



Brightek Part No: VZK1WCAV27CA01Z4

VZK1WCAG77DAZ1Z4

VZK1WCAB17BAZ1Z4

VZK1WCAB17CAZ1Z4

VZK1WCAY27BA01Z4

Documents No:

Prepared By: Kiwi Liao

Checked By: Ethan Chen

Time: 2012/4/25

Customer Confirmation:



Features

- § Forward current 350mA
- § Operating Temperature -30~85°C
- § Storage temperature -40~100°C
- § ROHS and REACH-compliant
- § Outline (L x W x H) of 14.5*8.0*5mm
- § Qualified according to JEDEC moisturevity Level 2
- § PACKAGE: 2000 PCS/Box.
- § Reverse Voltage: 5V

Catalog

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Part Number Matrix

Color	Emitter	STAR
Red	VZK1WCAV27CA01Z4	
Yellow	VZK1WCAY27BA01Z4	
Blue	VZK1WCAB17BAZ1Z4 VZK1WCAB17CAZ1Z4	
Green	VZK1WCAG77DAZ1Z4	

Absolute Maximum Ratings (Ta=25°C)

Iem	Symbol	Value	Unit
DC Forward Current	IF	350	mA
Pulsed Forward Current	IFP	500※	mA
Reverse Voltage	VR	5	V
Operating Temperature	Topr	-30 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +100	°C
Dice temperature	Tj	120	°C
Soldering Temperature	Tsol	200 for / 5sec	°C

※ Duty 1/10 Pulse Width 0.1ms

■ Please refer to IF-Ta curve for the temperature during application



Color	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Red	Φv	45	---	65	Lm	I _f =350mA
Yellow	Φv	50	---	65	Lm	I _f =350mA
Blue	Φv	12	---	26	Lm	I _f =350mA
Green	Φv	75	---	110	Lm	I _f =350mA

1. Luminous intensity (Iv) ±10%
2. IS standard testing

Color	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Red	λd	620	625	630	nm	I _f =350mA
Yellow	λd	585	590	595	nm	I _f =350mA
Blue	λd	460	465	475	nm	I _f =350mA
Green	λd	520	525	530	nm	I _f =350mA

1. IS standard testing

Color	Symbol	Value			Unit	Test condition
		Min.	Typ.	Max.		
Red	V _f	1.8	2.2	2.6	V	I _f =350mA
Yellow	V _f	1.8	2.4	2.8	V	I _f =350mA
Blue	V _f	3.0	3.2	3.6	V	I _f =350mA
Green	V _f	3.0	3.4	3.8	V	I _f =350mA

1. IS standard testing
2. Tolerance : ±0.1V of Forward Voltage



Color Bins

Color	Group	Min. Wavelength (nm)	Max.Wavelength (nm)
Blue	C	460	465
	D	465	470
	E	470	475
Green	G	520	525
	H	525	530
Yellow	J	585	590
	K	590	595
Red	N	620	625
	O	625	630

VF Bins

Group	Min. Forward Voltage(v)	Max. Forward Voltage(v)	Group	Min. Forward Voltage(v)	Max. Forward Voltage(v)
A	1.8	2	H	3.2	3.4
B	2	2.2	I	3.4	3.6
C	2.2	2.4	J	3.6	3.8
D	2.4	2.6			
E	2.6	2.8			
F	2.8	3			
G	3	3.2			



Luminous Flux Group

Group	Min. Luminous Flux (lm)	Max. Luminous Flux (lm)	Group	Min. Luminous Flux (lm)	Max. Luminous Flux (lm)
12	12	14	24	45	50
13	14	16	25	50	55
14	16	18	26	55	60
15	18	20	27	60	65
16	20	22	28	65	70
17	22	24	29	70	75
18	24	26	30	75	80
19	26	28	31	80	90
20	28	30	32	90	100
21	30	35	33	100	110
22	35	40			
23	40	45			



Figure 1. Relative Spectral Power VS Wavelength @Ta=25°C

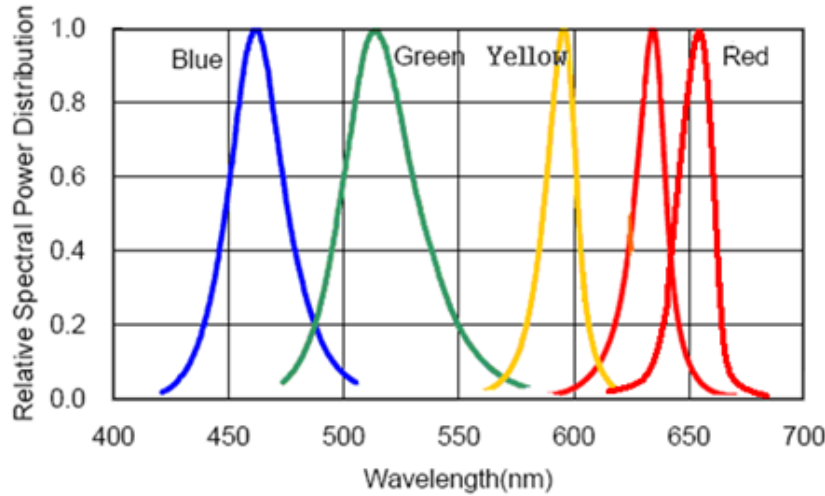


Figure 2. Forward Current VS Forward Voltage (Blue and Green)

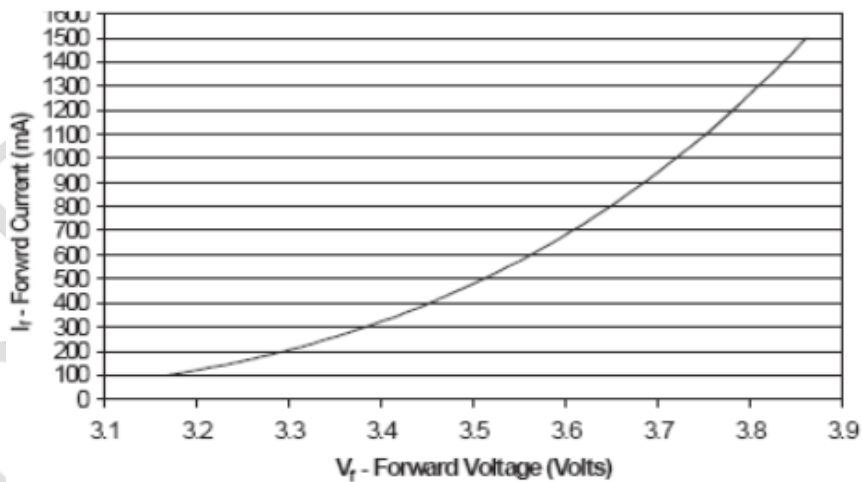




Figure 3. Forward Current VS Forward Voltage (Yellow and Red)

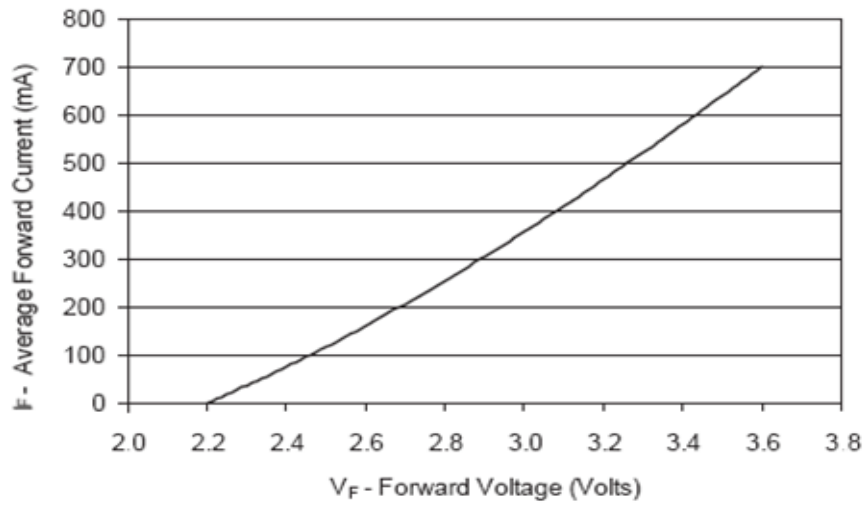


Figure 4. Relative Luminous Flux VS Forward Current @Ta=25°C (Blue and Green)

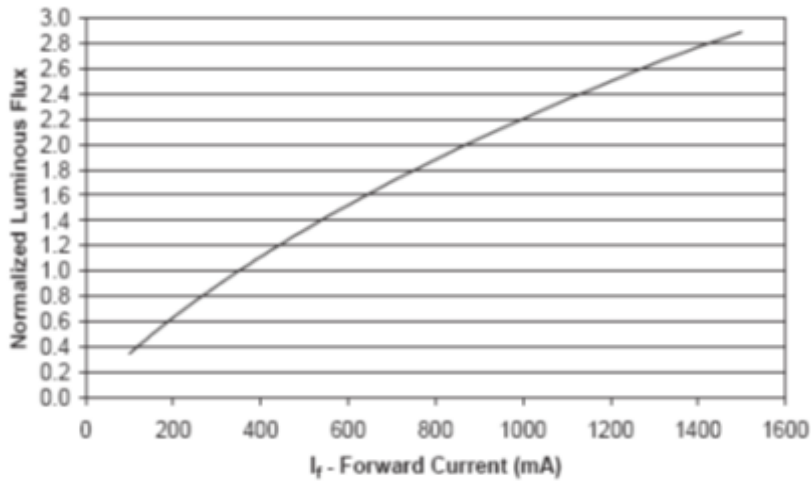


Figure 5. Relative Luminous Flux VS Forward Current @Ta=25°C (Yellow and Red)

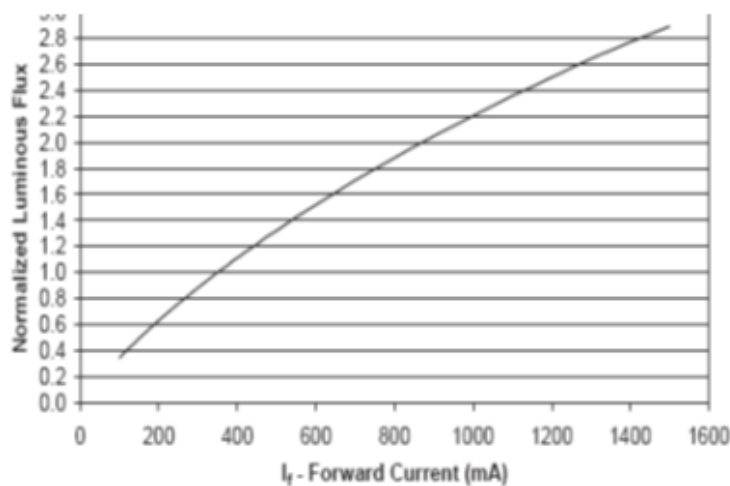




Figure 6. Relative Light Output VS Junction Temperature

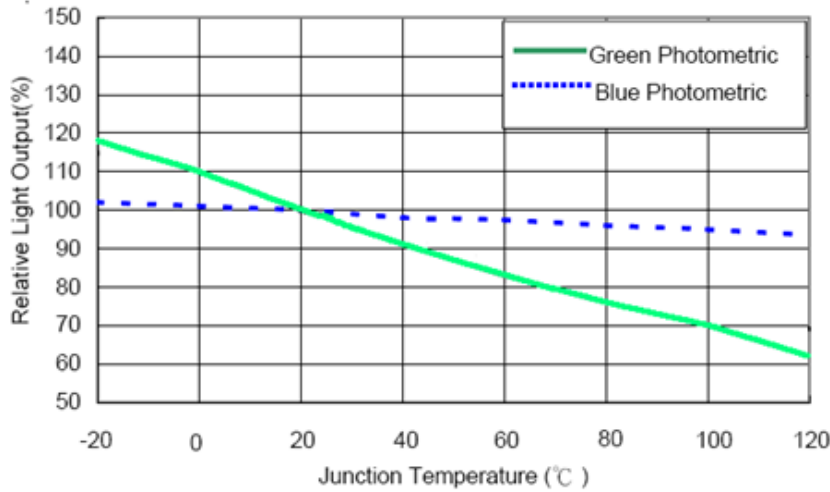


Figure 7. Relative Light Output VS Junction Temperature

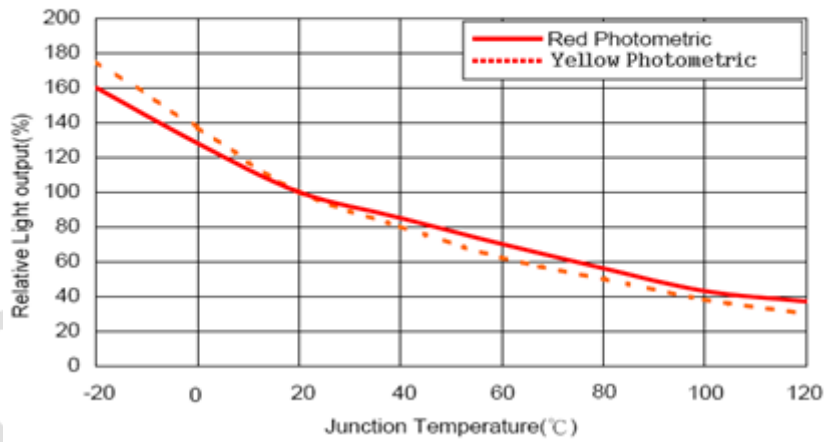


Figure 8. Forward Current VS Ambient Temperature @Tj=125°C (Blue and Green)

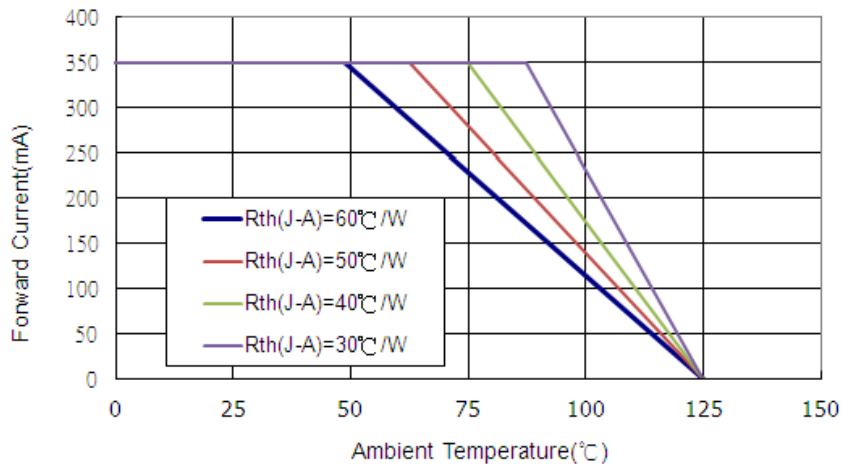




Figure 9. Forward Current VS Ambient Temperature @Tj=125°C (Yellow and Red)

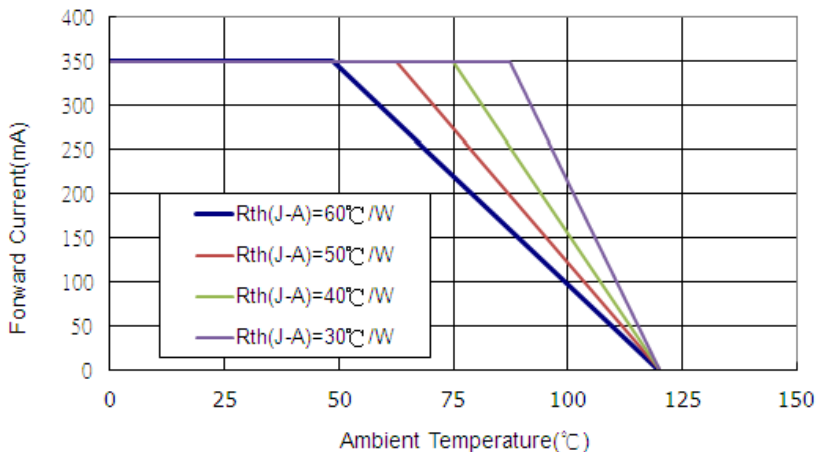
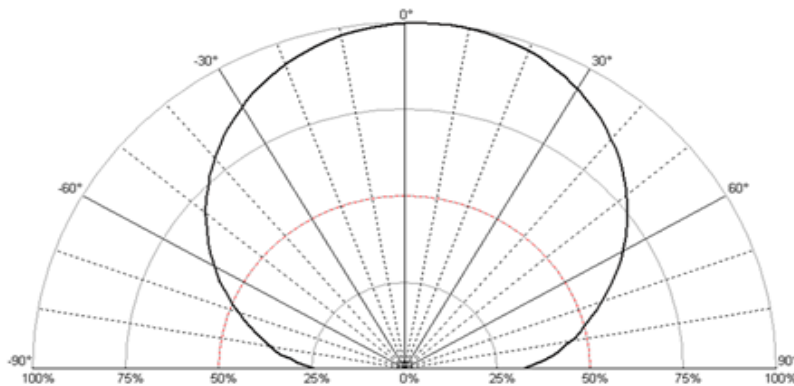


Figure 10. White Color Radiation Angle



High Power Product Identification Code

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

1 Z K 1 W B A B 1 7 B A Z 1 Z 4

- Process Type*
 - 0: OEM type 1: Brighttek product
- Category
 - Z: SMD single chip & color power LED
 - D: High power with star
- Specification
 - K1WB: K1 white shell silver-plating
 - K1BB: K1 black shell silver-plating
- Lens code
 - A: 120° B: 60°
- Current code
 - 2: 150mA 4: 350mA
- Module & Lens code
 - Z: Molding
- Cap color code & series No
 - X: series No
- Zener & high CRI
 - Z: Zener C: high CRI D: Zener & high CRI 0: No zener
- Support code
- Dice wavelength & luminous rank

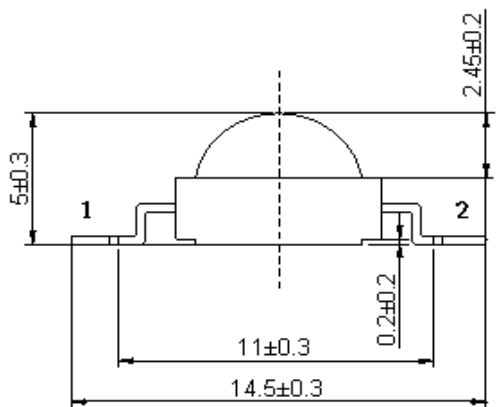
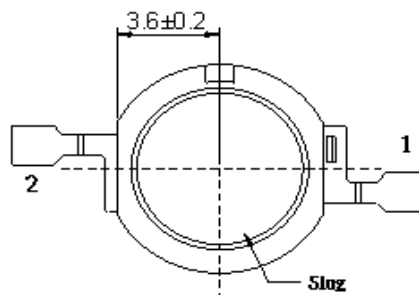
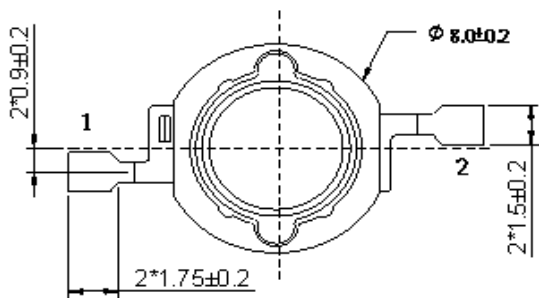


Label on Aluminum Vinyl Bag

N Item:	X X X X X X X X X X X X	→	Part No. of the Product
O Item:	X X X X X X X X X X	→	Substitutive Part No.
Part No. :	X X X X X X	→	Customer Part No.
Q TY :	X X X pcs	→	Quantity
350mA VF:	X	→	Voltage
350mA LM:	X	→	Lumen
350mA WL:	XX	→	Wavelength
LoT No.:	X X X X-X X X X X X X X X X	→	Number of Manufacturing Order
ROHS PASS			

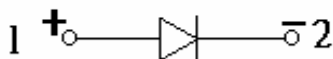
SPECIFICATION FOR APPROVAL

BRIGHTTEK

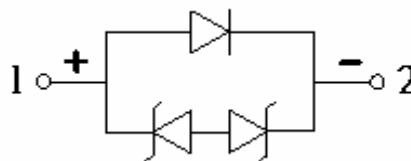


Circuit Type

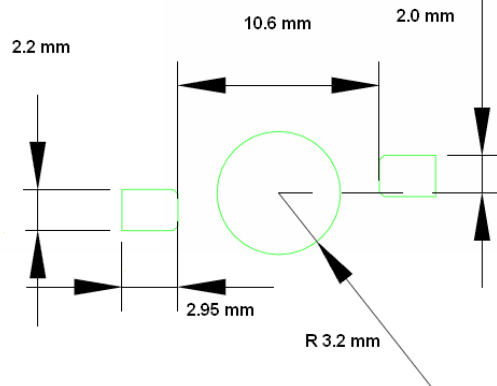
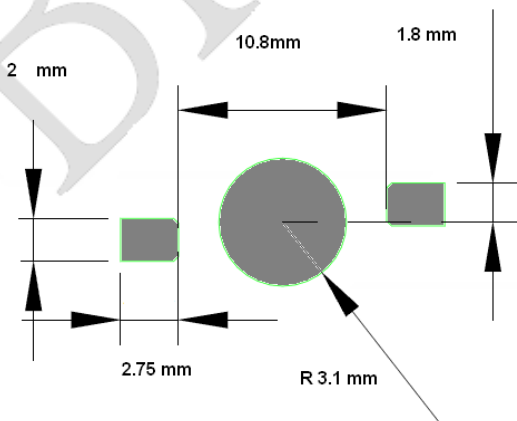
K1-Red / Yellow



K1-Blue / Green

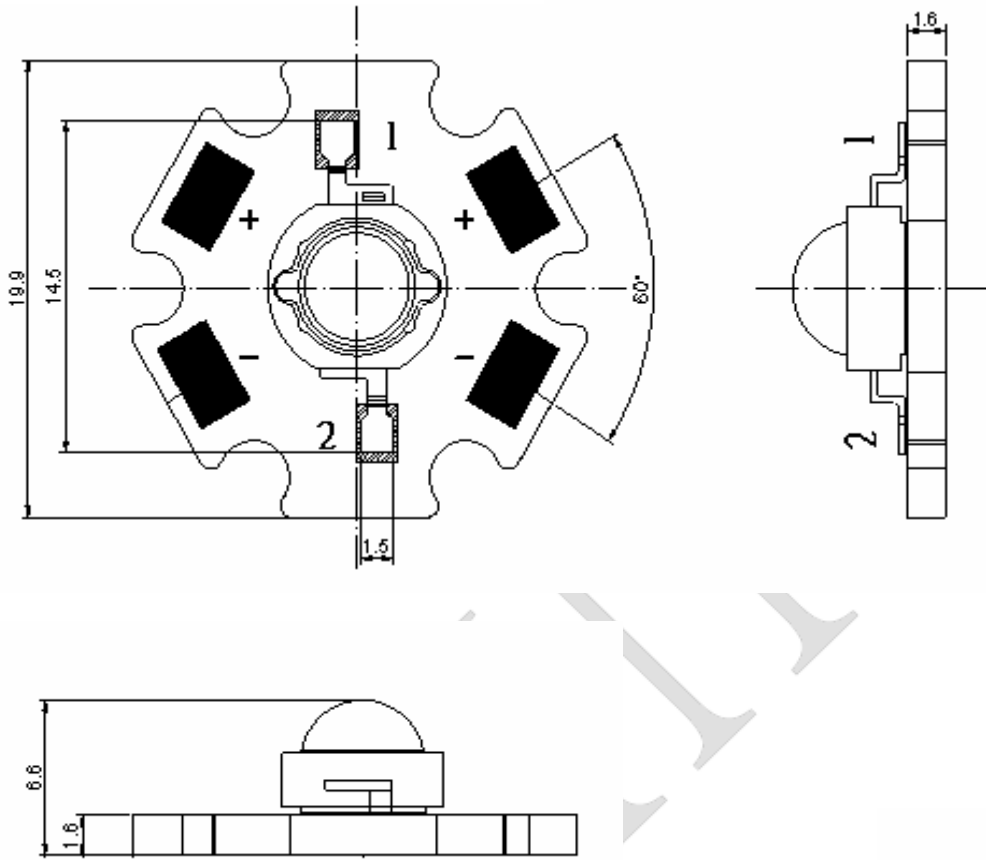


Recommended Soldering Pattern



RECOMMENDED STENCIL PATTERN
(HATCHED AREA IS OPENING)

RECOMMENDED PCB SOLDER PAD



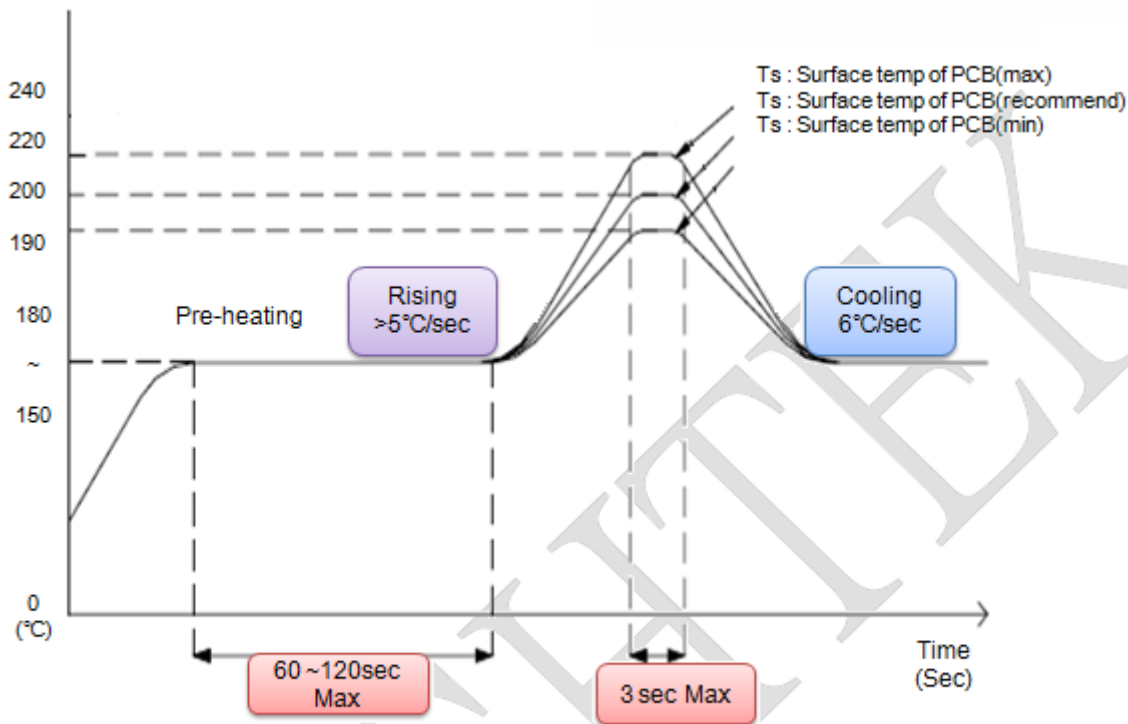
SPECIFICATION FOR APPROVAL

BRIGHTTEK



IR reflow soldering Profile

Lead Free solder



NOTES:

1. We recommend the reflow temperature 200°C (±10°C). the maximum soldering temperature should be limited to 210°C.
2. Don't stress the silicone resin while it is exposed to high temperature.
3. Number of reflow process shall be 1 time.
4. Recommend Solder: Recommend Solder:
 1. TAMURA-TLF-401-11
 2. PF602-P

Contact information: 東莞升貿錫製品有限公司

地址: 中國廣東省東莞市虎門鎮九門寨第二工業區

電話: +86-769-550-8193

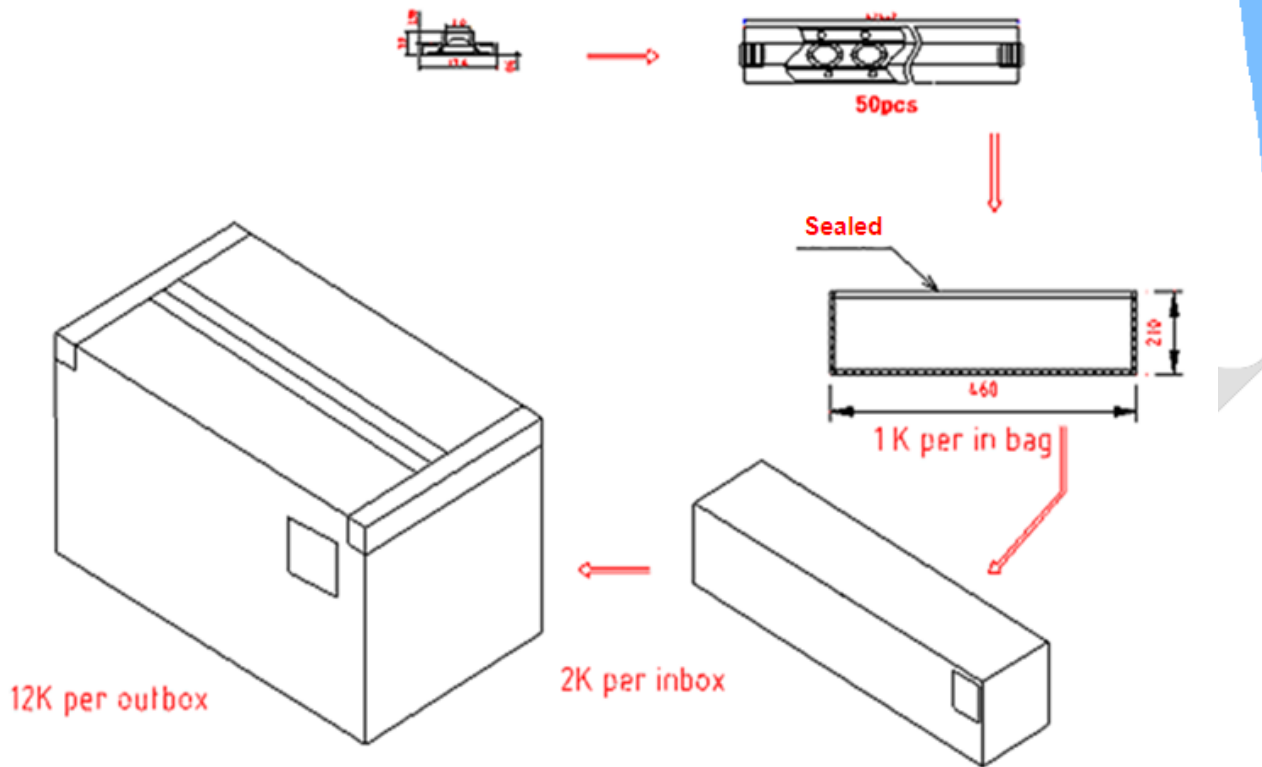


Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Temperature Cycle	-40°C 30min ↑↓25°C (5 min) 100°C 30min	100 cycle	0/22	JEITA ED-4701 300 303
Thermal Shock	-40°C 30min ↑↓5sec 110°C 30min	100 cycle	0/22	JEITA ED-4701 200 303
High Temperature Storage	T _a =85°C	1000 hrs	0/22	EIAJED-4701 200 201
Humidity Heat Storage	T _a =85°C RH=85%	1000 hrs	0/22	EIAJED-4701 100 103
Low Temperature Storage	T _a =-40°C	1000 hrs	0/22	EIAJED-4701 200 202
Life Test	T _a =25°C IF=350mA	1000 hrs	0/22	Tested with Brightek standard
High Humidity Heat Life Test	60°C RH=90% IF=350mA	1000 hrs	0/22	Tested with Brightek standard
Low Temperature Life Test	T _a =-40°C IF=350mA	1000 hrs	0/22	Tested with Brightek standard
ESD(HBM)	1KV at 1.5kΩ;100pf	3 Time	0/22	MIL-STD-883D

*Criteria for Judging the Damage

Item	Symbol	Condition	Criteria for Judgement	
			MIN	MAX
Forward Voltage	V _F	IF=350mA	-	USL* ¹ ×1.1
Reverse Current	I _R	VR=5V	-	100μA
Luminous Intensity	I _v	IF=350mA	LSL* ² ×0.7	-

[Note]*¹USL: Upper Specification Level*²LSL: Lower Specification Level



Notes:

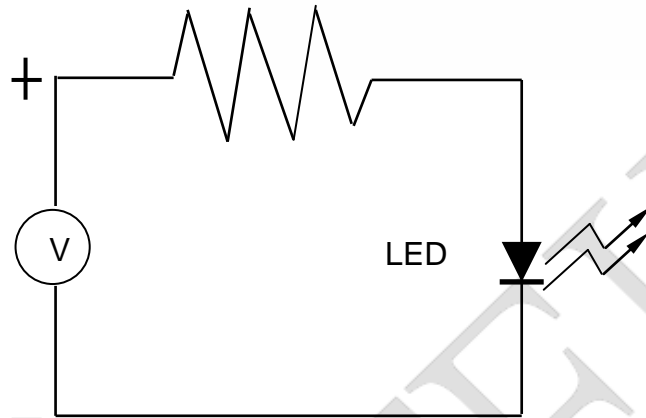
Products are (the most quantity of products are 50pcs) packed in a tube along with a desiccant one by one, 40 tube of maximums (total maximum quantity of products are 2,000pcs) packed in an inside box (size: about 45mm x about 8mm x about 9mm) and six inside boxes of maximums are put in the outside box (size: about 47mm x about 27mm x about 21mm) Together with buffer material, and it is packed. (Part No., Lot No., quantity should appear on the label on the tube, part No. And quantity should appear on the insertion request form on the cardboard box.) .

*Package available: Tube



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 <math> < 5^{\circ}\text{C} \sim 30^{\circ}\text{C}</math> and <math> < 30\% \text{ R.H.}</math> after the package is Opened, the products should be used within a week or they should be keeping to stored at $\leq 20 \text{ R.H.}$ 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 $70 \pm 3^{\circ}\text{C}$ x 24hrs and <math> < 5\% \text{RH}</math>, taped reel type

3.2 $100 \pm 3^{\circ}\text{C}$ x 2hrs , bulk type



Collet

1、Abnormal situation caused by improper setting of collet

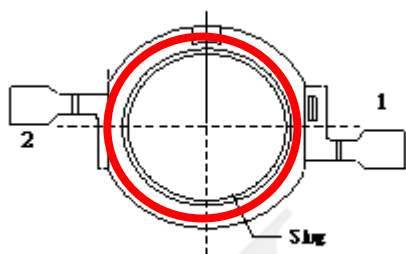
To choose the right collet is the key issue in improving the product's quality. LED is different from other electronic components, which is not only about electrical output but also for optical output. This characteristic made LED more fragile in the process of SMT. If the collet's lowering down height 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

2、How to choose the collet

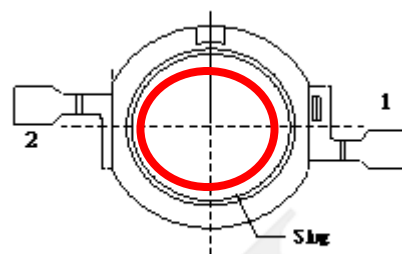
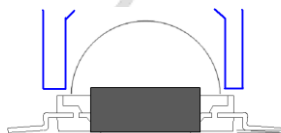
During SMT, please choose the collet that has larger outer diameter than the lighting area of lens, in case that improper position of collet will damage the gold wire inside the LED. Different collets fit for different products, please refer to the following pictures cross out:

Outer diameter of collet should be larger than the lighting area

Outer diameter of collet



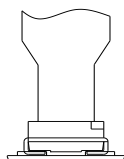
Picture 1 (✓)



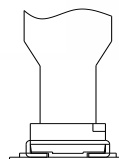
Picture 2 (x)

3、How to set the height of collet

The reason why for top view SMD, the height of collet before it presses downward will directly affect the quality of products during SMT is that if the collect go down too much, it will press lens and cause the distortion or breaking of gold wire. The setting of collet position should follow the pictures belowed.



Picture 3 (✓)



Picture 4 (x)



4 · 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.
- D、 This usage and handling instruction is only for your reference.

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