

SML0603-2CW-TR

White

Surface Mount LED

1.6 × 0.8 × 0.8 mm Chip LED

140° viewing angle

DWG BY:
SL / GP
08-03-07

CHK BY:
PL
08-20-07

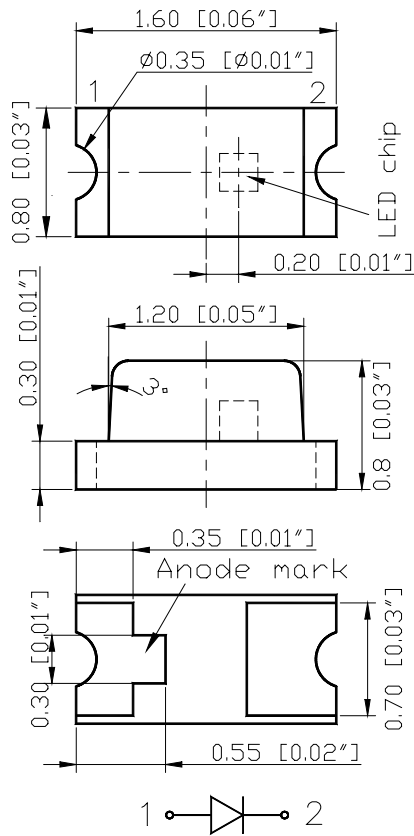
QA:

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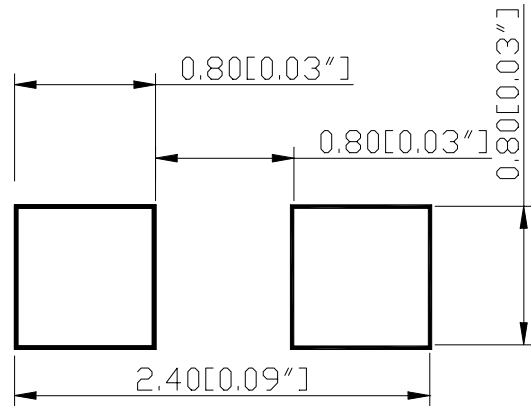
MFG:

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REVISION LTR: -
08-20-07



RECOMMEND PAD LAYOUT





ATTENTION
 OBSERVE PRECAUTIONS
 FOR HANDLING
 ELECTROSTATIC
 SENSITIVE DEVICES

ITEM	MATERIALS
Resin (mold)	Epoxy
Bonding wire	Dia. 25 μm Au
Lens color	Yellow
Printed circuit board	BT (White)
Dice	GaInN
Emitted color	White

NOTES:

1. All dimensions are in millimeters (inches);
2. Tolerances are ±0.1mm (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	111	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

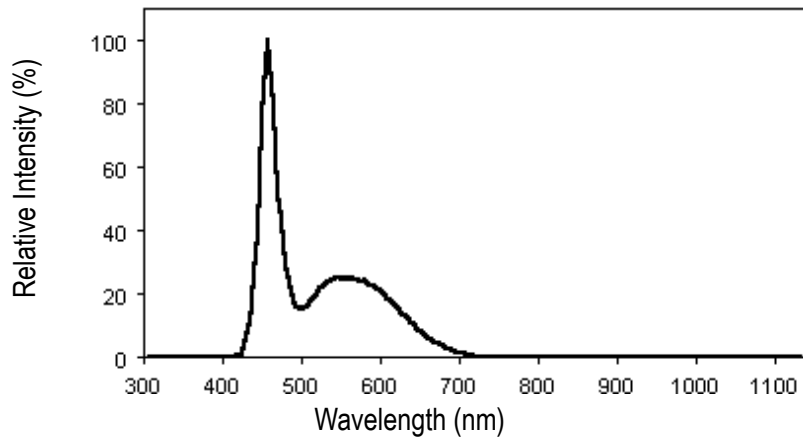
Electro-optical characteristics **(T_A=25°C)**

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
CIE Coordinates	I _f =20mA	X	--	0.28	--	--
		Y	--	0.27	--	
Forward voltage	I _f =20mA	V _f	--	3.1	4.0	V
Luminous intensity * 1	I _f =20mA	I _v	--	300	--	mcd
Viewing angle at 50% I _v	I _f =10mA	2θ 1/2	--	140	--	Deg
Reverse current	V _r =5V	I _r	--	--	10	μA

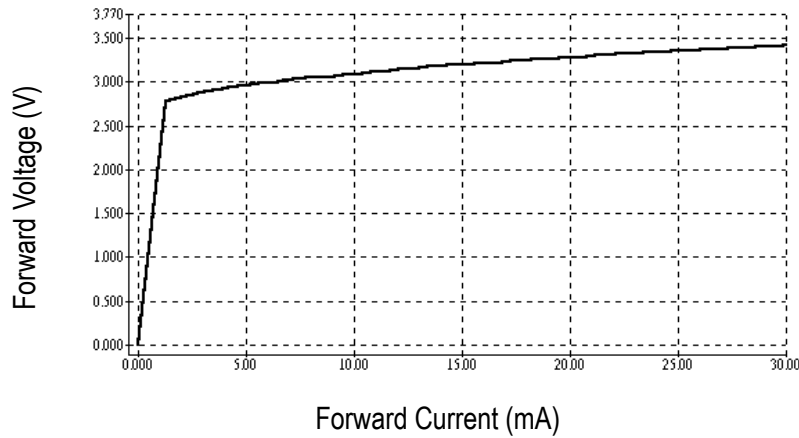
* 1 Note: Luminous intensity tolerance is +/- 10% .

OPTICAL CHARACTERISTIC CURVES

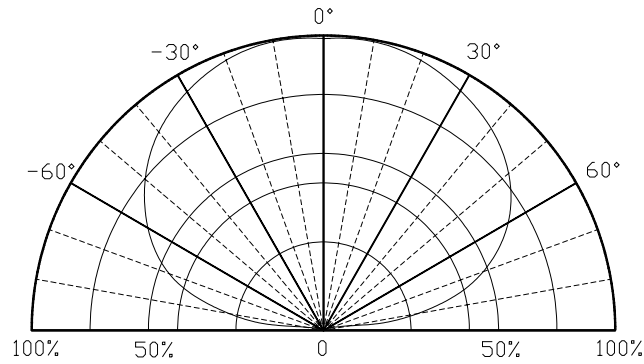
Relative Intensity vs. Wavelength



Forward Current vs. Forward Voltage

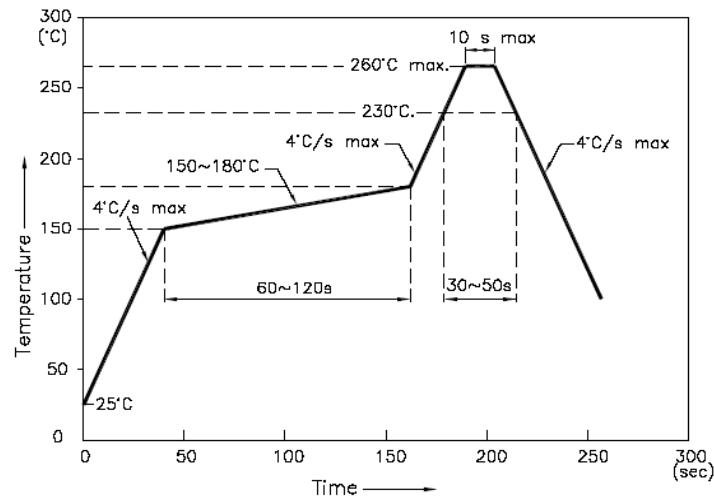


Directive Characteristics



Reflow Profile

■ Reflow Temp/Time



NOTES:

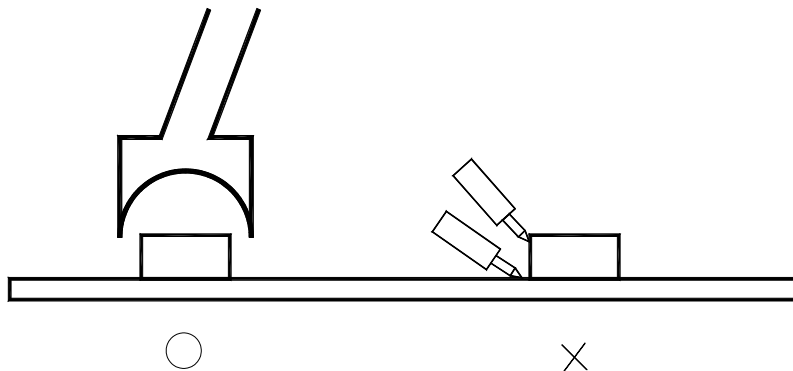
1. We recommend the reflow temperature $245^{\circ}\text{C} (\pm 5^{\circ}\text{C})$. the maximum soldering temperature should be limited to 260°C .
2. dont cause stress to the epoxy resin while it is exposed to high temperature.
3. Number of reflow process shall be 2 times or less.

■ Soldering iron

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

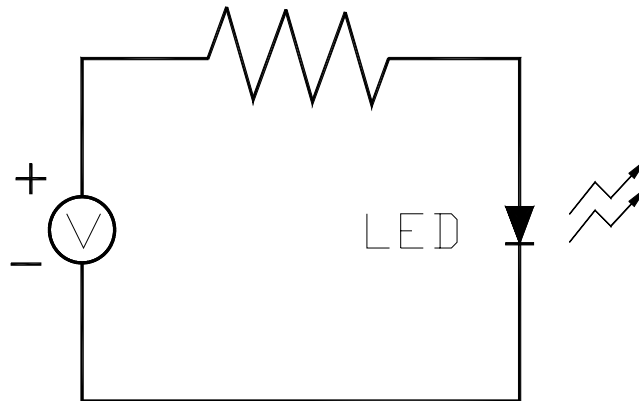
■ Rework

1. Customer must finish rework within 5 sec under 260°C .
2. The head of iron can not 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 slight voltage shift will cause big current change (Burn out will happen).

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 month 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 keeping to stored at ≤ 20 R.H. with zip-lock sealed.

3.Baking

It is recommended to baking before soldering when the pack is unsealed after 72hrs. The Conditions are as followings:

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

3.2 100±3°C x(45min~1hr), bulk type

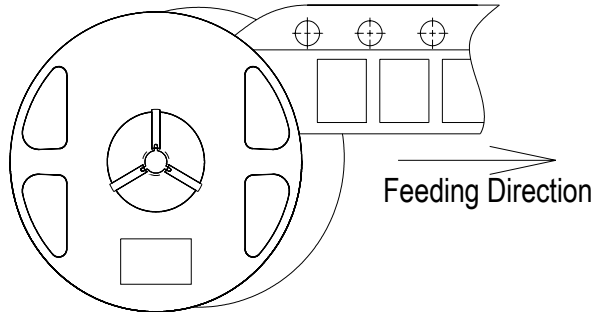
3.3 130±3°C x(15~30min), bulk type

Test items and results of reliability

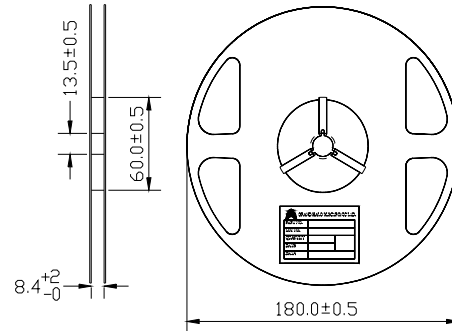
Type	Test Item	Test Conditions	Note	Number of Damaged
Environmental Sequence	Temperature Cycle	-20°C 30min ↑ ↓ 80°C 30min	100 cycle	0/22
	Thermal Shock	-20°C 15min ↑ ↓ 80°C 15min	100 cycle	0/22
	High Humidity Heat Cycle	30°C ↔ 65°C 90%RH 24hrs/1cycle	10 cycle	0/22
	High Temperature Storage	T _a =80°C	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

0603 Series SMD Chip LED Lamps Packaging Specifications

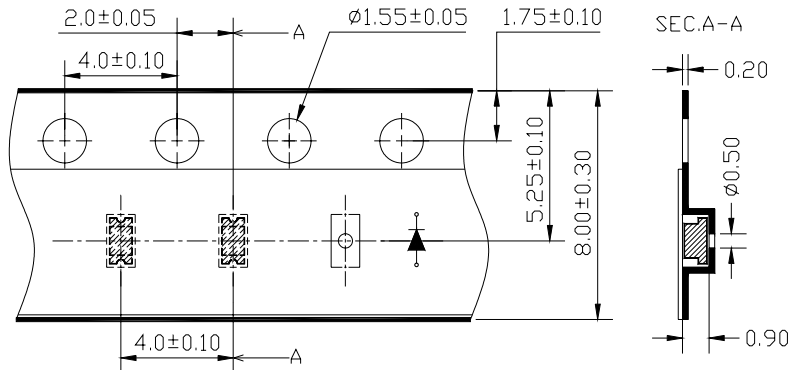
● Feeding Direction



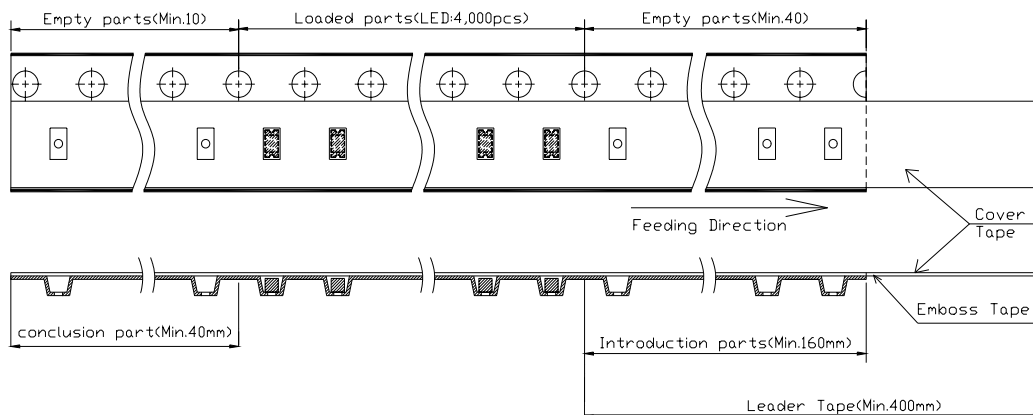
● Dimensions of Reel (Unit: mm)



● 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.
4. 4,000 pcs/Reel

Forward Voltage Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
f	2.8	3.1	V
g	3.1	3.4	
h	3.4	3.7	

Luminous Intensity Rank Combination (IF=20mA)

Rank	Min.	Max.	Unit
N	200	320	mcd
O	250	400	

Chromaticity coordinates Ranks combination (IF=20mA)

Rank	Chromaticity coordinates				
	E	X	0.27	0.27	0.29
Y		0.25	0.32	0.32	0.25
F	X	0.29	0.29	0.31	0.31
	Y	0.26	0.33	0.33	0.26
G	X	0.31	0.31	0.33	0.33
	Y	0.27	0.34	0.34	0.27

Group Name on Label (Example DATA: gNF20)

DATA: gNF 20	Vf(V)	Iv (mcd)	CIE(X,Y)	Test Condition
g→N→F→20	3.1~3.4	200~320	X(0.29~0.31),Y(0.26~0.33)	IF=20mA

* NOTE:

1. The tolerance of luminous intensity (Iv)is $\pm 15\%$.
2. The tolerance of Chromaticity coordinates is ± 0.02 .
3. This specification is preliminary.