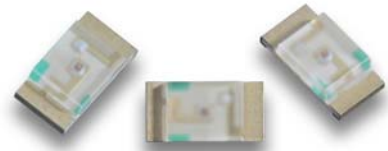


APT3216SURCK

3.2 mm x 1.6 mm SMD Chip LED Lamp



DESCRIPTIONS

- The Hyper Red source color devices are made with AlGaInP on GaAs substrate Light Emitting Diode
- Electrostatic discharge and power surge could damage the LEDs
- It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs
- All devices, equipments and machineries must be electrically grounded

FEATURES

- 3.2 mm x 1.6 mm SMD LED, 0.75 mm thickness
- Low power consumption
- Wide viewing angle
- Ideal for backlight and indicator
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- Halogen-free
- RoHS compliant

APPLICATIONS

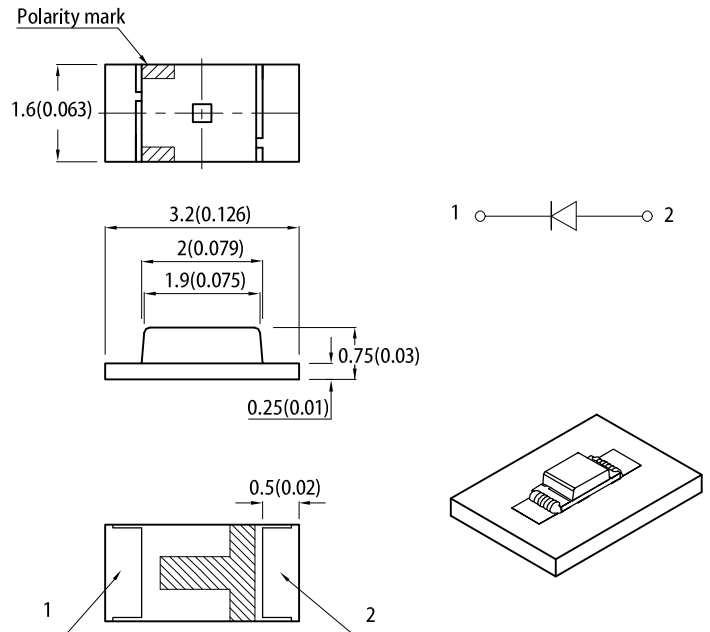
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

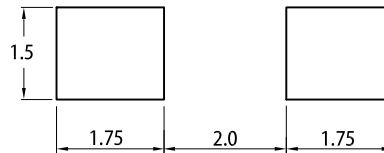


PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.1)



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is $\pm 0.2(0.008)$ unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
4. The device has a single mounting surface. The device must be mounted according to the specifications.

SELECTION GUIDE

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA ^[2]		Viewing Angle ^[1]
			Min.	Typ.	2θ1/2
APT3216SURCK	■ Hyper Red (AlGaInP)	Water Clear	120	230	140°
			*40	*80	

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: $\pm 15\%$.
 * Luminous intensity value is traceable to CIE127-2007 standards.

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I _F = 20mA	λ_{peak}	Hyper Red	645	-	nm
Dominant Wavelength I _F = 20mA	λ_{dom} ^[1]	Hyper Red	630	-	nm
Spectral Bandwidth at 50% Φ REL MAX I _F = 20mA	$\Delta\lambda$	Hyper Red	28	-	nm
Forward Voltage I _F = 20mA	V _F ^[2]	Hyper Red	1.95	2.5	V
Reverse Current (V _R = 5V)	I _R	Hyper Red	-	10	μA
Temperature Coefficient of λ_{peak} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{peak}}	Hyper Red	0.14	-	nm/°C
Temperature Coefficient of λ_{dom} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{dom}}	Hyper Red	0.05	-	nm/°C
Temperature Coefficient of V _F I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _V	Hyper Red	-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.
3. Wavelength value is traceable to CIE127-2007 standards.
4. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

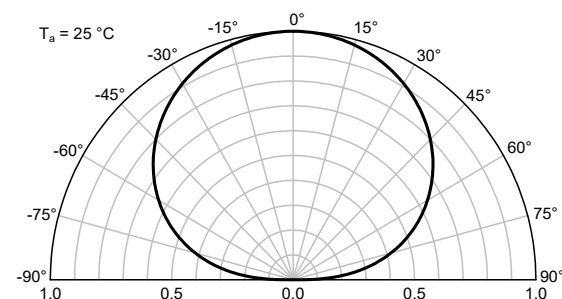
ABSOLUTE MAXIMUM RATINGS at T_A=25°C

Parameter	Symbol	Value	Unit
Power Dissipation	P _D	75	mW
Reverse Voltage	V _R	5	V
Junction Temperature	T _j	115	°C
Operating Temperature	T _{op}	-40 to +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C
DC Forward Current	I _F	30	mA
Peak Forward Current	I _{FP} ^[1]	185	mA
Electrostatic Discharge Threshold (HBM)	-	3000	V
Thermal Resistance (Junction / Ambient)	R _{th JA} ^[2]	660	°C/W
Thermal Resistance (Junction / Solder point)	R _{th JS} ^[2]	490	°C/W

Notes:

1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R_{th JA}, R_{th JS} Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

RELATIVE INTENSITY vs. WAVELENGTH



The figure consists of four graphs arranged horizontally, all for an ambient temperature $T_a = 25^\circ\text{C}$.

- Forward Current vs. Forward Voltage:** The y-axis is Forward current (mA) from 0 to 50. The x-axis is Forward voltage (V) from 1.5 to 2.5. The curve shows a sharp increase in current starting around 1.8V, reaching 30mA at approximately 2.0V.
- Luminous Intensity vs. Forward Current:** The y-axis is Luminous intensity normalised at 20 mA from 0.0 to 2.5. The x-axis is Forward current (mA) from 0 to 50. The graph is a straight line from (0,0) to (30, 1.5).
- Forward Current Derating Curve:** The y-axis is Permissible forward current (mA) from 0 to 50. The x-axis is Ambient temperature ($^\circ\text{C}$) from -40 to 100. The current is constant at 30mA from -40°C to 25°C, then decreases linearly to 0mA at 85°C.
- Luminous Intensity vs. Ambient Temperature:** The y-axis is Luminous intensity normalised at $T_a = 25^\circ\text{C}$ from 0.0 to 2.5. The x-axis is Ambient temperature ($^\circ\text{C}$) from -40 to 100. The intensity decreases from 2.0 at -40°C to approximately 0.5 at 85°C.

Figure 1 is a graph showing the temperature profile of a polymer solution during the polymerization of methyl methacrylate. The y-axis represents Temperature (°C) from 0 to 300, and the x-axis represents Time (sec) from 0 to 300. The profile starts at 25°C, rises to 150°C at 40s, then to 200°C at 160s (labeled "pre-heating 150~200°C 60~120s"). Above 200°C, the rate is 3°C/s max. It reaches a plateau above 255°C (30s max), then a peak at 260°C max (10s max), and finally cools at 6°C/s max. A region above 217°C is labeled 60~150s.

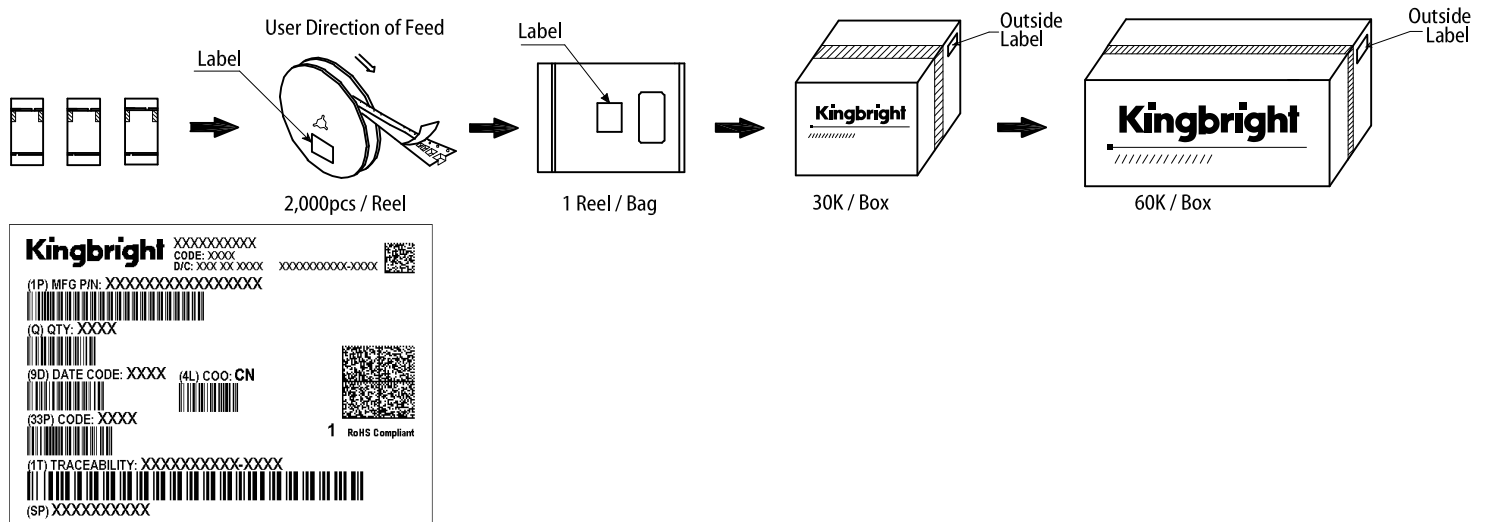
Notes:

1. Don't cause stress to the LEDs while it is exposed to high temperature.
2. The maximum number of reflow soldering passes is 2 times.
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

[illegible]

Technical drawing of a wheel hub. The drawing includes a top view (left) and a side view (right). The top view shows a circular hub with four spokes, a central bore, and a fillet radius of $R6.5 \pm 0.5$. The side view shows the hub's profile with a total width of 12 ± 1 , a central bore diameter of $\phi 178 \pm 2$, and a mounting flange diameter of $\phi 60 \pm 2$. The mounting flange has a thickness of 9 ± 1 . The angle between the spokes is 120° .

PACKING & LABEL SPECIFICATIONS



PRECAUTIONARY NOTES

1. The information included in this document reflects representative usage scenarios and is intended for technical reference only.
2. The part number, type, and specifications mentioned in this document are subject to future change and improvement without notice. Before production usage customer should refer to the latest datasheet for the updated specifications.
3. When using the products referenced in this document, please make sure the product is being operated within the environmental and electrical limits specified in the datasheet. If customer usage exceeds the specified limits, Kingbright will not be responsible for any subsequent issues.
4. The information in this document applies to typical usage in consumer electronics applications. If customer's application has special reliability requirements or have life-threatening liabilities, such as automotive or medical usage, please consult with Kingbright representative for further assistance.
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