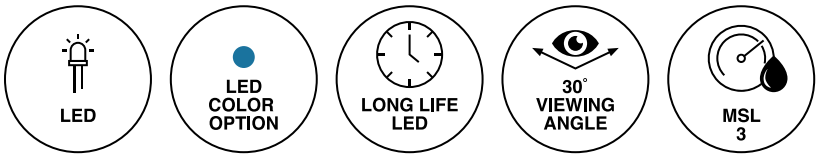
CMD264-UBD
3mm (T-1) LED Through Hole Blue LED Lamp

Superior optical performance.



Application

- Commercial Outdoor Signs
- Device Lights
- Front Panel Indicators
- Front Panel Backlighting
- Navigation Systems
- Backlit Keypads
- IoT
- Industrial Control Systems
- Storage Servers

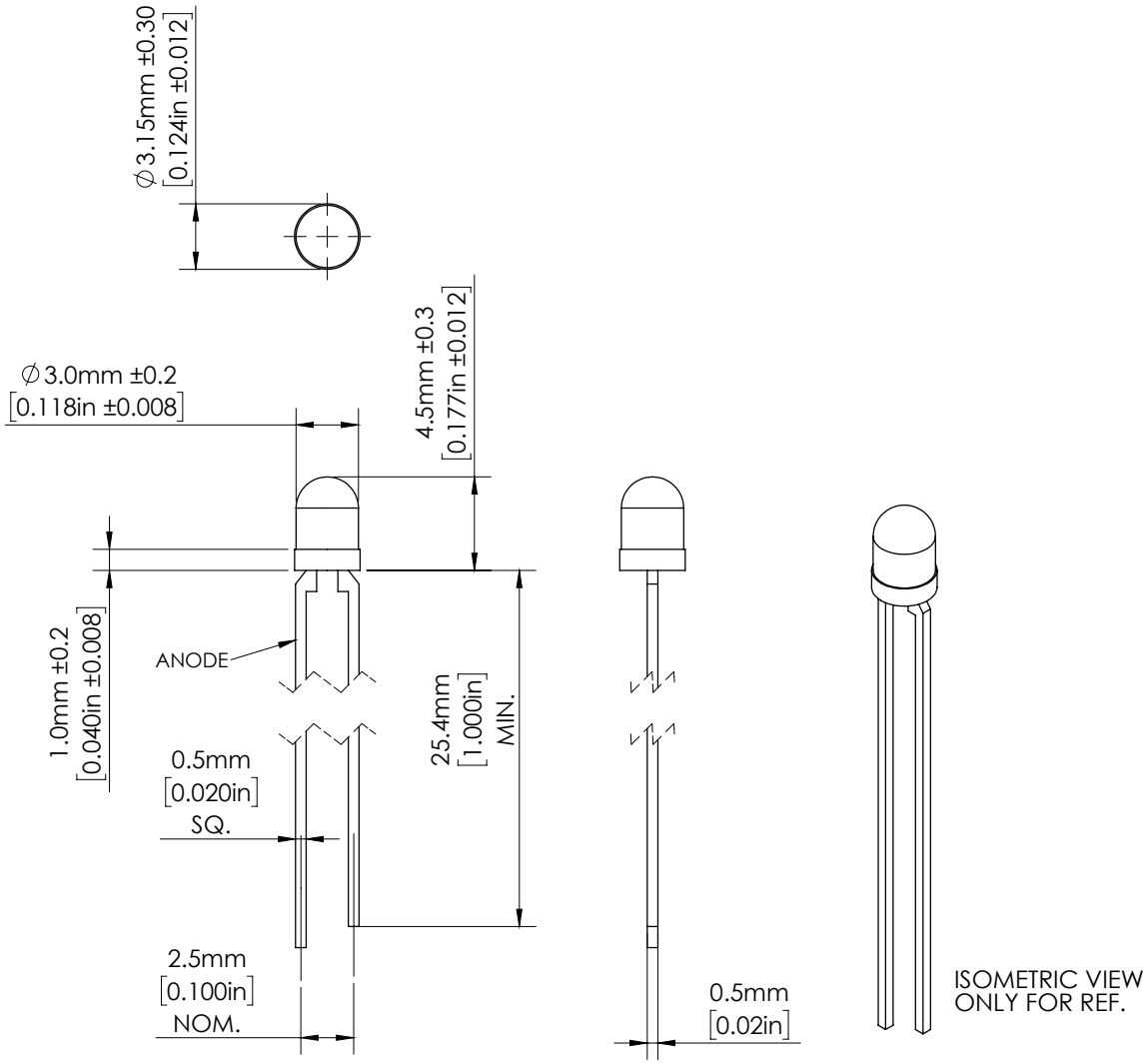
Key Features

- LED bulb size: 3mm (T-1)
- Precision optical performance GaN/SiC blue LED
- Blue diffused lens color
- Smooth and spatial radiation patterns
- Consistent color
- Ideal if bright sunlight conditions (operating temperature limit of +185˚F (85˚C)
- Through-hole technology
- Superior resistance to moisture
- Moisture Sensitive Level (MSL): 3
- Viewing Angle: 30
- RoHS and REACH compliance

Ordering Data

Series	Description
CMD264-UBD	3mm (T-1) Blue LED Through Hole

Product Dimensions



Notes:
1. All dimensions are in millimeters [inches]
2. Tolerance is ± 0.25 [0.01] unless otherwise noted.
3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.

Product Specifications

Absolute Maximum Ratings at Ta= 25°C

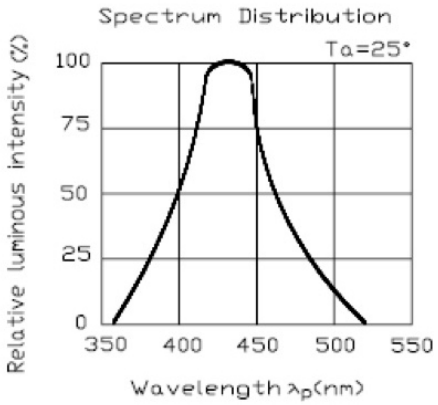
Parameter	Symbol	Rating	Unit
Forward Current	IF	30	mA
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +100	°C
Soldering Temperature	Tsol	260 (for 5 sec)	°C
Power Dissipation	Pd	135	mW
Peak Forward Current (Duty 1/10 @ 1KHZ)	IF (Peak)	90	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge	ESD	1000	V

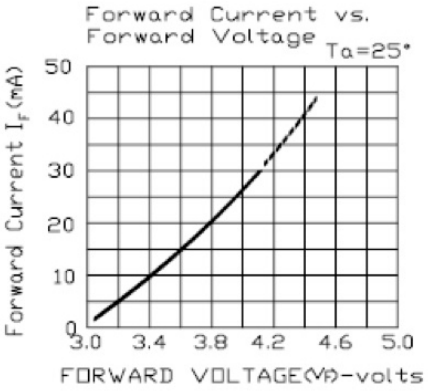
Electrical-Optical Characteristics

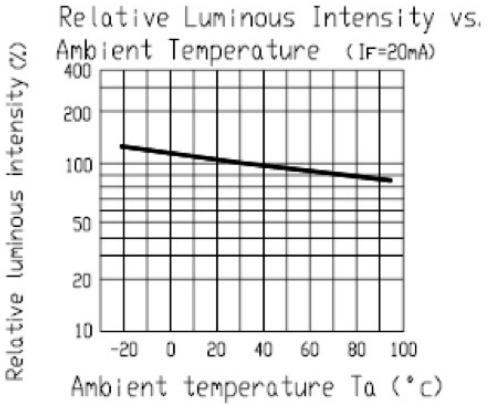
Parameter	Symbol	Min	Typ.	Max.	Unit	Condition
Peak Wavelength	λp	--	428	--	nm	IF=20mA
Dominant Wavelength	λd	--	466	--	nm	IF=20mA
Luminous Intensity	Iv	21	35	--	mcd	IF=20mA
Viewing Angle	2θ1/2	--	30	--	deg	IF=20mA
Forward Voltage	VF	--	3.8	4.5	V	IF=20mA
Spectrum Radiation Bandwidth	Δλ	--	65	--	nm	IF=20mA
Reverse Current	IR	--	--	50	μA	VR=5V

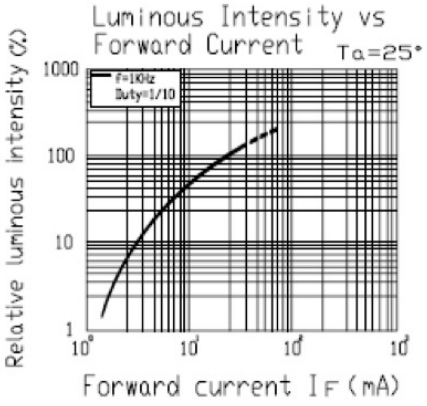
Product Specifications

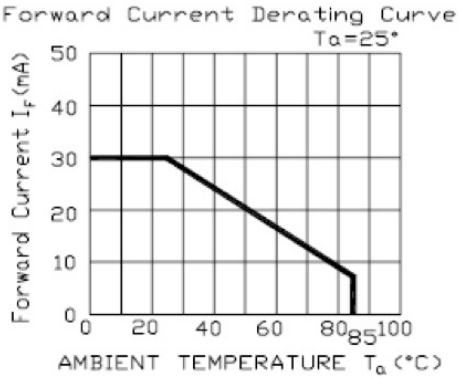
Typical Electrical-Optical Characteristics Curves

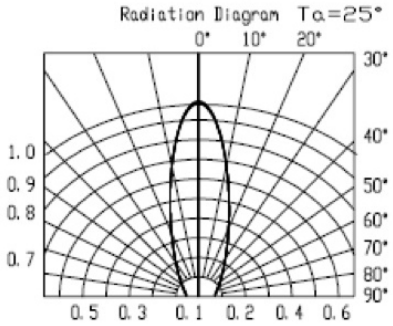












Reliability Data

Relaibility Test Conditions

No.	Conditions	Test Conditions	Test Hour/ Cycle	Sample Size	Accept/ Reject
A1	Solder Heat	Temperature: 260°C ± 5 °C	5 Secs	76 Pcs	0/1
A2	Thermal Shock	H : +100°C 5min ∫ 10 secs L:-10°C 5min	50 Cycles	76 Pcs	0/1
A3	Temperature Cycle	H : +85°C 30min ∫ 5 mins L:-55°C 30min	50 Cycles	76 Pcs	0/1
A4	Low Temperature Storage	Temperature: -55°C	1000 Hrs	76 Pcs	0/1
A5	High Temperature Storage	Temperature: 100°C	1000 Hrs	76 Pcs	0/1
A6	High Temperature / High Humidity	85°C/ 85% RH	1000 Hrs	76 Pcs	0/1
A7	DC Operating Life	Temperature: 25°C IF=20mA	1000 Hrs	76 Pcs	0/1

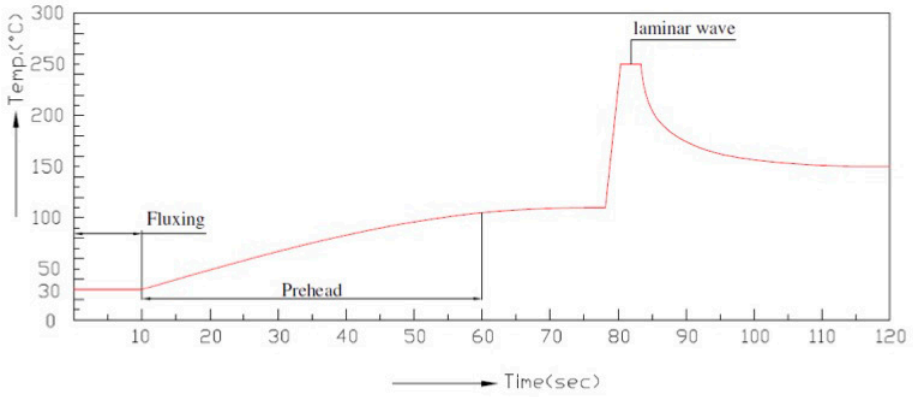
Recommended Reflow Soldering Profile

Soldering

- Careful attention should be paid during soldering. When soldering, leave more then 3mm from solder joint to epoxy bulb, and soldering beyond the base of the tie bar is recommended.
- Recommended soldering conditions:

Hand Soldering		**DIP Soldering**	
Temp. at tip of iron	300˚C Max. (30W Max.)	Preaheat temp.	100˚C Max. (60 Sec Max.)
Soldering time	3 Sec Max.	Bath temp. & time	260 Max., 5 Sec Max.
Distance	3mm Min. (From solder joint to epoxy bulb)	Distance	3mm Min. (From solder joint to epoxy bulb)

- Recommended soldering profile



- Avoiding applying any stress to the lead frame while the LEDs are at high temperature particularly when soldering.
- Dip and hand soldering should not be done more than one time.
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- A rapid-rate process is not recommended for cooling the LEDs down from the peak temperature.
- Although the recommended soldering conditions are specified in the above table, dip or hand soldering at the lowest possible temperature is desirable for the LEDs.
- Wave soldering parameter must be set and maintain according to recommended temperature and dwell time in the solder wave.

Precautions

Storage

- The LEDs should be stored at 30°C or less and 70%RH or less after being shipped and the storage life limits are 3 months. If the LEDs are stored for 3 months or more, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

Circuit Design Notes

Lead Forming

- During lead formation, the leads should be bent at a point at least 3mm from the base of the epoxy bulb
- Lead forming should be done before soldering.
- Avoid stressing the LED package during leads forming. The stress to the base may damage the LED's characteristics or it may break the LEDs.
- Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause failure of the LEDs.
- When mounting the LEDs onto a PCB, the PCB holes must be aligned exactly with the lead position of the LED. If the LEDs are mounted with stress at the leads, it causes deterioration of the epoxy resin and this will degrade the LEDs.

Cleaning

- When necessary, cleaning should occur only with isopropyl alcohol at room temperature for a duration of no more than one minute. Dry at room temperature before use.
- Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Ultrasonic cleaning shall be pre-qualified to ensure this will not cause damage to the LED.

Heat Management

- Heat management of LEDs must be taken into consideration during the design stage of LED application. The current should be de-rated appropriately by referring to the de-rating curve found in each product specification.
- The temperature surrounding the LED in the application should be controlled. Please refer to the data sheet de-rating curve.

ESD

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:
  - Eliminating the charge
  - Grounded wrist strap, ESD footwear, clothes, and floors
  - Grounded workstation equipment and tools
  - ESD table/shelf mat made of conductive materials
- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:
  - Dissipating static charge with conductive materials
  - Preventing charge generation with moisture
  - Neutralizing the charge with ionizers

Circuit Design Notes

Directions for Use

- The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, it may cause migration resulting in LED damage.

Compliances and Approvals

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