



## AA2810ASURSK

### 2.8 x 0.8 mm Right Angle 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

- 2.8 x 1.2 x 0.8 mm right angle SMD LED, 0.8 mm thickness
- Low power consumption
- Ideal for backlight and indicator
- Package: 2000 pcs / reel
- Moisture sensitivity level: 3
- RoHS compliant

#### APPLICATIONS

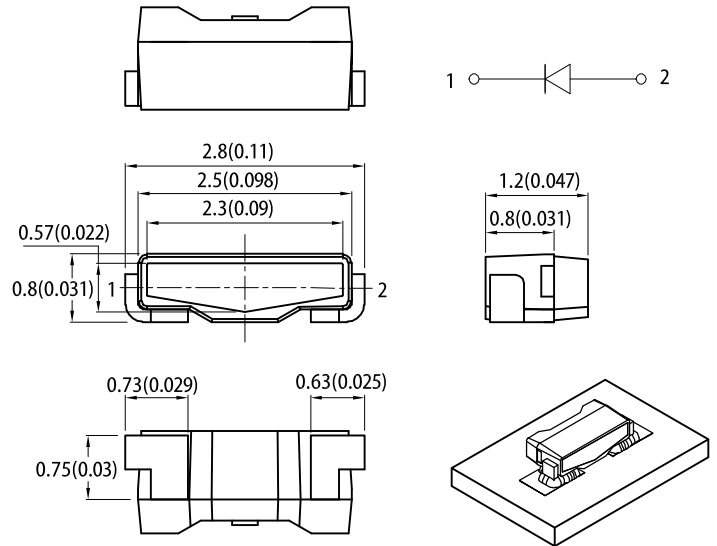
- Backlight
- Status indicator
- Home and smart appliances
- Wearable and portable devices
- Healthcare applications

#### ATTENTION

Observe precautions for handling electrostatic discharge sensitive devices

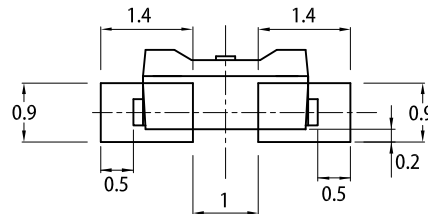


#### PACKAGE DIMENSIONS



#### RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance :  $\pm 0.1$ )



#### 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 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 <sup>[2]</sup>		Viewing Angle <sup>[1]</sup>
			Min.	Typ.	2θ1/2
AA2810ASURSK	■ Hyper Red (AlGaInP)	Water Clear	150	300	110°
			*40	*100	

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

**ELECTRICAL / OPTICAL CHARACTERISTICS at T<sub>A</sub>=25°C**

Parameter	Symbol	Emitting Color	Value		Unit
			Typ.	Max.	
Wavelength at Peak Emission I <sub>F</sub> = 20mA	$\lambda_{\text{peak}}$	Hyper Red	645	-	nm
Dominant Wavelength I <sub>F</sub> = 20mA	$\lambda_{\text{dom}}^{[1]}$	Hyper Red	630	-	nm
Spectral Bandwidth at 50% $\Phi$ REL MAX I <sub>F</sub> = 20mA	$\Delta\lambda$	Hyper Red	28	-	nm
Capacitance	C	Hyper Red	35	-	pF
Forward Voltage I <sub>F</sub> = 20mA	V <sub>F</sub> <sup>[2]</sup>	Hyper Red	1.95	2.5	V
Reverse Current (V <sub>R</sub> = 5V)	I <sub>R</sub>	Hyper Red	-	10	μA
Temperature Coefficient of $\lambda_{\text{peak}}$ I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub><math>\lambda_{\text{peak}}</math></sub>	Hyper Red	0.14	-	nm/°C
Temperature Coefficient of $\lambda_{\text{dom}}$ I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub><math>\lambda_{\text{dom}}</math></sub>	Hyper Red	0.05	-	nm/°C
Temperature Coefficient of V <sub>F</sub> I <sub>F</sub> = 20mA, -10°C ≤ T ≤ 85°C	TC <sub>V</sub>	Hyper Red	-1.9	-	mV/°C

**Notes:**

1. The dominant wavelength ( $\lambda_d$ ) above is the setup value of the sorting machine. (Tolerance  $\lambda_d$  : ±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.

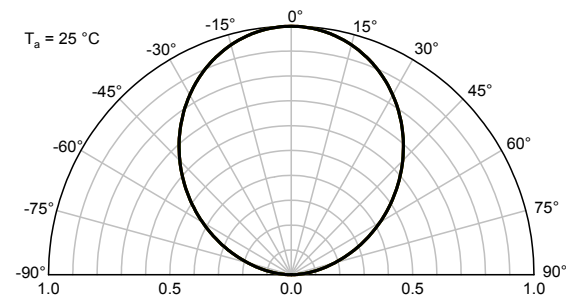
**ABSOLUTE MAXIMUM RATINGS at T<sub>A</sub>=25°C**

Parameter	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	75	mW
Reverse Voltage	V <sub>R</sub>	5	V
Junction Temperature	T <sub>j</sub>	115	°C
Operating Temperature	T <sub>op</sub>	-40 to +85	°C
Storage Temperature	T <sub>stg</sub>	-40 to +85	°C
DC Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current	I <sub>FM</sub> <sup>[1]</sup>	185	mA
Electrostatic Discharge Threshold (HBM)	-	3000	V
Thermal Resistance (Junction / Ambient)	R <sub>th JA</sub> <sup>[2]</sup>	290	°C/W
Thermal Resistance (Junction / Solder point)	R <sub>th JS</sub> <sup>[2]</sup>	170	°C/W

**Notes:**

1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R<sub>th JA</sub>, R<sub>th JS</sub> Results from mounting on PC board FR4 (pad size ≥ 16 mm<sup>2</sup> 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 four graphs illustrate the LED's characteristics:

- Forward Current vs. Forward Voltage:** Shows the forward current (mA) versus forward voltage (V) at  $T_a = 25^\circ\text{C}$ . The current starts to rise significantly around 1.7V and reaches 30mA at approximately 2.0V.
- Luminous Intensity vs. Forward Current:** Shows the normalized luminous intensity versus forward current (mA) at  $T_a = 25^\circ\text{C}$ . The intensity is linear, reaching 1.5 at 30mA.
- Forward Current Derating Curve:** Shows the permissible forward current (mA) versus ambient temperature ( $^\circ\text{C}$ ). The current is constant at 30mA from  $-40^\circ\text{C}$  to  $25^\circ\text{C}$  and then derates linearly to 0mA at  $85^\circ\text{C}$ .
- Luminous Intensity vs. Ambient Temperature:** Shows the normalized luminous intensity versus ambient temperature ( $^\circ\text{C}$ ) at  $T_a = 25^\circ\text{C}$ . The intensity decreases as temperature increases, starting at 2.0 at  $-40^\circ\text{C}$  and reaching approximately 0.5 at  $85^\circ\text{C}$ .

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 peak of 260°C max. at 210s (labeled "above 255°C 30s max."). The cooling rate is 6°C/s max. (labeled "260°C max. 10s max."). The solution remains above 217°C for 60~150s.

Technical drawing of a tape assembly. The main view shows a side profile of a tape with four circular holes. Dimensions include: overall width  $4 \pm 0.1$ , hole diameter  $\phi 1.5 \pm 0.1$ , distance from left edge to first hole  $1.75 \pm 0.1$ , distance between holes  $4 \pm 0.1$ , total length  $8^{+0.3}_{-0.1}$ , distance from bottom edge to hole center  $3.5 \pm 0.1$ , and a bottom flange width  $1.4 \pm 0.1$ . A cross-section A-A is shown below the main view. A detail view on the right shows a cross-section of a hole with dimensions: hole diameter  $0.2 \pm 0.1$ , distance from top edge to hole center  $0.96 \pm 0.1$ , and hole depth  $3 \pm 0.1$ . The text "TAPE" is written above the main view with an arrow pointing right. The text "A-A Section" is written below the cross-section. The text "1" and "2" are used as labels for the holes. The text " $\phi 0.5$  Typ." is written near the bottom flange.

Technical drawing of a circular mechanical part, showing a top view and a side view.

**Top View Dimensions:**

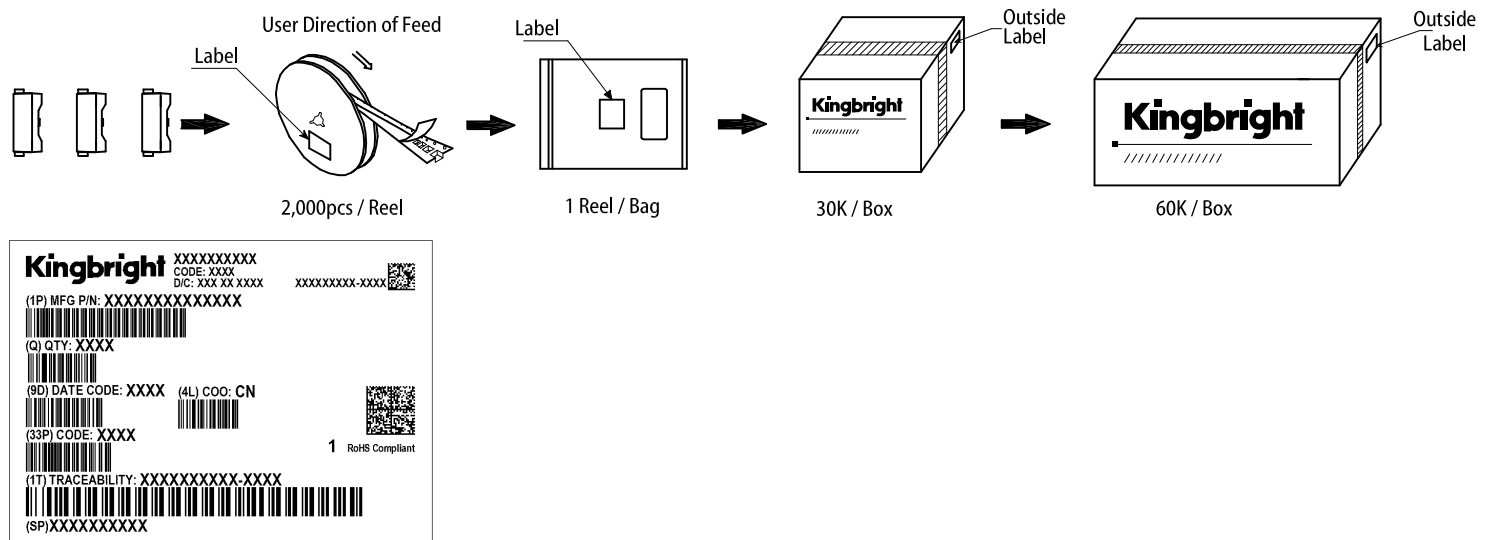
- Outer diameter:  $18 \pm 0.2$
- Inner radius:  $R6.5 \pm 0.1$
- Angle:  $120^\circ$
- Radius:  $R36$

**Side View Dimensions:**

- Top flange thickness:  $12 \pm 0.5$
- Main body diameter:  $\phi 178 \pm 1$
- Inner hole diameter:  $\phi 56$
- Outer diameter of the main body:  $\phi 60$
- Bottom flange thickness:  $9 + 0.2$

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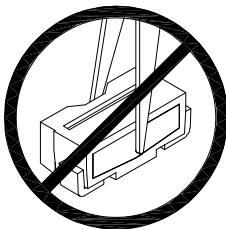
## PACKING & LABEL SPECIFICATIONS



## HANDLING PRECAUTIONS

Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Do not directly touch or handle the silicone lens surface.  
It may damage the internal circuitry.
2. As silicone encapsulation is permeable to gases, some corrosive substances such as  $H_2S$  might corrode silver plating of lead frame.  
Special care should be taken if an LED with silicone encapsulation is to be used near such substances.



## 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.
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