Kingbright

1.6X0.8mm SMD CHIP LED LAMP

Part Number: APT1608SYCK-AMT

Super Bright Yellow

Features

- High reliability LED package.
- 1.6mmx0.8mm SMT LED,0.75mm thickness
- Low power consumption.
- Wide viewing angle.
- Ideal for backlight and indicator.
- Various colors and lens types available.
- Package: 2000pcs / reel .
- Moisture sensitivity level : level 3.
- RoHS compliant.

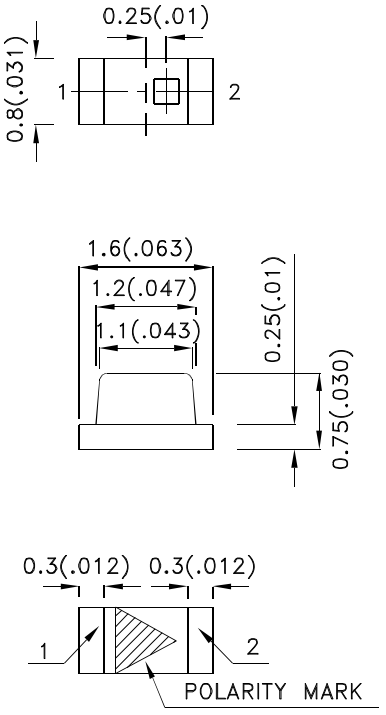
Description

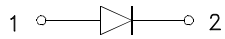
The Super Bright Yellow device is made with AlGaInP (on GaAs substrate) light emitting diode chip.

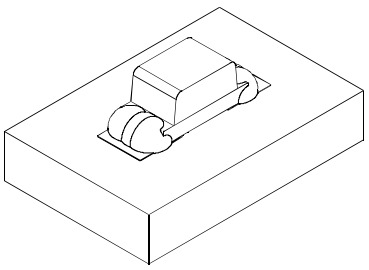
Applications

- Traffic signaling.
- Backlighting (illuminated advertising , general lighting).
- Interior and exterior automotive lighting.
- Substitution of micro incandescent lamps.
- Reading lamps.
- Signal and symbol luminaire for orientation.
- Marker lights (e.g. Steps, exit ways, etc).
- Decorative and entertainment lighting.
- Indoor and outdoor commercial and residential architectural lighting.

Package Dimensions







Notes:
1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.1(0.004") unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

Selection Guide

Part No.	Dice	Lens Type	Iv (mcd) [2] @ 20mA			Viewing Angle [1]
			Code.	Min.	Max.	2θ1/2
APT1608SYCK-AMT	Super Bright Yellow (AlGaInP)	Water Clear	N	120	200	120°
			P	200	300	
			Q	300	400	
			R	400	500	

Notes:
1. θ1/2 is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.
2. Luminous intensity/ luminous Flux: +/-15%.

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Value	Unit
Power dissipation	P_D	75	mW
Reverse Voltage	V_R	5	V
Junction temperature	T_J	120	°C
Operating Temperature	Top	-40 To +100	°C
Storage Temperature	Tstg	-40 To +120	°C
DC Forward Current[1]	I_F	30	mA
Peak Forward Current [2]	I_{FM}	175	mA
Electrostatic Discharge Threshold (HBM)		3000	V
Thermal Resistance (Junction/ambient) [1]	$R_{th\ j\text{-}a}$	350	°C/W

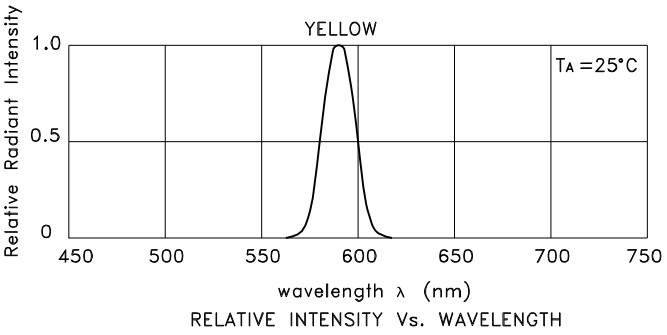
Notes:
1. Rth(j-a) Results from mounting on PC board FR4 (pad size≥16 mm^2 per pad),
2. 1/10 Duty Cycle, 0.1ms Pulse Width.

Electrical / Optical Characteristics at Ta=25°C

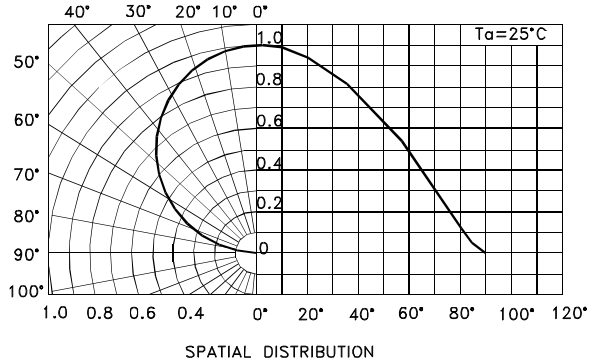
Parameter	Symbol	Value				Unit
		Code.	Min.	Typ.	Max.	
Wavelength at peak emission I_F=20mA	λ peak			590		nm
Dominant Wavelength I_F=20mA	λ dom [1]	2	584		586	nm
		3	586		588	
		4	588		590	
		5	590		592	
Spectral bandwidth at 50%Φ REL MAX I_F=20mA	Δλ			20		nm
Forward Voltage I_F=20mA	V_F [2]			2.0	2.5	V
Reverse Current (V_R = 5V)	I_R				10	uA
Temperature coefficient of λ peak I_F=20mA, -10° C≤ T≤100° C	TC λ peak			0.13		nm/° C
Temperature coefficient of λ dom I_F=20mA, -10° C≤ T≤100° C	TC λ dom			0.04		nm/° C
Temperature coefficient of V_F I_F=20mA, -10° C≤ T≤100° C	TCv			-1.9		mV/° C

Notes:
1.The dominant Wavelength (λ d) above is the setup value of the sorting machine. (Tolerance λ d : ±1nm.)
2. Forward Voltage: +/-0.1V.

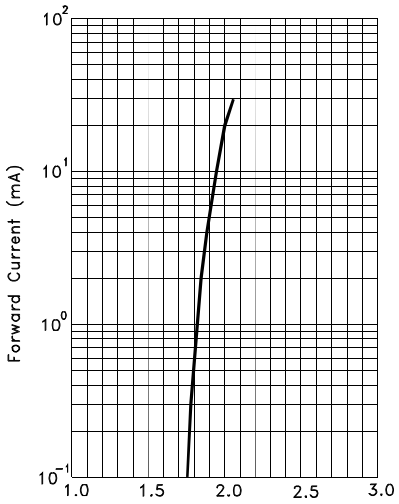
Super Bright Yellow **APT1608SYCK-AMT**



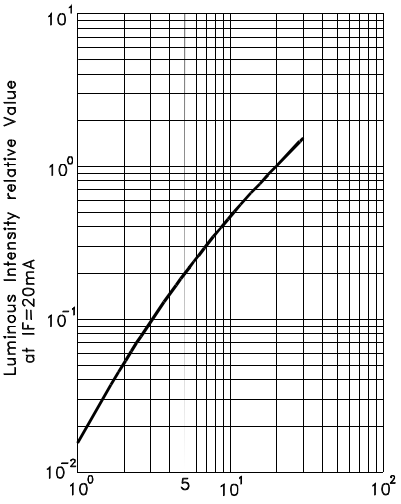
RELATIVE INTENSITY Vs. WAVELENGTH



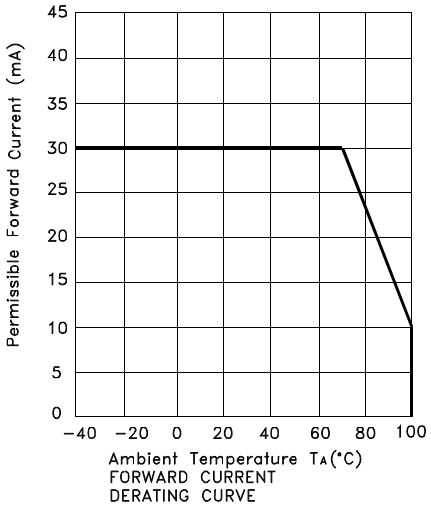
SPATIAL DISTRIBUTION



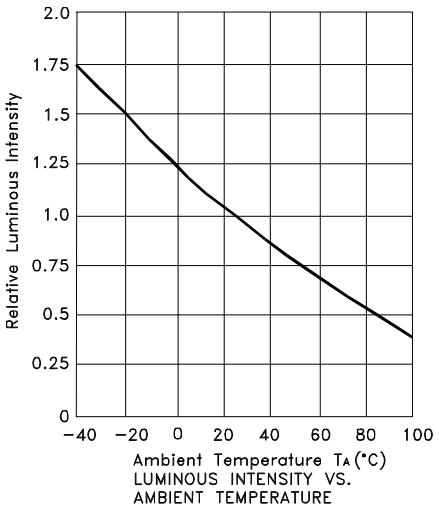
FORWARD CURRENT Vs.
FORWARD VOLTAGE



LUMINOUS INTENSITY Vs.
FORWARD CURRENT



FORWARD CURRENT
DERATING CURVE

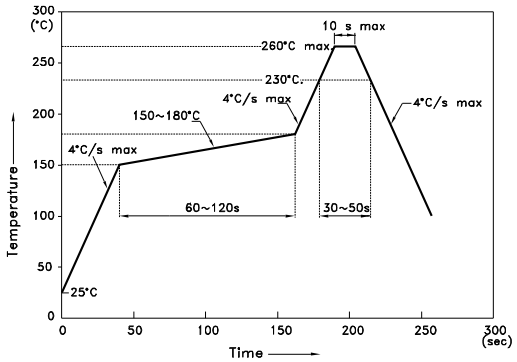


LUMINOUS INTENSITY VS.
AMBIENT TEMPERATURE

APT1608SYCK-AMT

Reflow soldering is recommended and the soldering profile is shown below.
Other soldering methods are not recommended as they might cause damage to the product.

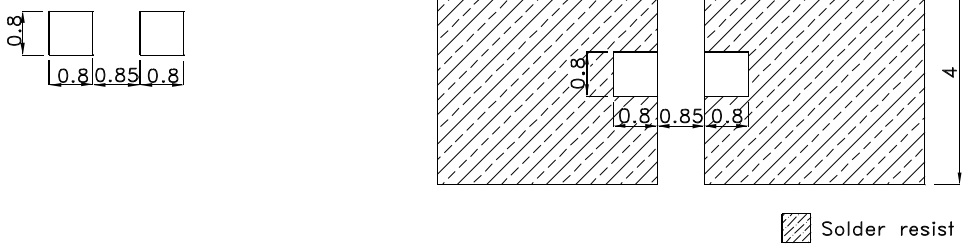
Reflow Soldering Profile For Lead-free SMT Process.



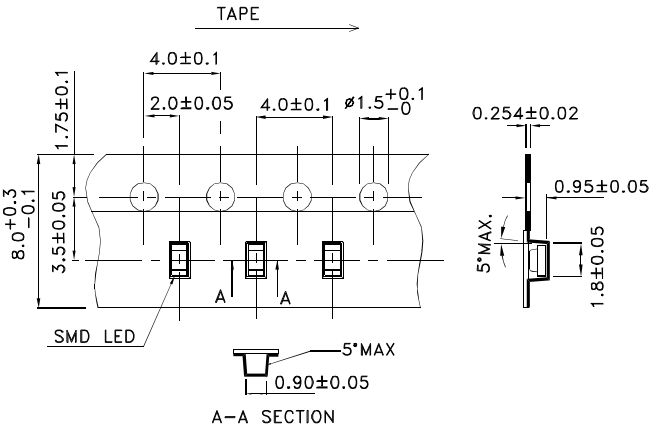
NOTES:
1. We recommend the reflow temperature 245°C(+/-5°C).The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)

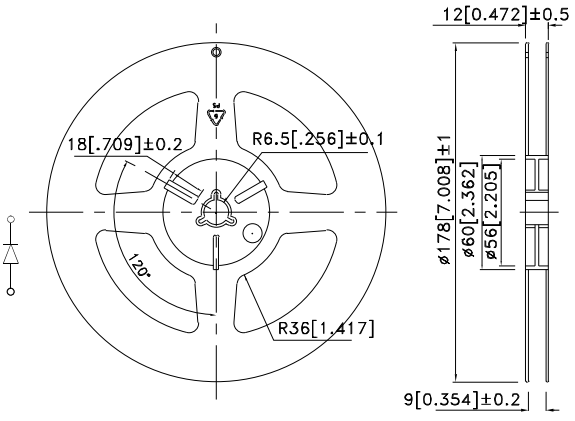
Pad design for improved heat dissipation



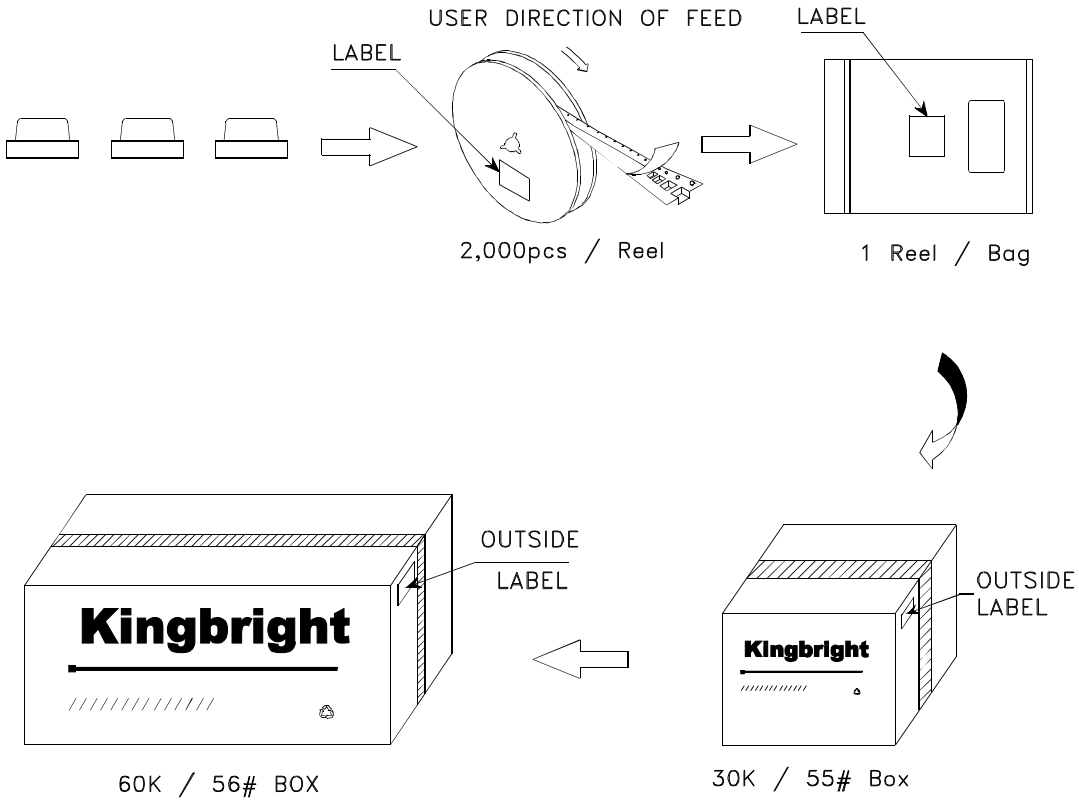
Tape Specifications (Units : mm)

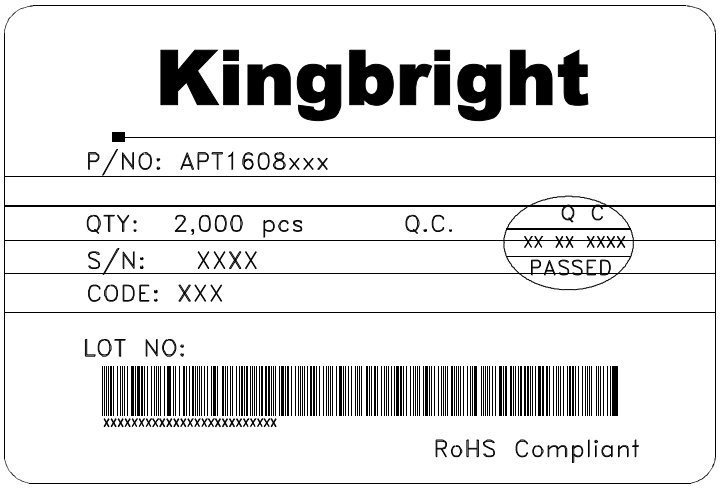


Reel Dimension



PACKING & LABEL SPECIFICATIONS **APT1608SYCK-AMT**





Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below

Lot Tolerance Percent Defective (LTPD) : 10%

No.	Test Item	Standards	Test Condition	Test Times / Cycles	Number of Damaged
1	Continuous operating test	-	Ta =25°C ,IF = maximum rated current*	1,000 h	0 / 22
2	High Temp. operating test	EIAJ ED-4701/100(101)	Ta = 100°C IF = maximum rated current*	1,000 h	0 / 22
3	Low Temp. operating test	-	Ta = -40°C, IF = maximum rated current*	1,000 h	0 / 22
4	High temp. storage test	EIAJ ED-4701/100(201)	Ta = maximum rated storage temperature	1,000 h	0 / 22
5	Low temp. storage test	EIAJ ED-4701/100(202)	Ta = -40°C	1,000 h	0 / 22
6	High temp. & humidity storage test	EIAJ ED-4701/100(103)	Ta = 60°C, RH = 90%	1,000 h	0 / 22
7	High temp. & humidity operating test	EIAJ ED-4701/100(102)	Ta = 60°C, RH = 90% IF = maximum rated current*	1,000 h	0 / 22
8	Soldering reliability test	EIAJ ED-4701/100(301)	Moisture soak : 30°C,70% RH, 72h Preheat : 150~180°C(120s max.) Soldering temp : 260°C(10s)	3 times	0 / 18
9	Thermal shock operating test	-	Ta = -40°C(15min) ~ 100°C(15min) IF = derated current at 100°C	1,000 cycles	0 / 22
10	Thermal shock test	-	Ta = -40°C(15min) ~ maximum rated storage temperature(15min)	1,000 cycles	0 / 22
11	Electric Static Discharge (ESD)	EIAJ ED-4701/100(304)	C = 100pF , R2 = 1.5KΩ V = 3000V	Once each Polarity	0 / 22
12	Vibration test	-	a = 196m/s² , f = 100~2KHz , t = 48min for all xyz axes	4 times	0 / 22

＊ : Refer to forward current vs. derating curve diagram

Failure Criteria

Items	Symbols	Conditions	Failure Criteria
luminous Intensity	I_V	I_F = 20mA	Testing Min. Value <Spec.Min.Value x 0.5
Forward Voltage	V_F	I_F = 20mA	Testing Max. Value ≥Spec.Max.Value x 1.2
Reverse Current	I_R	V_R = Maximum Rated Reverse Voltage	Testing Max. Value ≥Spec.Max.Value x 2.5
High temp. storage test	-	-	Occurrence of notable decoloration, deformation and cracking