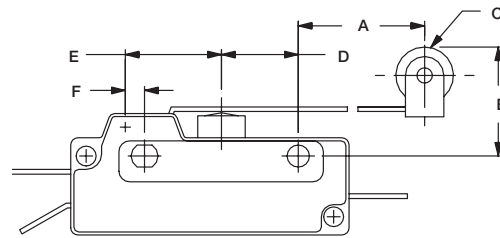


FIG. 4
Lever roller (High Force)

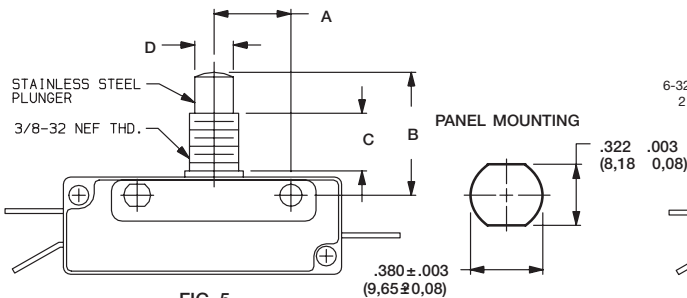


FIG. 5
High Overtravel Plunger

Torque 20 in/lbs max. (Nut)

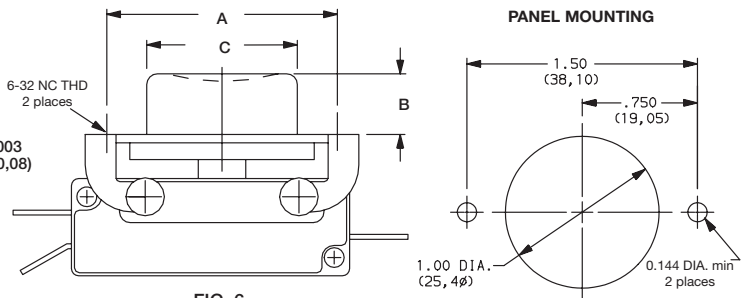


FIG. 6
B1 - Black Button
BB - Red Button

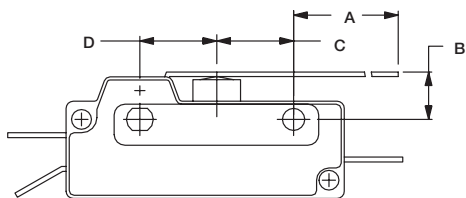


FIG. 7
Lever

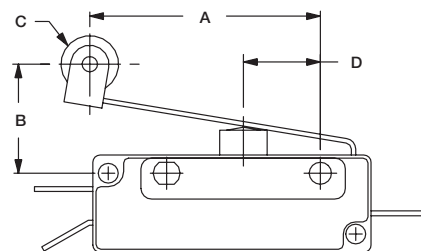


FIG. 8
Leaf Roller



Third Angle
Projection

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

Snap-acting

A Series General Purpose Snap-acting Switches

ACTUATOR

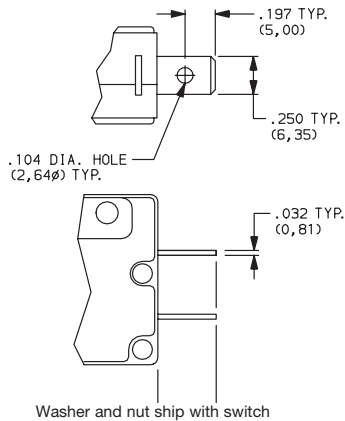
SWITCH CHARACTERISTICS

OPTION CODE	MAXIMUM OPERATING FORCE (OZ./GRAMS)				MINIMUM RELEASE FORCE (OZ./GRAMS)				MAXIMUM PRETRAVEL				MINIMUM OVERTRAVEL				OPERATING POSITION			
	GG	KH	PD	PF	GG	KH	PD	PF	GG	KH	PD	PF	GG	KH	PD	PF	GG	KH	PD	PF
	S.P.	S.P.	D.P.	D.P.	S.P.	S.P.	D.P.	D.P.	S.P.	S.P.	D.P.	D.P.	S.P.	S.P.	D.P.	D.P.	S.P.	S.P.	D.P.	D.P.
A0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				312 (7,92)		.187 (4,75)					.718 (18,24)
A2	1.5 42.5	4 113	6 170	10 283	0.4 11	0.5 14	1 28		.25 (6,4)				.14 (5,6)							.718 (18,24)
B1	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)							—
BB	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)							—
J0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.187 (4,75)							—
L0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)							.312 (7,92)
P0	8 227	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)							—
Q0	5 142	20 567	30 850	40 1134	1 28	3 85	6 170		.050 (1,27)				.050 (1,27)							—
T0	1.5 42.5	4 113	6 170	10 283	0.3 8.5	0.5 14	1 28		.312 (7,92)				.187 (4,75)							312 (7,92)
W0	3 85	12 340	18 510	22 624	0.5 14	1 28	2 56.7		.281 (7,14)				.062 (1,57)							.718 (18,24)

NOTE: For basic switch operating forces, see page J-77.

TERMINATIONS

4A .250" QUICK CONNECT

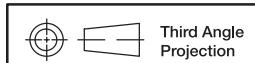


NOTE: Terminals can be supplied at various angles. Other terminal styles can be supplied for special applications. Consult Customer Service Center for special requirements.

CIRCUITRY

- C** DT (Double Throw, Normally Open & Normally Closed)
- W** ST N.C. (Single Throw, Normally Closed)
- Y** ST N.O. (Single Throw, Normally Open)

NOTE: To select number of poles, see NO. POLES section, page J-56



Third Angle
Projection

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

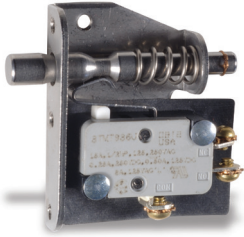


14 Jan 19



Snap-acting

TL Series Door Interlock Switches



Features/Benefits

- Push/pull motion
- Multiple mounting configurations
- Wide variety of termination options
- Ratings up to 15 AMPS

Typical Applications

- Computer enclosures
- Panel builders
- Industrial enclosures

Specifications

CONTACT RATING: 15 AMPS @ 125 & 250 V AC; 0.25 AMP @ 250 V DC; 0.5 AMP @ 125 V DC; 1/2 HP @ 125 & 250 V AC; 3 AMPS @ 125 V AC "L".

ELECTRICAL LIFE: 150,000 cycles at 15 AMPS @ 250 V AC.

INSULATION RESISTANCE: 1,000 M ohm min.

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

OPERATING TEMPERATURE: -67°F to 302°F (-55°C to 150°C).

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

Materials

SWITCH HOUSING: Thermoplastic or general purpose phenolic (UL 94V-0).

MOUNTING BRACKET: Stainless steel.

PLUNGER: Stainless steel.

ACTUATOR BUTTON: Thermoplastic (UL 94V-0).

SPRING: Copper alloy.

PIVOT: Brass alloy.

MOVABLE CONTACT: Fine silver.

STATIONARY CONTACTS: Fine silver.

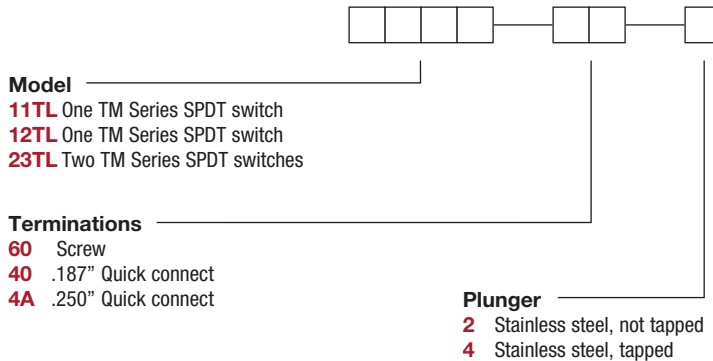
TERMINALS: Copper alloy.



Snap-acting

Build-A-Switch

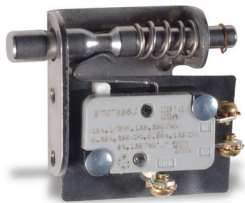
To order, simply select desired option from each category and place in the appropriate box. Available options are shown and described on pages J-83 and J-84. For additional options not shown in catalog, consult Customer Service Center.



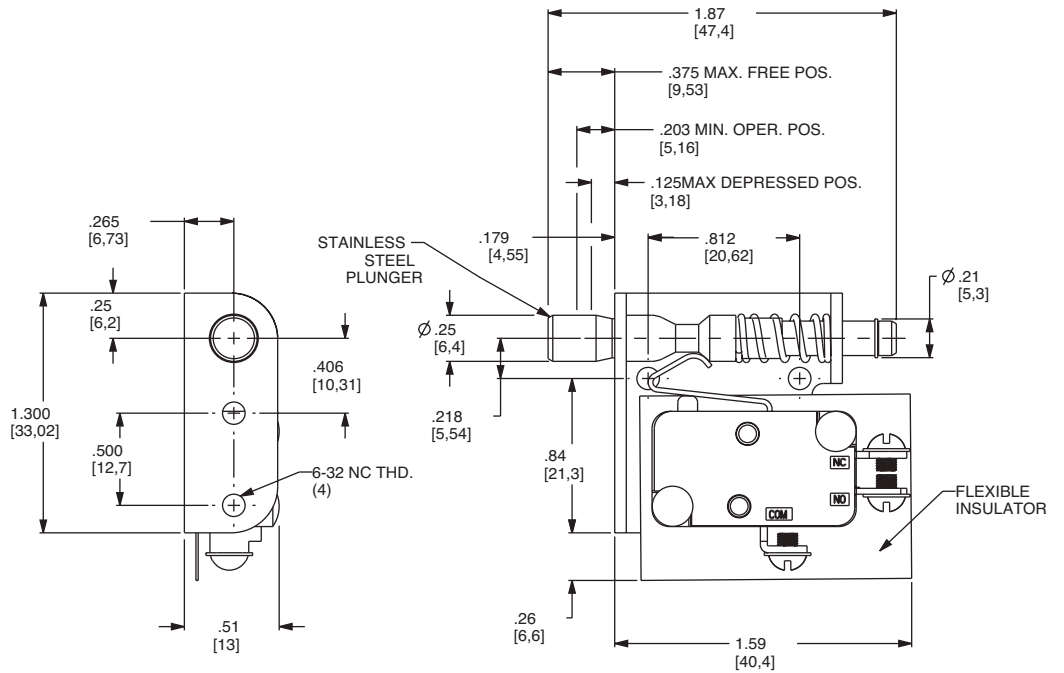
TL Series Door Interlock Switches

MODEL

11TL WITH SMALL BRACKET



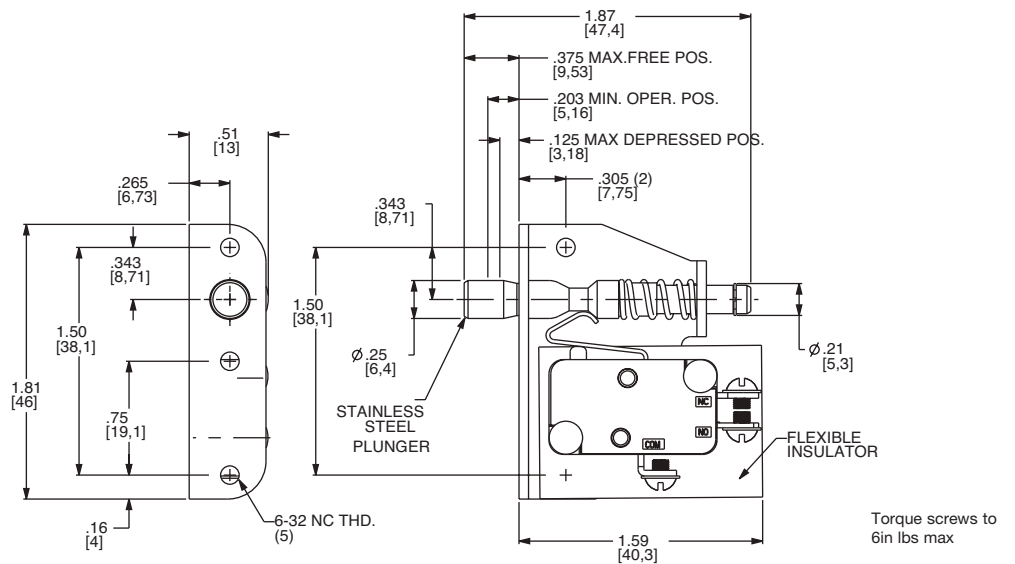
11TL602
SPDT



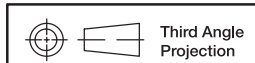
12TL WITH LARGE BRACKET



12TL602
SPDT



Snap-acting



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



DS Series Interlock Pushbutton Switches

Features/Benefits

- Snap-in mounting
- Reliable snap action mechanism
- Latch or momentary
- RoHS compliant
- Halogen free material

Typical Applications

- Interlock switch
- Detection switch
- Circuit interrupt



Specifications

FUNCTION: Single pole double throw / Double pole double throw
MOUNTING TYPE: Snap in style

Electrical

ELECTRICAL LIFE: see ratings chart below
DIELECTRIC STRENGTH: 1500 V (50-60 Hz @ sea level)
INSULATION RESISTANCE: 100 M Ω min.
INITIAL CONTACT RESISTANCE: 30 milli-ohms

Materials

HOUSING, COVER, ACTUATOR, KNOB: PA 66/6 halogen free, UL94V-0
NO & NC FIXED TERMINALS: Copper alloy
COMMON TERMINALS: Copper alloy, silver plate
CONTACTS: Silver alloy / F5 rating gold plated over silver alloy
RETURN SPRINGS: Stainless steel

Operating Environment

OPERATING TEMPERATURE: -40°C to +85°C

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.

<p>Designation</p> <p>DS DS Series</p> <p>Number of Poles</p> <p>1 SPDT 2 DPDT</p> <p>Rating</p> <p>F5 0.1 (0.5)A @ 125/250 V AC 50/60 Hz 50E3 0.1A G.P. @ 125/250 V AC 50/60 Hz 50E3</p> <p>F7 0.1 (0.5)A @ 125/250 V AC 50/60 Hz 10E4 0.1A G.P. @ 125/250 V AC 50/60 Hz 10E4</p> <p>D6 10 (4)A @125/250 V AC 50/60 Hz 50E3 10A G.P. @ 125 / 250 V AC 1/3HP @ 125/250 V AC 50/60 Hz 10E3</p> <p>D7* 16A G.P. @125/250 V AC 3/4HP 125/250 V AC 50/60 Hz 10E3 16 (6) A @125/250 V AC 50/60 Hz 10E3 * Note - 16A version has Q3 terminals only</p>	<p>Actuator Style</p> <p>A Momentary, Short button B Momentary, Long button C Momentary/Pulled out button (not available on D7 rating)</p>	<p>Terminals</p> <p>Q1 4.8 x 0.5 Q2 4.8 x 0.8 Q3 6.3 x 0.8</p>	<p>Housing Color</p> <p>NONE White B Black</p>
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International Rating Symbols

10E3	Cycles 10,000
10E4	Cycles 100,000
50E3	Cycles 50,000
10(4)	Current rating: First number represents resistive rating. Second number represents inductive (motor) rating
GP	General purpose rating UL1054

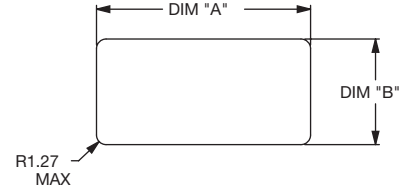
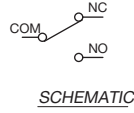
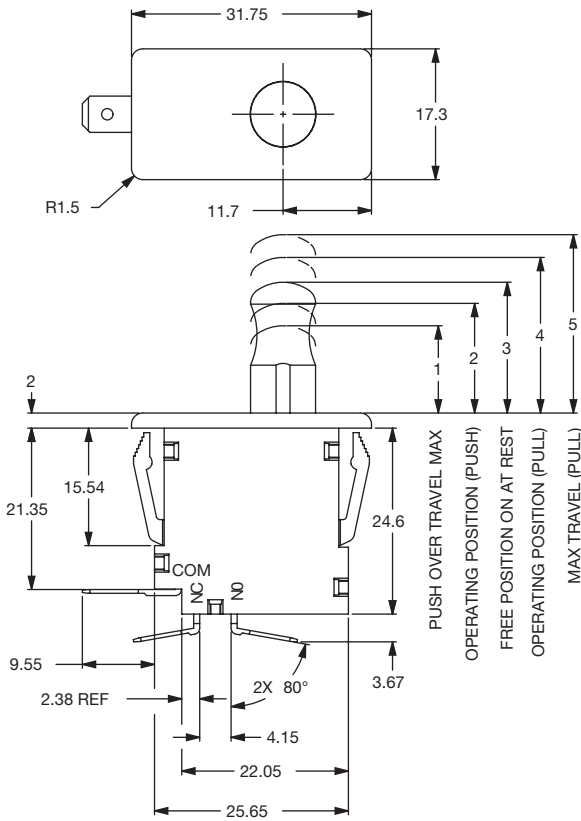


Snap-acting

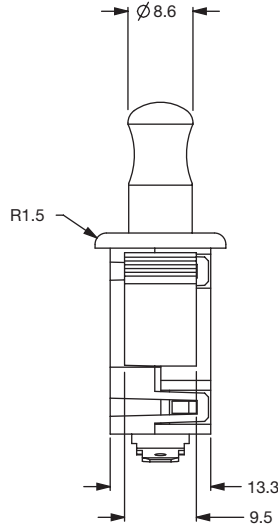
DS Series Interlock Pushbutton Switches

NUMBER OF POLES

1 SPDT

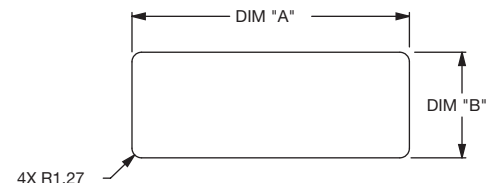
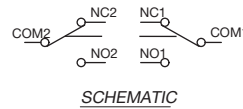
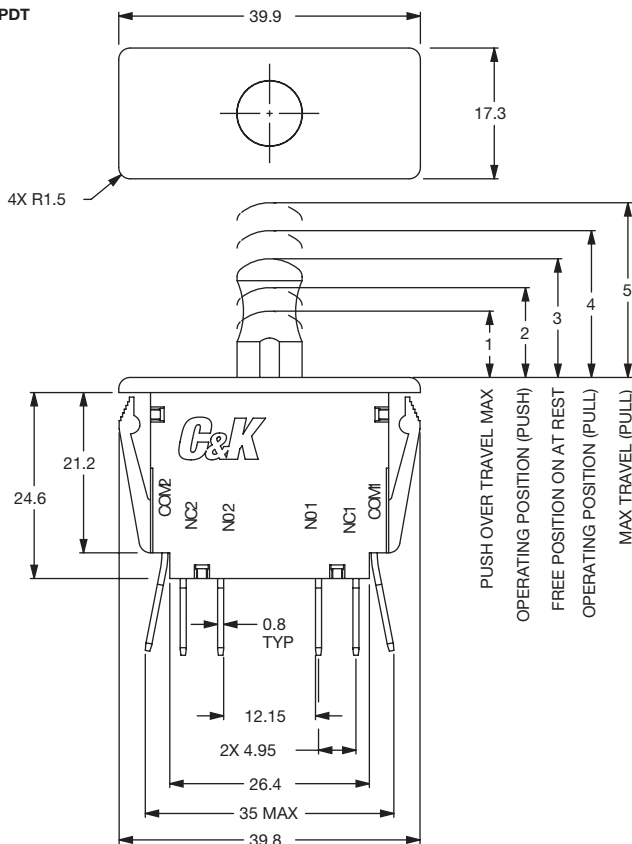


PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	28.32	13.97
2.54	28.58	13.97

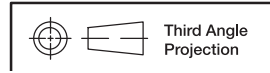
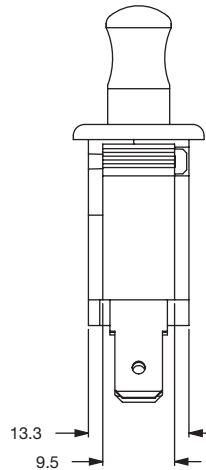


Snap-acting

2 DPDT



PANEL MOUNTING		
PANEL THICKNESS	DIM "A" mm	DIM "B" mm
1.14	36.70	13.97
2.54	36.96	13.97



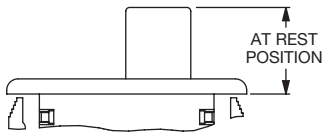
Dimensions are shown: mm
Specifications and dimensions subject to change



DS Series Interlock Pushbutton Switches

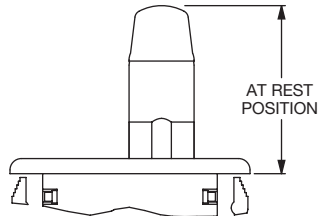
ACTUATOR STYLE / SPECIFICATIONS

A SHORT BUTTON



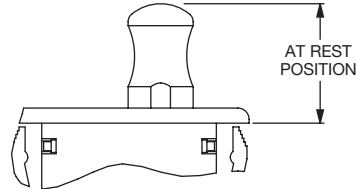
SHORT BUTTON

B LONG BUTTON

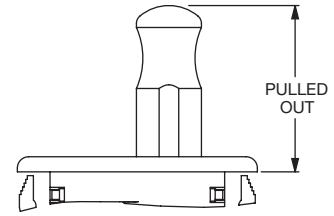


LONG BUTTON

C MOMENTARY/PULLED OUT



FREE POSITION



PULLED OUT POSITION

SPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	425 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	425 gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 385gf	PULL 475gf

DPDT Specification

BUTTON STYLE	OVER TRAVEL POSITION PUSH MAX	OVER TRAVEL POSITION PULL MAX	OPERATING POSITION PUSH	OPERATING POSITION PULL	FREE POSITION AT REST	OPERATING FORCE	
A	3.20	NA	8.90 ± 1.25	NA	11.45 ± 0.75	680 gf	
B	10.15	NA	19.55 ± 1.25	NA	22.25 ± 0.75	680gf	
C	13.20	24.90	16.75 ± 1.25	21.60 ± 1.25	19.30 ± 0.75	PUSH 560gf	PULL 750gf

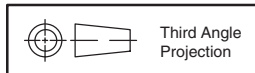
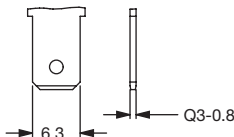
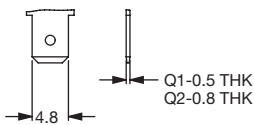


Snap-acting

TERMINALS

Q1 4.8 x 0.5
Q2 4.8 x 0.8

Q3 6.3 x 0.8



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

