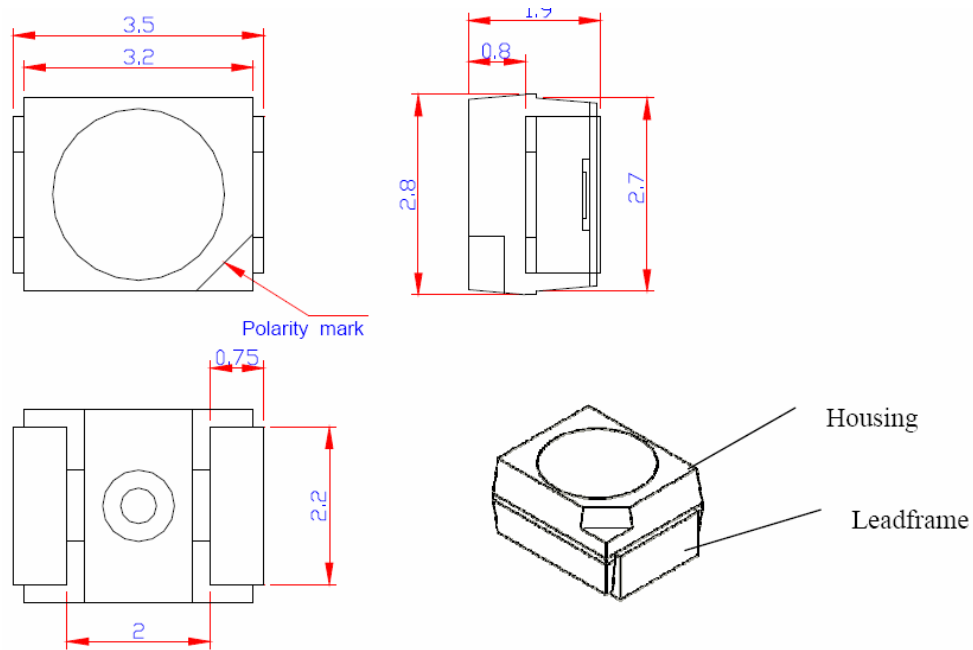


標 示 章		海灣國際科技股份有限公司 Baytek International Technology	文件 編號	
			版次	1.1
			頁次	共 13 頁

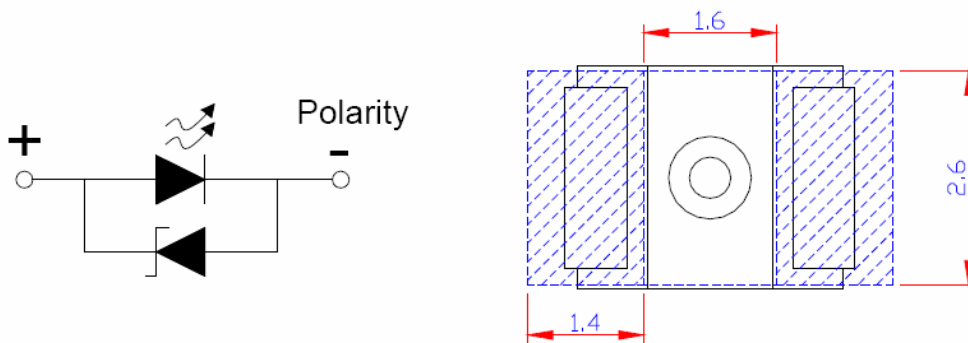
BT-OLC-PT23528 SERIES

SMDLED Component
 PLCC2 Series
 Lead (Pb) Free Product – RoHS Compliant

Mechanical Dimensions



< Figure 1 PLCC 3528 series dimensions >



< Figure 2 PLCC 3528 series circuit diagram and recommended soldering pad >

Notes:

- All dimensions are in mm
- Tolerance: ± 0.2 mm

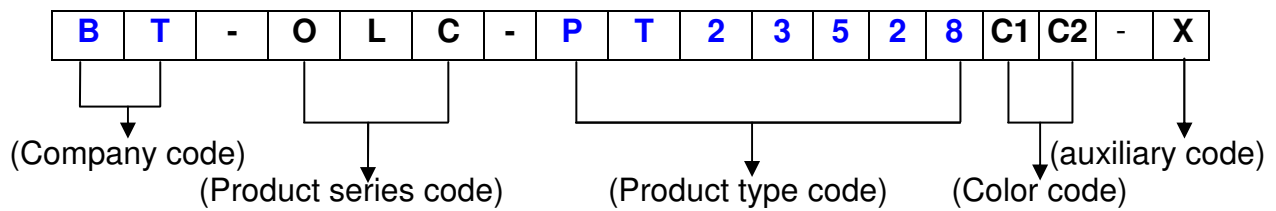
Features

- **High luminous intensity**
- **Based on Blue/Green : InGan , Red : AlGaInP technology**
- **Wide viewing angle: 120 deg**
- **Excellent performance and visibility**
- **Suitable for all SMT assembly methods**
- **IR reflow process compatible**

Typical Applications

- **Signal and symbol luminaire**
- **Indoor and outdoor displays**
- **Backlight (illuminated advertising, general lighting)**
- **Interior automotive lighting**

PLCC2 3528 series Nomenclature



Luminous Intensity Characteristics, $T_a = 25 \cdot C$, $I_F = 20 \text{ mA}$

Part Number	Color	Luminous Intensity			Unit
		Min.	Typ.	Max.	
OLC-PT23528 Series	NW	900	1200	---	mcd
	WW	900	1000	---	
	NR	250	350	---	
	NA	250	350	---	
	PG	460	690	---	
	NB	175	250	---	

- Luminous intensity is measured with an accuracy $\pm 10 \%$

Forward Voltage Characteristics, $T_a = 25 \cdot C$, $I_F = 20 \text{ mA}$

Part Number	Color	Electrical Characteristics			Unit
		Min.	Typ.	Max.	
OLC-PT23528 Series	NW	2.8	---	3.8	V
	WW	2.8	---	3.8	
	NR	1.8	---	2.8	
	NA	1.8	---	2.8	
	PG	2.8	---	3.7	
	NB	2.8	---	3.7	

- Forward Voltage is measured with an accuracy $\pm 0.05V$

Dominant Wavelength Characteristics, $T_a = 25 \cdot C$, $I_F = 20 \text{ mA}$

Part Number	Color	Optical Characteristics			Unit
		Min.	Typ.	Max.	
OLC-PT23528 Series	NW	5000	---	10000	K
	WW	3000	---	5000	
	NR	615	---	630	nm
	NA	580	---	600	
	PG	520	---	535	
	NB	455	---	470	

- Wavelength is measured with an accuracy $\pm 0.5\text{nm}$

Others

Items	Specification	Material	Quantity
Resin	Water Clear	Silicon	
Carrier	According to EIA 481-1A specs	Conductive Black Tape	2000 pcs
Reel	According EIA 481-1A specs	Conductive Black	
Label	BT Standard	Paper	
Packing Bag	235 x 240mm	Aluminum laminated bag / no-zipper	One reel one bag
Carton	BT standard	Paper	Non-specified

Luminous Intensity Ranks

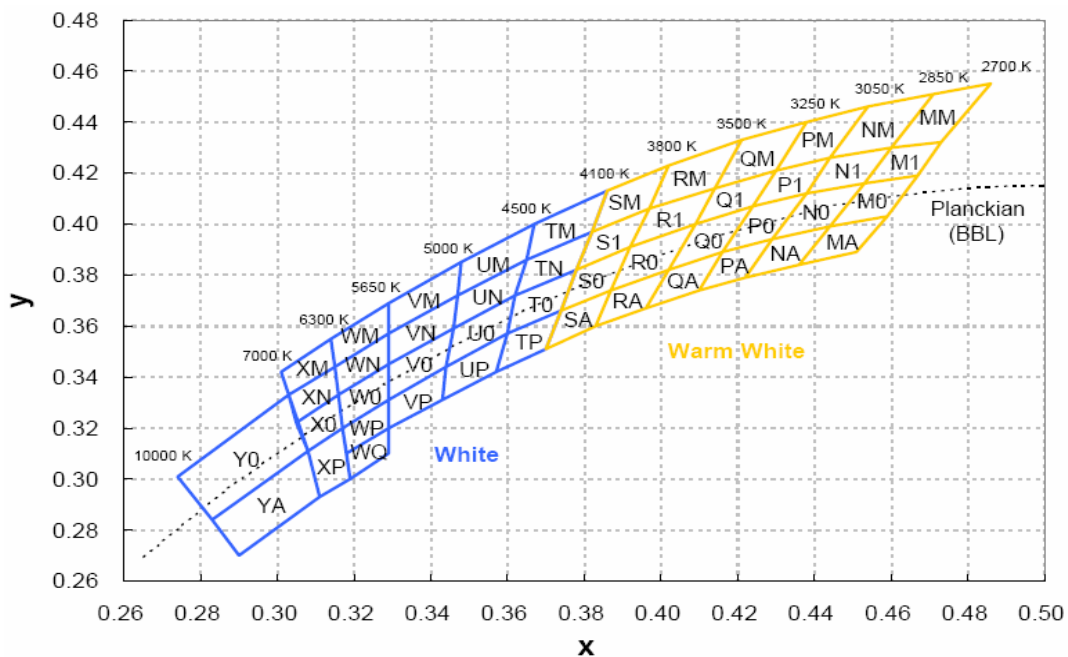
Color	Bin Code	Minimum Photometric Flux (mcd)	Maximum Photometric Flux (mcd)
White	W1	900	1000
	W2	1000	1200
	W3	1200	1400
	W4	1400	1600
Warm White	WA	900	1000
	WB	1000	1100
	WC	1100	1200
	WD	1200	1300
Green	GH	460	690
	GI	690	850
	GJ	850	1000
	GK	1000	1150
Blue	BH	175	200
	BI	200	250
	BJ	250	300
	BK	300	350
Amber	O	250	300
	P	300	350
Red	Q	350	400
	R	400	450

Dominant Wavelength Bin Structure

Color	Bin Code	Minimum Dominant Wavelength (nm)	Maximum Dominant Wavelength (nm)
Amber	2	587.0	589.5
	4	589.5	592
	6	592.0	594.5
	7	594.5	597.0
Blue	A	455	460
	1	460	565
	2	465	470
Green	A	515	520
	1	520	525
	2	525	530
Red	2	613.5	620.5
	4	620.5	631.0

Color Bin

White and Warm White Binning Structure Graphical Representation

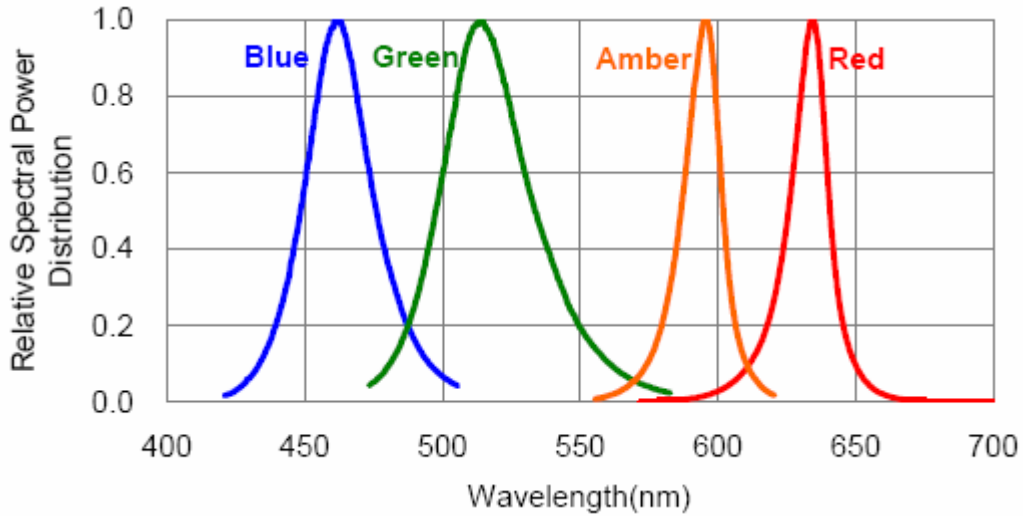


- BIT maintains a tolerance of ± 1 nm for dominant wavelength measurements.

Note : Although several bins are outlined, product availability in a particular bin varies by production run and by product performance. Not all bins are available in all colors.

Color Spectrum, $T_a = 25^\circ\text{C}$

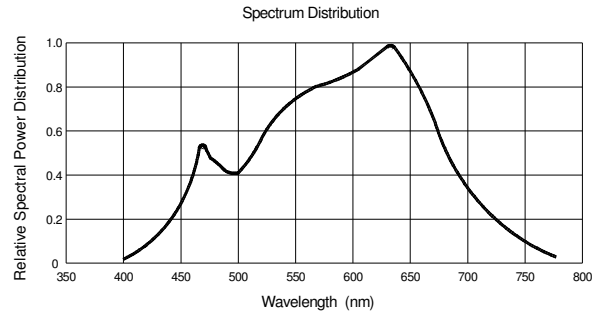
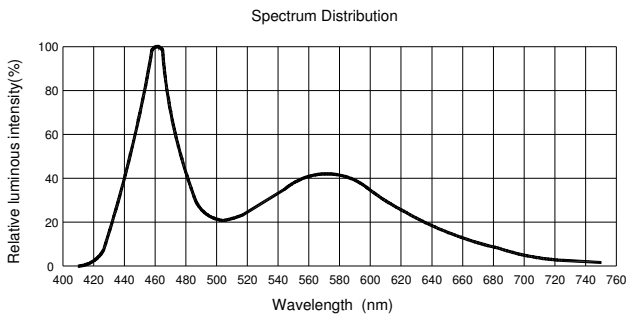
Blue, Green, Amber, Red



Typical Electrical / Optical Characteristics Curves

White

Warm white

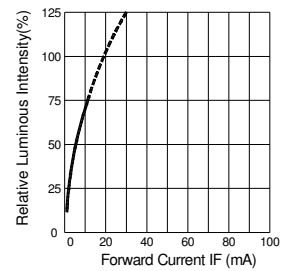
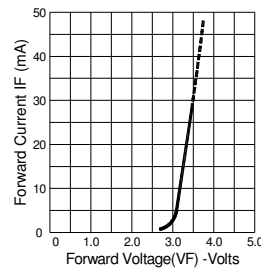
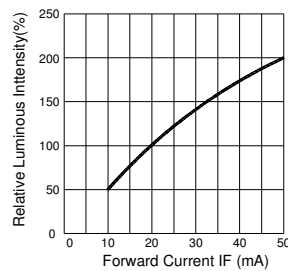
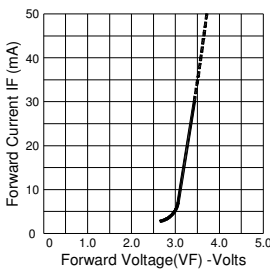


Forward Current VS. Forward Voltage

Luminous Intensity VS. Forward Current

Forward Current VS. Forward Voltage

Luminous Intensity VS. Forward Current

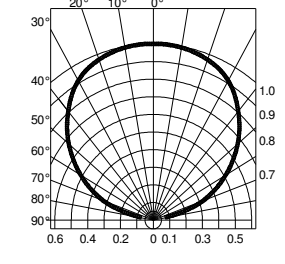
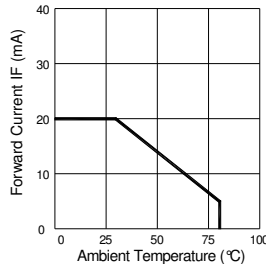
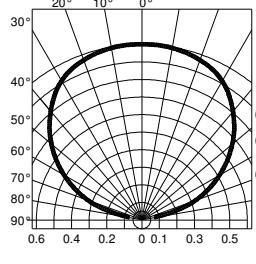
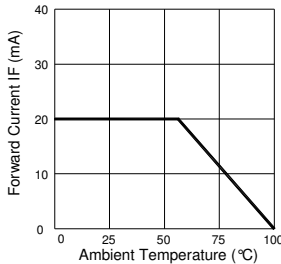


Forward Current VS. Ambient Temperature

Radiation Diagram

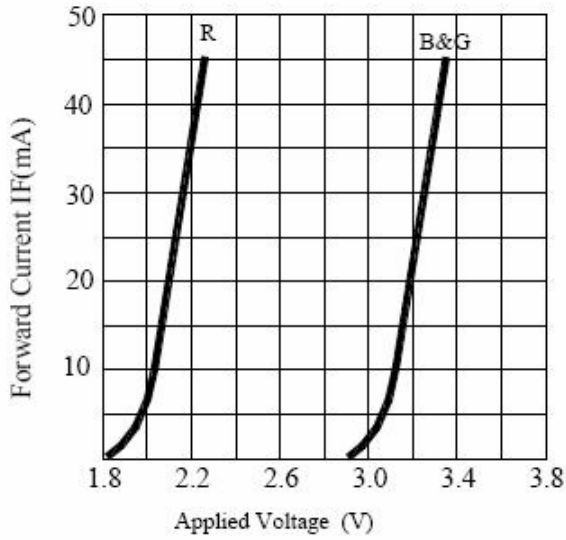
Forward Current VS. Ambient Temperature

Radiation Diagram

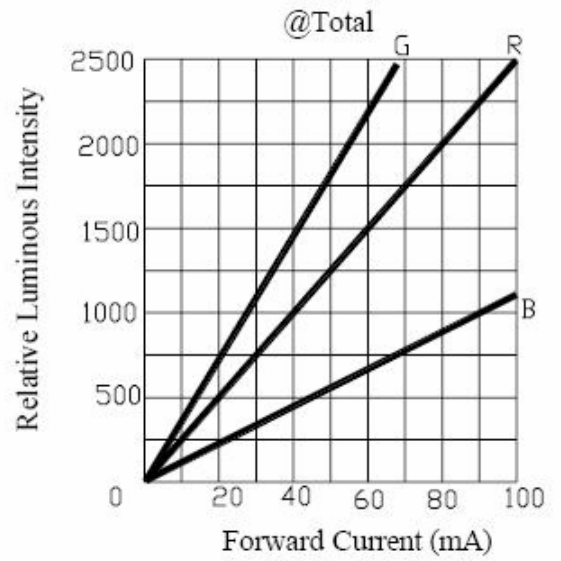


Forward Current Characteristics, $T_a = 25 \text{ }^\circ\text{C}$

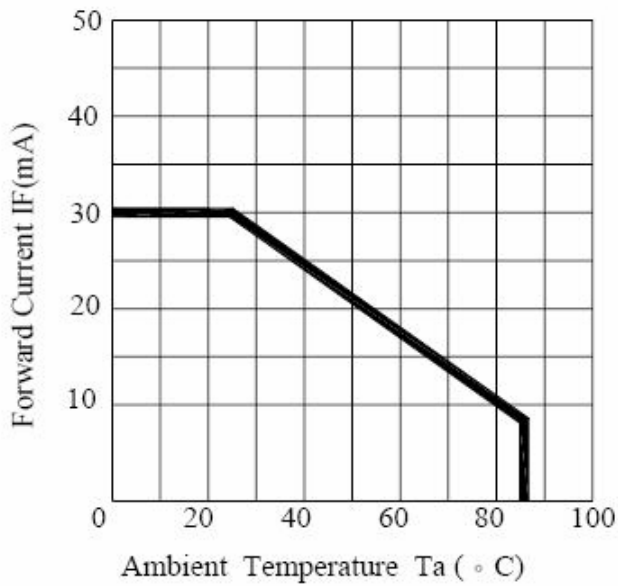
** Condition for IFP is pulse of 1/10 duty and 0.1 msec width



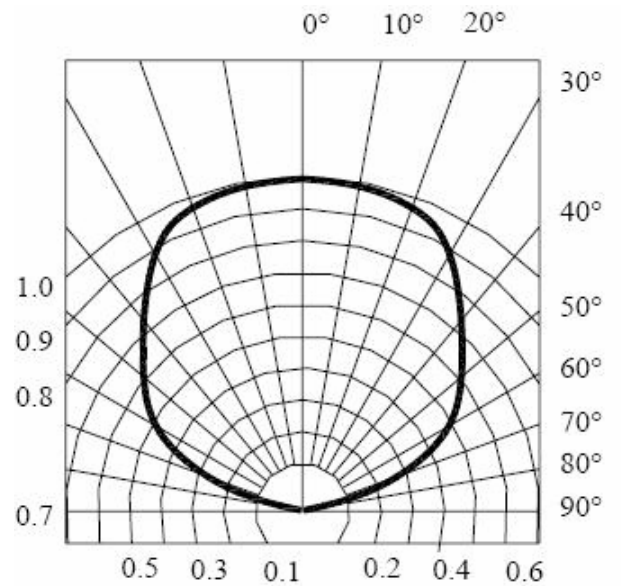
Forward Current VS. Applied Voltage



Forward Current VS. Luminous Intensity



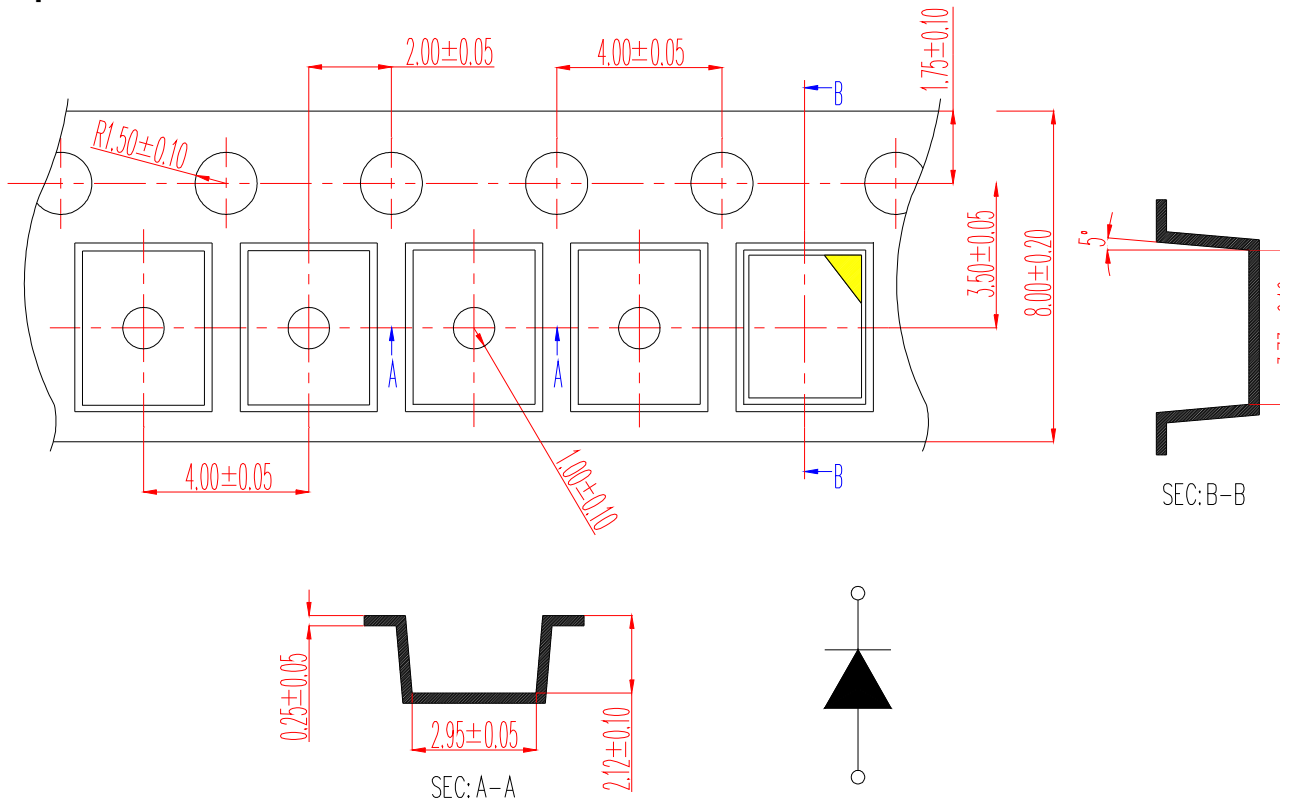
Ambient Temperature vs. Forward Current



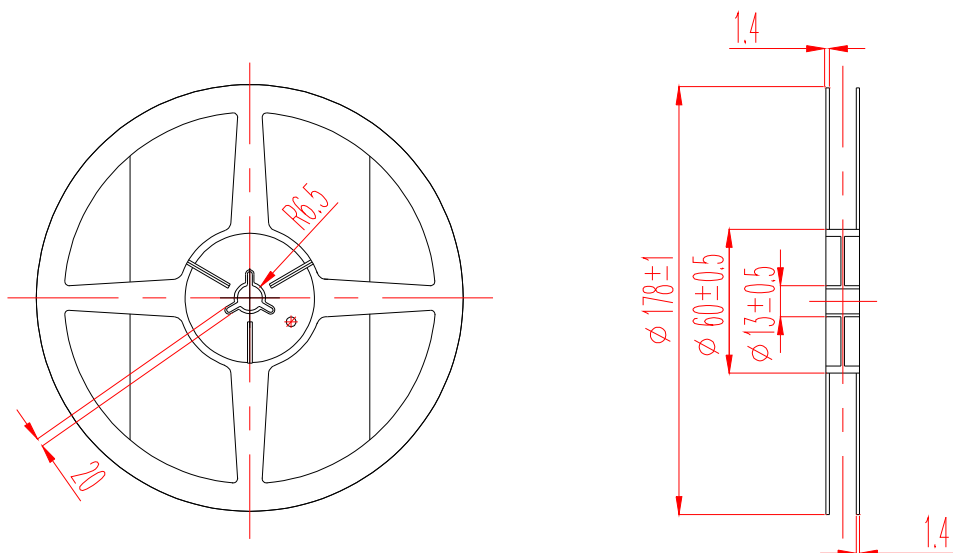
Radiation Diagram

Packing Tape, Reel, and Packing Model

Tape Dimension



Reel Dimension



Precaution of Application

Designing 1 : Soldering pattern

The dimensions of the recommended soldering pattern may not every user. Please confirm and study first before designing the soldering pattern in order to obtain the best performance of soldering.

Designing 2 : Circuit layout

Due to circuit design is not available, assuming the circuit is in parallel and a resistor that is put in series in the circuit, it cannot provide an effective current-limiting function to the LEDs due to each LED had a different inherent resistance.

In general, the LEDs usually have a different inherent resistance. Different inherent resistance will cause different current, the LED on the different path would be driven at different power, and the result was the LED with a higher resistance would be dimmer than the order.

To solve this situation, a suitable resistor is put in series with each LED to limit the current disparity through the LED will be very useful.

Designing 3 : Max Rating

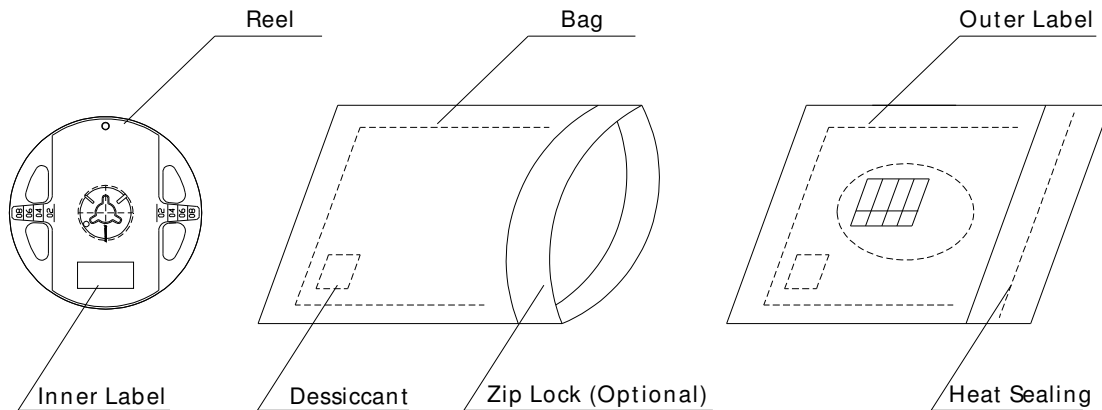
Any application should refer to the specifications of absolute maximum ratings.

Dry Pack

Any SMD optical device, like this chip LED, is MOISTURE SENSITIVE device. Avoid absorbing moisture at any time during transportation or storage. Every reel will be packaged in the moisture barrier anti-static bag (Specific bag material will depend upon customers' requirement or option). And the bag is well sealed before shipment.

By customer's requirement, we will put a humidity indicator in each moisture barrier anti-static bag before shipment.

The Package



Storage

It's recommended to store the products in the following conditions :

Humidity: 60 %RH Max.

Temperature: 5 ° C ~ 30 ° C (41 ° F ~86 ° F)

Shelf life in sealed bag: 12months at < 40 ° C and < 90%RH (Base on aluminum laminated moisture barrier bag.)

After the bag is opened, devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing must be:

Mounted within 72 hours at factory conditions of ≤ 30 ° C/60% RH, or

Stored at $\leq 20\%$ RH with zip-lock sealed.

Baking

It's recommended to bake before soldering once the pack is unsealed open & re-sealed after 72 hours. The conditions are as followings:

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

100 ± 3 ° C x (45 min ~ 1 hr), bulk type.

130 ± 3 ° C x (15 ~ 30 min), bulk type.

Soldering

Manual soldering (We do not recommend this method strongly.)

Soldering wire: 63/37 Sn/Pb, flux contained.

To prevent cracking, please bake before manual soldering, if the device is subject to moisture.

Temperature at tip of soldering tool: 300 ° C ± 3 ° C Max. (25W).

It's banned to load any stress on the resin during soldering.

Soldering time : 3 ± 1 sec.

Handling of Silicone Resin LEDs

Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be to pierce the sealing compound.

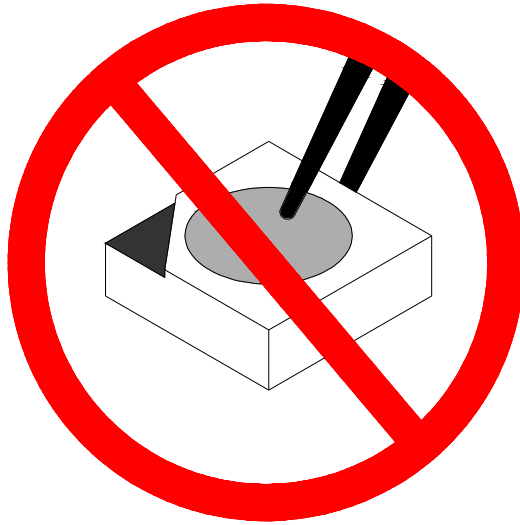


Figure 1

In general, LEDs should only be handled from the side. By the way, this also applies to LEDs without a silicone sealant, since surface can also become scratched.

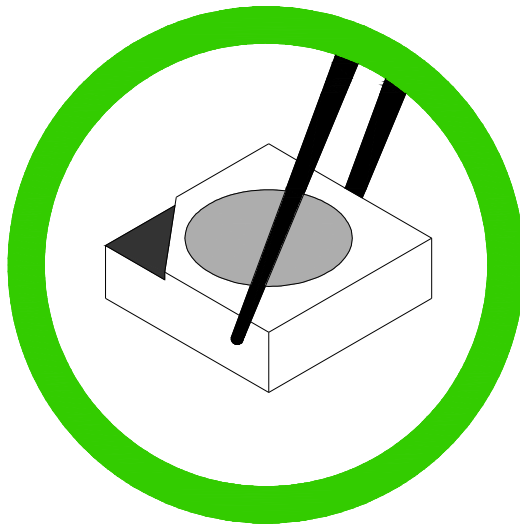


Figure 2

When populating boards in SMT production, there are basically no restrictions regarding the from of the pick and place nozzle, except that mechanical pressure on the surface of the resin must be prevented.

This is assured by choosing a pick and place nozzle which is large than LEDs reflector area.

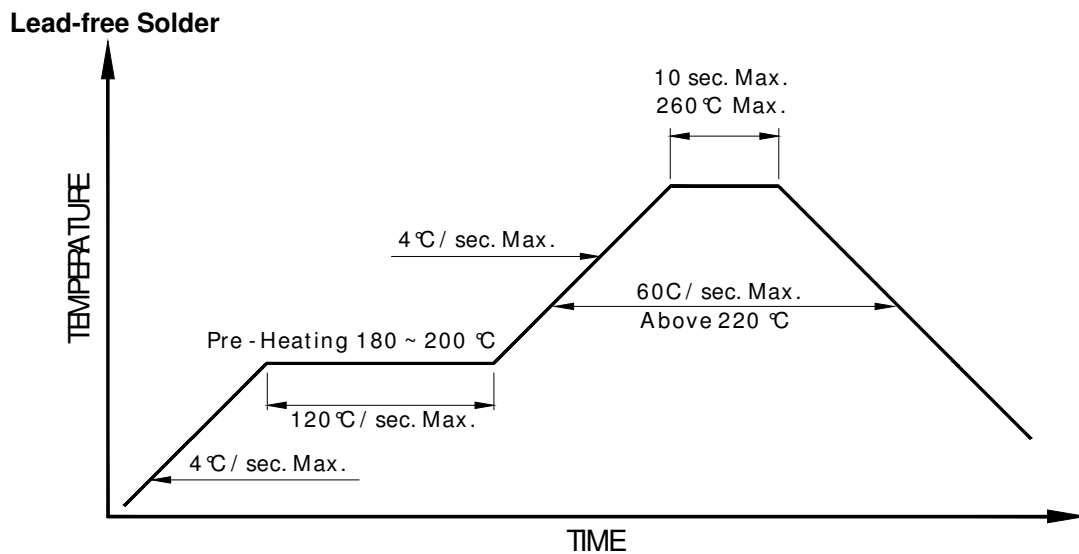
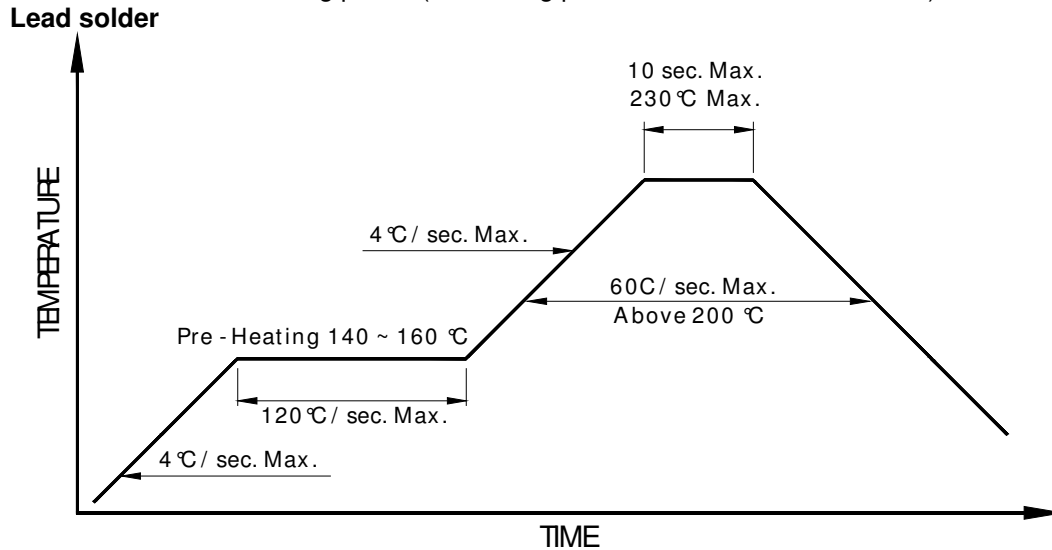
Handling of Silicone Resin LEDs

Reflow Soldering

Recommend tin glue specifications: Melting temperature 178~192 ° C.

Never take next process until the component is cooled down to room temperature after reflow.

The recommended reflow soldering profile (measuring on the surface of the LED resin) is following:



Cleaning

The conditions of cleaning after soldering:

An alcohol-based solvent such as isopropyl alcohol (IPA) is recommended.

Temperature x Time: < 50 ° C x 30 sec, or < 30 ° C x 3 min.

Ultra sonic cleaning: < 15W/bath; Bath volume: 1 liter max.

Curing: 100 ° C max, < 3 min.

Do not contact with component on the assembly board.

Cautions of Pick and Place

It should be avoided to load stress on the resin during high temperature.

Avoid rubbing or scraping the resin by any object.

Electric-static may cause damage to the component.

Please confirm that the equipment grounding well.

Using an ionizer fan is recommended.