

❖ Product Code Method

$\frac{H}{1} - \frac{2012}{2} - \frac{A}{3} - \frac{W32B}{4} - \frac{0}{5} - \frac{C}{6} - \frac{24}{7}$

1、The Company Initials	2、Lead Frame	3、Light Code	4、Dice Wavelength & Luminous Rank
H : Hongbright	2012 (L×W) : 2.0mm×1.25mm	A : Representatives are light	W××× : White

5、Lap Polarity	6、Zener Code	7、Material Flow Code
0 : On behalf of non cathode non anode	C : Representatives do not add Gazina products	Material Flow Code

❖ Maximum Rating (Ta=25°C)

Characteristics	Symbol	Rating	Unit
DC Forward Current	I _F	30	mA
Pulse Forward Current*1	I _{FP}	100	mA
Reverse Voltage	V _R	5	V
ESD (Classification acc. AEC Q101)	ESD _{HBM}	Min 2.0	KV
Operating Temperature Range	T _{OP}	-40~+85	°C
Storage Temperature Range	T _{STG}	-40~+100	°C
Soldering Temperature*2	T _{SD}	260	°C

Notes :

- ❖ *1: Duty 1/10, pulse width 0.1ms
- ❖ *2: The maximum of soldering time is 5 seconds in T_{SD}
- ❖ There is no maximum or typical voltage parameter
- ❖ For other ambient, limited setting of current will be depended on de-rating curves

❖ Typical Product Characteristics

Characteristics	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	2.6	...	3.6	V	$I_F=20\text{mA}$
Luminous Intensity	I_v	845	1100	...	mcd	$I_F=20\text{mA}$
Color Coordinate	X	...	0.30	...	...	$I_F=20\text{mA}$
	Y	...	0.31	...	...
Reverse Current	I_R	...	...	10	μA	$V_R=5\text{V}$
View Angle	2 θ 1/2	...	140	...	deg	$I_F=20\text{mA}$

Notes:

- ❖ Measurement Errors : Forward Voltage : $\pm 0.1\text{V}$, Luminous Intensity : $\pm 15\%$ mcd, Color Coordinate : ± 0.006
- ❖ Electrical-Optical Characteristics ($T_a=25^\circ\text{C}$)

❖ Range of Bins

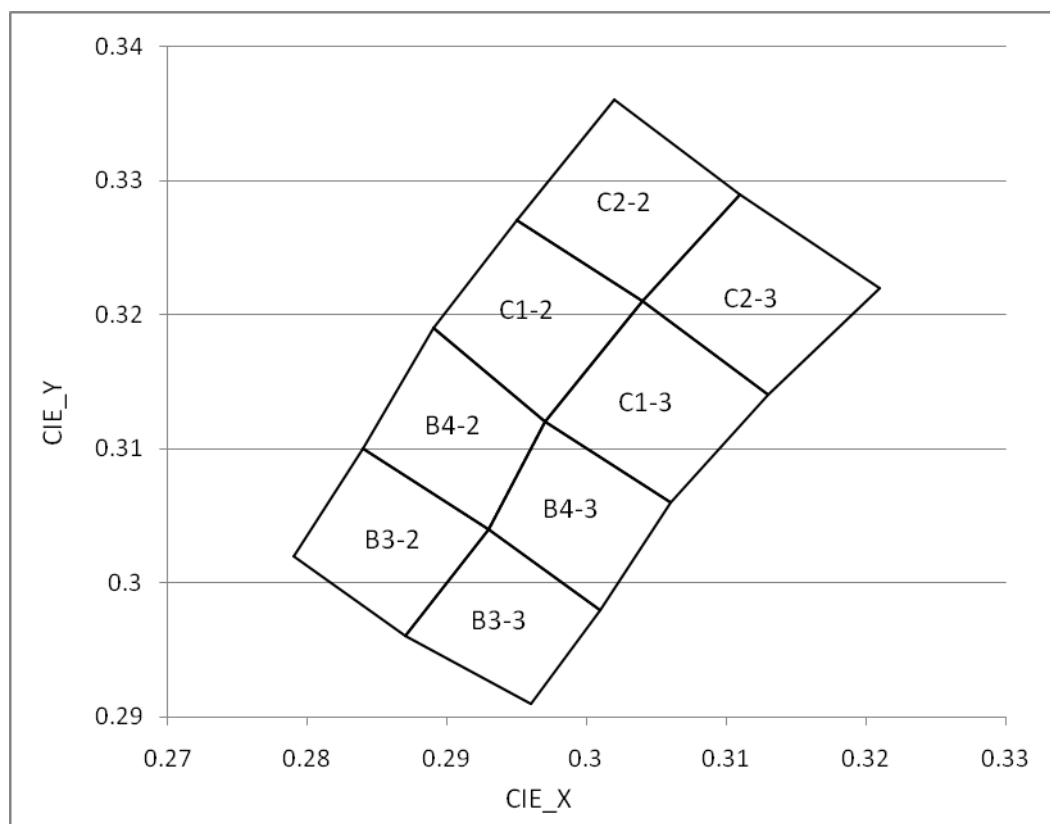
1). Forward Voltage Bins ($I_F=20\text{mA}$)

V_F (V)		
Bin code	Min	Max
F	2.6	2.8
G	2.8	3.0
H	3.0	3.2
J	3.2	3.4
K	3.4	3.6

2). Intensity Bins ($I_F=20\text{mA}$)

I_v (mcd)		
Bin code	Min	Max
W	845	1100
X	1100	1400
Y	1400	1800
Z	1800	2300

❖ Color Coordinate Comparison

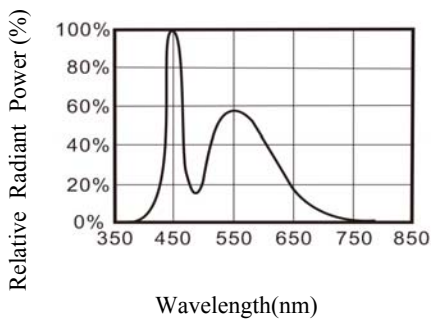


Bins Code

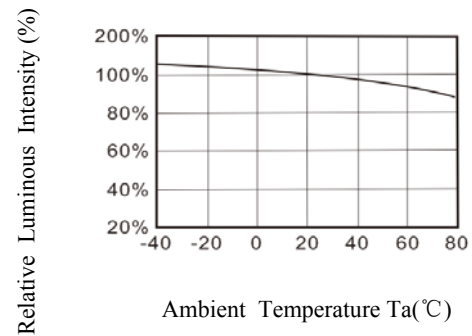
BIN Code	RANK					BIN Code	RANK				
B3-2	X	0.284	0.293	0.287	0.279	C1-2	X	0.295	0.304	0.297	0.289
	Y	0.310	0.304	0.296	0.302		Y	0.327	0.321	0.312	0.319
B3-3	X	0.293	0.301	0.296	0.287	C1-3	X	0.304	0.313	0.306	0.297
	Y	0.304	0.298	0.291	0.296		Y	0.321	0.314	0.306	0.312
B4-2	X	0.289	0.297	0.293	0.284	C2-2	X	0.302	0.311	0.304	0.295
	Y	0.319	0.312	0.304	0.310		Y	0.336	0.329	0.321	0.327
B4-3	X	0.297	0.306	0.301	0.293	C2-3	X	0.311	0.321	0.313	0.304
	Y	0.312	0.306	0.298	0.304		Y	0.329	0.322	0.314	0.321

❖ Electronic-optical Characteristics

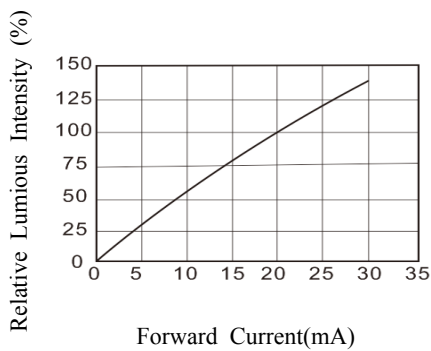
1). Relative Spectral Distribution



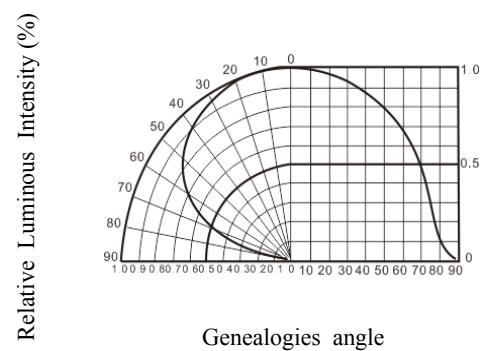
2). Typical Spatial Distribution



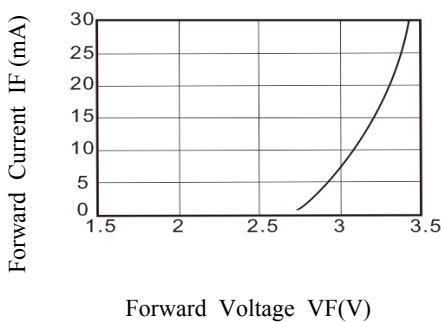
3). Relative Luminous Intensity .Current



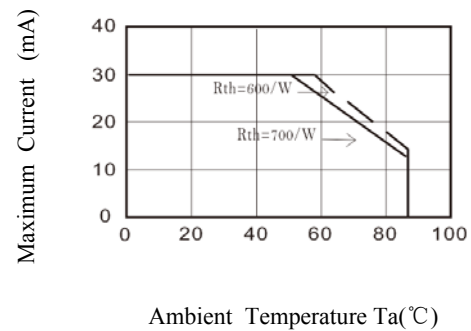
4). Relative Luminous Intensity .Ambient Temperature



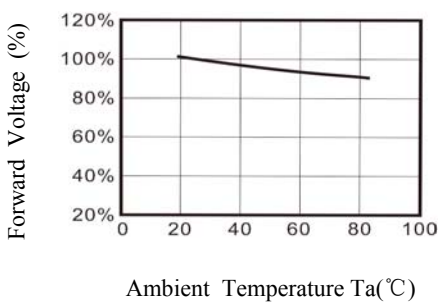
5). Electrical Characteristics



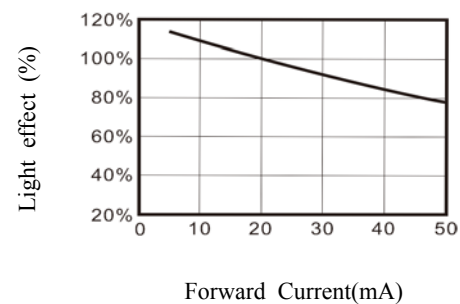
6). Thermal Design



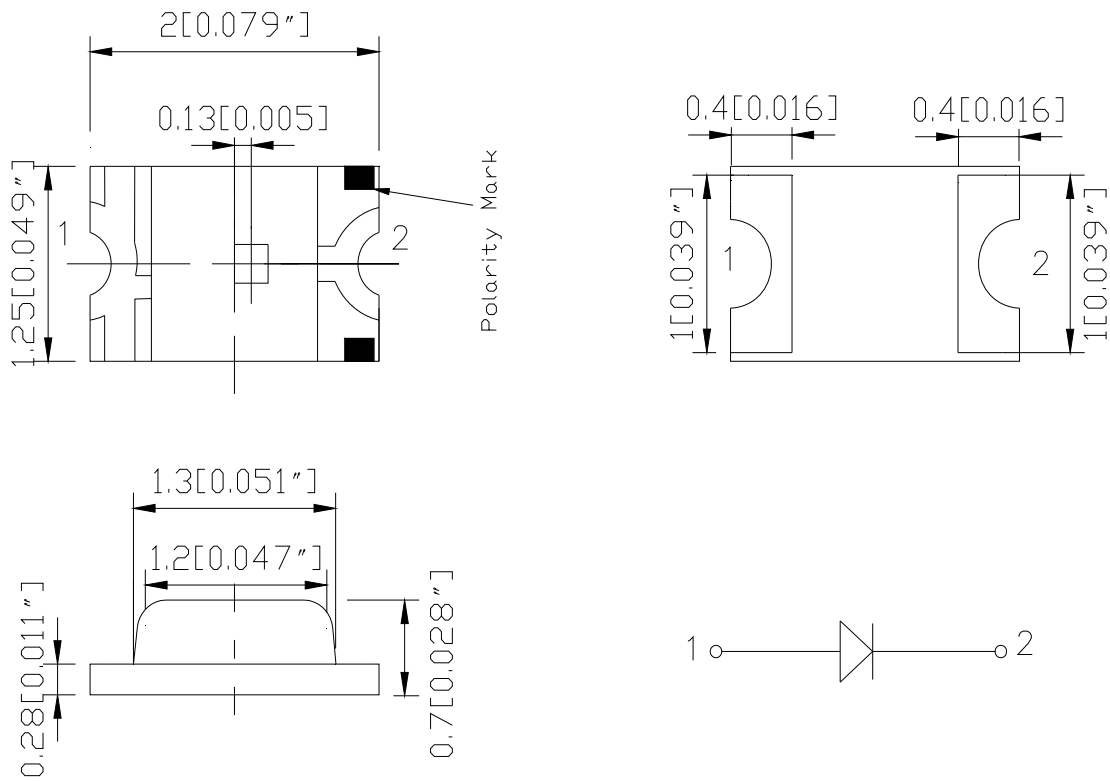
7). Forward Voltage Temperature



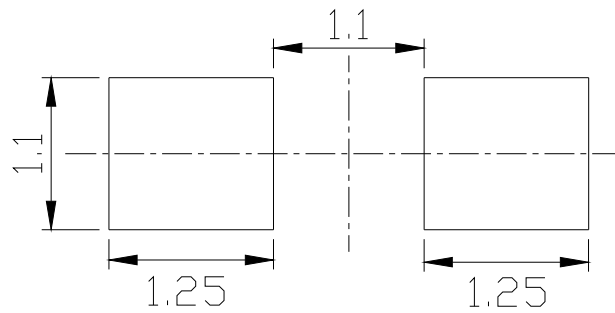
8).Light effect VS Current



❖ Dimensions



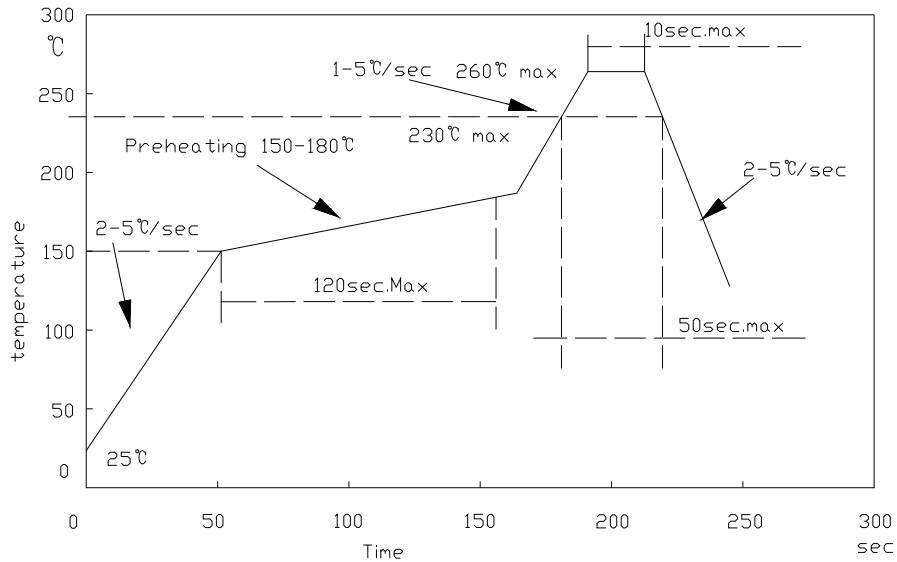
RECOMMEND PADLAYOUT



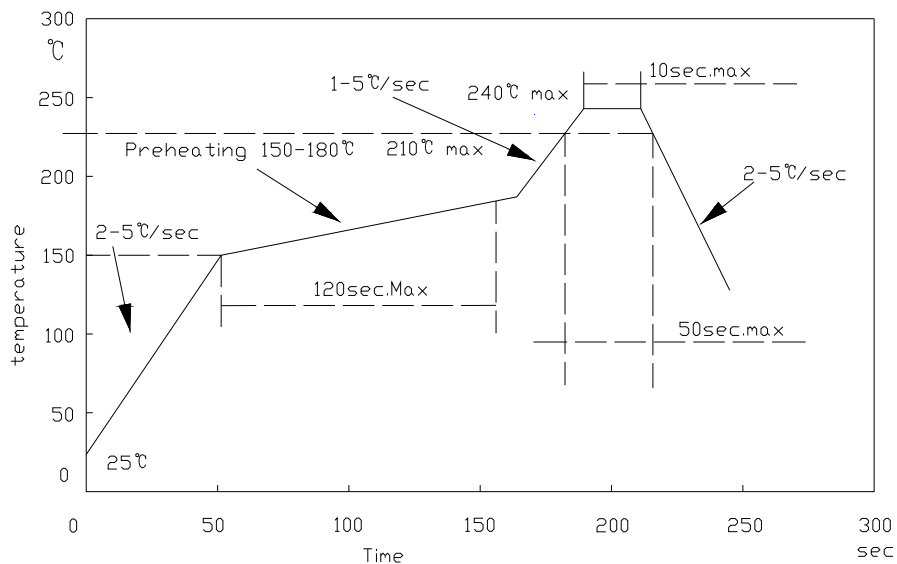
- ❖ All dimensions are in millimeters
- ❖ Tolerance is ± 0.25 ($.010$) mm unless otherwise noted.

❖ Reflow Profile

1. IR reflow soldering Profile for Lead Free solder



2. IR reflow soldering Profile for Lead solder

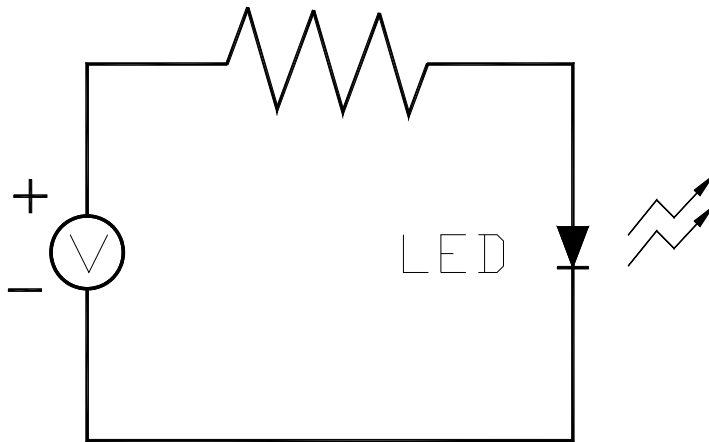


Notes:

- ❖ We recommend the reflow temperature 240°C(±5°C).the maximum soldering temperature should be limited to 260°C
- ❖ Don't cause stress to the silicone resin while it is exposed to high temperature ;
- ❖ Number of reflow process shall be less than 3 times.

❖ 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 : $5^{\circ}\text{C}\sim 30^{\circ}\text{C}$ ($41^{\circ}\text{F}\sim 86^{\circ}\text{F}$)

2.2 Shelf life in sealed bag: 3month at $< 5^{\circ}\text{C}\sim 30^{\circ}\text{C}$ and $< 30\%$ R.H. after the package is Opened, the products should be used within 24hrs after unpacking,they should be keeping to stored at ≤ 20 R.H. with zip-lock sealed.

3.Baking

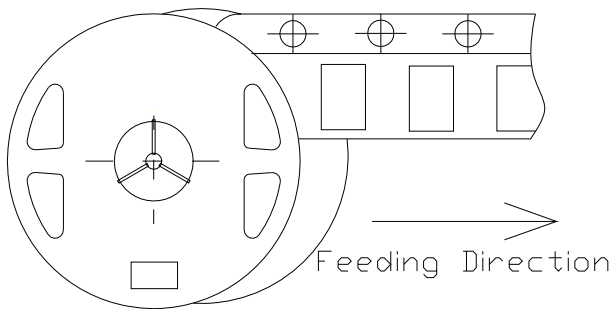
It is recommended to baking before soldering when the pack is unsealed after 24hrs. The Conditions are as followings:

3.1 $65\pm 3^{\circ}\text{C}$ x(48hrs) and $< 5\%$ RH, taped reel type

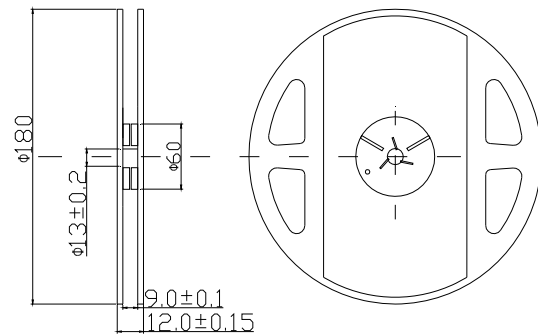
3.2 $150\pm 3^{\circ}\text{C}$ x(3hrs), bulk type

❖ Packing

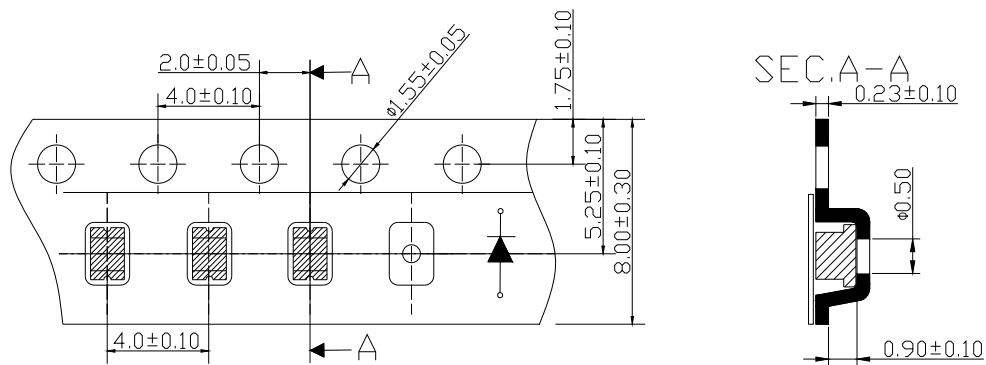
• Feeding Direction (Unit: mm)



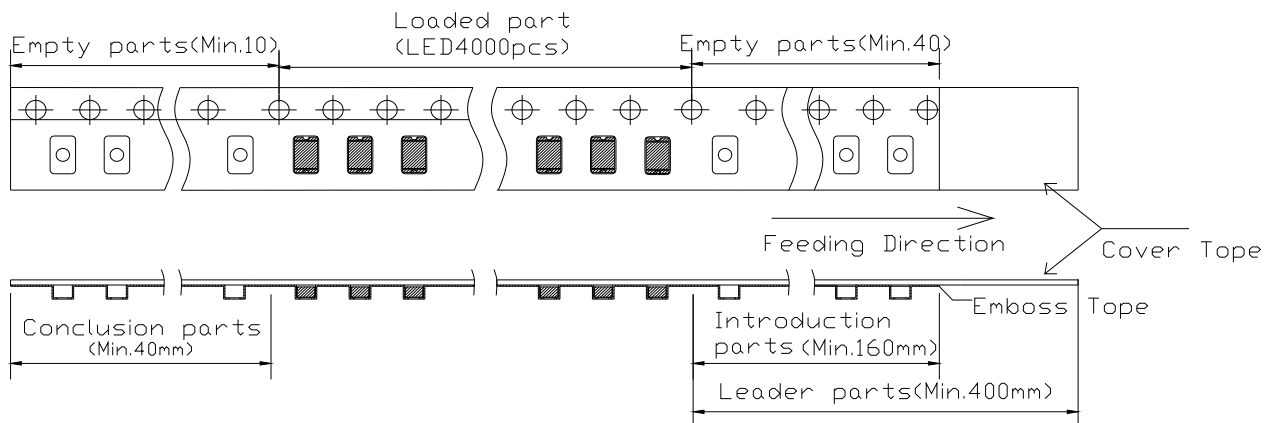
• Dimensions of Reel (Unit: mm)



• Dimensions of Tape (Unit: mm)



• Arrangement of Tap

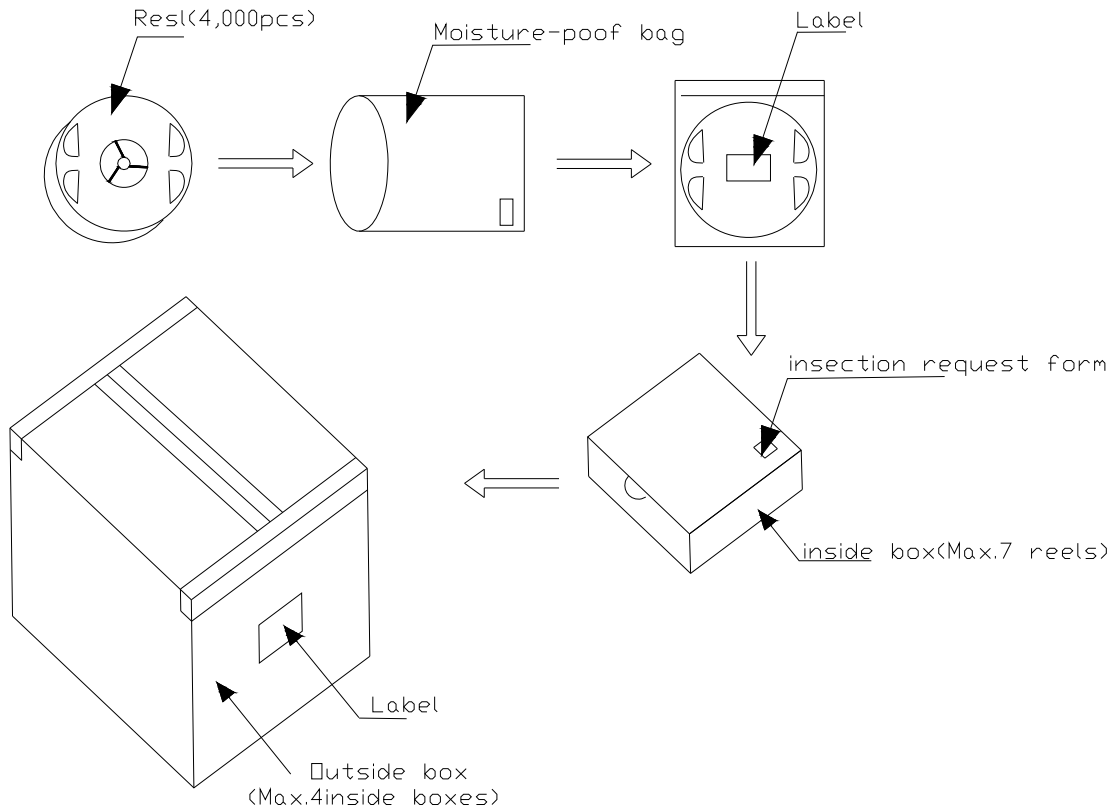


• NOTES

- ❖ Empty component pockets are sealed with top cover tape
- ❖ The max loss number of SMD is 2pcs
- ❖ The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications
- ❖ 4,000pcs per reel

❖ Packing

•Packaging Specifications



Notes :

Reeled product (max.4,000) is packed in a sealed moisture-proof bag. Seven bags are packed in an inner box (size: about 238 X 194 X 102 mm) and four inner boxes are in an outer box (size: about 410 X 254 X 229mm). On the label of moisture-proof bag, there should be the information of Part No., Lot No. and quantity number; also the total quantity number should be on inspection request form on outer box.

❖ Precautions

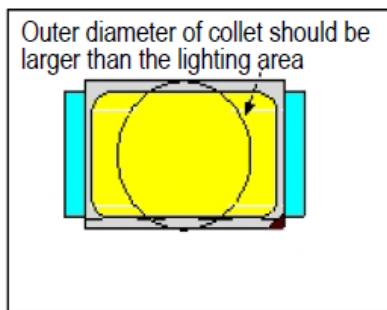
• Abnormal situation caused by improper setting of collet

To choose the right collet is the key issue in improving the product's quality. LED is different from other electronic components, which is not only about electrical output but also for optical output. This characteristic made LED more fragile in the process of SMT. If the collet's lowering down height is not well set, it will bring damage to the gold wire at the time of collet's picking up and loading which will cause the LED fail to light up, light up now and then or other quality problems

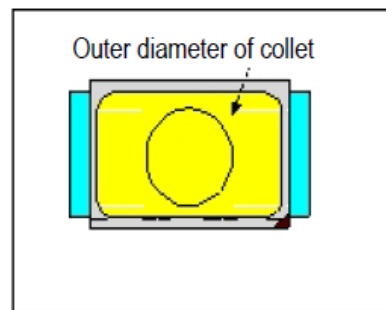
• How to choose the collet

During SMT, please choose the collet that has larger outer diameter than the lighting area of lens, in case that improper position of collet will damage the gold wire inside the LED. Different collets fit for different products, please refer to the following pictures cross out

Outer diameter of collet should be larger than the lighting area



Picture 1 (✓)



Picture 2 (✗)

• Other points for attention

- A. No pressure should be exerted to the epoxy shell of the SMD under high temperature.
- B. Do not scratch or wipe the lens since the lens and gold wire inside are rather fragile and cross out easy to break.
- C. LED should be used as soon as possible when being taken out of the original package, and should be stored in anti-moisture and anti-ESD package.

• This usage and handling instruction is only for your reference

❖ Test Items and Results of Reliability

Type	Test Item	Test Conditions	Duration/Cycle	Number of Damaged
Environmental Sequence	Temperature Cycle	-40°C 30min ↑↓30 min 100°C 30min	100 cycle	0/22
	Thermal Shock	-20°C 15min ↑↓5sec 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 Temperature Life Test	T _a =60°C I _F =10mA	500 hrs	0/22
	Low Temperature Life Test	T _a =-20°C I _F =20mA	1000 hrs	0/22

*Criteria for Judging

Item	Symbol	Condition	Criteria for Judgment of Pass	
			Min	Max
Forward Voltage	V _F	I _F =20mA	~	USL* ¹ ×1.1
Reverse Current	I _R	V _R = 5V	~	10μA
Luminous Intensity	I _V	I _F =20mA	LSL* ² ×0.7	~

Note :

USL*¹: Upper Specification Level

LSL*²: Lower Specification Level