SPECIFICATION FOR APPROVAL

Customer	**:**	
Customer Part No.	**:**	
Brightek Part No.	**:**	6SC3433VGB00MSZ5
Time	**:**	2022/02/10

Customer Confirmation	Approval	Checked By	Prepared By
	Wilson	HP.LI	CB.TAN

6SC3433VGB00MSZ5

◆**Outline(L*W*H): 3.4*3.3*1.9 mm**

◆**Good thermal dissipation & optical uniformity**

Table of Contents

Features

- Forward current: ≦50mA
- Typical view angle 50% Iv: 120°
- RoHS2.0 and REACH-compliant
- Lens color: water transparent
- Qualified according to JEDEC moisture sensitivity Level 2a
- ESD level 6 kV(HBM)

Applications

- Indoor and outdoor display
- Outdoor lighting for amusement
- Consumer electronics
- Other applications

■ Product Code Method

6 - S - C - 3433 - VGB0 - 0 - M - S - Z5

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

①	②	③	④	⑤
Process Type	Category	LED Type	Lead Frame Size	Dice wavelength &luminous rank
6: special product	S: SMD LED	C: PLCC top view D: PLCC side view	3433: 3.4*3.3mm	V:red/G:green/B:blue

⑥	⑦	⑧	⑨
Lap Polarity	Cap Color	PCB Module Code	Flow Code
0: non-common anode and non-common cathode	M: white diffused	S: article mode	Z:zener 5: no expression above meaning for company

■ Maximum Rating(Ta=25℃)

Characteristics	Symbol	Typical	Unit
DC Forward Current	I_F	50	mA
Pulse Forward Current*3	I_{PF}	100	mA
Reverse Voltage	V_R	5	V
Junction Temperature	T_J	125	ºC
Operating Temperature Range	T_{OP}	-40-105	ºC
Storage Temperature Range	T_{STG}	-40-105	ºC
Soldering Temperature*4	T_{SD}	260	ºC
Thermal Resistance Junction/ Solder Point	RTH_{J-S}	60	℃/W
Thermal Resistance Junction/ Ambient Point	RTH_{J-A}	120	℃/W

Notes 1: There is no maximum or typical voltage parameter

2: For other ambient, limited setting of current will be depended on de-rating curves.

3: Duty 1/10, pulse width 0.1ms

4: The maximum of soldering time is 10 seconds in T_{SD}

■ Typical Product Characteristics(Ta=25℃)

Characteristics	Symbol		Min.	Typ.	Max.	Unit	Test condition
Forward Voltage	V_F	V	1.8	-	2.6	V	I_F=20mA
		G	2.6	-	3.4		
		B	2.6	-	3.4		
Reverse Current	I_R		-	-	10	μA	V_R= 5V
Luminous Intensity	Iv	V	630	800	1000	mcd	I_F=20mA
		G	1902	2300	2800		
		B	400	500	630		
Dominant Wavelength	λd	V	620	-	630	nm	I_F=20mA
		G	520	-	530		
		B	460	-	470		
View Angle	$2\theta_{1/2}$		-	120	-	deg	I_F=20mA

Notes: 1. Measurement Errors:

Forward Voltage: ±0.1V, Luminous Intensity: ±10%Iv, Dominant Wavelength: ±1.0nm

2. Electrical-Optical Characteristics (Ta=25℃)

3. We will amend the Bin code to maintain Bin Code centralize,

And we get the Luminous Intensity is 1.25double per Bins and the Dominant Wavelength is 5/5/5nm of R/G/B per Bins

■ Range of Bins (Ta=25℃)

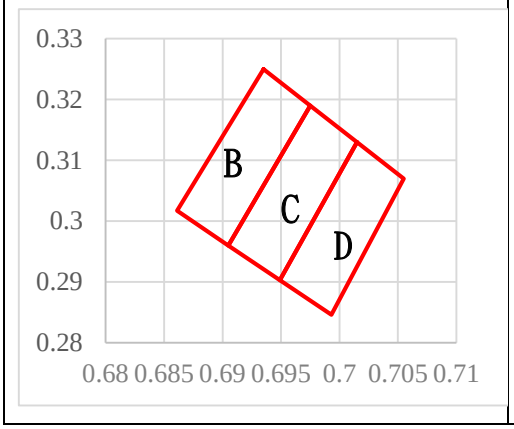
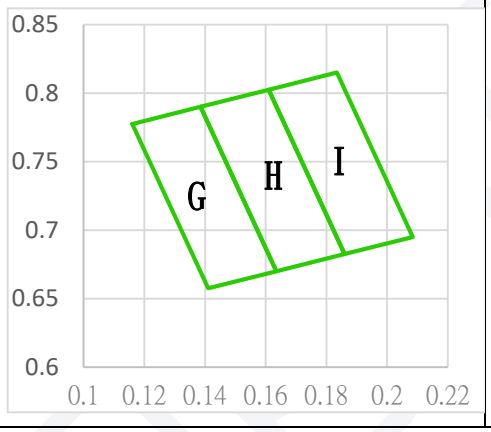
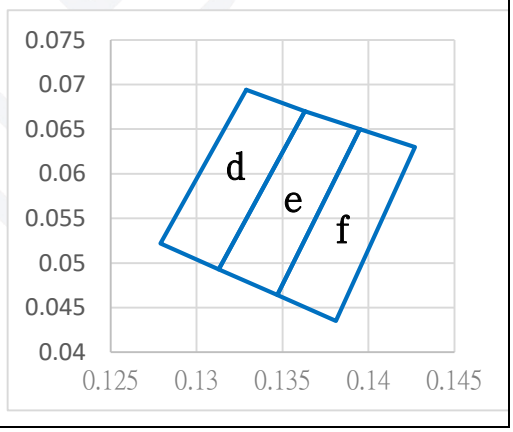
1) Luminous Intensity Bins (I_F=20mA)

Bin code		Min. Iv (mcd)	Max. Iv (mcd)
V	20	630	800
	21	800	1000
G	24	1902	2366
	25	2366	2800
B	18	400	500
	19	500	630

2).Dominant Wavelength Bins (I_F=20mA)

Bin Code		Min. λd (nm)	Max. λd (nm)
V	V1	620	625
	V2	625	630
G	G5	520	525
	G6	525	530
B	B3	460	465
	B4	465	470

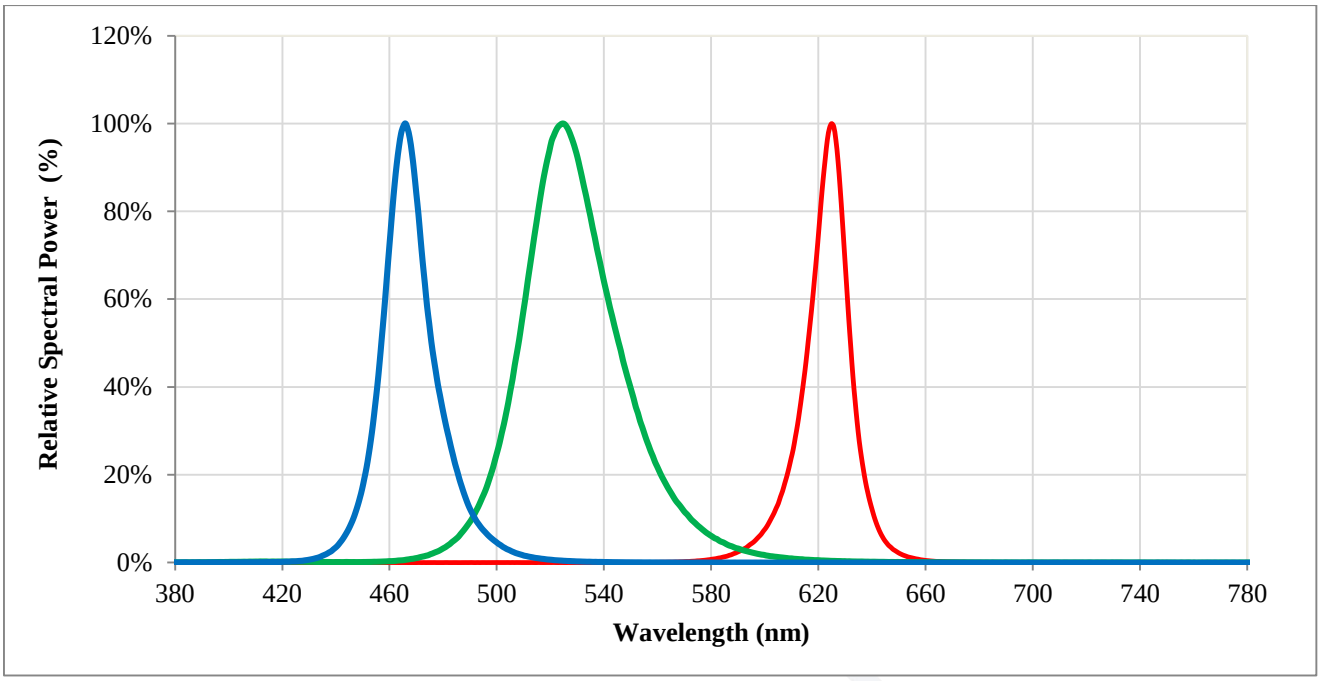
3）Chromaticity Coordinate Groups

Red	Green	Blue
		

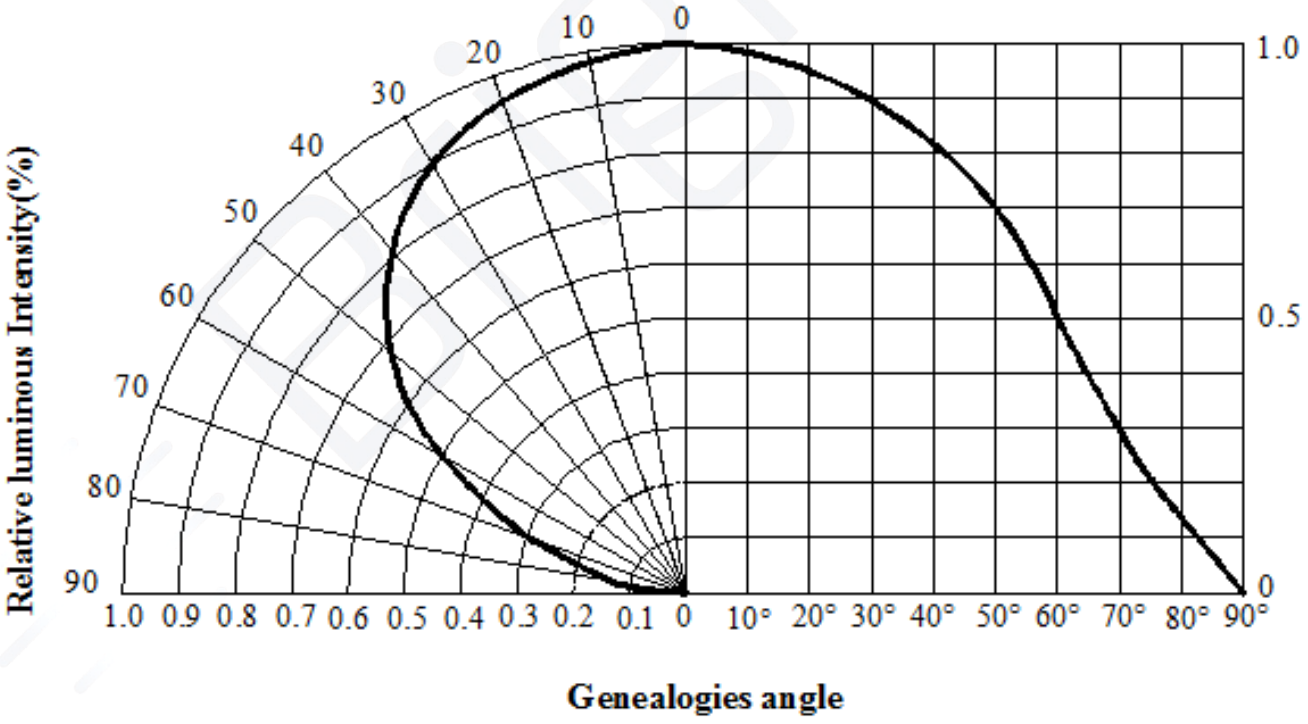
Color Rank

Bin	X	Y	X	Y	X	Y	X	Y
B	0.6935	0.325	0.6975	0.319	0.6905	0.296	0.6861	0.3017
C	0.6975	0.319	0.7015	0.313	0.6949	0.2903	0.6905	0.296
D	0.7015	0.313	0.7055	0.307	0.6993	0.2846	0.6949	0.2903
G	0.116	0.7775	0.1385	0.79	0.1635	0.67	0.141	0.6575
H	0.1385	0.79	0.161	0.8025	0.186	0.6825	0.1635	0.67
I	0.161	0.8025	0.1835	0.815	0.2085	0.695	0.186	0.6825
d	0.1329	0.0694	0.1363	0.067	0.1313	0.0493	0.1279	0.0522
e	0.1363	0.067	0.1395	0.065	0.1347	0.0464	0.1313	0.0493
f	0.1395	0.065	0.1427	0.063	0.1381	0.0435	0.1347	0.0464

■ Relative Spectral Power Distribution

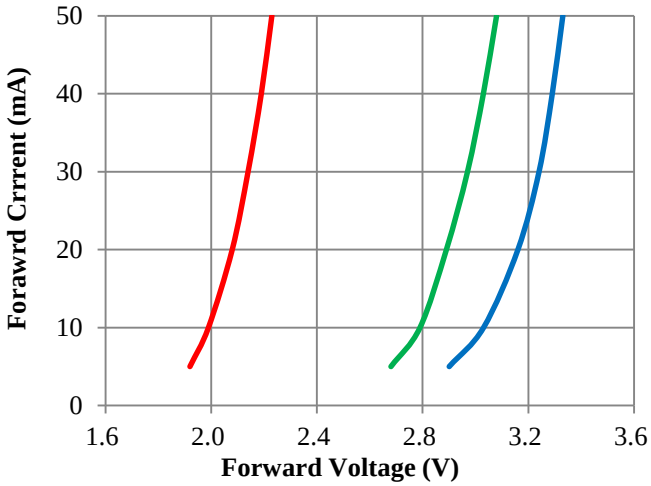


■ Typical Diagram Characteristics of Radiation

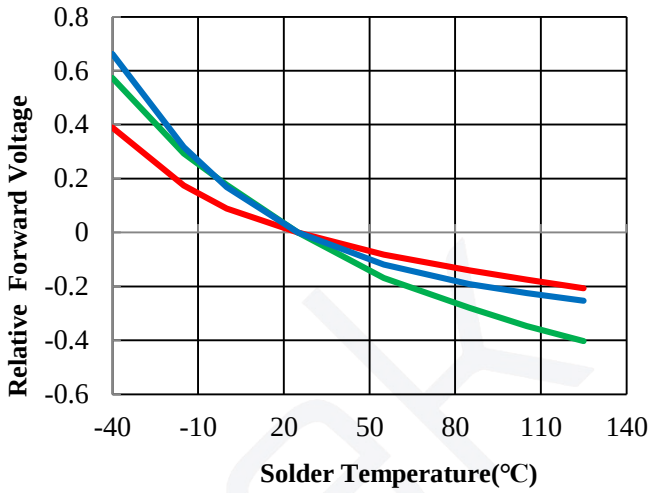


■ Electronic-Optical Characteristics

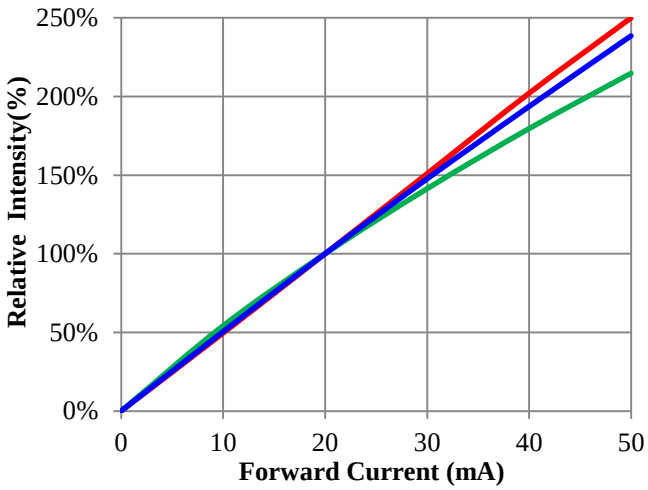
Relative Forward Current vs. Forward Voltage



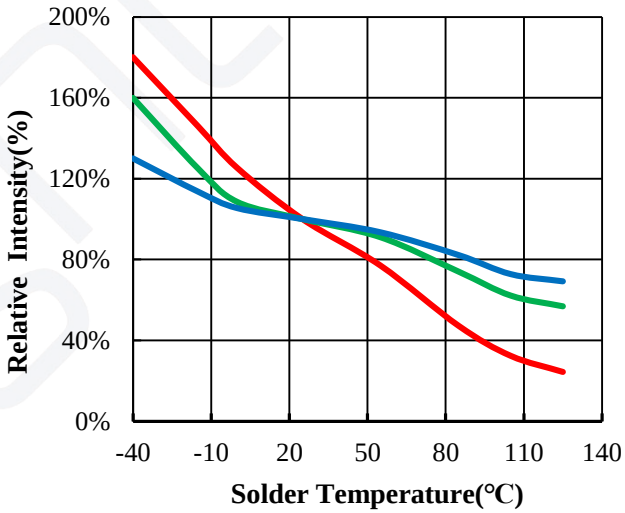
Relative Forward Voltage vs. Solder Temperature



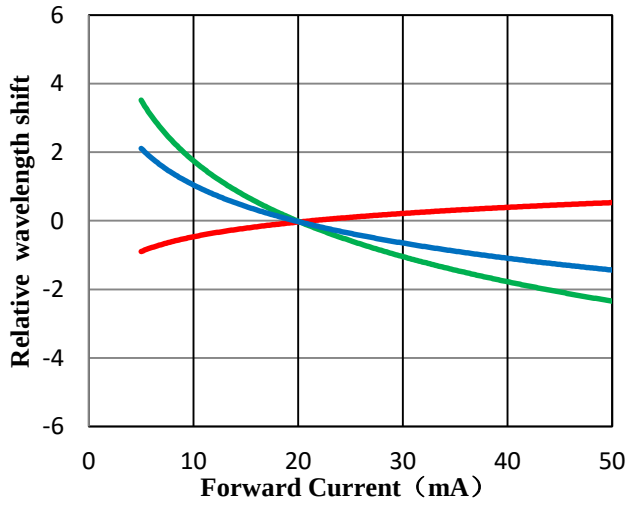
Relative Intensity vs. Forward Current



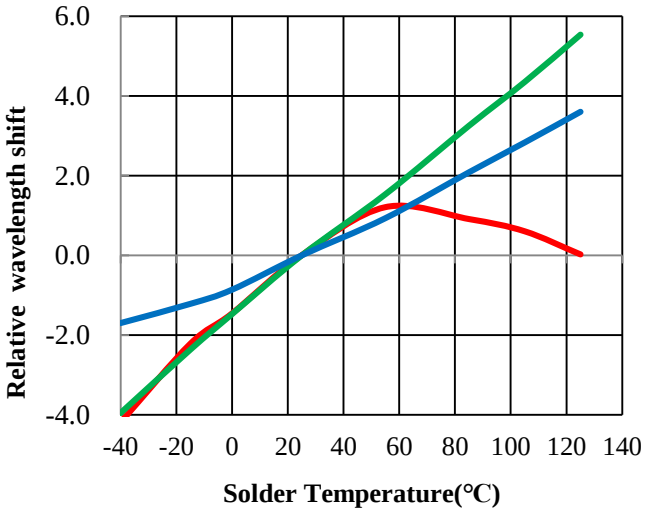
Relative Intensity vs. Solder Temperature



Wavelength shift vs. Forward Current

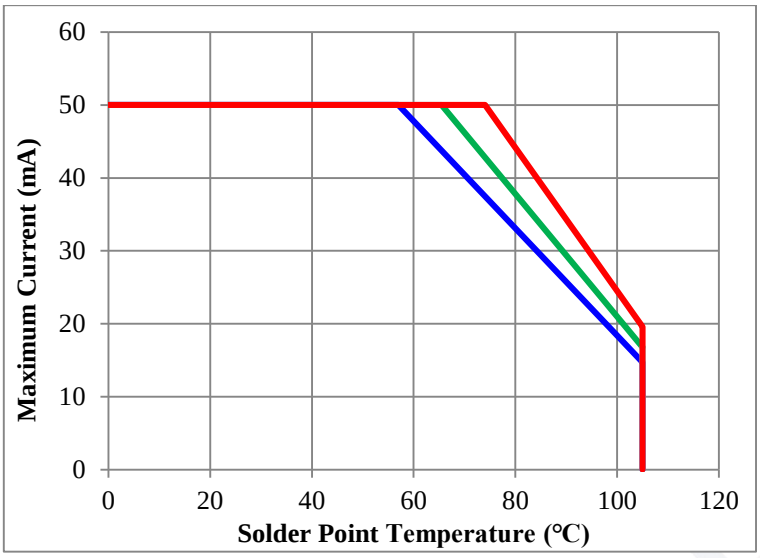


Wavelength shift vs. Solder Temperature

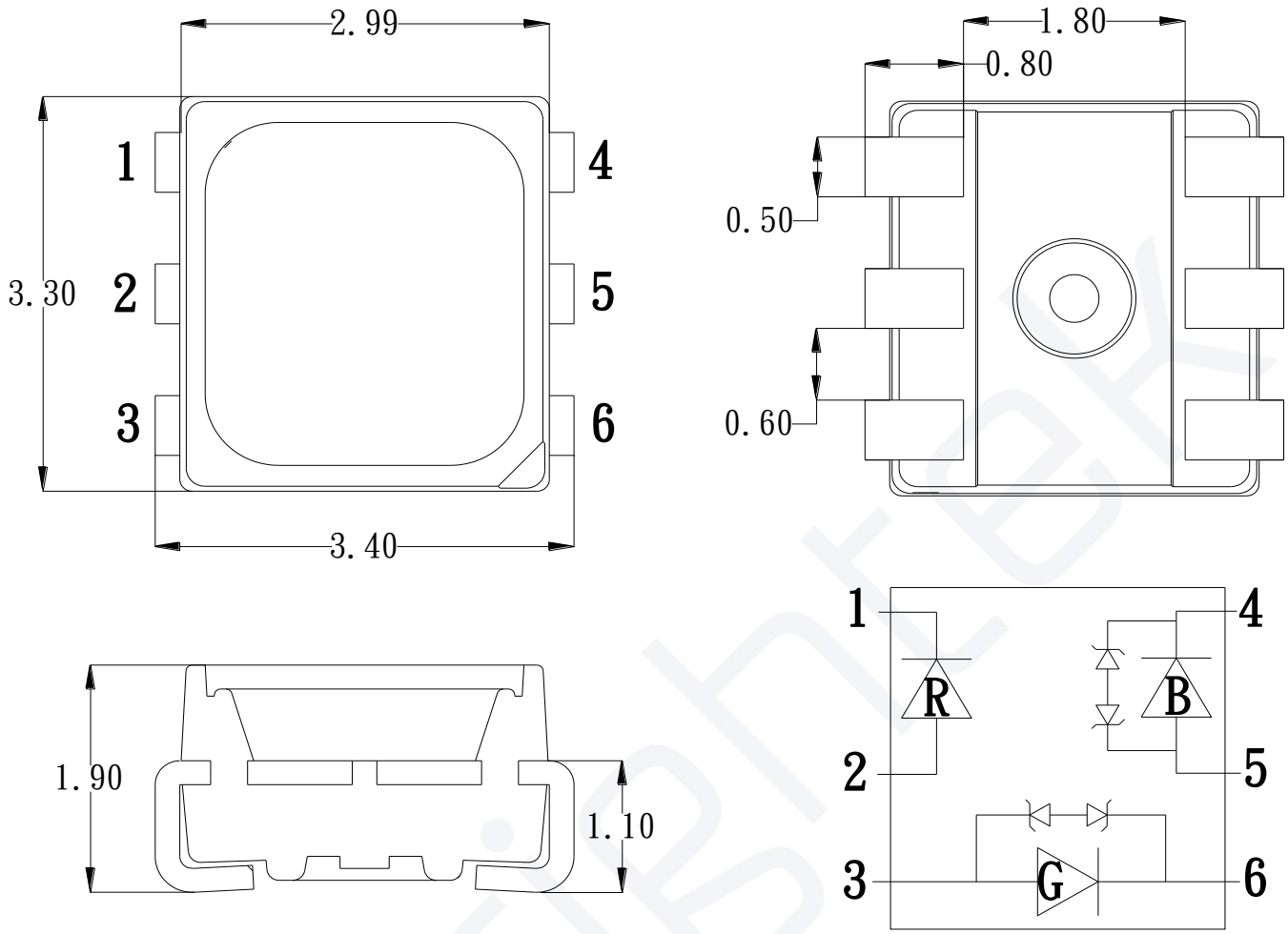


■ Thermal Design for De-rating

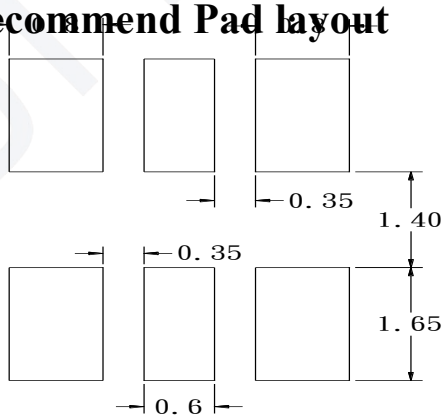
The maximum forward current is determined by the thermal resistance between the LED junction and solder point. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics. The graph is lighting with one chip on board



■ Dimensions



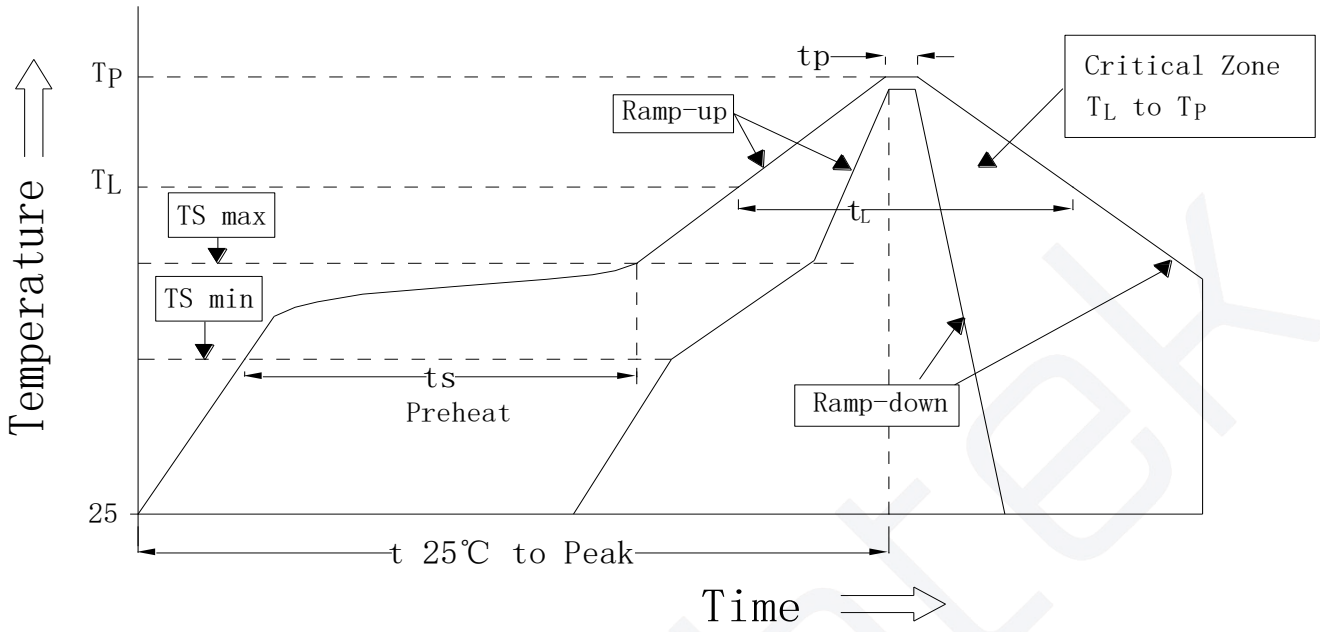
Recommend Pad layout



§ All dimensions are in millimeters.
§ Tolerance is ±0.1mm unless other specified
§ Specifications are subject to change without notice

■ Reflow Profile

SMT Reflow Soldering Profile



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Min.	Recommendation	Max.	
Ramp-up rate to preheat (25℃ to 150℃)	-	-	2	3	K/s
Time t_S ($T_{S\ min}$ to $T_{S\ max}$)	t_S	60	100	120	s
Ramp-up rate to peak ($T_{S\ max}$ to T_P)	-	-	2	3	K/s
Liquidus temperature	T_L	-	217	-	°C
Time above liquidus temperature	t_L	-	80	100	s
Peak temperature	T_P	-	245	260	°C
Time within 5 ℃ of the specified peak temperature T_P - 5 K	t_P	-	-	10	s
Ramp-down Rate (T_P to 100 ℃)	-	-	3	4	K/s
Time 25 ℃ to T_P	-	-	-	480	s

Notes:

1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 3 times.

■ Test Circuit and Handling Precautions

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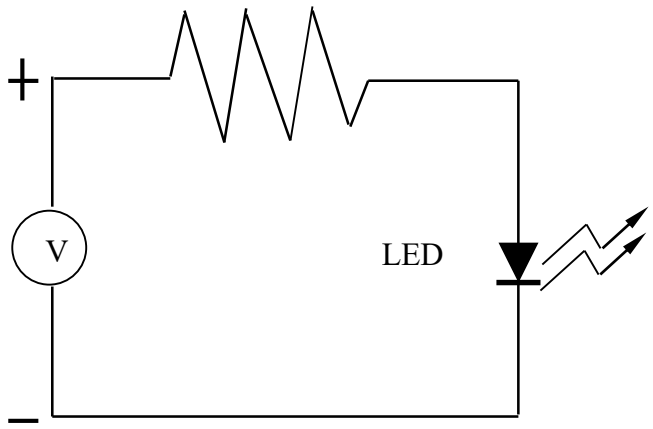
1. Test Circuit



2. Handling Precautions

2.1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2.2. Storage

1). It is recommended to store the products in the following conditions:

Humidity: 60% R.H. Max.

Temperature: 5℃~30℃(41℉~86℉)

2). Shelf life in sealed bag: 12 month at ＜5℃~30℃ and ＜60% R.H. after the package is Opened, the products should be used within four weeks or they should be keeping to stored at ≦20%R.H. with zip-lock sealed.

2.3. Baking

If the package has been opened for more than 4 weeks, it is recommended to bake the products with the following instruction:

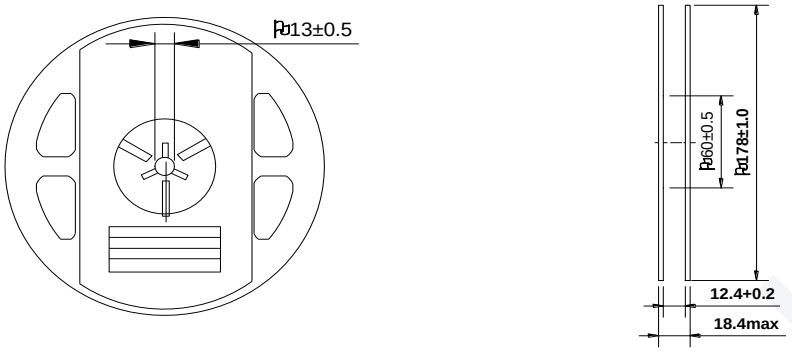
1). 60±3℃ X 6hrs and ＜5%RH, for reel

2). 125±3℃ X 2hrs, for single LED

It shall be normal to see slight color fading of carrier (light yellow) after baking in process

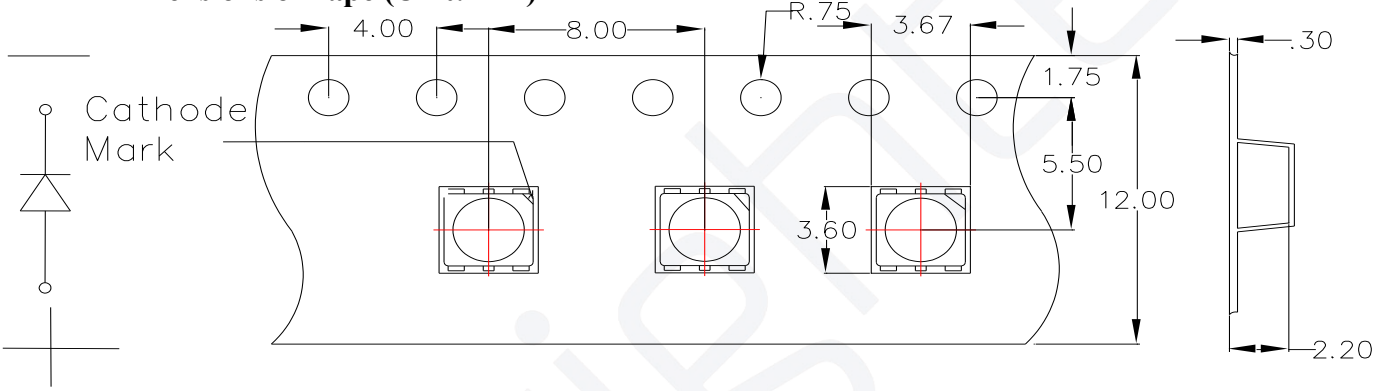
■ Packing

- **Dimensions of Reel (Unit: mm)**

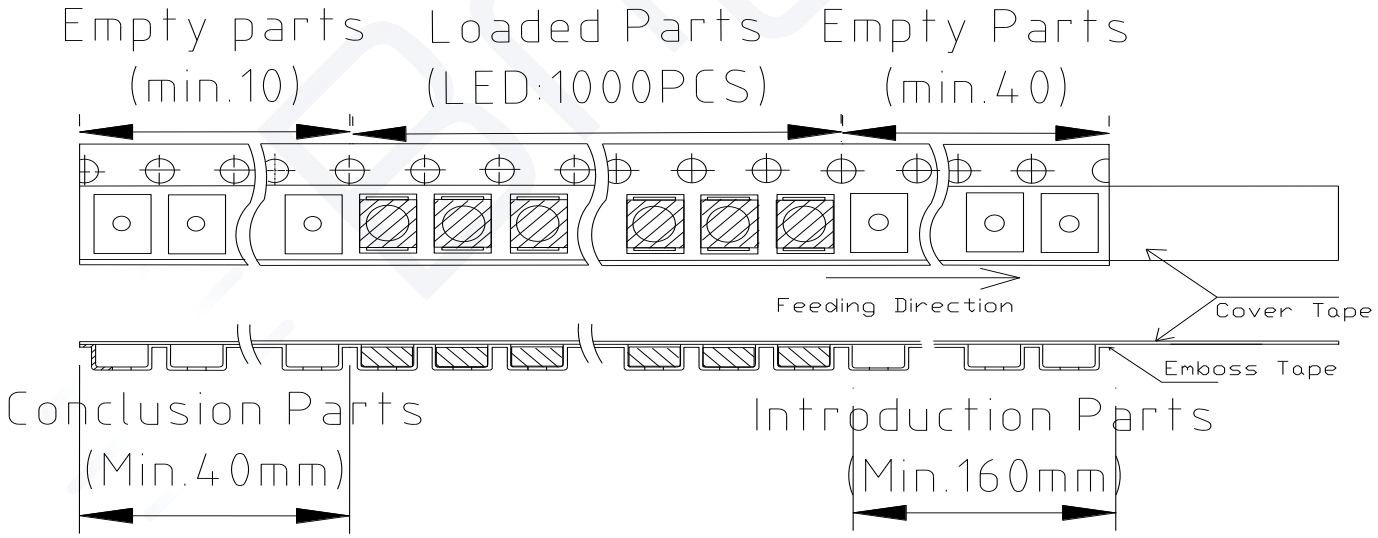


Note: 01.The tolerance unless mentioned is ±0.1mm.
02.The measured unit is "mm".

- **Dimensions of Tape (Unit: mm)**



- **Arrangement of Tape**

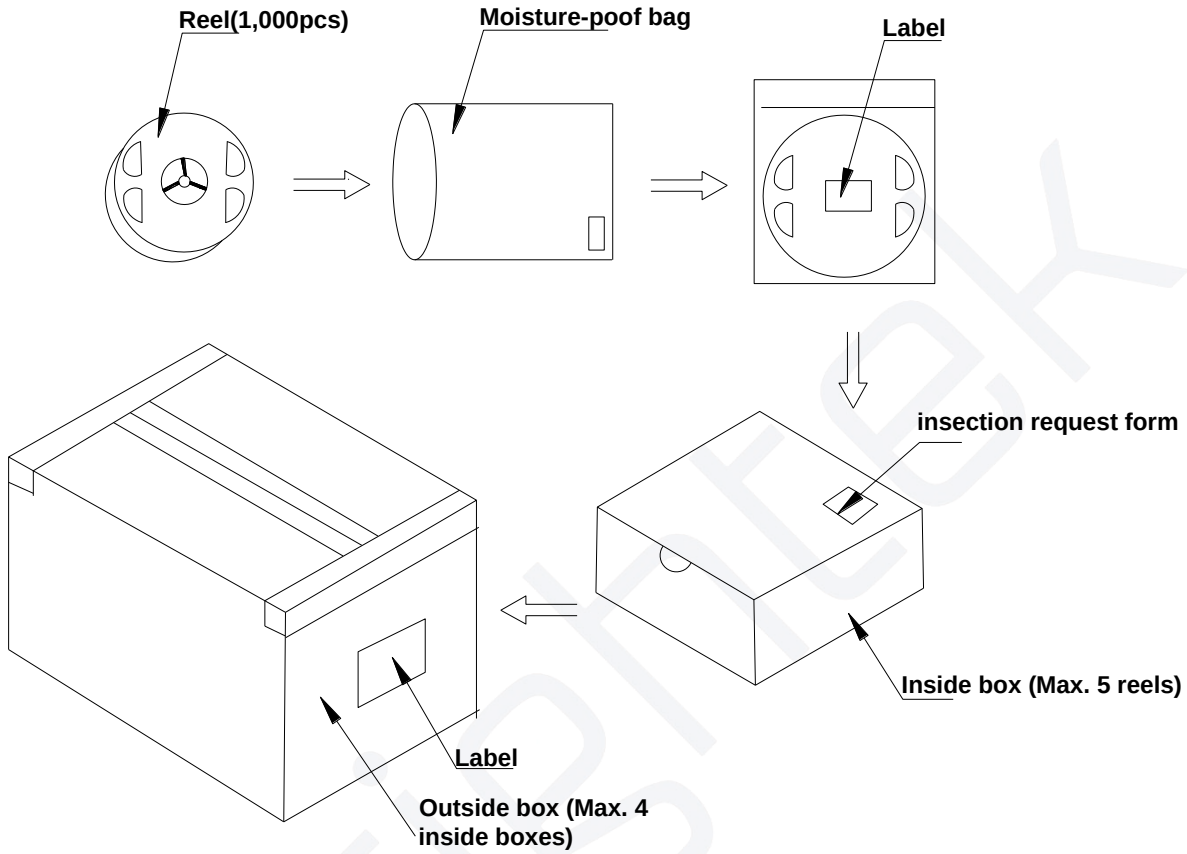


Notes:

1. Empty component pockets are sealed with top cover tape
2. The max loss number of SMD is 2pcs
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications
4. 1,000pcs per reel
5. The remainder packing in multiples of 500pcs.

■ Packing

- **Packaging Specifications**



Notes:

Reeled product (max.1,000) is packed in a sealed moisture-proof bag. Five bags are packed in an inner box (size: about 260 X 230 X 100 mm) and four inner boxes are in an outer box (size: about 480 X 275 X 215 mm). On the label of moisture-poof 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

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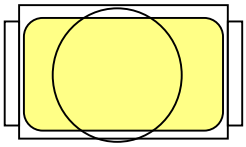
1. **Abnormal situation caused by improper setting of collet**

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

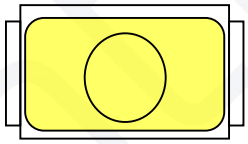
2. **How to choose the collet**

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



Picture 1(√)



Picture 2(X)

3. **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.

4. **This usage and handling instruction is only for your reference.**

■ Test Items and Results of Reliability

Test Item	Test Conditions	Duration/ Cycle	Number of Damage	Reference
Thermal Shock	–40℃ 30min ↑↓5min 105℃ 30min	1000 cycles	0/26	JESD22 A-106
High Temperature Storage	T_a=105℃	1000 hrs	0/26	JESD22 A-103B
Low Temperature Storage	T_a=-40℃	1000 hrs	0/26	JESD22 A-119
Life Test	T_a=25℃ If=20mA	1000 hrs	0/26	JESD22 A-108
High Humidity Heat Operation	85℃ RH=85% If=20mA	1000 hrs	0/26	JESD22 A-101
High Temperature Operation	T_a=105℃ If=20mA	1000 hrs	0/26	JESD22 A-108C
ESD(HBM)	6KV at 1.5kΩ;100pF	3 times	0/30	ANSI/JEDEC JS-001

Failure Criteria				
Item	**Symbol**	**Condition**	**Criteria for Judgment**	
			Min	**Max**
Forward Voltage	V_F	If=20mA	-	USL[1]×1.1
Reverse Current	I_R	V_R =5V	-	10μA
Radiant Power	P_O	If=20mA	LSL[2]×0.7	-

[Note] USL*[1]: Upper Specification Level

LSL*[2]: Lower Specification Level

Note: Version updates will not be announced and Brightek will have the final interpretation rights