

4.0 x 0.8 mm Right Angle SMD Chip LED Lamp

- The Blue source color devices are made with InGaN 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

- 4.0 x 1.4 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
- Halogen-free
- RoHS compliant

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

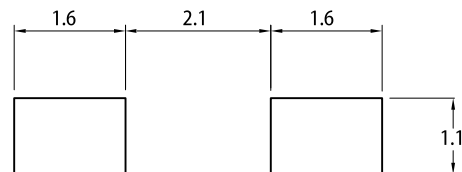
Observe precautions for handling electrostatic discharge sensitive devices



Technical drawing of a 1N4148 diode showing multiple views and dimensions in millimeters (mm) and inches (in).

- Top View:** Shows the diode's footprint. Dimensions include a total width of 4(0.157) mm, a central width of 2.86(0.113) mm, and a central width of 2.2(0.087) mm. The distance from the center to the left edge is 0.62(0.024) mm. The distance from the center to the right edge is 0.8(0.031) mm. The distance from the center to the bottom edge is 0.56(0.022) mm.
- Front View:** Shows the diode's profile. Dimensions include a total height of 1.4(0.055) mm, a top width of 0.8(0.031) mm, and a bottom width of 0.2(0.008) mm.
- Side View:** Shows the diode's profile from the side. Dimensions include a total height of 0.75(0.03) mm and a bottom width of 0.75(0.03) mm.
- Detail View:** Shows a close-up of the diode's body. Dimensions include a total height of 0.75(0.03) mm and a bottom width of 0.75(0.03) mm. A "Polarity Mark" is indicated on the diode's body.
- Symbol and Assembly:** The diode symbol is shown with terminals 1 and 2. A 3D perspective view shows the diode mounted on a PCB, with terminal 1 connected to a pad and terminal 2 connected to a pad.

(units : mm; tolerance : ± 0.1)



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.

Part Number	Emitting Color (Material)	Lens Type	Iv (mcd) @ 20mA ^[2]		Viewing Angle ^[1]
			Min.	Typ.	2θ1/2
KA-4008VBS-D	Blue (InGaN)	Water Clear	300	450	120°

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: $\pm 15\%$.
3. 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}	Blue	465	-	nm
Dominant Wavelength I _F = 20mA	$\lambda_{\text{dom}}^{[1]}$	Blue	470	-	nm
Spectral Bandwidth at 50% Φ REL MAX I _F = 20mA	$\Delta\lambda$	Blue	22	-	nm
Capacitance	C	Blue	100	-	pF
Forward Voltage I _F = 20mA	V _F ^[2]	Blue	3.3	4.0	V
Reverse Current (V _R = 5V)	I _R	Blue	-	50	μA
Temperature Coefficient of λ_{peak} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{peak}}	Blue	0.04	-	nm/°C
Temperature Coefficient of λ_{dom} I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _{λ_{dom}}	Blue	0.03	-	nm/°C
Temperature Coefficient of V _F I _F = 20mA, -10°C ≤ T ≤ 85°C	TC _V	Blue	-2.9	-	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

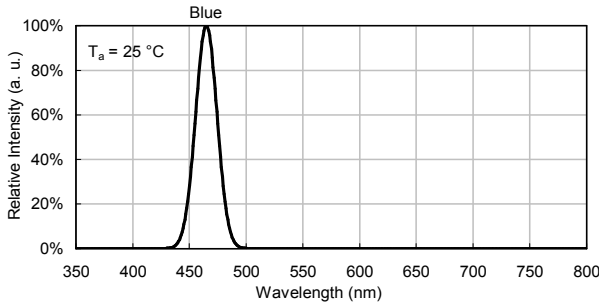
Parameter	Symbol	Value	Unit
Power Dissipation	P _D	120	mW
Reverse Voltage	V _R	5	V
Junction Temperature	T _j	115	°C
Operating Temperature	T _{op}	-40 to +85	°C
Storage Temperature	T _{stg}	-40 to +85	°C
DC Forward Current	I _F	30	mA
Peak Forward Current	I _{FM} ^[1]	100	mA
Electrostatic Discharge Threshold (HBM)	-	250	V
Thermal Resistance (Junction / Ambient)	R _{th JA} ^[2]	330	°C/W
Thermal Resistance (Junction / Solder point)	R _{th JS} ^[2]	150	°C/W

Notes:

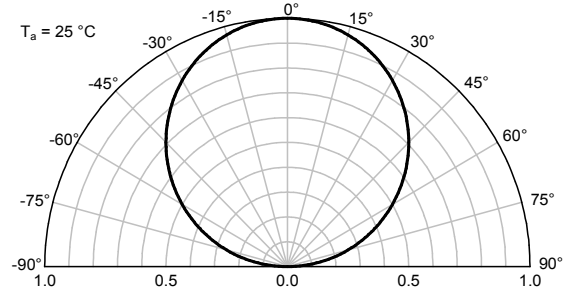
1. 1/10 Duty Cycle, 0.1ms Pulse Width.
2. R_{th JA}, R_{th JS} Results from mounting on PC board FR4 (pad size ≥ 16 mm² per pad).
3. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

TECHNICAL DATA

RELATIVE INTENSITY vs. WAVELENGTH

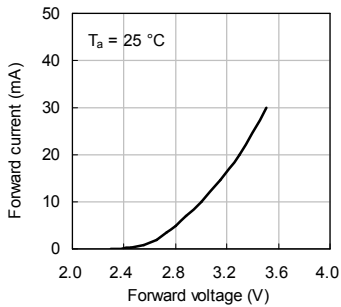


SPATIAL DISTRIBUTION

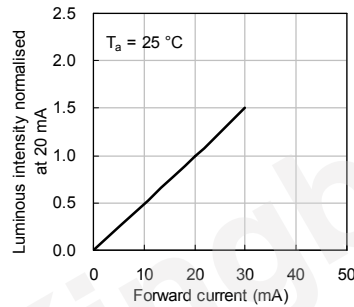


BLUE

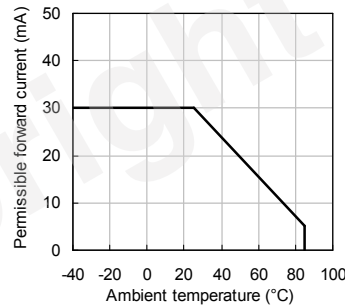
Forward Current vs. Forward Voltage



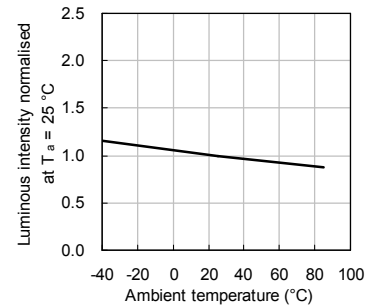
Luminous Intensity vs. Forward Current



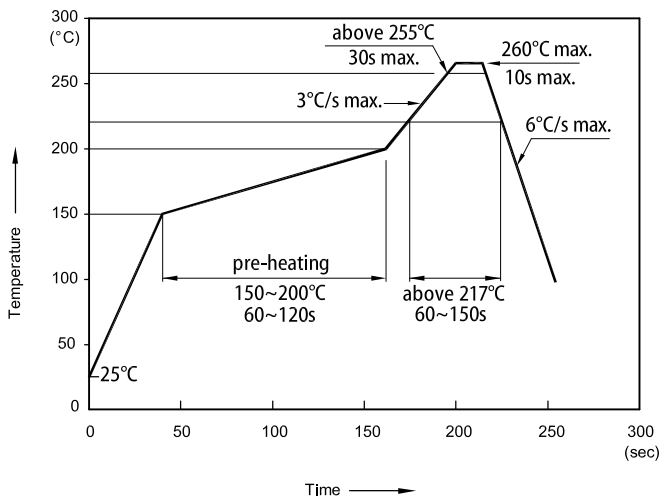
Forward Current Derating Curve



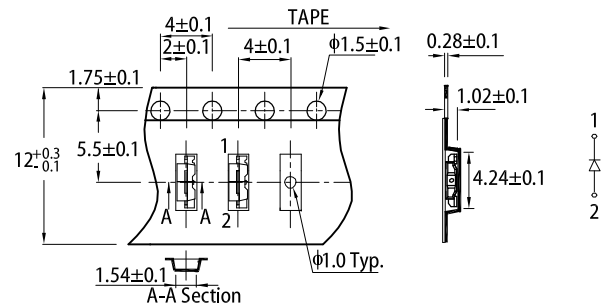
Luminous Intensity vs. Ambient Temperature



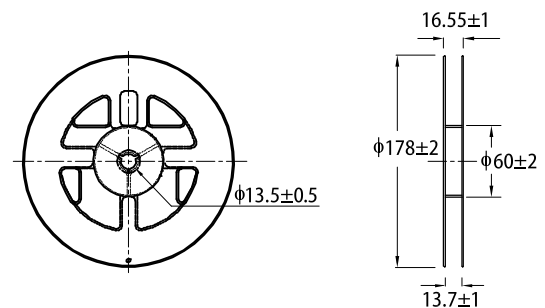
REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS



TAPE SPECIFICATIONS (units : mm)

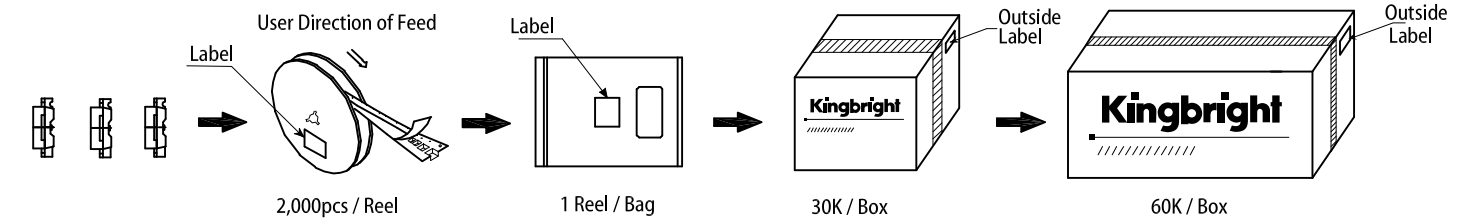


REEL DIMENSION (units : mm)



- 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.

PACKING & LABEL SPECIFICATIONS



Kingbright

XXXXXXXXXX-XXXX

PINO: XXXXXXXX

QTY: XXXXXpcs

S/N: XXXX

CODE: XX

COUNTRY: CN

LOT NO:

QC DATE: XXX XX XXXX PASSED

XXXXXXXXXXXXXXX

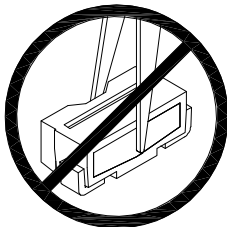
(SP)XXXXXXXXXX

RoHS Compliant

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.

- Do not directly touch or handle the silicone lens surface.
It may damage the internal circuitry.
- 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

- The information included in this document reflects representative usage scenarios and is intended for technical reference only.
- 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.
- 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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