

SML1209-0PY-TR

Super Yellow
Surface Mount LED
3.2 × 2.4 × 2.5 mm Chip LED
15° Viewing Angle

DWG BY:
SL / JG / GP
07-18-06

CHK BY:
PL
11-02-16

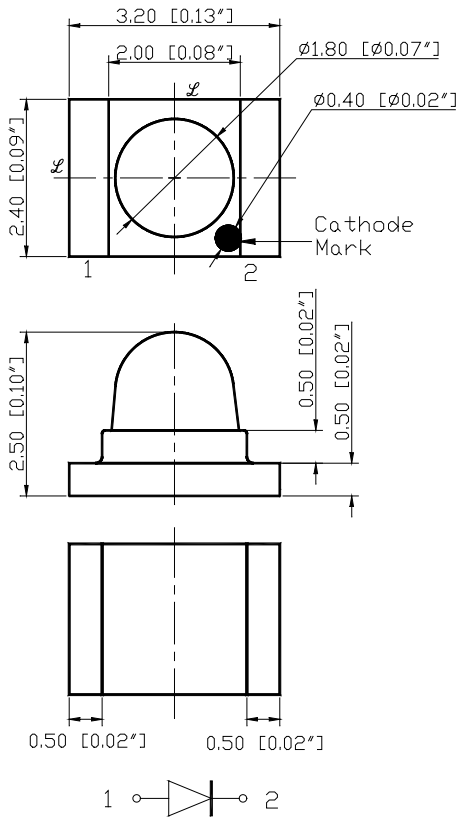
R&D:
LUV
11-02-16

MFG:
LD
11-02-16

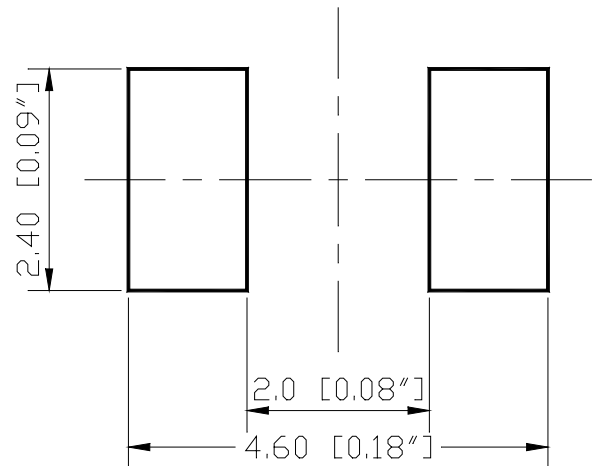
QA:
JH
11-02-16

REVISION LTR: B
ECR#: 110216-GP01
11-02-16

Package outlines



RECOMMEND PAD LAYOUT





ATTENTION
 OBSERVE PRECAUTIONS
 FOR HANDLING
 ELECTROSTATIC
 SENSITIVE DEVICES

ITEM	MATERIALS
Resin	Epoxy
Bonding Wire	$\phi 25\mu\text{m Au}$
Lens color	Water transparent
Printed circuit board	BT (white)
Dice	AllnGaP
Emitted color	Yellow

NOTES:

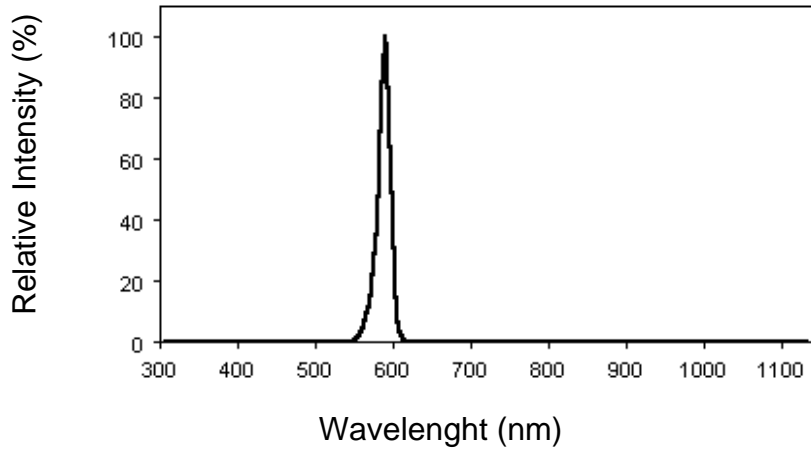
1. All dimensions are in millimeters (inches);
2. Tolerance are $\pm 0.1\text{mm}$ (0.004inch) unless otherwise noted.

Absolute Maximum Ratings (T_A=25°C)			
Parameter	Symbol	Value	Unit
Forward current	I _f	30	mA
Reverse voltage	V _r	5	V
Power dissipation	P _d	75	mW
Operating temperature range	T _{op}	-20 ~+80	°C
Storage temperature range	T _{stg}	-20 ~+80	°C
Peak pulsing current (1/8 duty f=1kHz)	I _{fp}	125	mA

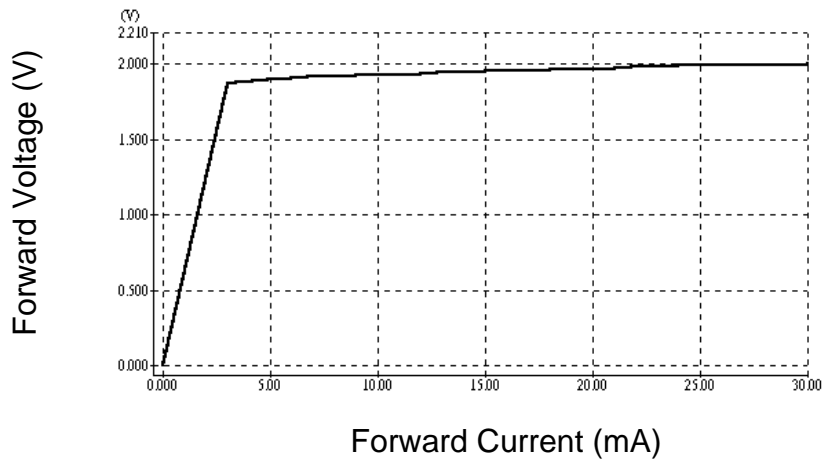
Electro-optical characteristics (T_A=25°C)						
Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Wavelength at peak emission	I _f =20mA	λ peak	588	593	599	nm
Spectral half bandwidth	I _f =20mA	Δ λ	--	18	--	nm
Dominant wavelength	I _f =20mA	λ dom	586	590	594	nm
Forward voltage	I _f =20mA	V _f	--	2.0	2.5	V
Luminous intensity	I _f =20mA	I _v	1200	3300	--	mcd
Viewing angle at 50% I _v	I _f =10mA	2θ _{1/2}	--	15	--	Deg
Reverse current	V _r =5V	I _r	--	--	10	μA
Chromaticity Coordinates	I _f =20mA	X	--	0.58	--	
		Y		0.42		
Radiant Intensity	I _f =20mA	I _e	--	6800	--	μW/sr

OPTICAL CHARACTERISTIC CURVES

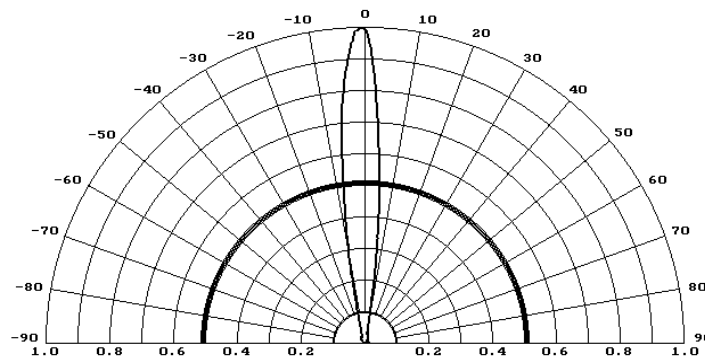
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

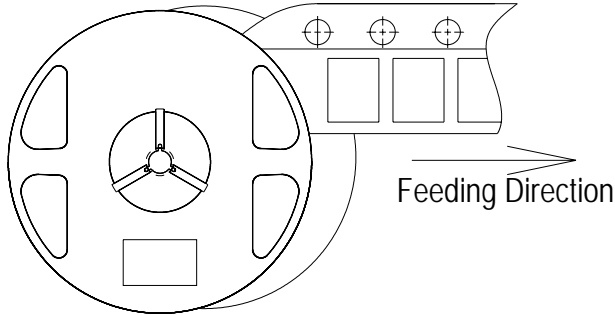


Directive Characteristics

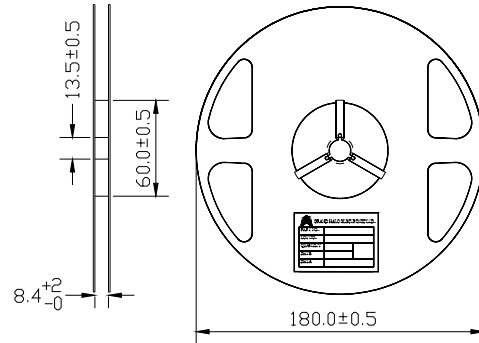


SMD Chip LED Lamps Packaging Specifications

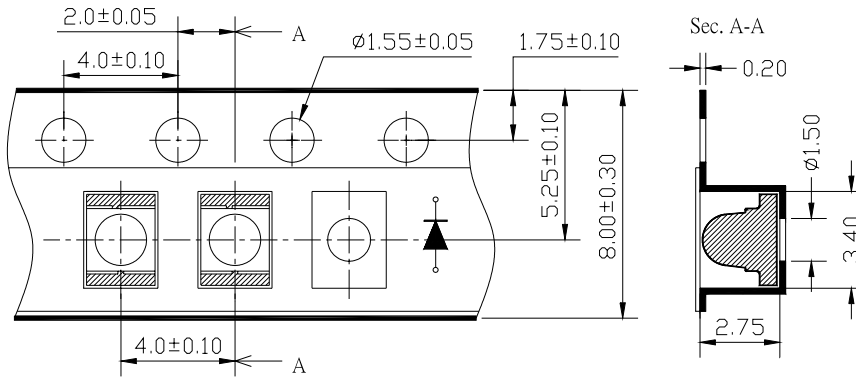
● Feeding



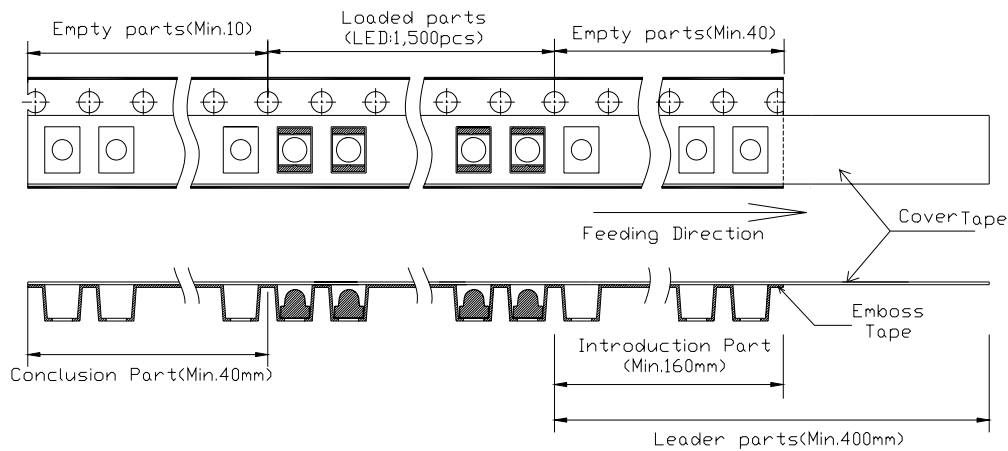
● Dimensions of Reel (Unit: mm)



● 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

Forward Voltage Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
□	1.9	2.5	V

Luminous Intensity Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
-	-	-	mcd
T	1000	2000	
U	1600	3200	
V	2500	5000	

Dominant wavelength Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
m	585	590	nm
-	-	-	
-	-	-	

Group Name on Label (□Vm20)

DATA: □Vm20	Vf (V)	Iv (mcd)	λd (nm)	Test Condition
□→V→m→20	1.9~2.5	2500~5000	585~590	IF=20mA

* NOTE:

1. The tolerance of luminous intensity (Iv) is ±15%.
2. The tolerance of dominant wavelength is ±1nm.
3. This specification is preliminary.

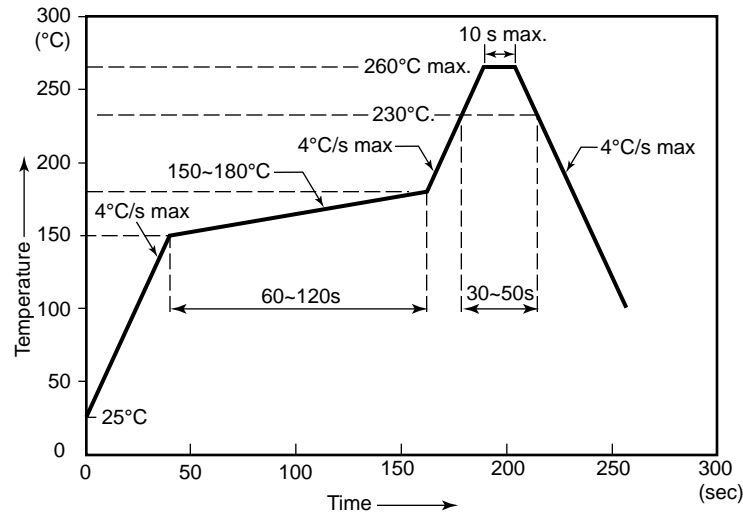


Test items and results of reliability

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 _a =80°C	1000 hrs	0/22
	Humidity Heat Storage	T _a =60°C RH=90%	1000 hrs	0/22
	Low Temperature Storage	T _a =-30°C	1000 hrs	0/22
Operation Sequence	Life Test	T _a =25°C I _F =20mA	1000 hrs	0/22
	High Humidity Heat Life Test	60°C RH=90% I _F =10mA	500 hrs	0/22
	Low Temperature Life Test	T _a =-20°C I _F =20mA	1000 hrs	0/22

Reflow Profile

■ Reflow Temp/Time



NOTES:

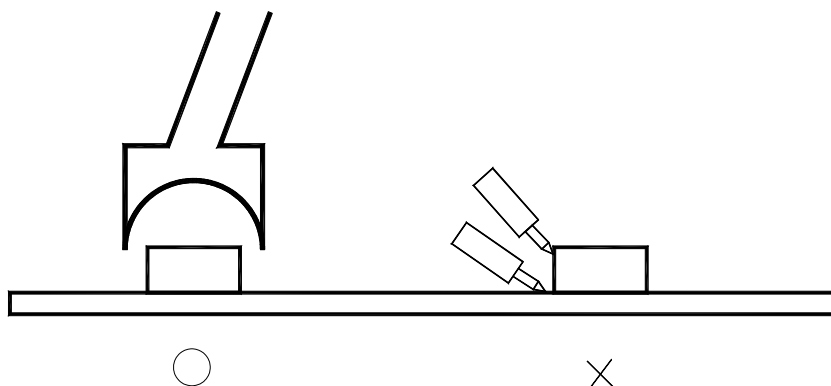
1. We recommend the reflow temperature at 245°C (±5°C). The maximum soldering temperature should be limited to 260°C.
2. Don't cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

Basic spec is ≤ 5 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.

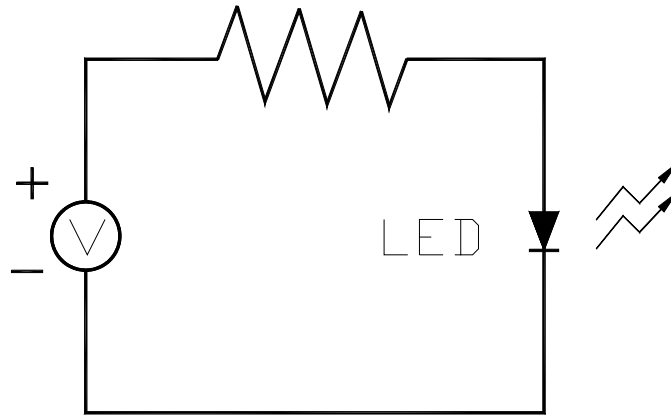
■ Rework

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 \pm 3°C x(12~24hrs) and < 5%RH, taped reel type

3.2 100 \pm 3°C x(45min~1hr), bulk type

3.3 130 \pm 3°C x(15~30min), bulk type