

3528 SMD Chip LED

Warm White

multicomp PRO

**RoHS
Compliant**



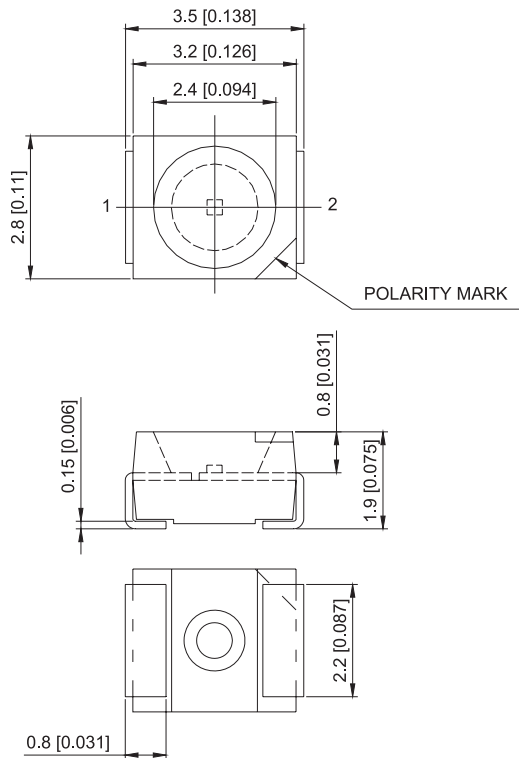
Features

- Dimensions : 3.5mm × 2.8mm × 1.9mm.
- Wide Viewing Angle.

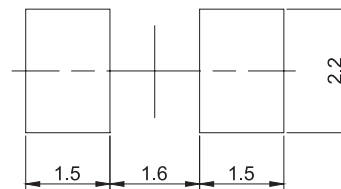
Applications

- Indoor lighting: LED tube, light bar
- Decorative lighting: light flexible strips
- General lighting

Package Dimensions



Recommended soldering pattern



Dimensions : Millimetres

Notes

1. All dimensions are in millimeters.
2. Tolerance is ± 0.25 unless otherwise noted.
3. Specifications are subject to change without notice.

Device Selection Guide

Part No.	Chip Material	Emitting Colour
MP007087	(InGaN)	Warm White

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Absolute Maximum Ratings at TA=25°C

Parameter	Symbol	Rating	Unit
Power Dissipation	P _D	120	mW
Forward Current	I _F	30	mA
Peak Forward Current*1	I _{FP}	100	mA
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-40°C To +85°C	
Storage Temperature	T _{stg}	-40°C To +85°C	

Notes:

*1: Pulse width ≤ 0.1ms, Duty cycle ≤ 1/10

Optical / Electrical Characteristics at TA=25°C

Electrical / Optical Characteristics at TA=25°C

Parameter	Symbol	Min.	Typ.	Max	Unit	Test Conditions
Forward Voltage (one circuit)	V _F	2.8	—	3.6	V	I _F =20mA
Reverse Current (one circuit)	I _R	—	—	10	μA	V _R =5V
Chromaticity Coordinates	X	—	0.44	—	—	I _F =20mA
	Y		0.403			
Colour temperature	CCT	—	3000	—	K	
Colour tolerance	—	0	—	6	SDCM	
Colour Rendering Index	R _a	80	—	—	—	
Lumen	φ	6	7	—	LM	
Viewing Angle	2θ _{1/2}	—	120	—	Deg.	

Remarks:

If special sorting is required (e.g. binning based on forward voltage, luminous intensity, or dominate wavelength), the typical accuracy of the sorting process is as follows:

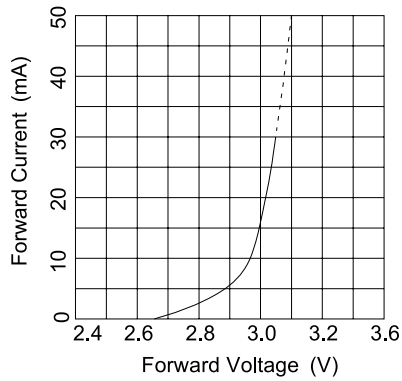
1. Chromaticity Coordinates: ±0.005
2. Luminous Intensity: ±15%
3. Forward Voltage: ±0.1V

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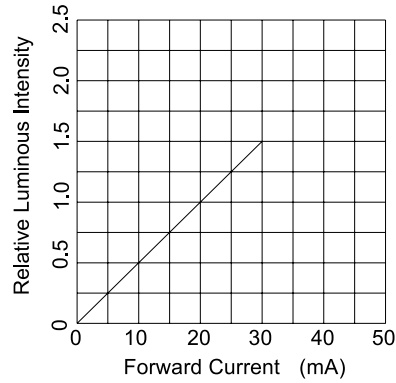
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Typical Electrical/Optical Characteristics Curves

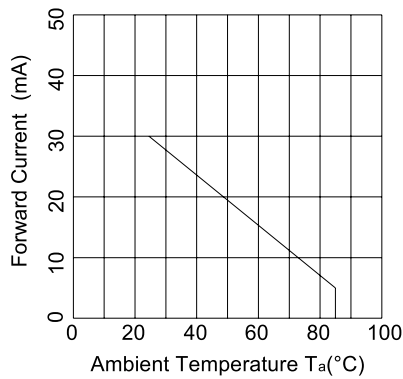
Volt-Ampere Characteristics
VF-IF



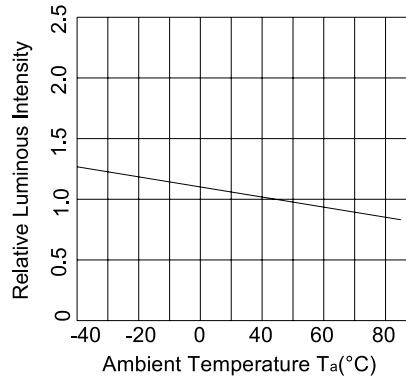
Forward Current VS. Relative Intensity
IF-IV



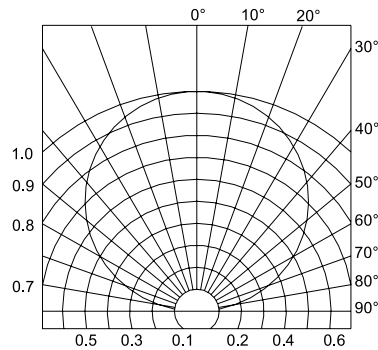
Ambient Temperature VS. Forward Current
Ta-IF



Ambient Temperature VS. Relative Intensity
Ta-IV



Radiation Diagram



Dimensions : Millimetres

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Reliability Test Items and Conditions

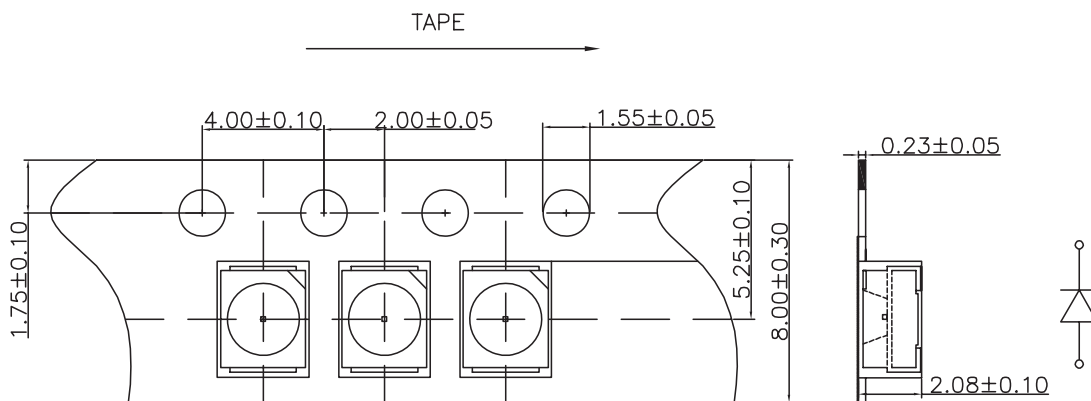
Test Item	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	JIS-C7021 A-4	100°C±5°C 15min ↓ -40°C±5°C 15min	200cycles	22	0/22
High Temperature Storage	JEITA ED- 4701 200 201	Ta=100°C	1000h		
Low Temperature Storage	JEITA ED- 4701 200 202	Ta=-40°C			
High Temperature High Humidity Storage	JIS-C7021 B-11	Ta=85, RH=85%	2 times		
Resistance to Soldering Heat	GB/T 4937	Tsol*=(260±5)°C 10secs.	1000h		
Life Test	JESD22-A108	Ta=25°C±5°C IF=20mA	1000h		
High Temperature Life Test		Ts=55°C±5°C IF=20mA			

Criteria for Judging the Damage

Item	Symbol	Test Condition	Failure Criteria	
			MIN.	MAX.
Forward Voltage	VF (V)	IF=20mA	---	U.S.L*1.1
Reverse Current	IR (uA)	VR=5V	---	10uA
Luminous Flux	IV (LM)	IF=20mA	L.S.L*0.7	---

Note:1.USL:Upper Specification Level
2.LSL:Lower Specification Level

Tape specifications



Dimensions : Millimetres

Hand Soldering

A soldering iron of less than 20W is recommended to be used in Hand Soldering, Please keep the temperature of the soldering iron under 360°C while soldering. Each terminal of the LED is to go for less than 3 second and for one time only. Be careful because the damage of the product is often started at the time of the hand soldering.

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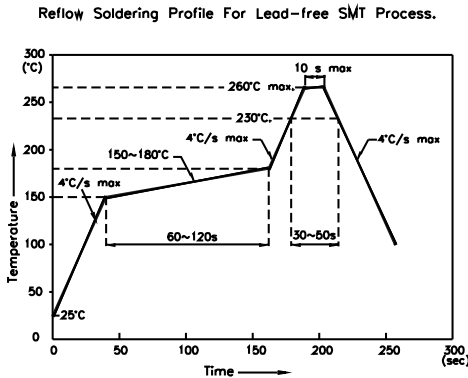
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Soldering Profile



Notes

1. We recommend the reflow temperature 245°C. ($\pm 5^\circ\text{C}$) The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED.

The following procedures may decrease the possibility of ESD damage.

- All production machinery and test instruments must be electrically grounded.
- Use a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- Maintain a humidity level of 50% or higher in production areas.
- Use anti-static packaging for transport and storage.

Cleaning

- Led should be cleaned in a normal temperature and the time for cleaning should be less than 3 minutes; please use Alcohol as cleaner ,before you use other cleaning solvent ,please make sure that the cleaner will not make any damage to the LED performance or the appearance .
- Ultrasonic Cleaning is also commonly used for cleaning LED , please verify the Ultrasonic cleaning's Power and time to avoid any damage to the LED.

Storage

- Storage condition before opening the package: 5°C to 30°C, the largest percentage relative humidity is 60% and the storage period is one month. The LEDs beyond the storage period just can be used after dealing as step 4.
- After opening the package, If the LEDs will be Infrared reflow soldering, Oxygen phase reflow soldering or any other welding.
 - a. must be welding within 24 hours.
 - b. the storage humidity must be below 30% .
- If the situation does not satisfy 2a or 2b, the LEDs must be roasted.
- If the LEDs need to be roasted, the roast temperature should be 60°C \pm 3 and the roast timeshould be 48 hours.

Part Number Table

Description	Part Number
SMD LED, Warm White , 120°, 3.5mm x 2.8mm	MP007087

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