

# SML1209-0UO-TR

Super Orange  
Dome Lens Surface Mount LED  
3.2 × 2.4 × 2.5 mm Package  
25° viewing angle

DWG BY:  
SL / JG  
12-06-06

CHK BY:  
PL  
01-17-07

QA:  
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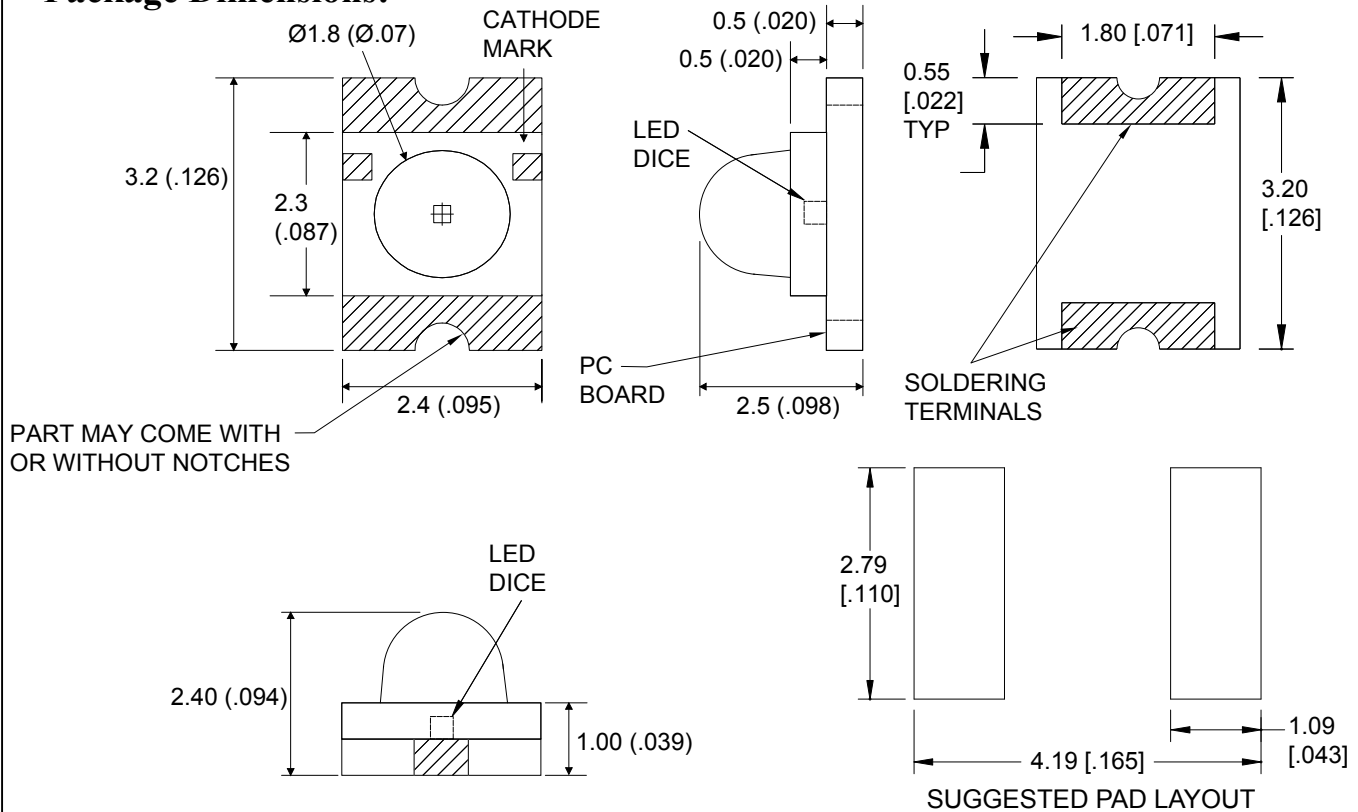
MFG:  
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REVISION LTR: -  
12-06-06

**Features**

- \* Meet ROHS standards.
- \* Dome lens Chip LED.
- \* Ultra bright AlInGaP Chip LED.
- \* Package in 8mm tape on 7" diameter reels.
- \* Compatible with automatic placement equipment.
- \* Compatible with infrared and vapor phase reflow solder process.
- \* EIA STD package.
- \* I.C. compatible.

**Package Dimensions:**



PART MAY COME WITH OR WITHOUT NOTCHES

Part No.	Chip Material	Lens Color	Emission Color
SML1209-0UO-TR	GaAlInP	Water Clear	Super Orange

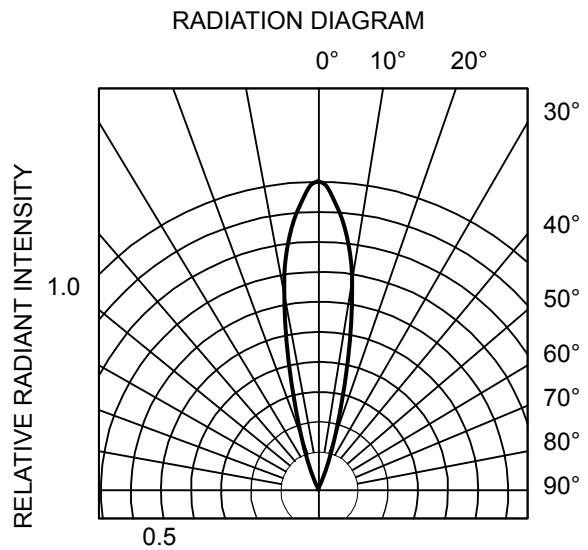
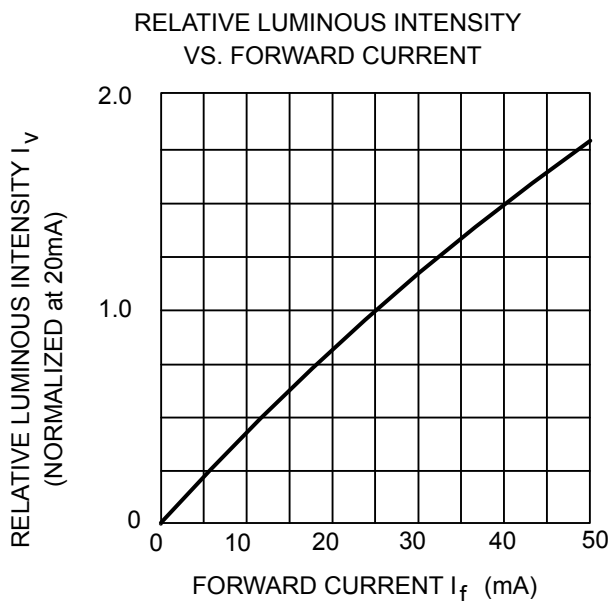
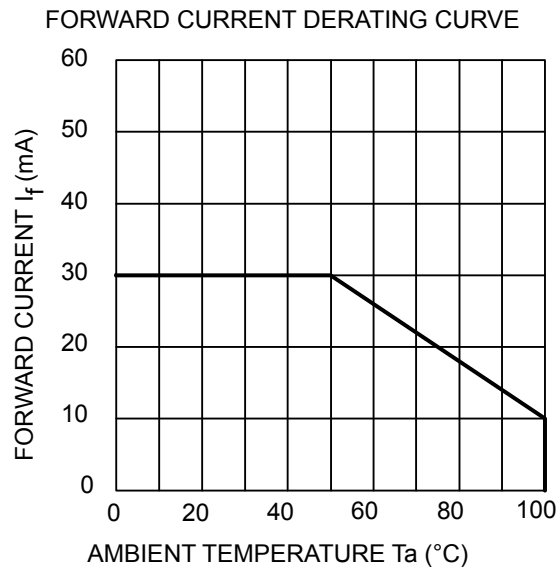
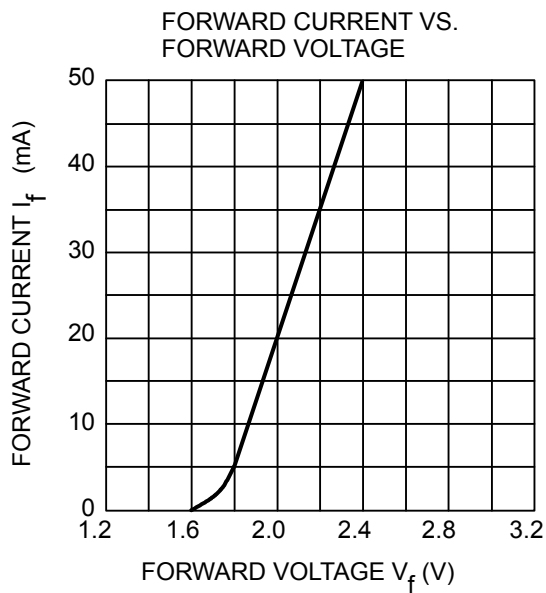
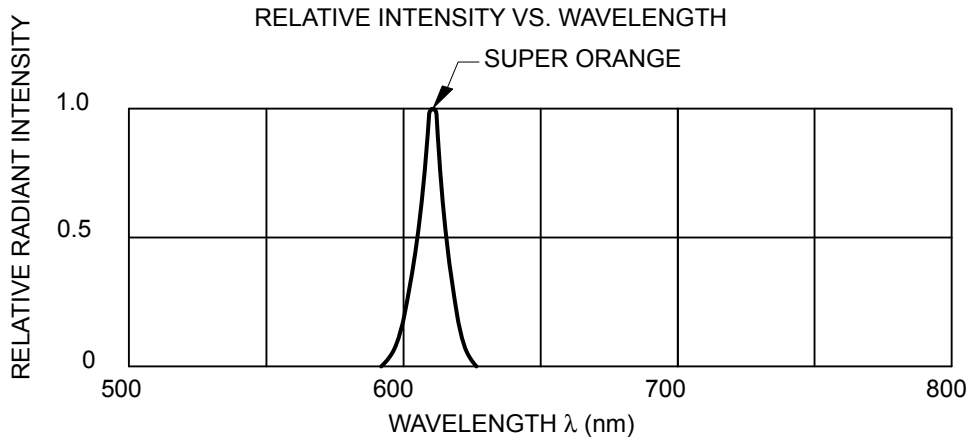
**Notes:**

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.1mm (.004") unless otherwise noted.
3. Specifications are subject to change without notice.
4. Precautions for ESD:  
 Static electricity and surge can damage the LED. It is recommended to use a wristband or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.

<b>Absolute Maximum Ratings</b>				<b>(T<sub>A</sub>=25°C)</b>			
<b>Parameter</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>				
Forward current	I <sub>f</sub>	30	mA				
Reverse voltage	V <sub>r</sub>	5	V				
Power dissipation	P <sub>d</sub>	75	mW				
Operating temperature range	T <sub>opr</sub>	-55 ~+85	°C				
Storage temperature range	T <sub>stg</sub>	-40 ~+85	°C				
Peak forward current (1/10 Duty Cycle, 0.1ms Pulse Width)	I <sub>fp</sub>	80	mA				

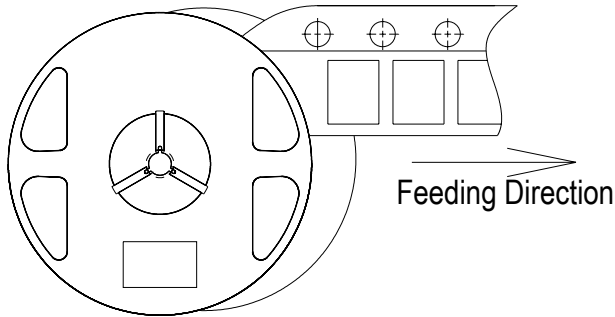
<b>Electro-optical characteristics</b>							<b>(T<sub>A</sub>=25°C)</b>	
Parameter	Test Condition	Symbol	Value			Unit		
			Min	Typ	Max			
Wavelength at peak emission	I <sub>f</sub> =20mA	λ peak	612	613	619	nm		
Spectral half bandwidth	I <sub>f</sub> =20mA	Δ λ	--	18	--	nm		
Dominant wavelength	I <sub>f</sub> =20mA	λ dom	605	607	609	nm		
Forward voltage	I <sub>f</sub> =20mA	V <sub>f</sub>	--	2.0	2.6	V		
Luminous intensity	I <sub>f</sub> =20mA	I <sub>v</sub>	--	3000	--	mcd		
Viewing angle at 50% I <sub>v</sub>	I <sub>f</sub> =20mA	2θ <sub>1/2</sub>	--	25	--	Deg		
Reverse current	V <sub>r</sub> =5V	I <sub>r</sub>	--	--	100	μA		
Chromaticity Coordinates	I <sub>f</sub> =20mA	X	--	0.65	--			
		Y		0.34				
Radiant Intensity	I <sub>f</sub> =20mA	I <sub>e</sub>	--	7000	--	μW/sr		

# OPTICAL CHARACTERISTIC CURVES

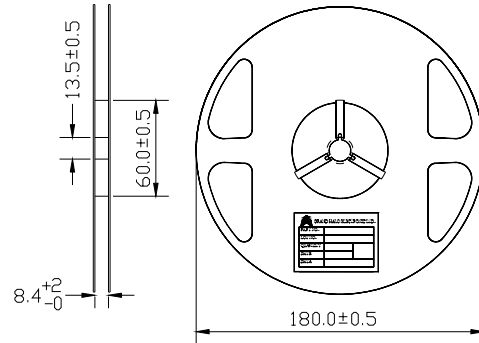


# SMD Chip LED Lamps Packaging Specifications

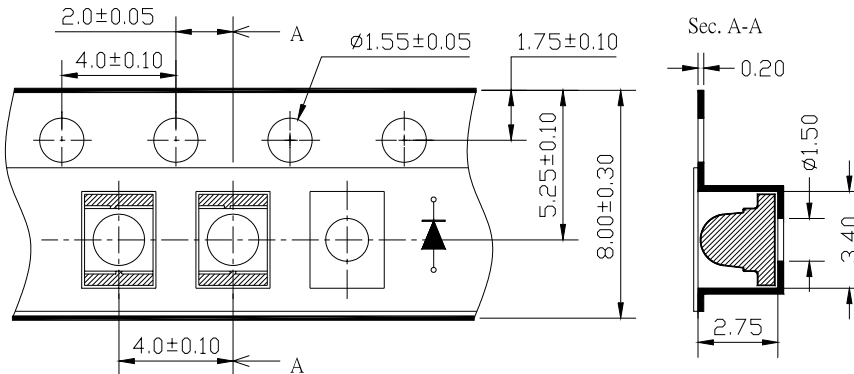
## ● Feeding



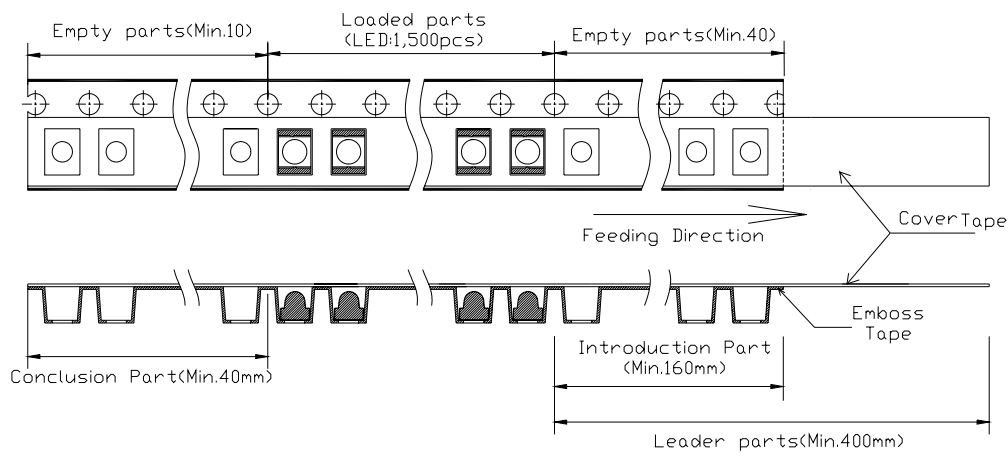
## ● Dimensions of Reel (Unit: mm)



## ● Dimensions of Tape (Unit: mm)



## ● Arrangement of Tape



### NOTES

1. Empty component pockets are sealed with top cover tape;
2. The maximum number of missing lamps is two;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications.
4. 1,500 pcs/Reel

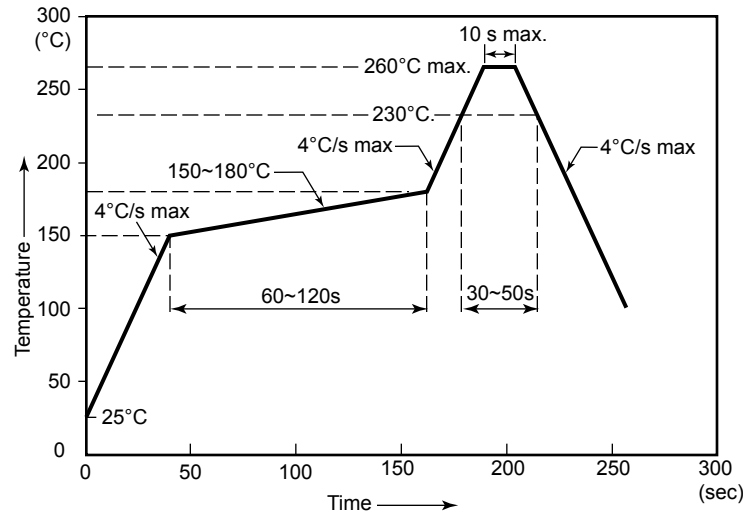


### Test items and results of reliability

Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-20°C 30min ↑ ↓ 80°C 30min	100 cycle	0/22
	Thermal Shock	-20°C 15min ↑ ↓ 80°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	T <sub>a</sub> =80°C	1000 hrs	0/22
	Humidity Heat Storage	T <sub>a</sub> =60°C RH=90%	1000 hrs	0/22
	Low Temperature Storage	T <sub>a</sub> =-30°C	1000 hrs	0/22
Operation Sequence	Life Test	T <sub>a</sub> =25°C I <sub>F</sub> =20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=90% I <sub>F</sub> =10mA	500 hrs	0/22
	Low Temperature Life Test	T <sub>a</sub> =-20°C I <sub>F</sub> =20mA	1000 hrs	0/22

## Reflow Profile

### ■ Reflow Temp/Time



### NOTES:

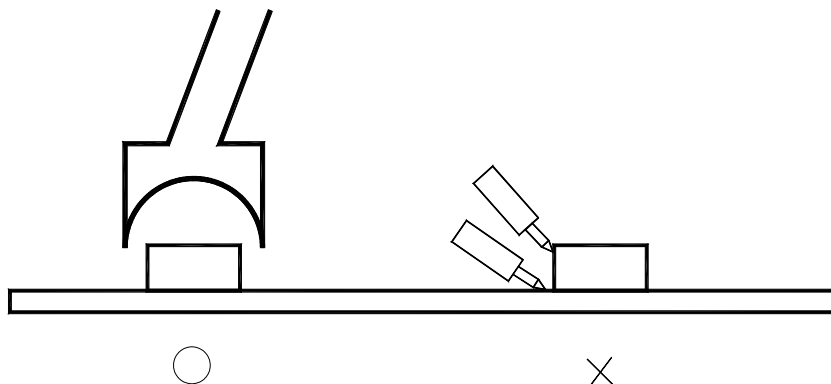
1. We recommend the reflow temperature at 245°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

### ■ Soldering iron

Basic spec is  $\leq 5\text{sec}$  when 260°C. If temperature is higher, time should be shorter (+10°C → -1sec). Power dissipation of iron should be smaller than 15W, and temperatures should be controllable. Surface temperature of the device should be under 230°C.

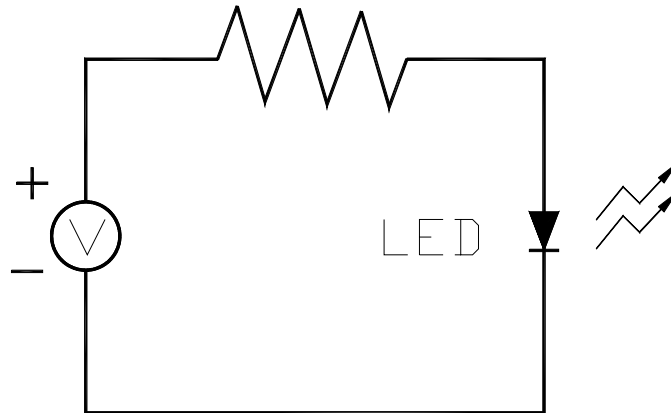
### ■ Rework

1. Customer must finish rework within 5 sec under 260°C.
2. The head of iron cannot touch copper foil.
3. Twin-head type is preferred.



## Test circuit and handling precautions

### ■ Test circuit



### ■ Handling precautions

#### 1. Over-current-proof

Customer must apply resistors for protection; otherwise a slight voltage shift will cause a big change in current (Burn out occurs).

#### 2.Storage

2.1 It is recommended to store the products in the following conditions:

Humidity: 60% R.H. Max.

Temperature : 5°C~30°C (41°F~86°F)

2.2 Shelf life in sealed bag: 12 months at < 5°C~30°C and < 30% R.H. after the package is opened, the products should be used within a week or they should be kept stored at  $\leq$  20 R.H. with zip-lock seal.

#### 3.Baking

It is recommended to bake before soldering when the pack is unsealed after 72hrs.

The conditions are as follows:

3.1 60±3°C x(12~24hrs) and < 5%RH, taped reel type

3.2 100±3°C x(45min~1hr), bulk type

3.3 130±3°C x(15~30min), bulk type