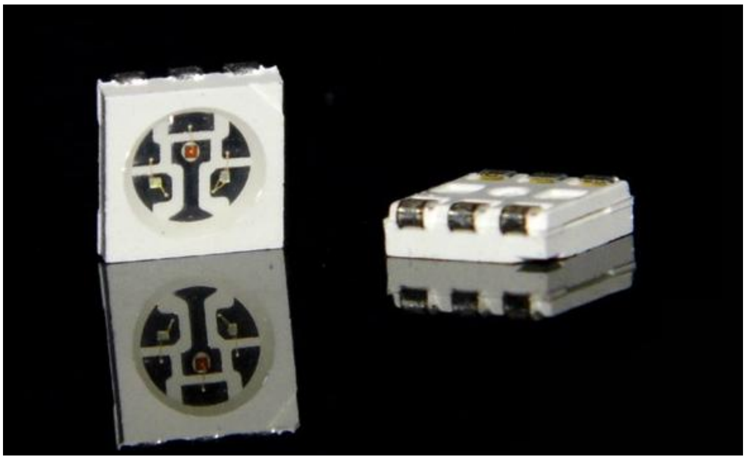
Product Data Sheet

PN:5050BGR-ZR2

5050SMD LED-BGR+2pcs Zener LED



ATTENTION

OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC DISCHARGE
SENSITIVE DEVICES

Features

- Dimensions:5.0mm×5.0mm×H1.5mm
- Color :BGR+2Chips Zener LED
- Lens: Water Clear Epoxy
- Chip Material:InGaN、InGaN、AlGaAs
- Chip Dimension:230um、 305um、305um
- Number of Chips:5pcs
- High reliability,High radiant intensity
- Low forward voltage
- Meet ROHS, Green Product

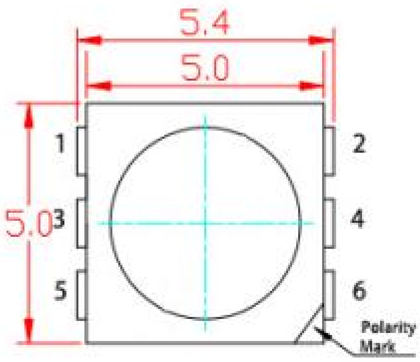
Applications

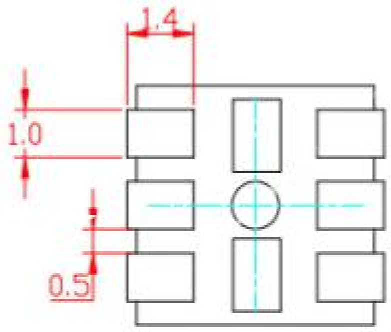
Ideal for backlight

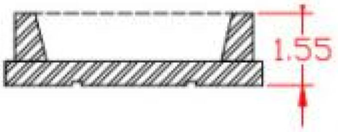
Medical appliances

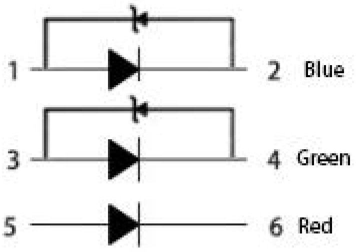
Indicator Light

Package Dimensions









Notes:

1.All dimensions are in millimeters ;

2.Tolerance is ± 0.10 mm unless otherwise noted.

3.The mark is cathode.

Absolute Maximum Ratings (Tc=25℃)

Parameter	Symbol	Rating			Unit
		Blue	Green	Red	
Power Dissipation	Pd	100	100	100	mW
Pulse Forward Current	IFP	100	100	100	mA
Forward Current	IF	30	30	30	mA
Reverse Voltage	VR	5			V
Junction Temperature	Tj	100			°C
Operating Temperature	Topr	-40 ~ +80			°C
Storage Temperature Range	Tstg	-40 ~ +100			°C
Soldering Temperature	Tsol	240			°C
Electro-Static-Discharge(HBM)	ESD	2000			V
Service life under normal conditions	Time	60000			H
Warranty	Time	2			Years
Antistatic bag	Piece	1000pcs			Bag

***Pulse Forward Current Condition:Duty 1% and Pulse Width=10us.**

***Soldering Condition:Soldering condition must be completed with 3 seconds at 260**℃

Electrical Optical Characteristics(Tc=25℃)

Parameter		Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage	Blue	VF	2.8	3.0	3.4	V	IF=20mA
	Green		2.8	3.0	3.4		
	Red		1.8	2.0	2.4		
Luminous Intensity	Blue	IV	200		400	mcd	IF=20mA
	Green		1000		1600		
	Red		500		700		
Peak Wavelength	Blue	λP		460		nm	IF=20mA
	Green			525			
	Red			633			
Dominant Wavelength	Blue	λD	455	460	465	nm	IF=20mA
	Green		515	520	530		
	Red		620	625	630		
Half Width		Δλ		15		nm	IF=20mA
Viewing Half Angle		2θ1/2		128		deg	IF=20mA
Reverse Voltage		V_{ZR}	5		8	V	IF=20mA

***Luminous Intensity is measured by ZWL600.**

***θ1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.**

Bin code definition

- ### IV Rank@IF=20mA

Colour	BIN CODE	Min	Max	Unit
Blue	BI1	200	300	mcd
	BI2	300	400	
Green	GI1	900	1100	
	GI2	1100	1300	
Red	RI1	500	700	

- ### VF Rank@IF=20mA

Colour	BIN CODE	Min	Max	Unit
Blue	RV1	2.8	3.0	V
	RV2	3.0	3.2	
	RV3	3.2	3.4	
Green	GV1	2.8	3.0	
	GV2	3.0	3.2	
	GV3	3.2	3.4	
Red	BV1	1.8	2.0	
	BV2	2.0	2.2	
	BV3	2.2	2.4	

- ### WD Rank@IF=20mA

Colour	BIN CODE	Min	Max	Unit
Blue	BW1	455	460	nm
	BW2	460	465	
Green	GW1	515	520	
	GW2	520	525	
	GW3	525	530	
Red	RW1	620	625	
	RW2	625	630	

Typical Electrical-Optical Characteristics Curves

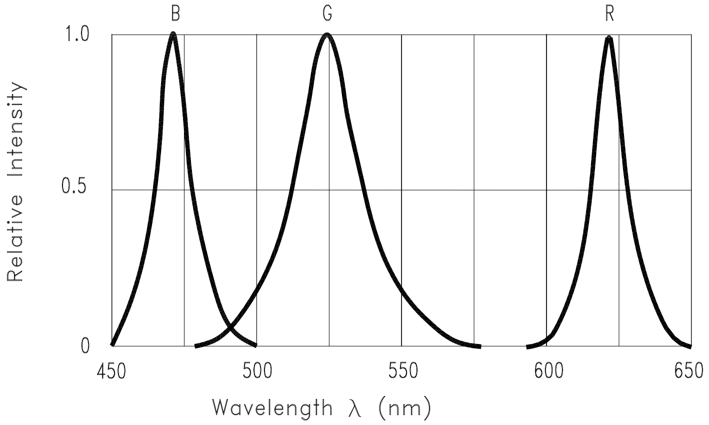


Fig.1 RELATIVE INTENSITY VS. WAVELENGTH

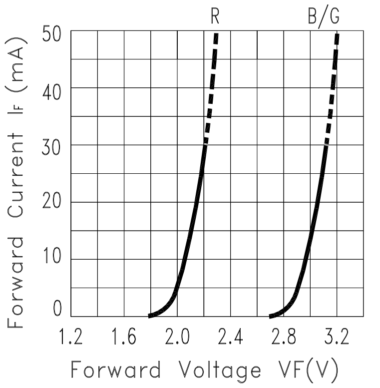


Fig.2 FORWARD CURRENT VS. FORWARD VOLTAGE

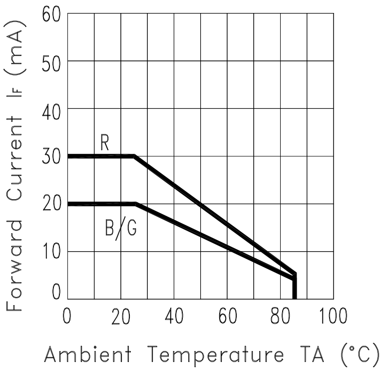


Fig.3 FORWARD CURRENT DERATING CURVE

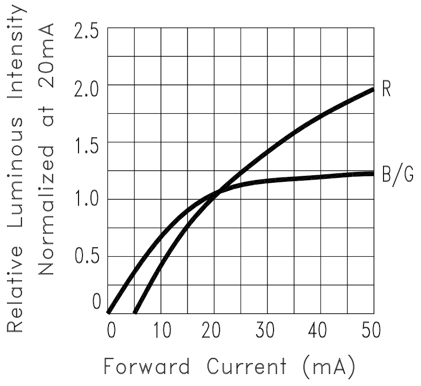


Fig.4 RELATIVE LUMINOUS INTENSITY VS. FORWARD CURRENT

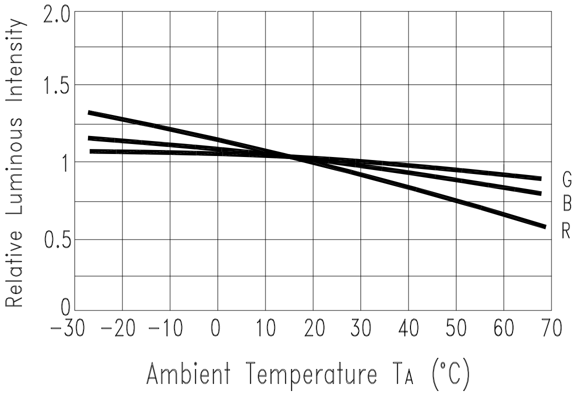


Fig.5 Luminous Intensity vs.Ambient Temperature

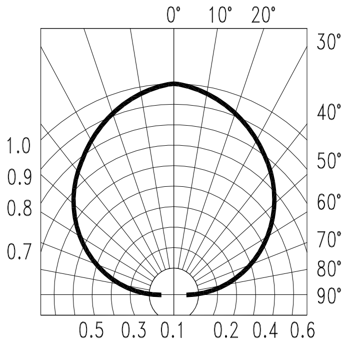
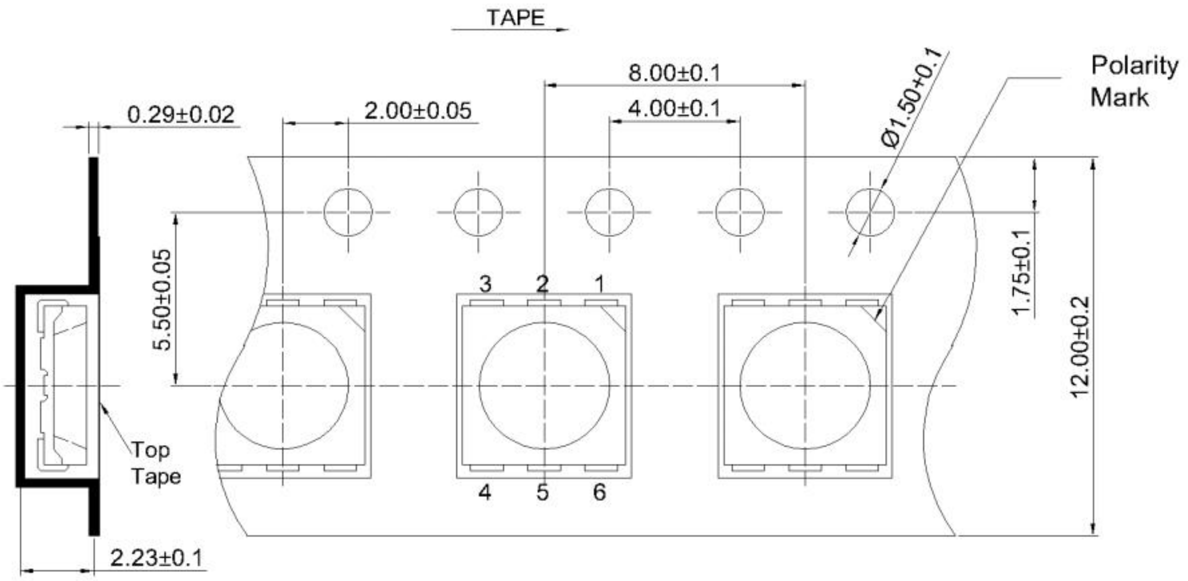
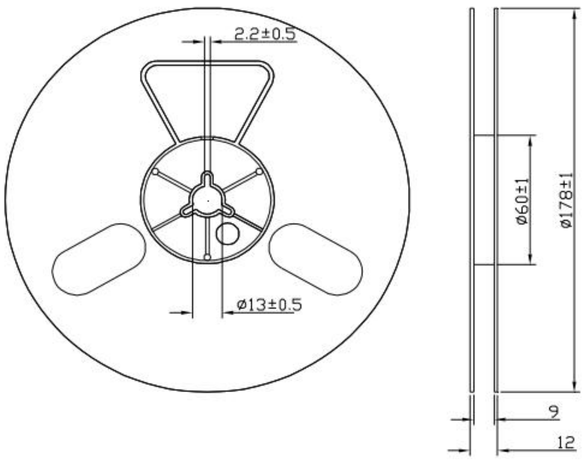


Fig.6 SPATIAL DISTRIBUTION

Tape specifications (Units:mm)



Reel Dimensions

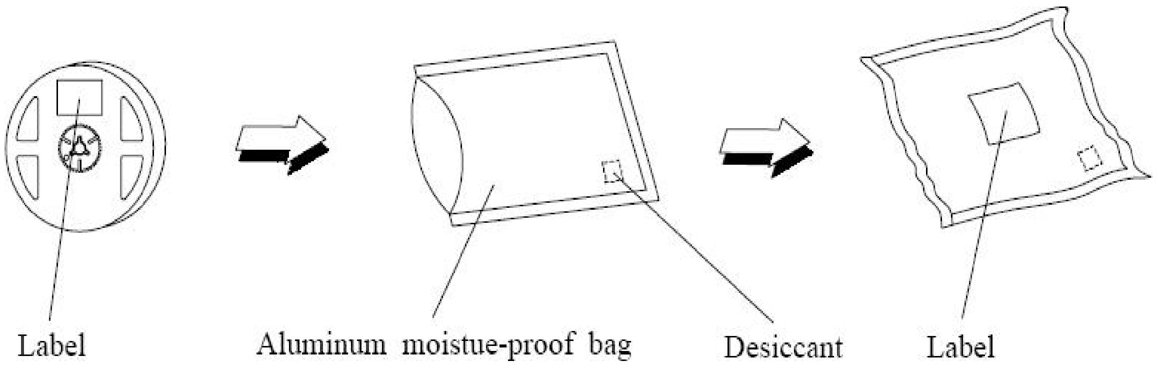


Notes:

1. Empty component pockets sealed with top cover tape.

2. 6.6 inch reel-1000 pieces per reel.

Moisture Resistant Packaging



Reliability Test Items and Conditions

Test Item	Reference	Test Conditions	Time	Quantity	Criterion
Thermal Shock	JIS-C7021 A-4	100°C±5°C 15min ↓ ↑ -40°C±5°C 15min	200cycles	22	0/22
High Temperature Storage	JEITA ED- 4701 200 201	Ta=100℃	1000h	22	0/22
Low Temperature Storage	JEITA ED- 4701 200 202	Ta=-40℃	1000h	22	0/22
High Temperature High Humidity Storage	JIS-C7021 B-11	Ta=85℃, RH=85%	1000h	22	0/22
Resistance to Soldering Heat	GB/T 4937	Tsol*=(260±5)℃ 10secs.	2times	22	0/22
Life Test	JESD22-A108	Ta=25℃±5℃ IF=5mA	1000h	22	0/22
High Temperature Life Test	JESD22-A108	Ts=55℃±5℃	1000h	22	0/22

*Note:Tsol-Temperature of tin liquid

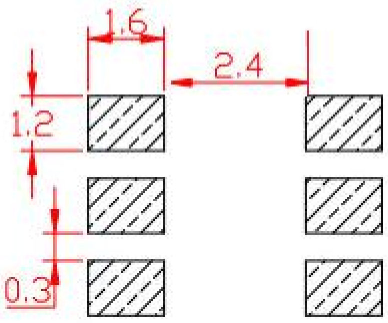
Criteria for Judging the Damage

Item	Symbol	Test Condition	Failure Criteria	
			MIN	MAX
Forward Voltage	VF（V）	IF=20mA	---	U.S.L*1.1
Reverse Current	IR（uA）	VR=5V	---	5uA
Luminous Intensity	IV（mcd）	IF=20mA	L.S.L*0.7	---

*Note:1.USL:Upper Specification Level

2.LSL:Lower Specification Level

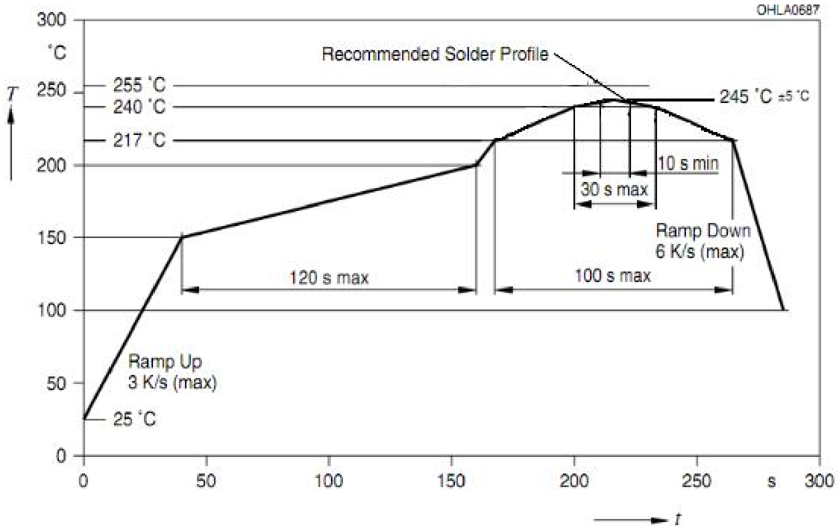
Suggest Soldering Pad Dimensions



Packing Instructions

5050SMD **(1000pcs/Bag---0.161KG)**				
QTY	5000pcs	20000pcs	40000pcs	75000pcs
N.W.(KG)	0.161	3.22	6.44	12.1
G.W.(KG)	0.91	3.33	6.75	13
Carton Size (cm)	25*25*7	25*25*25	45*26*25	43*43*27cm

Reflow soldering profile for LEAD-FREE SMD process



Notes:

1. **Don't cause stress to the LEDs while it is exposed to high temperature.**
2. **The maximum number of reflow soldering passes is 2 times**

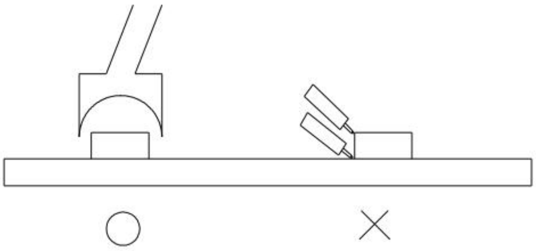
3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product

Soldering Iron

When hand soldering,keep the temperature of iron below less 300℃ less than 3 seconds
The hand solder should be done only one times

Repairing

Repair should not be done after the LEDS have been soldered.When repairing is unavoidable,a double-head soldering iron should be used (as below figure).It should be confirmed in advance whether the characteristics of LEDS will or will not be damaged by repairing.

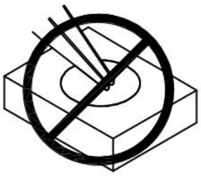


HANDLING PRECAUTIONS

Compare to epoxy encapsulant that is hard and brittle,silicone is softer and flexible.Althouth its characteristic significantly reduces thermal stress, it is more susceptible to damage by extemal mechanical force. As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

1. Handle the component along the side surfaces by using forceps or appropriate tools.

2. Do not directly touch or handle the silicone lens surface.It may damage the intemal circuitry.



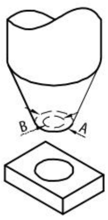
3. Do not stack together assembled PCBS containing exposed LEDS.Impact may scratch the silicone lens or damage the intemal circuitry.

4. 4-A The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks

4-B A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup

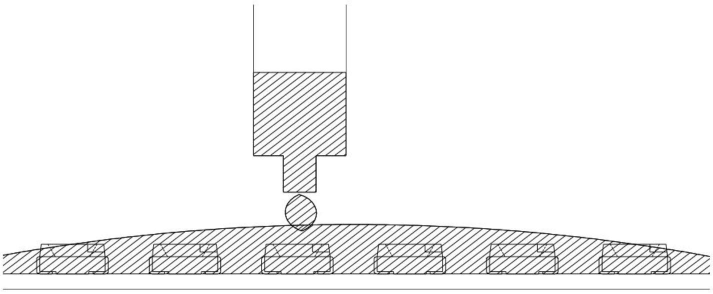
4-C The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production

4-D As silicone encapsulation is permeable to gases, some corrosive substances such as H2S might corrode silver plating of leadframe. Special care should be taken if an LED with Silicone encapsulation is to used near such substances.



5. LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material.

6. When we need to use external glue for LED application products,please make sure that the external glue matches the LED packaging glue.Additionally,as most of LED packaging glue is silica gel,and it has strong Oxygen permeability as well as strong moisture permeability;in order to prevent external of Bromine element is required to be less than 900PPM,the single content of Chlorine element is required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM



7.Avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.

Storage

1. Do not open moisture proof bag before the products are ready to use.

2. The storage conditions of sealed bags are: TA 5℃ - 30℃, RH < 60%.

3. The storage time is calculated according to the date of the certificate on the packaging bag, and the effective time is 30 days. If the time is more than 30 days, it must be baked before use, and the baking condition is 65℃ / 24h.

4. Before opening the package, please check the vacuum bag for find air leak in time. If so, please use it after baking.

5. After opening, please use the product under the following conditions: temperature < 30 ℃ / Rh < 60%. in addition, Please following baking treatment as below before use:

A: Baking condition: Place the product in an oven at 65 ℃ (± 5 ℃) for 24 hours.

B:Take out the product from the packaging bag and bake it. Do not open the oven during baking.

6.In order to avoid the customer's loss in the production process that caused by moisture absorption of materials, please Strictly observe with the above requirements.