

Part Number: APT1608SURCK-AMT

Hyper Red

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.

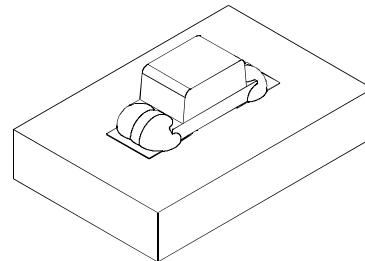
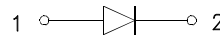
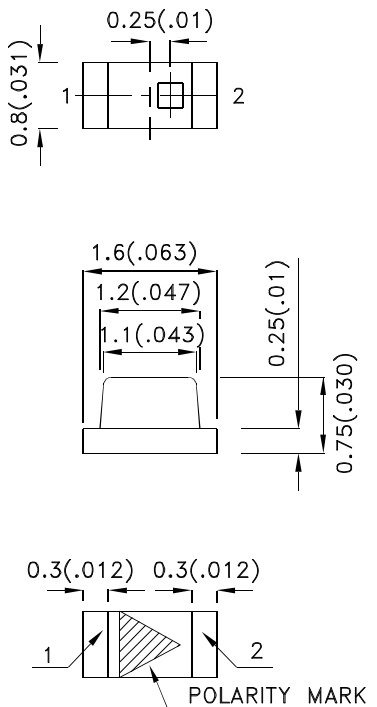
Description

The Hyper Red source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode.

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 $\pm 0.1(0.004)$ 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
APT1608SURCK-AMT	Hyper Red (AlGaInP)	Water Clear	N	120	200	120°
			P	200	300	
			Q	300	400	

Notes:

1. $\theta_{1/2}$ 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	T _{op}	-40 To +100	°C
Storage Temperature	T _{stg}	-40 To +120	°C
DC Forward Current[1]	I _F	30	mA
Peak Forward Current [2]	I _{FM}	185	mA
Electrostatic Discharge Threshold (HBM)		3000	V
Thermal Resistance (Junction/ambient) [1]	R _{th(j-a)}	350	°C/W

Notes:

1. R_{th(j-a)} Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad),
2. 1/10 Duty Cycle, 0.1ms Pulse Width.

Electrical / Optical Characteristics at Ta=25°C

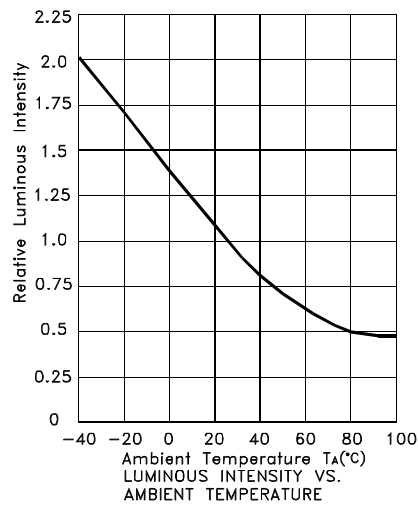
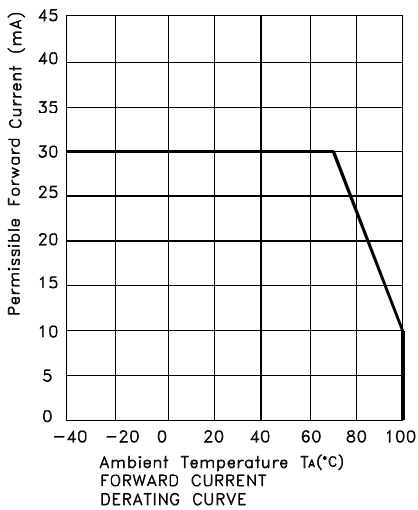
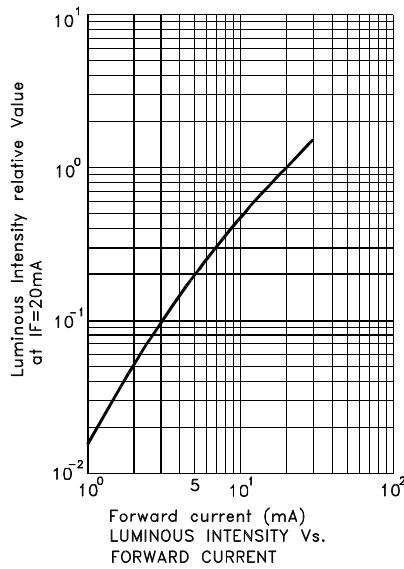
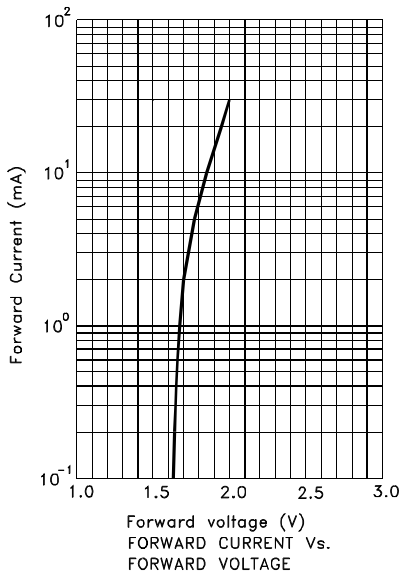
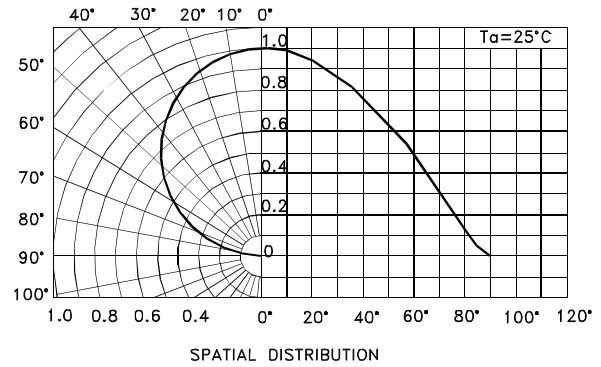
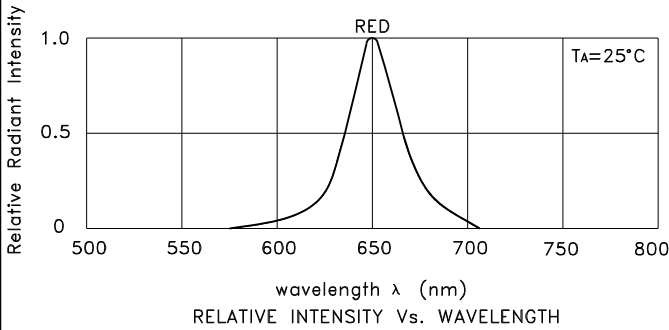
Parameter	Symbol	Value	Unit
Wavelength at peak emission I _F =20mA [Typ.]	λ peak	650	nm
Dominant Wavelength I _F =20mA [Min.]	λ dom [1]	620	nm
Dominant Wavelength I _F =20mA [Max.]	λ dom [1]	640	nm
Spectral bandwidth at 50%Φ _{REL MAX} I _F =20mA [Typ.]	Δλ	28	nm
Forward Voltage I _F =20mA [Min.]	V _F [2]	-	V
Forward Voltage I _F =20mA [Typ.]		1.95	
Forward Voltage I _F =20mA [Max.]		2.5	
Reverse Current (V _R = 5V) [Max.]	I _R	10	uA
Temperature coefficient of λ peak I _F =20mA, -10 ° C ≤ T ≤ 100 ° C [Typ.]	TC λ peak	0.14	nm/° C
Temperature coefficient of λ dom I _F =20mA, -10 ° C ≤ T ≤ 100 ° C [Typ.]	TC λ dom	0.05	nm/° C
Temperature coefficient of V _F I _F =20mA, -10 ° C ≤ T ≤ 100 ° C [Typ.]	TC _V	-1.8	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.

Hyper Red

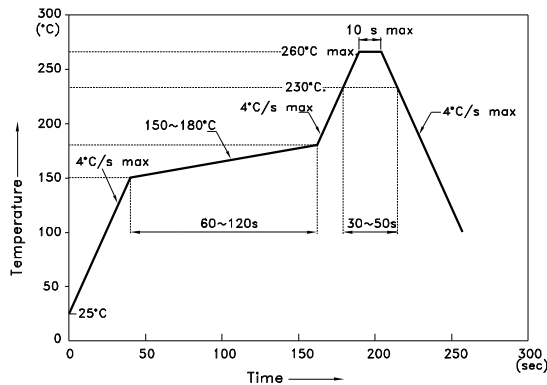
APT1608SURCK-AMT



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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.

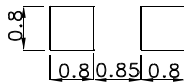


NOTES:

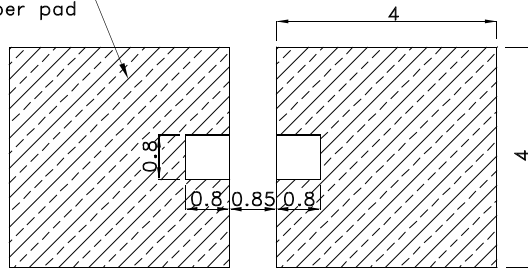
1. We recommend the reflow temperature 245°C(+/-5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

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

Pad design for improved heat dissipation

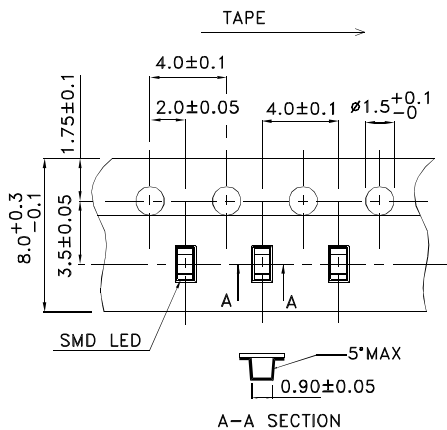


Cu-area ≥ 16mm²
per pad

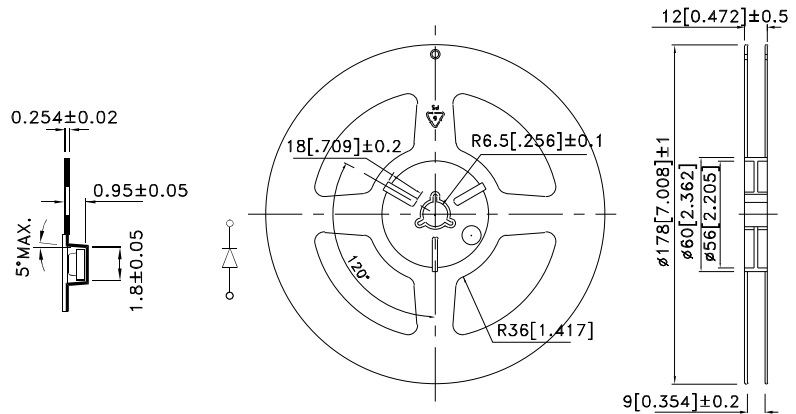


▨ Solder resist

Tape Specifications (Units : mm)

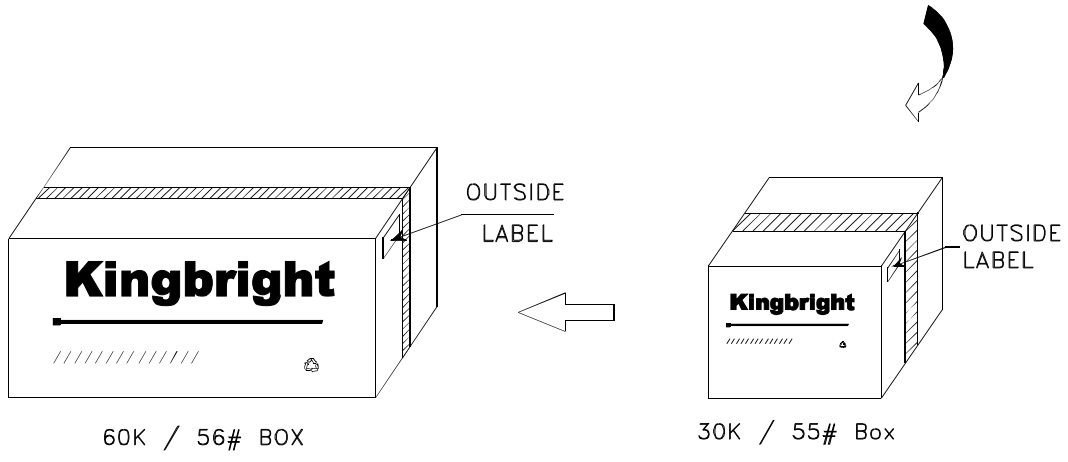
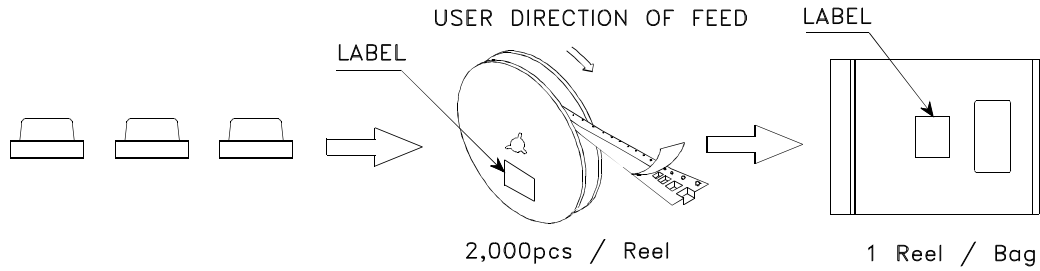



Reel Dimension



PACKING & LABEL SPECIFICATIONS

APT1608SURCK-AMT



<h1>Kingbright</h1>	
P/NO: APT1608xxx	
QTY: 2,000 pcs	Q.C. Q C xx xx xxxx PASSED
S/N: XXXX	
CODE: XXX	
LOT NO:	
 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	
RoHS Compliant	

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/s ² , 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	Iv	IF = 20mA	Testing Min. Value < Spec.Min.Value x 0.5
Forward Voltage	Vf	IF = 20mA	Testing Max. Value ≥ Spec.Max.Value x 1.2
Reverse Current	IR	VR = Maximum Rated Reverse Voltage	Testing Max. Value ≥ Spec.Max.Value x 2.5
High temp. storage test	-	-	Occurrence of notable decoloration, deformation and cracking