

3535

Features:

Size (mm): 3.7 x 3.5 x 2.8

Dominant Wavelength (nm):

Red (618-628) @20mA Green (515-535)
@20mA Blue (460-480) @20mA

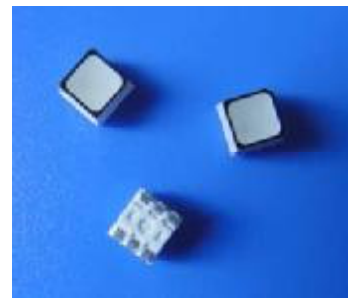
Relative Luminous Intensity (mcd)

Red (500-1200) Green (900-2000)
Blue (300-600)

Lead-Free

RoHS Compliant

Beam: 110 degree.



Applications:

Outdoor Full-Color Video
Screen

Decorative lighting

Amusement

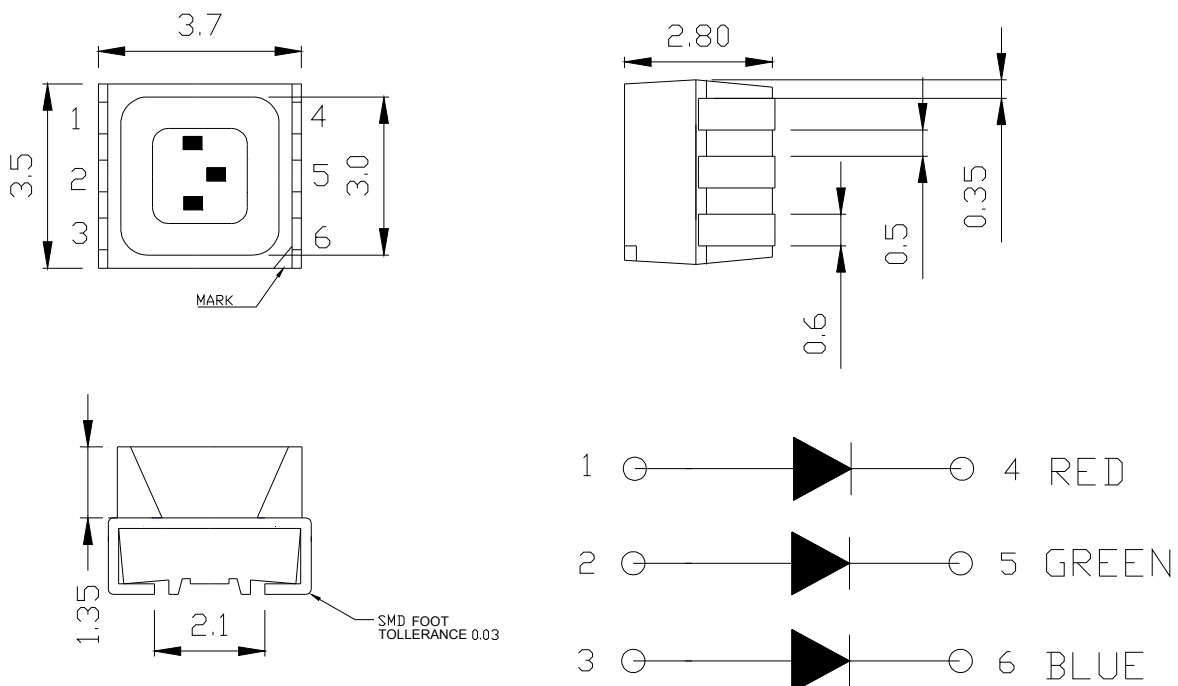
Backlight

Absolute Maximum Ratings (Ta = 25°)

Items	Symbol	Absolute maximum Rating			Unit
		R	G	B	
Forward Current ^{*1}	I _F	30	25	25	mA
Peak Forward Current ^{*2}	I _{PM}	200	100	100	mA
Reverse Voltage	V _R	5	5	5	V
Power Dissipation	P _D	120	90	90	mW
Operation Temperature	T _{opr}	-40~+100			
Storage Temperature	T _{stg}	-40~+100			°C
Junction Temperature	T _j	+110	+110	+110	°C
Junction/Ambient ^{*3}	R _{th JS}	280	300	300	°C/W
Junction/Solder Point ^{*3}	R _{th JS}	450	480	480	°C/W

^{*1} single chip on ^{*2} pulse width ≤ 0.1msec, duty ≤ 1/10 ^{*3} R_{th} test condition: Mounted on PCB board (pad size ≥ 40mm²)

Dimension Drawing



Typical Electrical & Optical Characteristics (Ta = 25°)

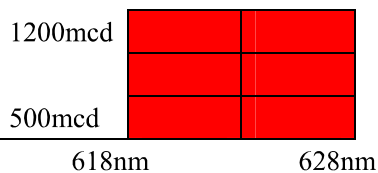
Items	Condition	symbol	values			Unit
			R	G	B	
Peak Emission Wavelength	I _F =20mA	λ _{peak}	630	515	460	nm
Dominant Wavelength	I _F =20mA	λ _{dom}	618~628	515~535	460~480	nm
Spectral bandwidth at 50% I _{re} max	I _F =20mA	Δ λ	17	33	22	nm
Viewing Angle at 50% IV	I _F =20mA	2 θ	110	110	110	Deg.
Forward Voltage	I _F =20mA	V _{F(Avg)}	2.0	3.2	3.2	V
		V _{FMax}	2.4	3.6	3.6	V
Relative Luminous Intensity	I _F =20mA	I _{V(Min)}	675	1375	380	mcd
		I _{V(Avg)}	770	1570	435	mcd
Reverse Current (max.)	V _R =5V	I _R	10	10	10	μ A

Standard bins

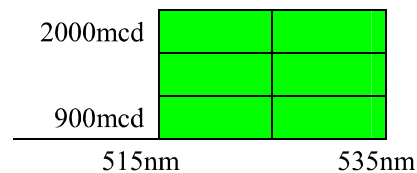
I_F=

Products are sorted mainly according to Relative Luminous Intensity & Dominant Wavelength λ_D as shown below, Test condition: I_F=20mA.

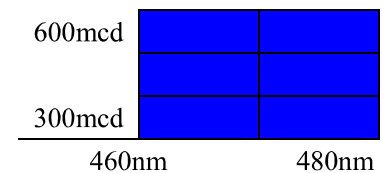
Red



Green



Blue



VF BIN

Red

ITEMS	MIN	MAX
(V _F)	1.8	2.4

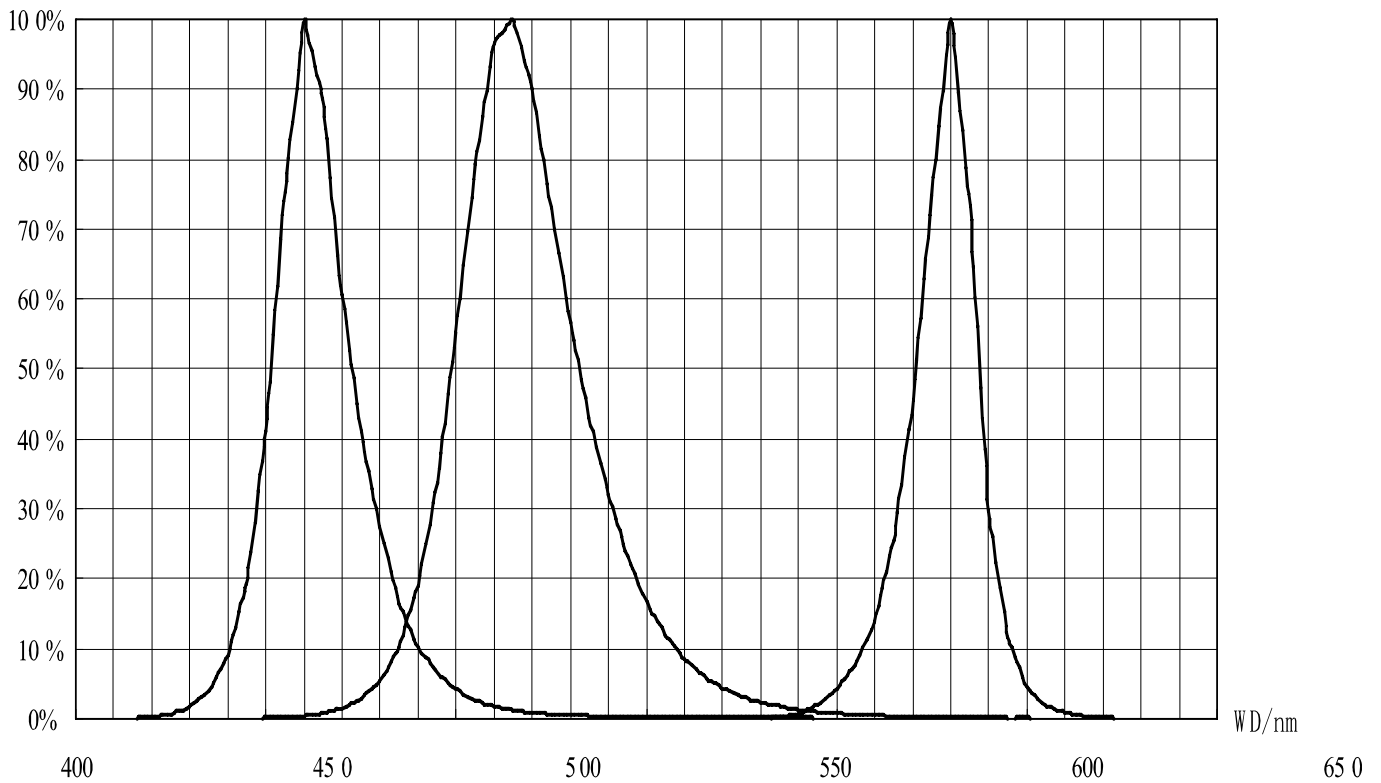
Green, Blue

ITEMS	MIN	MAX
(V _F)	2.8	3.6

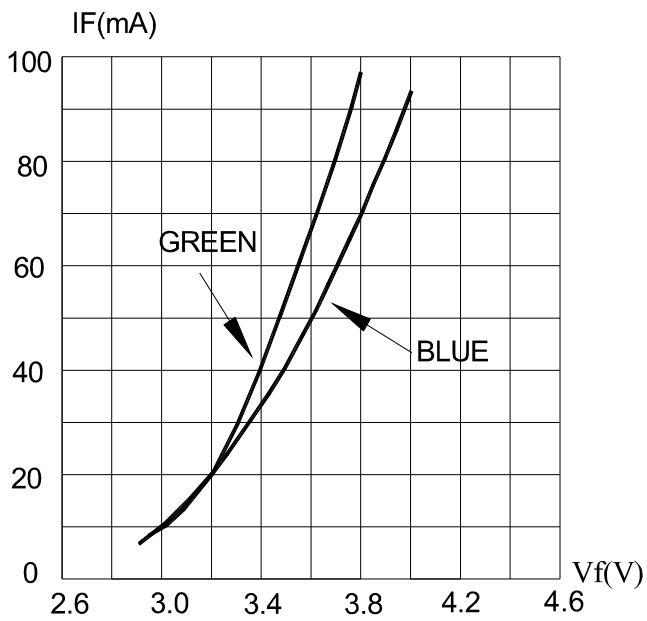
Important Notes

- 1) All ranks will be included in every delivery;
- 2) Tolerance of measurement of Relative Luminous Intensity is ±10%.
- 3) Tolerance of measurement of Dominant Wavelength is ±1nm.
- 4) Tolerance of measurement of V_F is ±0.05 V.
- 5) BIN set : Relative Luminous Intensity 1:1.25~1.35, Dominant Wavelength of Red, Green and Blue: 5nm,4nm,4nm.

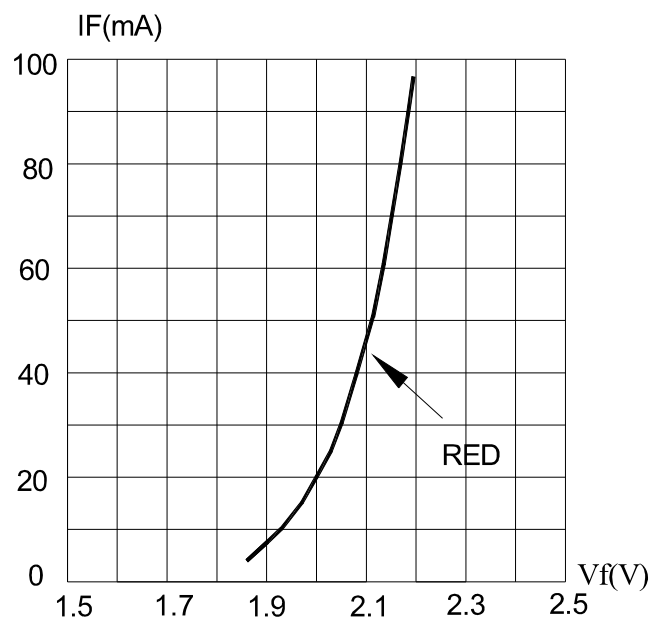
Graphs



RELATIVE SPECTRAL ENERGY VS WAVE LENGTH

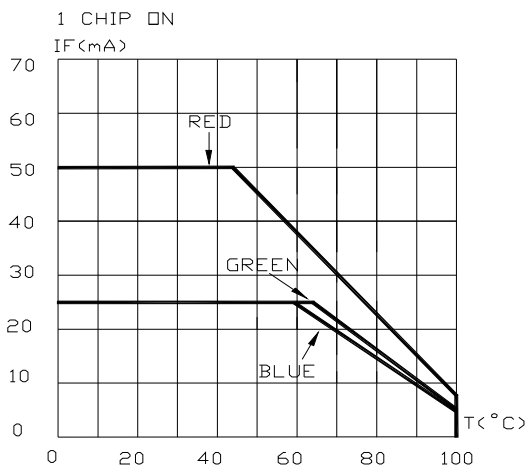
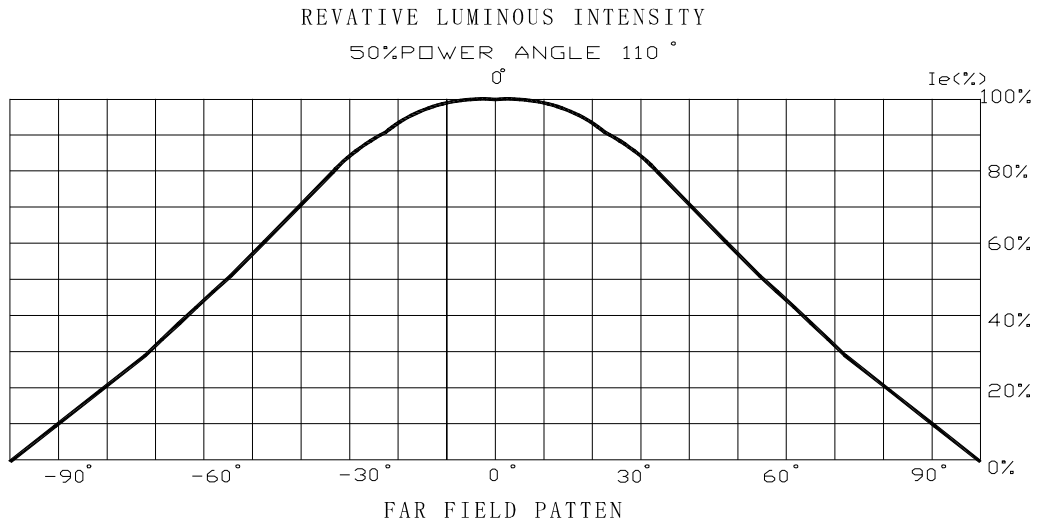


BLUE, GREEN FORWARD CURRENT VS FORWARD VOLTAGE

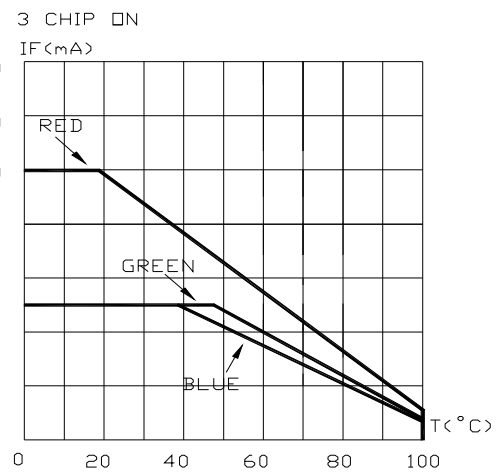


RED FORWARD CURRENT VS FORWARD VOLTAGE

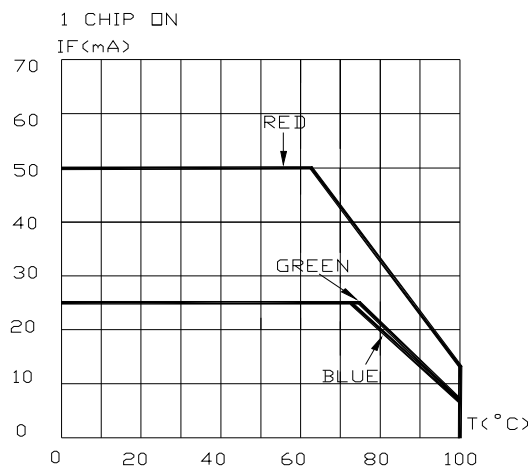
Graphs



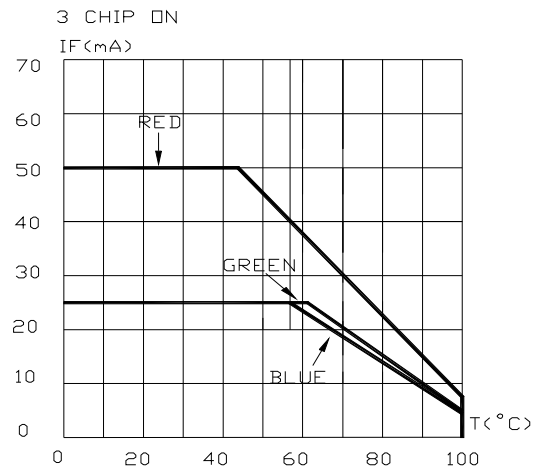
MAXIMUM FORWARD DC CURRENT
VS, AMBIENT TEMPERATURE.



MAXIMUM FORWARD DC CURRENT
VS, AMBIENT TEMPERATURE.



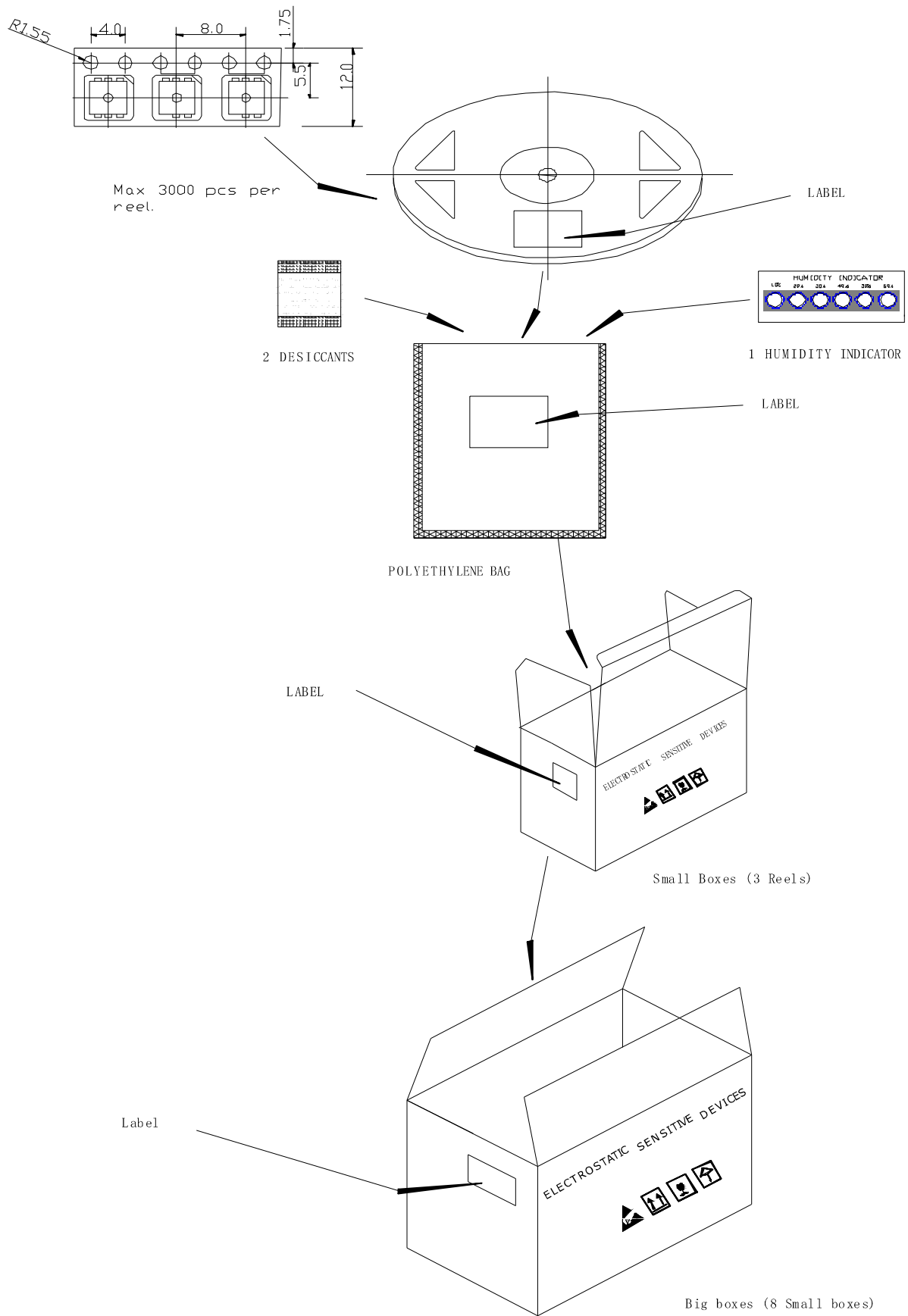
MAXIMUM FORWARD DC CURRENT
VS, SOLDER POINT TEMPERATURE.



MAXIMUM FORWARD DC CURRENT
VS, SOLDER POINT TEMPERATURE.

The data above are collected from statistical figures which do not necessarily correspond to the actual Parameters of each single LED. Hence, these data will be changed without further notice.

Package



The boxes are not water resistant and they must be kept away from water and moisture.

SMD LED

SMD LED INSTRUCTION MANUAL

1. Cleaning

- ⌘ Don't use unspecified chemical liquids to clean the SMD LED; they could harm the SMD LED. When cleaning is necessary, please immerse SMD LED in pure alcohol at normal room temperature for less than 1 minute and dry at normal room temperature for 15 minutes before using.
- ⌘ The influence of ultrasonic cleaning on the SMD LED depends on factors such as ultrasonic power and the way LED are mounted. Ultrasonic cleaning shall be pre-qualified to ensure it would not cause damage to SMD LED.

2. Moisture Proof Packing

- ⌘ In order to prevent moisture absorption during the transportation and storage, SMD LED is packed in a moisture barrier bag. Desiccants and a humidity indicator are packed together with SMD LED as a further protection. Different colors of humidity indicator card indicate different information of humidity in the bag.

3. Storage

- ⌘ Shelf life in original sealed bag is 6 months under the condition <40°C and <90%RH. Baking is required whenever shelf life is expired.
- ⌘ If the bag has been opened, the SMD LED must be stored under the condition < 30 C and < 60%RH. Under this condition, SMD LED should be used out in drippy month within 12 hrs and in dry month within 24 hrs (subject to reflow), the way as de-packaging as surface mounting is recommended. And re-baking is required when exceeding the time above (Please seal the bag whenever the material are left, and mark the time after the opening time on the back of the bag. When using next time, material must be baked for at least 24hrs in condition of 80°C , please lengthen the baking time if the time of the bag opened exceeds 3 days).
- ⌘ For baking, place SMD LED in oven temperature 80°C±5C and relative humidity ≤10%RH, for 24hrs , and the material should be baked erectly.
- ⌘ Please get the material out of the bag when re-baking, and do not open the door of the oven frequently.

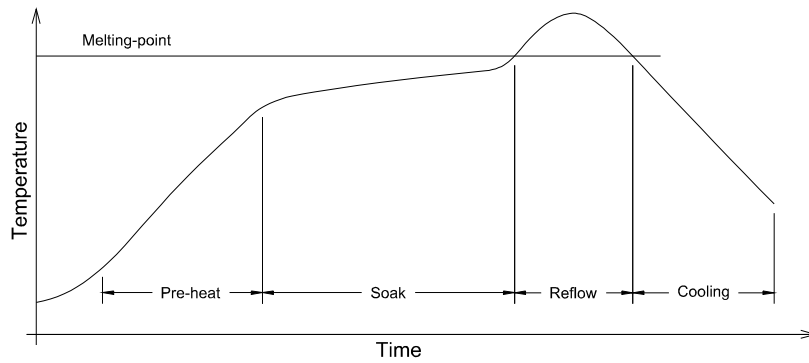
4. Soldering

Manual soldering by soldering iron

- ⌘ The use of a soldering iron power less than 25W is recommended and the temperature of the iron must be kept below 315°C, with soldering time within 3 seconds (If it failed first time, 10secs cooling is necessary and then continue soldering, failed second time, must replace a new SMD LED).
- ⌘ Do not contact the resin of SMD LED with the tip of soldering iron.
- ⌘ No mechanical stress should be exerted on the resin of SMD LED during soldering.
- ⌘ Post work after soldering should be done when the package has been cooled down to below 40°C or less. This is to prevent the SMD LED failures due to thermal-mechanical stress during holding.

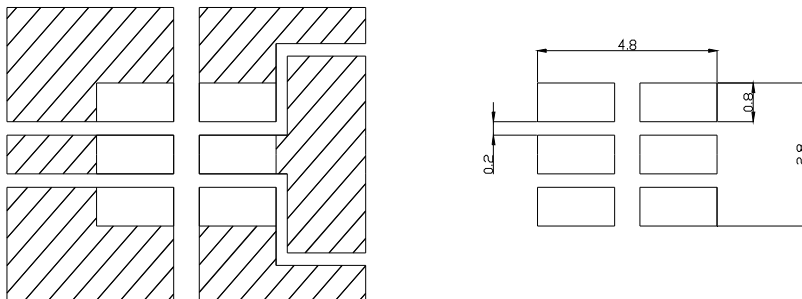
Reflow Soldering

∞ The temperature (Top SMD LED) profile is as below:



Solder = Sn63-Pb37	Solder =Low Lead-free
Average ramp-up rate = 4°C/s max.	Average ramp-up rate = 3°C/s max.
Preheat temperature = 100°C ~150°C	Preheat temperature = 130°C ~170°C
Preheat time = 100s max.	Preheat time = 120s max.
Ramp-down rate = 6°C/s max.	Ramp-down rate = 6°C/s max.
Peak temperature = 230°C max.	Peak temperature = 213°C max.
Time within 5C of actual Peak Temperature = 10s max.	Time within 3C of actual Peak Temperature = 25s max.
Duration above 183°C is 80s max.	Duration above 200°C is 40s max.

- ☞ Recommended solder pad designed for heat dissipation (PLCC 6)



<Units: mm>

- ☞ Modification is not recommended on SMD LED after soldering. If cannot be avoided, it must be pre-qualified to avoid damaging SMD LED; Please control the soldering time (refer to **Manual soldering by soldering iron**).
- ☞ Reflow soldering should not be done more than one time.
- ☞ No stress should be exerted on the package during soldering.
- ☞ PCB should not be wrapped immediately after soldering; the purpose is cooling the PCB board and SMD LED naturally.

5. Electrostatic Discharge and Surge Current

- ☞ Electrostatic discharge (ESD) or surge current (EOS) may damage SMD LED.
- ☞ Precautions such as ESD wrist strap, ESD shoes and antistatic gloves must be worn whenever holding SMD LED.
- ☞ All devices, equipments and machines must be properly grounded.
- ☞ It is recommended to perform electrical test to screen out ESD failures at final inspection.
- ☞ It is important to eliminate the possibility of surge current during circuitry design.

6. Heat Management

- ☞ SMD LED
- ☞ Heat management of SMD LED must be taken into consideration during the design stage of SMD LED application. The current should be de-rated appropriately by referring to the de-rating curve attached on the corresponding specification.

7. Other

- ☞ For display application, for SMD LED is different from LAMP LED which could be mixed before production, we mix the material in one batch before shipment; material of different batches could be have little difference, so they must not be used in one display, or the effect of display may unequal (mosaic).
- ☞ After soldering, please arrange production as soon as possible. If it can not be done within one week, moisture proof protection should be done.
- ☞ Corresponding used in >65% RH environment, please do the moisture protection of the lamp foot, display products without making moisture treatment is recommended in <65% RH environment , this is tested after assembling the products on a PCB and isolating the electrical paths by silicone.