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# SMD LED

RND components

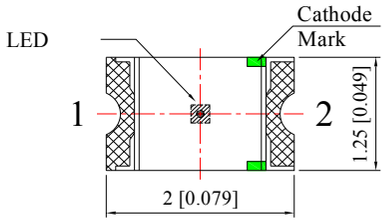
## Features:

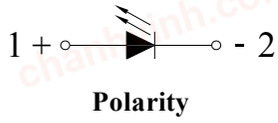
- Package in 8mm tape on 7″diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.

## Applications:

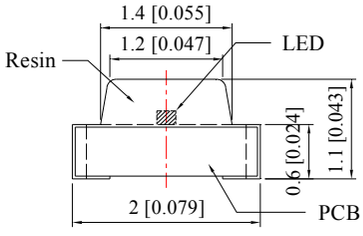
- Backlighting in dashboard and switch.
- Telecommunication: Indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

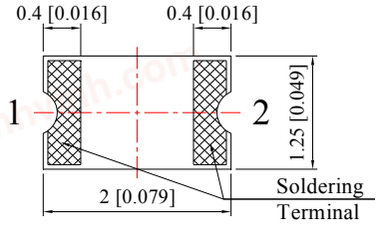
| Part No. | Emitting Color | Lens Color(LED) |
|---|---|---|
| RND 135-00185 | Super Bright Yellow | Water Clear |



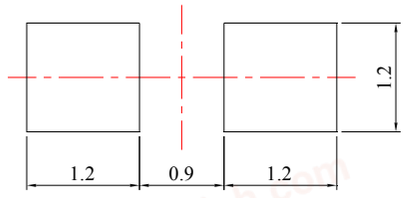




Polarity




**Recommended Soldering Pad Dimensions**




Unit: mm

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## Absolute Maximum Ratings at Ta=25℃

| Parameters | Symbol | Max | Unit |
|---|---|---|---|
| Power Dissipation | Pd | 60 | mW |
| Peak Forward Current[a] | IFP | 100 | mA |
| DC Forward Current[b] | IF | 25 | mA |
| Reverse Voltage | VR | 5 | V |
| Electrostatic Discharge (HBM) | ESD | 2000 | V |
| Operating Temperature Range | Topr | -40℃ to +80℃ | |
| Storage Temperature Range | Tstg | -40℃ to +85℃ | |
| Soldering Temperature | Tsld | 260℃ for 5 Seconds | |

Notes:
a. Derate linearly as shown in derating curve.
b. Duty Factor = 10%, Frequency = 1 kHz

## Electrical Optical Characteristics at Ta=25℃

| Parameters | Symbol | Min. | Typ. | Max. | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Luminous Intensity[a] | IV | 80 | 120 | --- | mcd | IF=20mA |
| Viewing Angle[b] | 2θ1/2 | --- | 120 | --- | Deg | IF=20mA |
| Peak Emission Wavelength | λp | --- | 592 | --- | nm | IF=20mA |
| Dominant Wavelength[C] | λd | --- | 590 | --- | nm | IF=20mA |
| Spectral Line Half-Width | △λ | --- | 15 | --- | nm | IF=20mA |
| Forward Voltage | VF | 1.60 | 2.00 | 2.40 | V | IF=20mA |
| Reverse Current | IR | --- | --- | 10 | μA | VR=5V |

Notes:

a. ALuminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.

b. 2θ1/2 is the o -axis angle where the luminous intensity is 1⁄2 the peak intensity

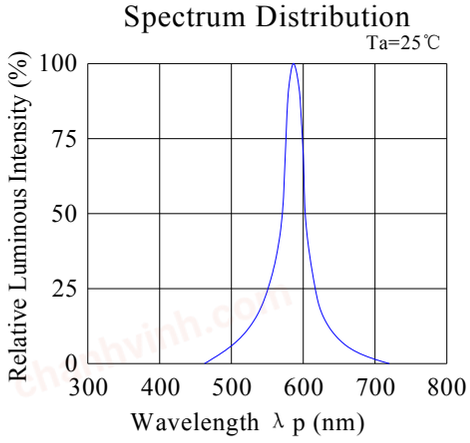
c. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

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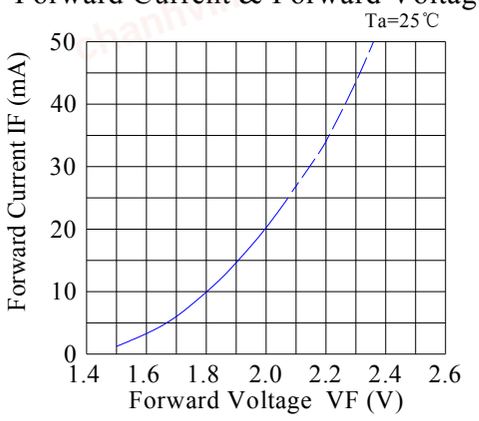
# SMD LED

## Typical Electrical / Optical Characteristics Curves (25℃ Ambient Temperature Unless Otherwise Noted)

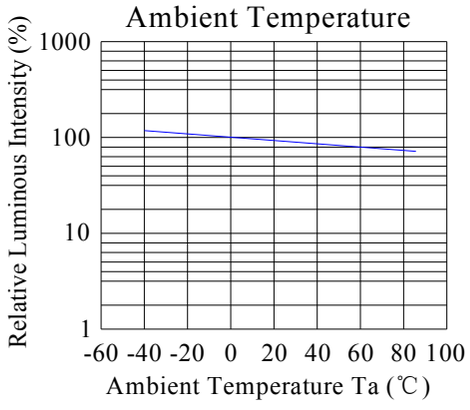
Spectrum Distribution



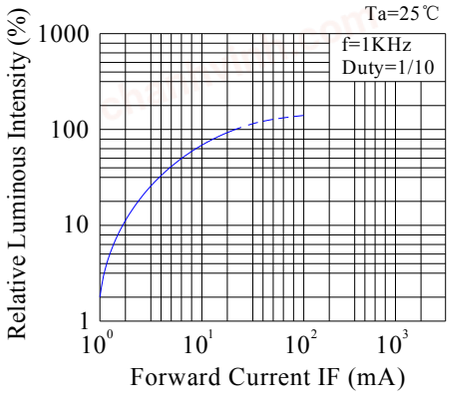

Forward Current & Forward Voltage



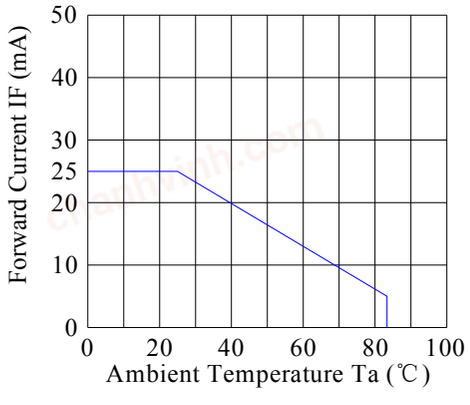

Luminous Intensity & Ambient Temperature



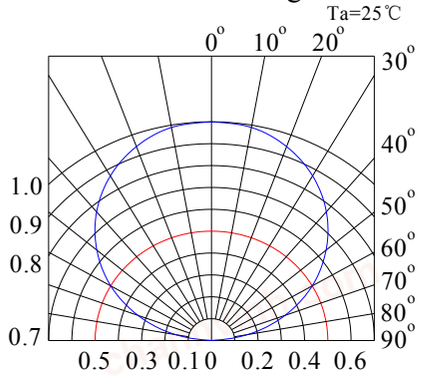

Luminous Intensity & Forward Current




Forward Current Derating Curve




Radiation Diagram

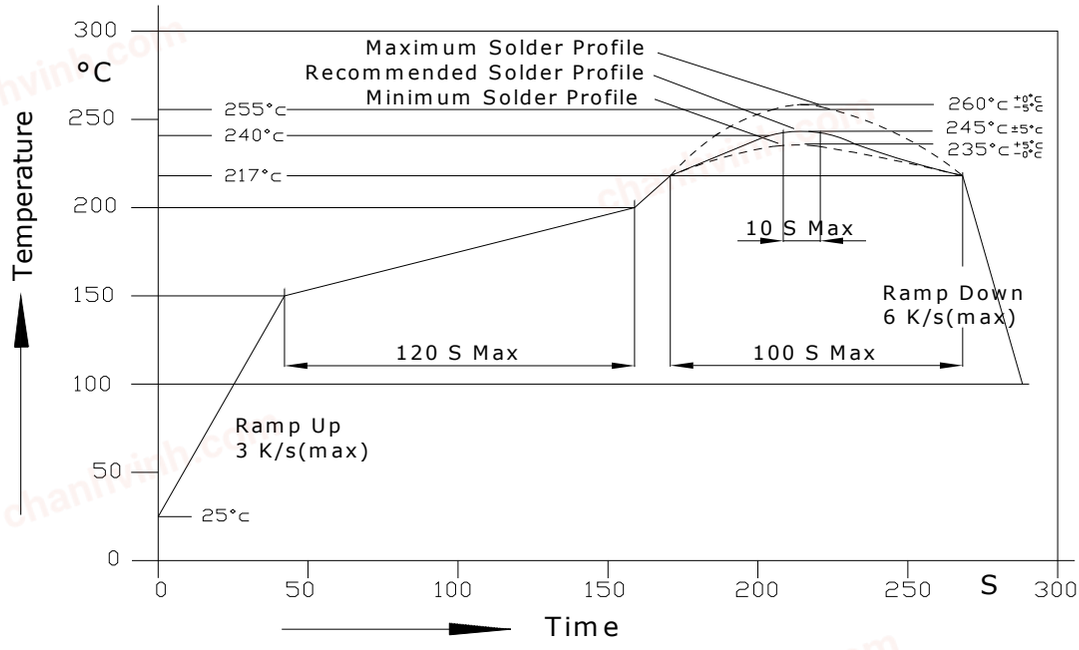


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# SMD LED

## Soldering Condition

Pb-free solder temperature profile




- Reflow soldering should not be done more than two times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.
- Recommended soldering conditions:

| Reflow soldering | | Soldering iron | |
|---|---|---|---|
| Pre-heat | 150~200°C | Temperature | 300°C Max. |
| Pre-heat time | 120 sec. Max. | Soldering time | 3 sec. Max. |
| Peak temperature | 260°C Max. | | (one time only) |
| Soldering time | 10 sec. Max.(Max. two times) | | |

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# SMD LED

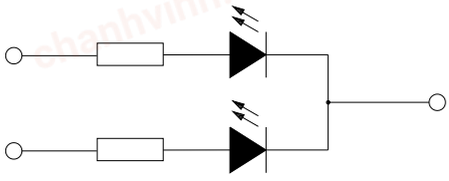
Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.
However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.

**Drive Method**

An LED is a current-operated device. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended that a current limiting resistor be incorporated in the drive circuit, in series with each LED as shown in Circuit A below.

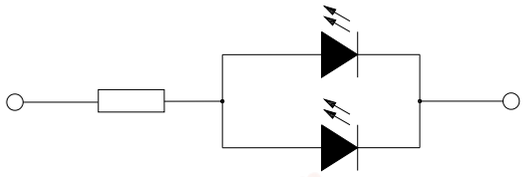
Circuit model A

LED



Circuit model B

LED



a. Recommended circuit.
b. The brightness of each LED might appear different due to the differences in the I-V characteristics of those LEDs.

**ESD (Electrostatic Discharge):**

- Use of a conductive wrist band or anti-electrostatic glove when handling these LEDs.
- All devices, equipment, and machinery must be properly grounded.
- Work tables, storage racks, etc. should be properly grounded.
- Use ion blower to neutralize the static charge which might have built up on surface of the LED's plastic lens as a result of friction between LEDs during storage and handling.

ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or "no lightup" at low currents. To verify for ESD damage, check for "lightup" and Vf of the suspect LEDs at low currents. The Vf of "good" LEDs should be >2.0V@0.1mA for InGaN product and >1.4V@0.1mA for AlInGaP product.