0603-FLWC-DLG

1.6 x 0.8mm, Pure Green LED
Surface Mount Chip LED Indicator

Technical Data Sheet

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.
- The product itself will remain within RoHS compliant version.

Descriptions:

- This SMD LED is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications, etc.

Applications:

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

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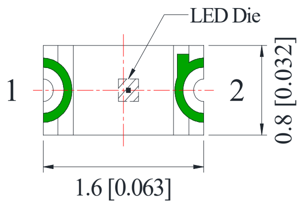
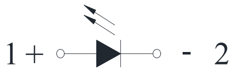
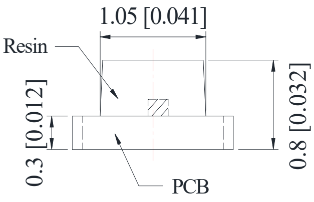
Part No.	Emitting Color	Lens Color
0603-FLWC-DLG	Pure Green	Water Clear

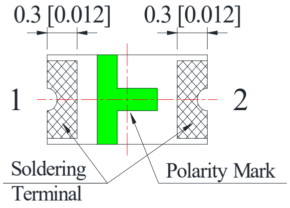
Package Dimension:



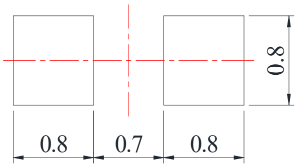


Polarity





Recommended Soldering Pad Dimensions



Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.25 mm (.010″) unless otherwise noted.

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Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Max	Unit
Power Dissipation	Pd	85	mW
Peak Forward Current(a)	IFP	100	mA
DC Forward Current(b)	IF	25	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge (HBM)	ESD	1000	V
Operating Temperature Range	Topr	-40℃ to +85℃	
Storage Temperature Range	Tstg	-40℃ to +85℃	
Soldering Temperature	Tsld	260℃ for 5 Seconds	

Notes:

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

Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity(a)	IV	250	550	---	mcd	IF=20mA
Viewing Angle	2θ1/2	---	130	---	Deg	IF=20mA
Peak Emission Wavelength	λp	---	520	---	nm	IF=20mA
Dominant Wavelength(b)	λd	---	525	---	nm	IF=20mA
Spectral Line Half-Width	△λ	---	35	---	nm	IF=20mA
Forward Voltage(C)	VF	2.80	3.10	3.40	V	IF=20mA
Reverse Current	IR	---	---	10	μA	VR=5V

Notes:

a. Luminous Intensity measurement tolerance: ±10%.

b. Wavelength measurement tolerance: ±1nm

c. Forward voltage measurement tolerance: ±0.1V

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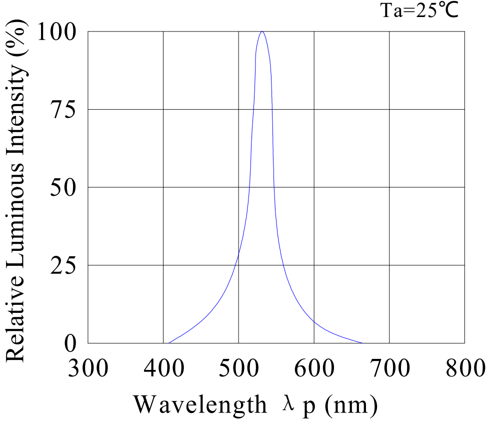
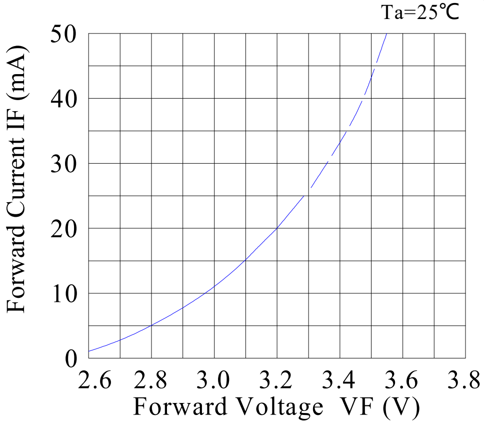
Typical Electrical / Optical Characteristics Curves
(25℃ Ambient Temperature Unless Otherwise Noted)

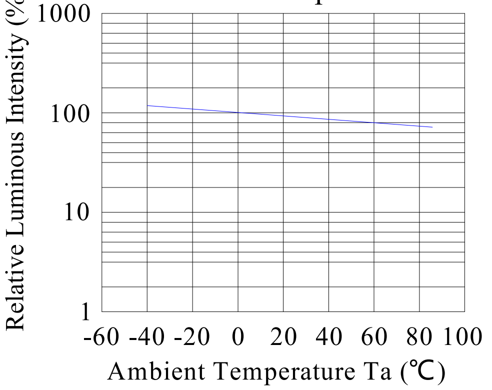
Spectrum Distribution



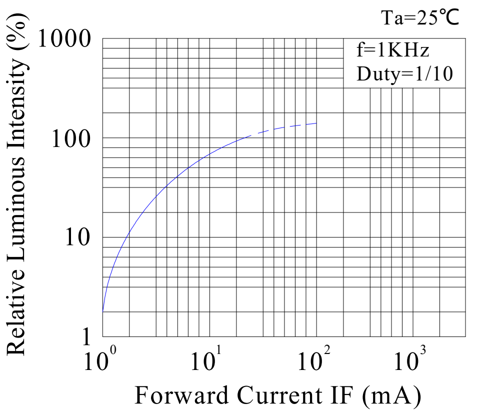
Forward Current & Forward Voltage



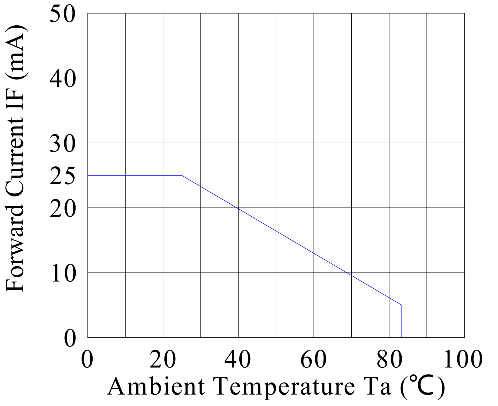
Luminous Intensity & Ambient Temperature



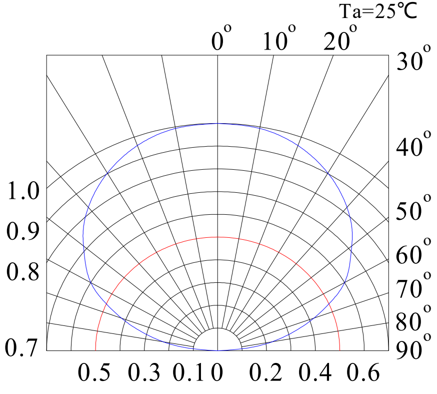
Luminous Intensity & Forward Current



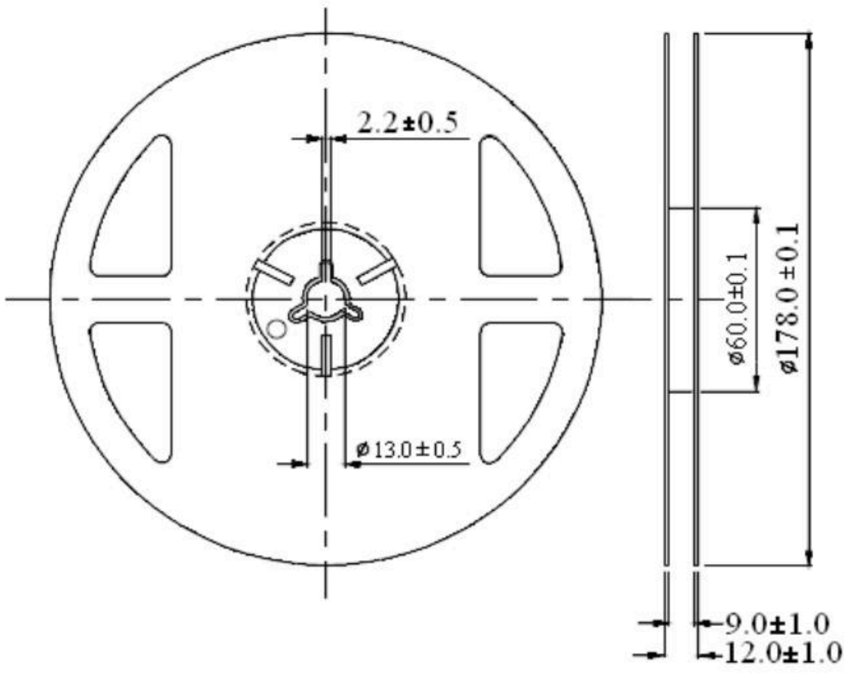
Forward Current Derating Curve



Radiation Diagram



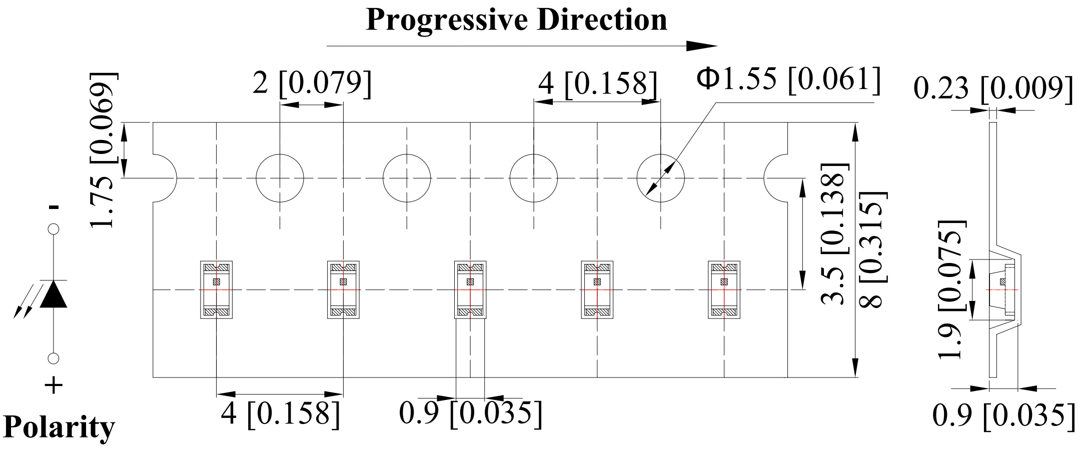
Reel Dimensions:



Unit: mm
Tolerance: ±0.25mm

Carrier Tape Dimensions:

Loaded quantity 4000 pcs per reel.

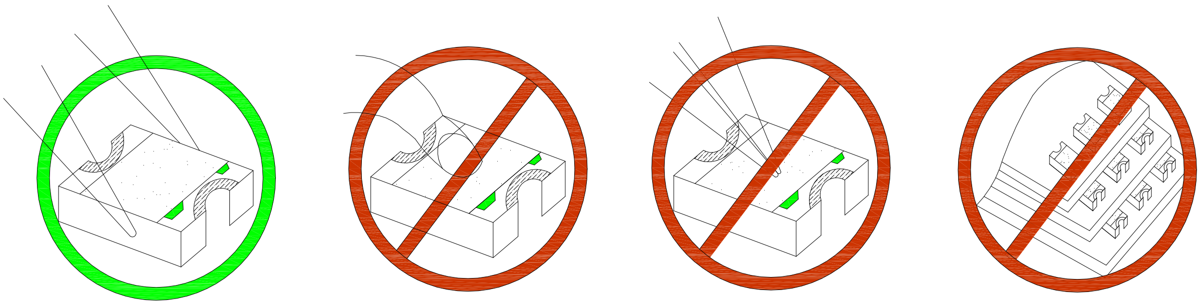


Unit: mm
Tolerance: ±0.10mm

CAUTIONS

1. Handling Precautions:

1.1. Handle the component along the side surfaces by using forceps or appropriate tools.
1.2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.
1.3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



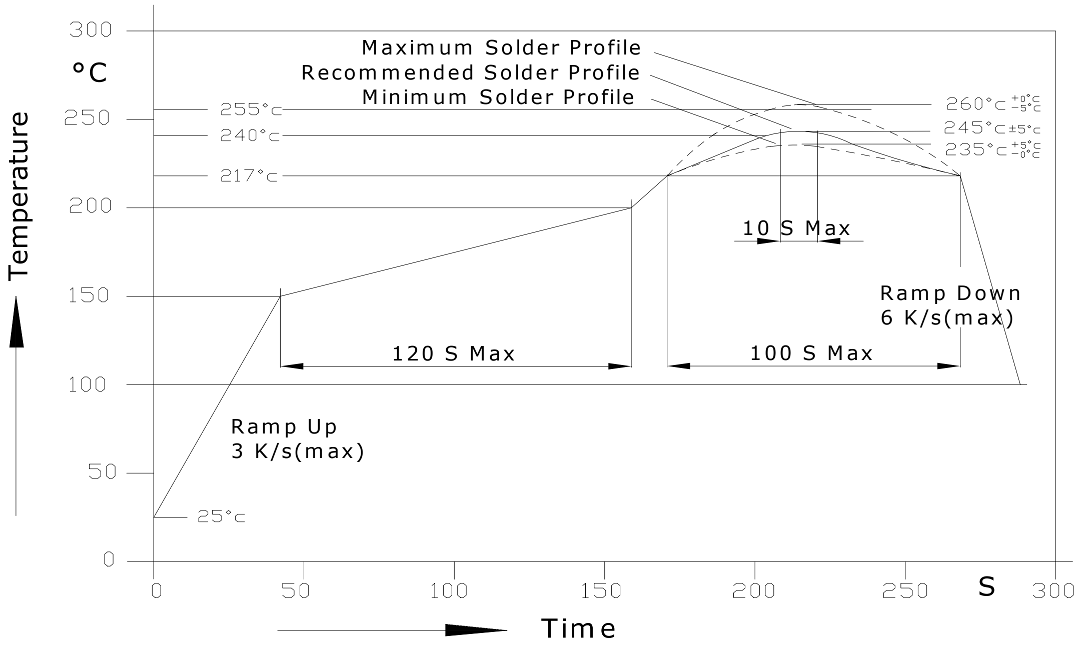
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using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

2. Storage

2.1. Do not open moisture proof bag before the products are ready to use.
2.2. Before opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
2.3. The LEDs should be used within a year.
2.4. After opening the package, the LEDs should be kept at 30°C or less and 60%RH or less.
2.5. The LEDs should be used within 168 hours after opening the package.
2.6. If the moisture adsorbent material has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 65±5°C for 24 hours.

3. Soldering Condition

3.1. Pb-free solder temperature profile



3.2. Reflow soldering should not be done more than two times.

3.3. When soldering, do not put stress on the LEDs during heating.

3.4. After soldering, do not warp the circuit board.

3.5. 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)		

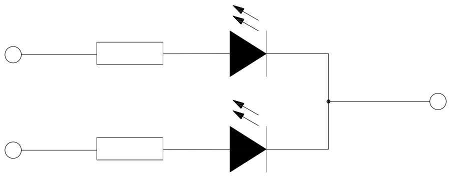
3.6. Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.

However, you can successfully mount your packages to the PCB by following the proper guidelines and PCB-specific characterization.

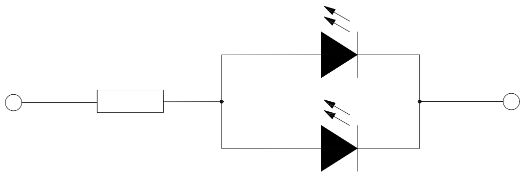
4. Drive Method

4.1. 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.

5. ESD (Electrostatic Discharge):

Static Electricity or power surge will damage the LED. Suggestions to prevent ESD damage:

- 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.

RoHS Compliant
PB Free

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