

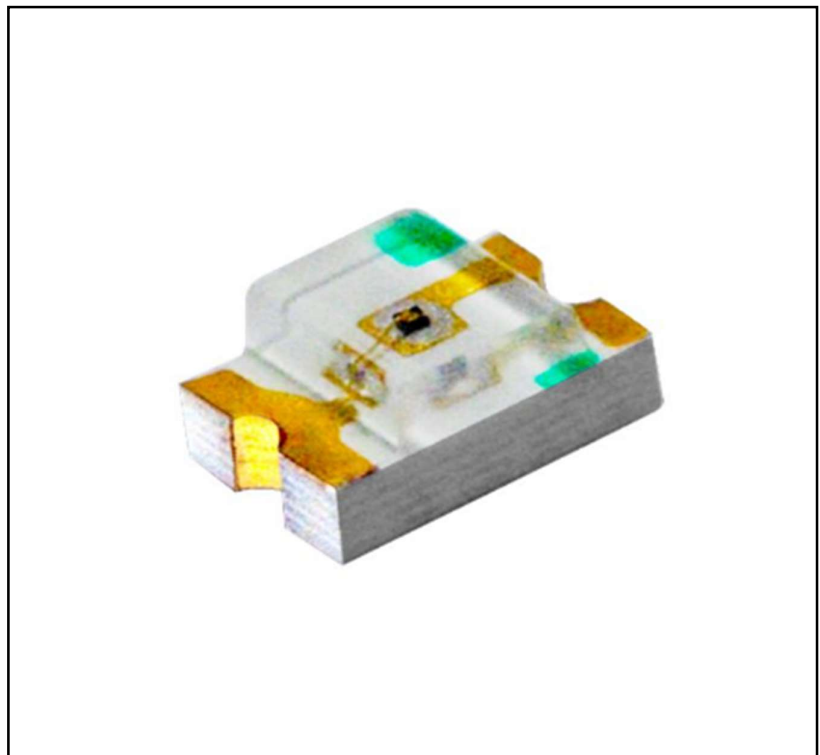
## Features

- Package in 8mm tape on 7" diameter reel
- Compatible with automatic placement equipment
- Compatible within infrared and vapor phase reflows older process

The product itself will remain within RoHS compliant version

## RS PRO LEDs

RS Stock No.: 0280109



RS PRO is the own brand of RS. The RS PRO Seal of Approval is your assurance of professional quality, a guarantee that every part is rigorously tested, inspected, and audited against demanding standards. Making RS PRO the Smart Choice for our customers.

## Product Description

SMD LED, higher packing density, reduced storage space, lightweight makes them ideal for miniature applications. The S170 SMD LED is much smaller than lead frame type components. 0280109 is 2.0 x 1.25mm, Pure Green, Surface Mount Chip LED Indicator, RoHS & REACH Compliant, and Applications is

- Flat backlight for LCD's.
- Switches and symbols.
- Backlighting in dashboard.
- Indicator and backlight in telephone

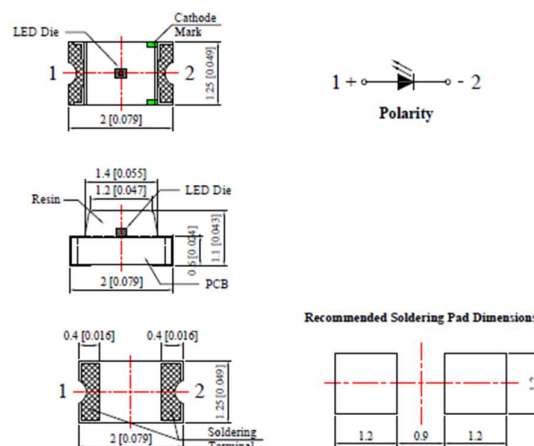
## General Specifications

LED Colour	Pure Green, SMD LED
Dimensions	2.0 x 1.25mm, Surface Mount Chip LED Indicator

## Mechanical Specifications

### Mechanical Life

Recommended Soldering Pad Dimensions  
Soldering Temperature : 260°C for 5 Seconds



## Electrical Specifications

Absolute Maximum Ratings at  $T_a = 25^\circ\text{C}$

Buy this product from [www.rspro.com](http://www.rspro.com)

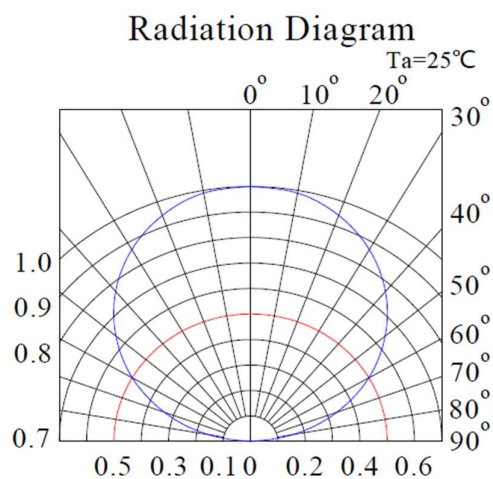
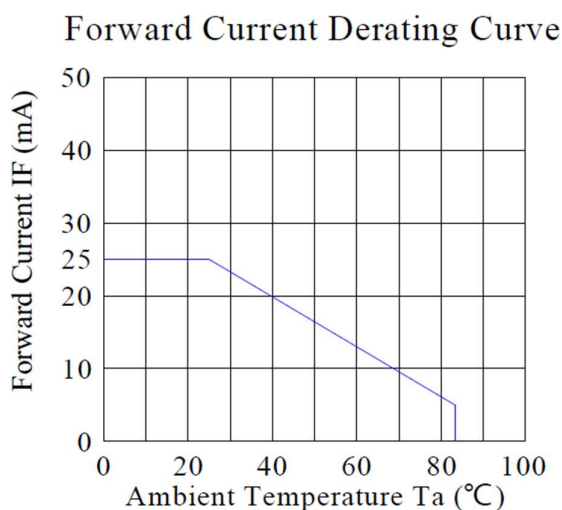
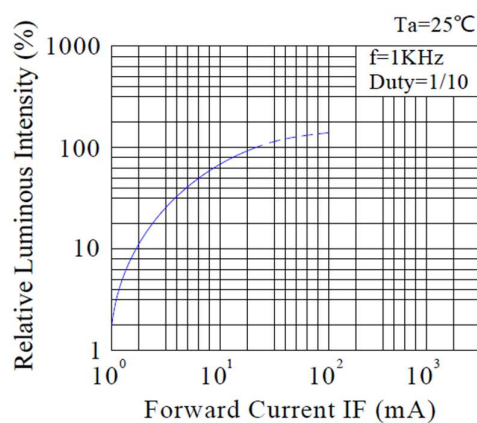
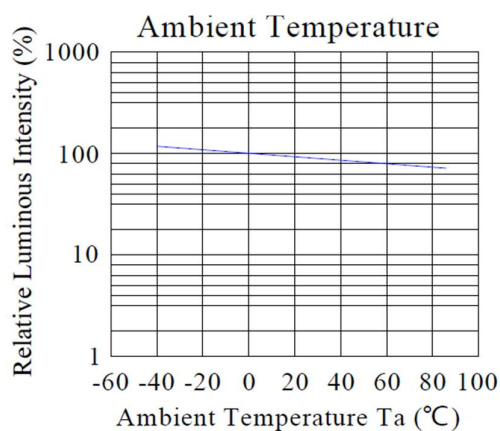
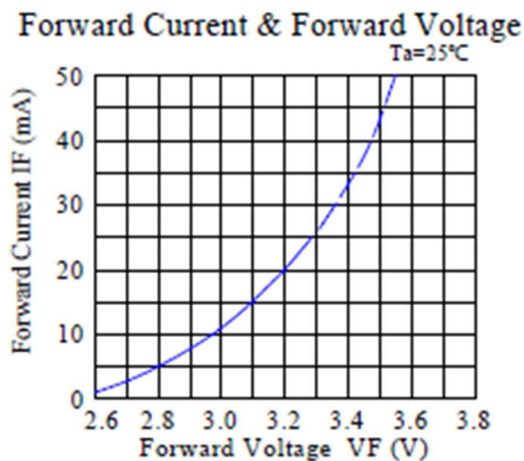
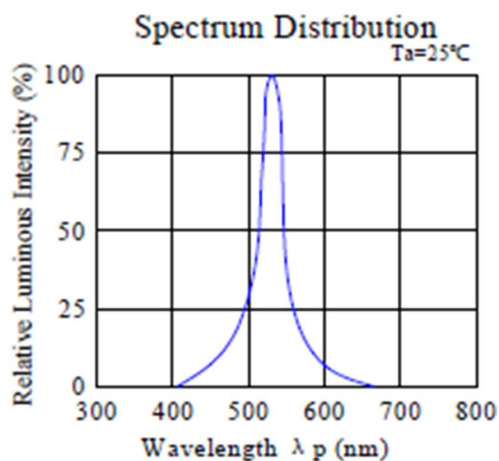
Parameters	Symbol	Max	Unit
Power Dissipation	Pd	90	mW
Peak Forward Current(a)	IFP	100	mA
DC Forward Current(b)	IF	25	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge (HBM)	ESDc	400	V
Operating Temperature Range		-40°C to+80°C	
Storage Temperature Range	Tstg	-40°C to+85°C	
Soldering Temperature	Tstg	260°Cfor 5 Seconds	

#### Electrical Optical Characteristics at Ta=25°C

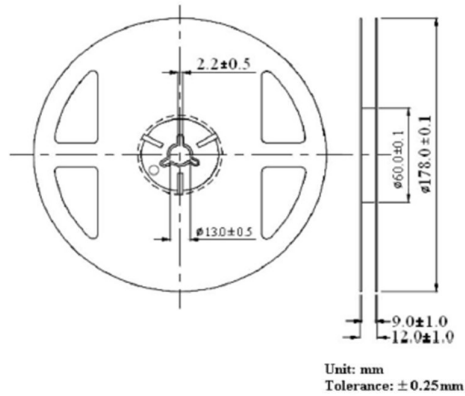
Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity(a)	IV	300	600	---	mcd	IF=20mA
Viewing Angle(b)	2 $\theta$ 1/2	---	120	---	Deg	IF=20mA
Peak Emission Wavelength	$\lambda_p$	---	520	---	nm	IF=20mA
Dominant Wavelength(C)	$\lambda_d$	---	525	---	nm	IF=20mA
Spectral LineHalf-Width	$\Delta\lambda$	---	20	---	nm	IF=20mA
ForwardVoltage	VF	2.8	3.2	3.6	V	IF=20mA
ReverseCurrent	IR	---	---	10	$\mu$ A	VR=5V

#### Typical Electrical / Optical Characteristics Curves

(25°C Ambient Temperature Unless Otherwise Noted)

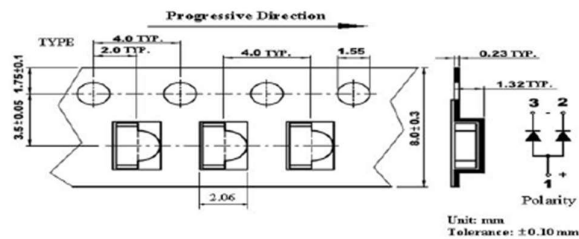


1. 3000pcs/bag
2. 30000pcs/box

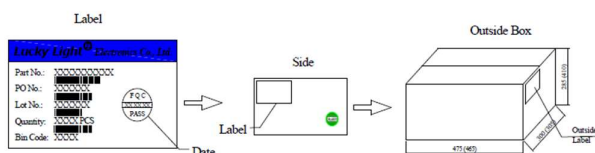
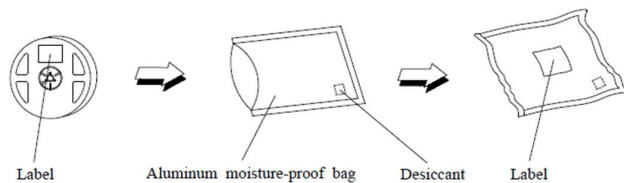


#### Carrier Tape Dimensions:

Loaded quantity 3000 pcs per reel.



#### Moisture Resistant Packaging:

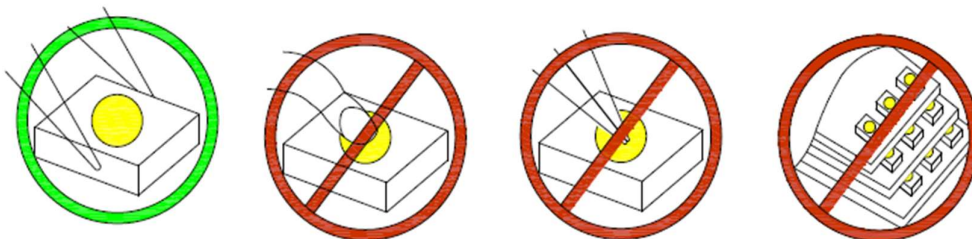


#### CAUTIONS

## 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.



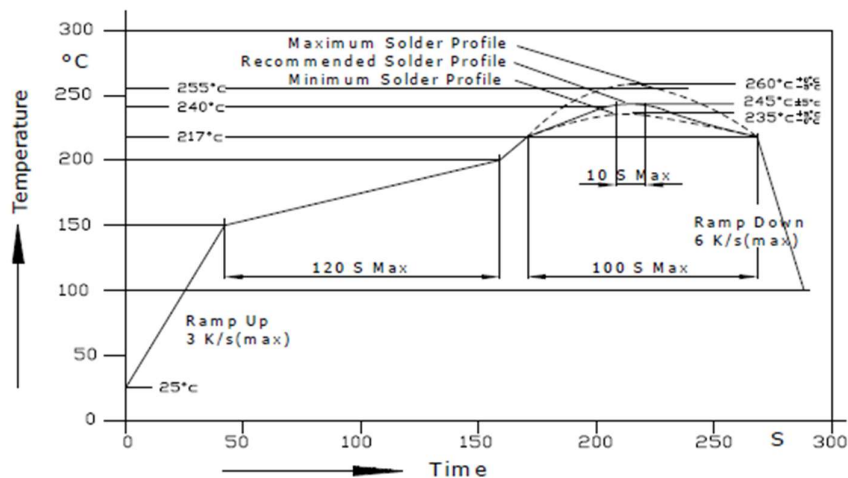
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force. As a result, special handling precautions need to be observed during assembly using 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 24 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)		

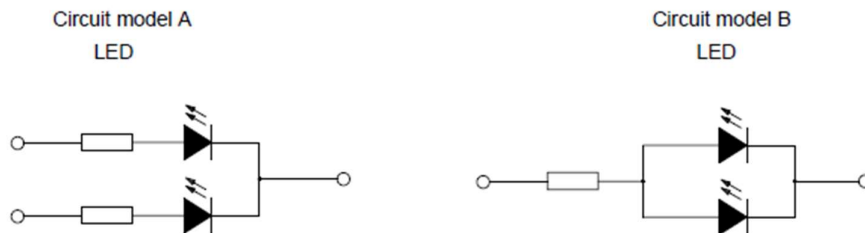
3.6. Because different board designs use different number and types of devices, solder pastes, reflow ovens, and circuit boards, no single temperature profile works for all possible combinations.

### CAUTIONS



#### 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.



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  $V_f$  of the suspect LEDs at low currents. The  $V_f$  of "good" LEDs should be  $>2.0V@0.1mA$  for InGaN product and  $>1.4V@0.1mA$  for AlInGaP product.