

SML0606-RGB-TR

Super Red/Green/Super Blue
Surface Mount LED
1.6 × 1.5 × 0.4 mm Chip LED
120° viewing angle

DWG BY:
BL / GP
09-02-09

CHK BY:
PL
09-04-09

REVISION LTR: -
09-02-09

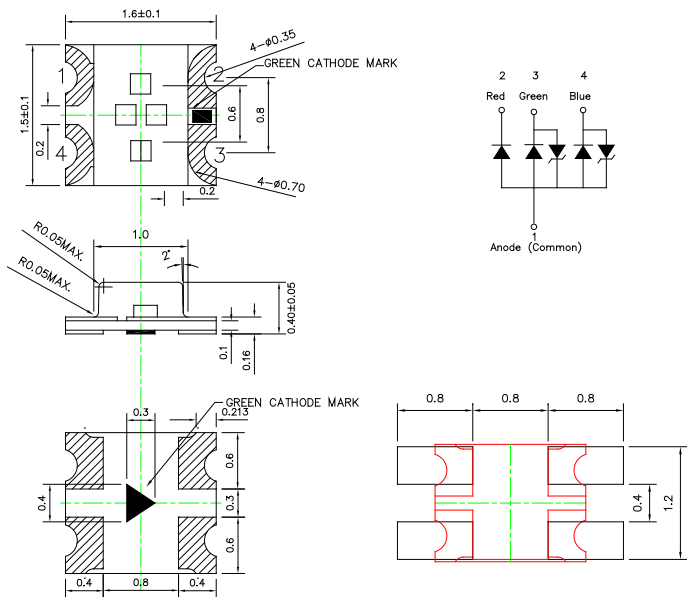
● **Features:**

1. Emitted Color : Super Blue, Green and Super Red
2. Lens Appearance : Water Clear
3. Multi-color type.
4. 1.6x1.5x0.4mm(0605) standard package
5. Suitable for all SMT assembly methods.
6. Compatible with infrared and vapor phase reflow solder process.
7. Compatible with automatic placement equipment.
8. This product is RoHS compliant.

● **Applications:**

1. Automatic : Dashboards
2. Backlighting : LCDs, Key pads advertising.
3. Status indicators : Consumer & industrial electronics.
4. General use.

● **Package Dimensions:**



NOTES:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.10mm (0.004") unless otherwise specified.
3. Specifications are subject to change without notice.

● **Absolute Maximum Ratings(Ta=25 °C)**

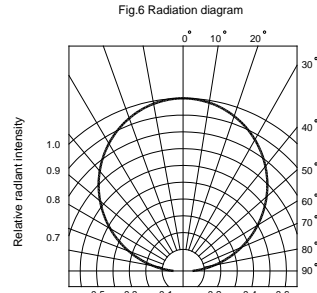
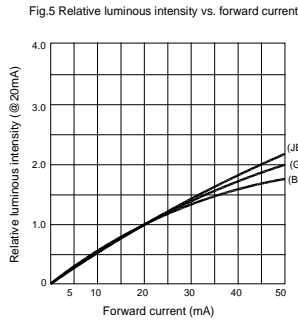
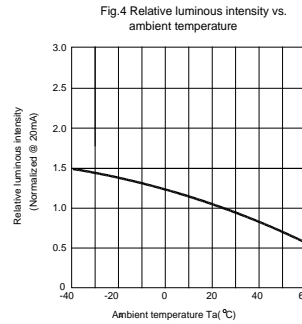
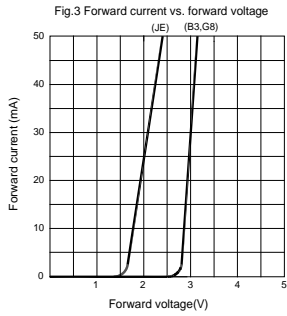
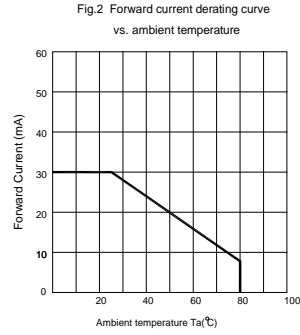
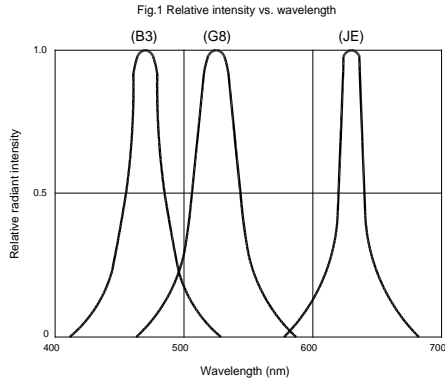
Parameter	Symbol	Super Blue	Green	Super Red	Unit
Power Dissipation	Pd	120	120	100	mW
Forward Current	I _F	30	30	30	mA
Peak Forward Current * 1	I _{FP}	100	100	100	mA
Reverse Voltage	V _R	5			V
Operating Temperature	Topr	-40 °C ~85 °C			-
Storage Temperature	Tstg	-40 °C ~85 °C			-
Soldering Temperature	Tsol	See Page 7			-

* 1 Condition for I_{Fp} is pulse of 1/10 duty and 0.1msec width.

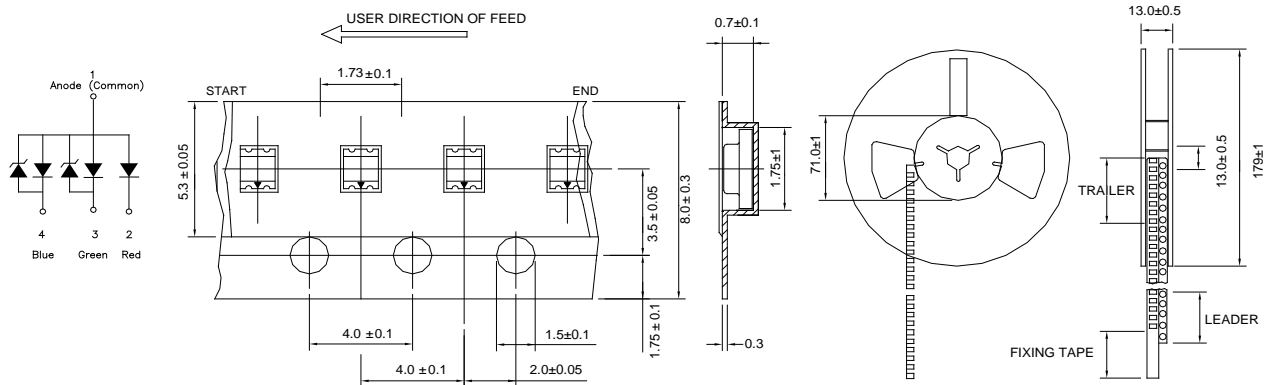
● **Electrical and optical characteristics(Ta=25°C)**

Parameter	Symbol	Condition	Color	Min.	Typ.	Max.	Unit
Forward Voltage	V _F	I _F =5mA	Super Red Green Super Blue	-	1.8 2.8 2.8	2.4 3.2 3.2	V
Luminous Intensity	I _v	I _F =5mA	Super Red Green Super Blue	12.3 28 12.3	30 50 30	-	mcd
Reverse Current	I _R	V _R =5V	Super Red Green Super Blue	- - -	- - -	100 100 100	μA
Peak Wave Length	λ _p	I _F =5mA	Super Red Green Super Blue	- - -	630 520 460	-	nm
Dominant Wave Length	λ _d	I _F =5mA	Super Red Green Super Blue	615 520 465	- - -	625 530 470	nm
Spectral Line Half-width	Δλ	I _F =5mA	Super Red Green Super Blue	-	17 35 30	-	nm
Viewing Angle	2θ _{1/2}	I _F =5mA	Super Red Green Super Blue	-	120	-	deg
Chromaticity Coordinates	X	I _F =5mA	Super Red	-	0.	-	
	Y			-	0.	-	
Chromaticity Coordinates	X	I _F =5mA	Green	-	0.	-	
	Y			-	0.	-	
Chromaticity Coordinates	X	I _F =5mA	Super Blue	-	0.	-	
	Y			-	0.	-	

● **Typical Electro-Optical Characteristics Curves**



● **Tapping and packaging specifications(Units: mm)**



NOTE: 3000 pcs PER REEL

● **Bin Limits**

Intensity Bin Limits (B3) (5mA)

BIN CODE	Min. (mcd)	Max. (mcd)
K	12.3	18.5
L	18.5	28
M	28	42
N	42	63

Tolerance for each Bin limit is $\pm 15\%$.

Color Bin Limits (B3) (5mA)

BIN CODE	Min.(nm)	Max.(nm)
4	465	470

Tolerance for each Bin limit is $\pm 1\text{nm}$.

V_F Bin Limits (B3) (5mA)

BIN CODE	Min.(v)	Max.(v)
E	2.4	2.6
F	2.6	2.8
G	2.8	3.0
H	3.0	3.2

Tolerance for each Bin limit is $\pm 0.05\text{V}$.

Intensity Bin Limits (G8) (5mA)

BIN CODE	Min. (mcd)	Max. (mcd)
M	28	42
N	42	63
P	63	94
Q	94	140

Tolerance for each Bin limit is $\pm 15\%$.

● **Bin Limits**

Color Bin Limits (G8) (5mA)

BIN CODE	Min.(nm)	Max.(nm)
6	520	525
7	525	530

Tolerance for each Bin limit is $\pm 1\text{nm}$.

V_F Bin Limits (G8) (5mA)

BIN CODE	Min.(v)	Max.(v)
E	2.4	2.6
F	2.6	2.8
G	2.8	3.0
H	3.0	3.2

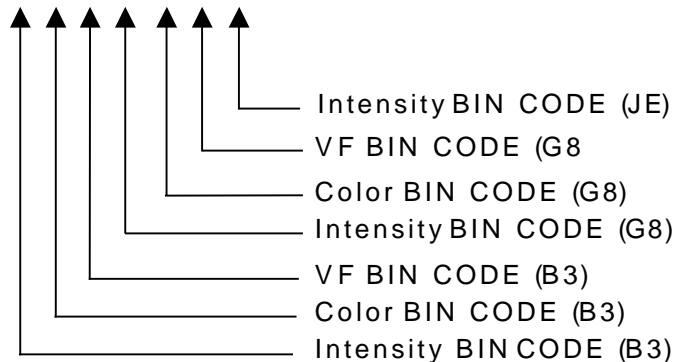
Tolerance for each Bin limit is $\pm 0.05\text{V}$.

Intensity Bin Limits (JE)(5mA)

BIN CODE	Min. (mcd)	Max. (mcd)
K	12.3	18.5
L	18.5	28
M	28	42
N	42	63

Tolerance for each Bin limit is $\pm 15\%$.

● BIN : X X X-X X X-X



● **Reliability Test**

Classification	Test Item	Reference Standard	Test Conditions	Result
Endurance Test	Operation Life	MIL-STD-750:1026 MIL-STD-883D:1005 JIS-C-7021 :B-1	Connect with a power $I_f=5mA$ T_a =Under room temperature Test time=1,000hrs	0/20
	High Temperature High Humidity Storage	MIL-STD-202F:103B JIS-C-7021 :B-11	$T_a=+85^{\circ}C \pm 5^{\circ}C$ RH=90%-95% Test time=240hrs	0/20
	High Temperature Storage	MIL-STD-883:1008 JIS-C-7021 :B-10	High $T_a=+100^{\circ}C \pm 5^{\circ}C$ Test time=1,000hrs	0/20
	Low Temperature Storage	JIS-C-7021 :B-11	Low $T_a=-40^{\circ}C \pm 5^{\circ}C$ Test time=1,000hrs	0/20
Environmental Test	Temperature Cycling	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS-C-7021 :A-2	$-35^{\circ}C \pm 5^{\circ}C \sim +25^{\circ}C \sim +85^{\circ}C \pm 5^{\circ}C \sim +25^{\circ}C$ 30min 5min 30min 5min Test Time=10cycle	0/20
	Thermal Shock	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1011	$-40^{\circ}C \pm 5^{\circ}C \sim +85^{\circ}C \pm 5^{\circ}C$ 20min 20min Test Time=10cycle	0/20
	Solder Resistance	MIL-STD-202:201A MIL-STD-750:2031 JIS-C-7021 :A-1	Preheating : $140^{\circ}C-160^{\circ}C$, within 2 minutes. Operation heating : $260^{\circ}C$ (Max.), within 10seconds. (Max.)	0/20

● **Judgment criteria of failure for the reliability**

Measuring items	Symbol	Measuring conditions	Judgement criteria for failure
Forward voltage	V_F (V)	$I_F=5mA$	Initial Level*1.1
Reverse current	I_R (μA)	$V_R=5V$	Over U*2
Luminous intensity	I_v (mcd)	$I_F=5mA$	Initial Level*0.7

Note: 1.U means the upper limit of specified characteristics.

2.Measurment shall be taken between 2 hours and after the test pieces have been returned to normal ambient conditions after completion of each test.

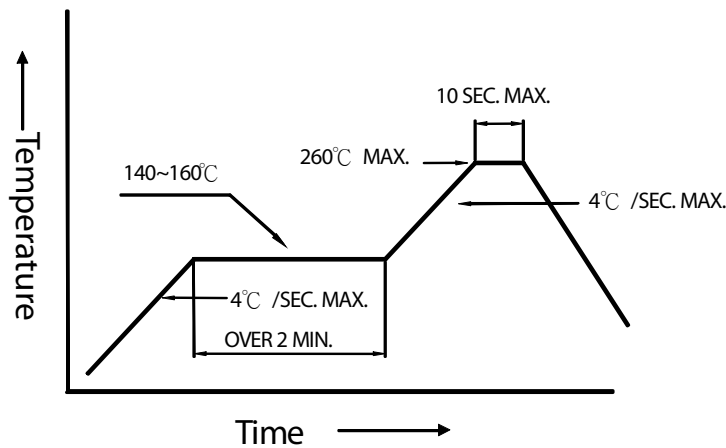
● **Soldering :**

1. Manual of Soldering

The temperature of the iron tip should not be higher than 300°C(572°F) and Soldering within 3 seconds per solder-land is to be observed.

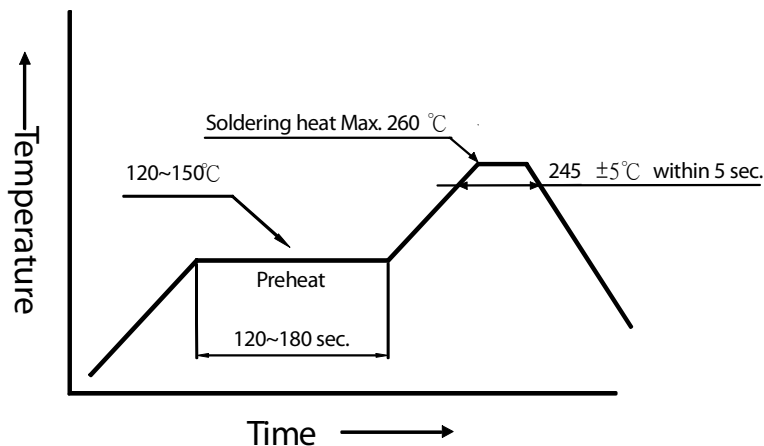
2. Reflow Soldering

Preheating : 140°C~160°C±5°C,within 2 minutes.
 Operation heating : 260°C(Max.) within 10 seconds.(Max)
 Gradual Cooling (Avoid quenching).



3. DIP soldering (Wave Soldering) :

Preheating : 120°C~150°C,within 120~180 sec.
 Operation heating : 245°C±5°C within 5 sec.260°C (Max)
 Gradual Cooling (Avoid quenching).



● **Handling :**

Care must be taken not to cause to the epoxy resin portion of LEDs while it is exposed to high temperature.

Care must be taken not rub the epoxy resin portion of LEDs with hard or sharp article such as the sand blast and the metal hook.