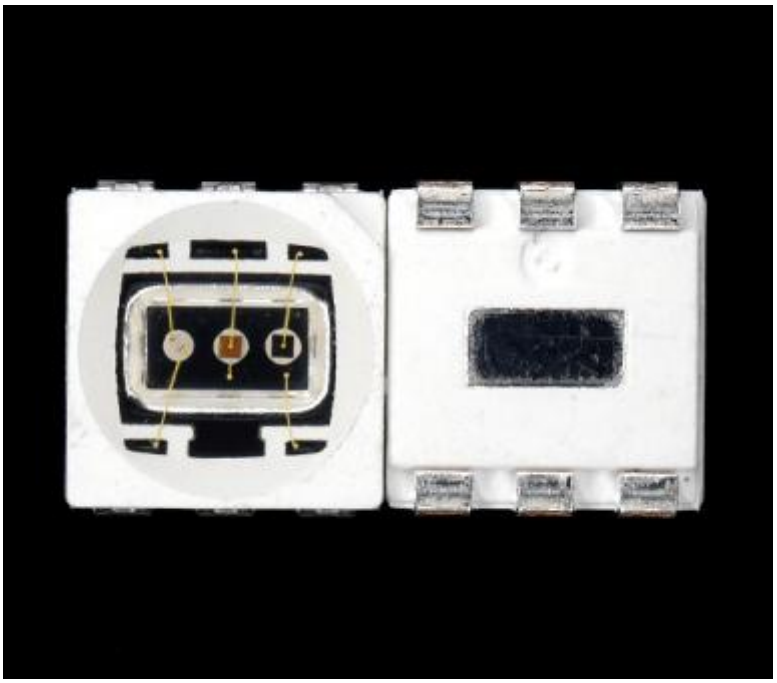
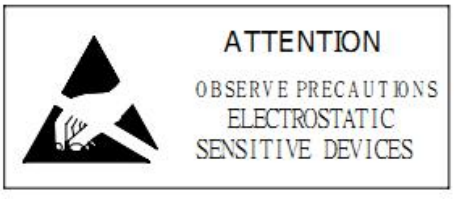
SHENZHEN BEST LED OPTO-ELECTRONIC CO.,LTD

TOP LED:5054FYRGC
（5054 SMD 3-chip LED)





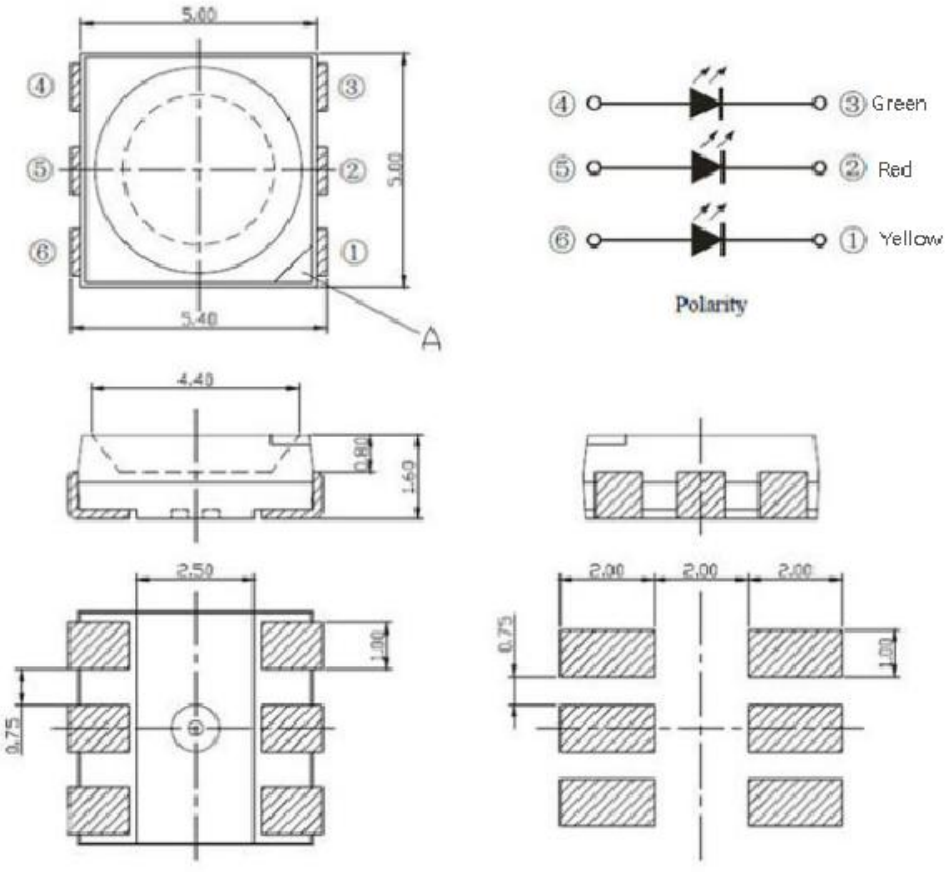
CUSTOMER APPOVED SIGNATURES	SALES APPROVED	APPROVED BY	CHECKED BY	PREPARED BY

SHENZHEN BEST LED OPTO-ELECTRONIC CO.，LTD

1. Features

- Color :Yellow+Red+Green
- Lens: water clear
- EIA STD Package
- Meet ROHS, Green Product
- Compatible With SMT Automatic Equipment
- Compatible With Infrared Reflow Solder And Wave Solder Process

2. Package Profile & Soldering PAD Suggested



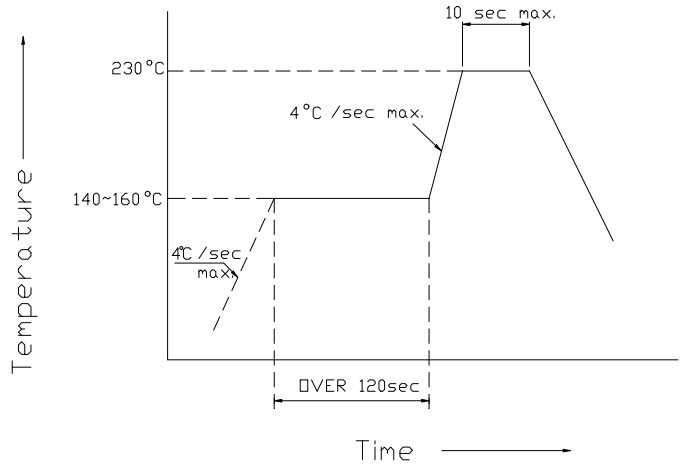
Notes: 1. All dimensions are in millimeters ;

2.Tolerance is ± 0.10 mm unless otherwise noted.

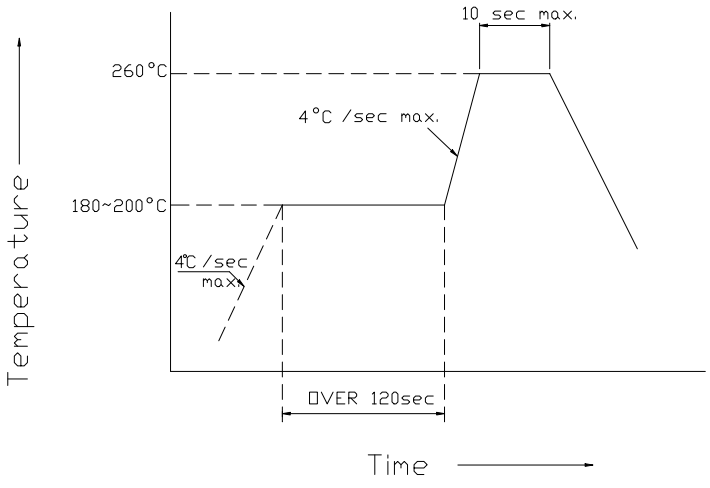
3. Soldering Profile Suggested

Reflow Soldering			Hand Soldering	
	Lead Solder	Lead-free Solder	Temperature	350°C Max.
Pre-heat	140 ~ 160°C	180 ~ 200°C	Soldering time	3 sec. Max. (one time only)
Pre-heat time	120 sec. Max.	120 sec. Max.		
Peak temperature	230°C Max.	260°C Max.		
Soldering time	10 sec. Max.	10 sec. Max.		
Condition				

Lead Solder:



Lead-Free Solder:



4. Absolute Maximum Ratings At Ta=25℃

Parameter	Symbol	Rating			Unit
		Yellow	Red	Green	
Power Dissipation	Pd	60	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	110			°C
Operating Temperature	Topr	-40 ~ +80			°C
Storage Temperature Range	Tstg	-40 ~ +100			°C
Soldering Temperature	Tsol	260			°C
Electro-Static-Discharge(HBM)	ESD	1000			V
Service life under normal conditions	Time	80000			H
Warranty	Time	5			Years
Antistatic bag	Piece	1000			Back

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

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

5. Electrical Optical Characteristics At Ta=25℃

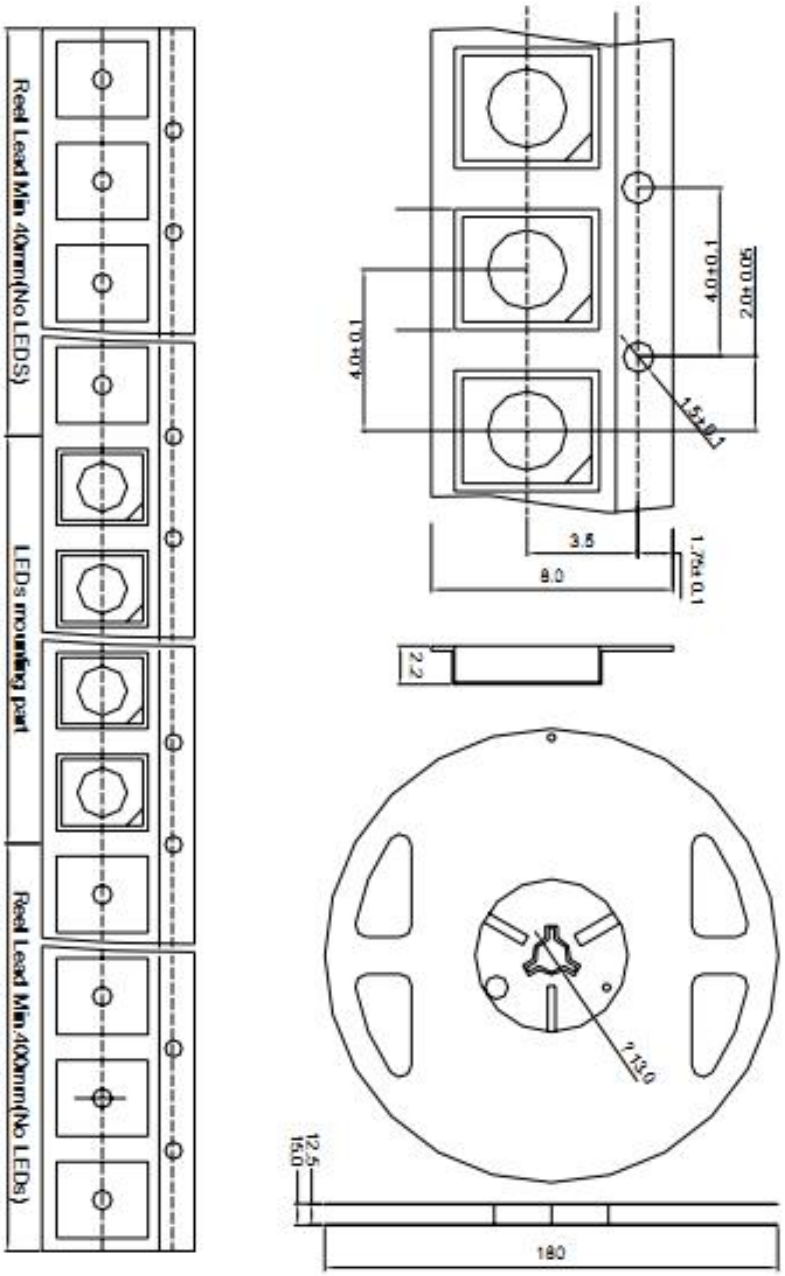
Parameter		Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage	Yellow	VF	1.9	2.0	2.4	V	IF=20mA
	Red		2.8	3.0	3.4		
	Green		2.8	3.0	3.4		
Luminous Intensity	Yellow	IV	600		800	mcd	IF=20mA
	Red		600		800		
	Green		1400		1700		
Peak Wavelength	Yellow	λP		590		nm	IF=20mA
	Red			633			
	Green			525			
Dominant Wavelength	Yellow	λD	587		594	nm	IF=20mA
	Red		620		630		
	Green		518		525		
Half Width		Δλ		15		nm	IF=20mA
Viewing Half Angle		2θ1/2		±60		deg	IF=20mA
Reverse Current		IR			5	uA	VR=5V
Rise Time		tr		10		ns	IF=20mA
Fall Time		tf		10		ns	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.**

***λD is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.**

6. Tape Leader & Trailer Dimensions And Reel



Dimensions are specified as follows:mm

Notes:

1) The packing only appropriate for Mingjia light.
2) Normal packing quantity: 1,000pcs/reel

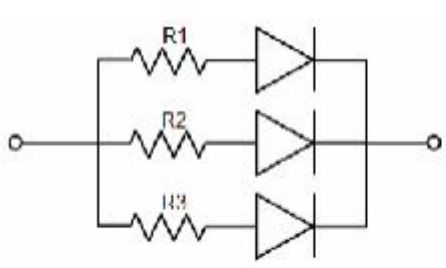
7. Reliability Test

Classification	Test Item	Test Condition	Reference Standard	Reference Standard
Endurance Test	Operation Life	Ta= Under Room Temperature As Per Data Sheet Maximum Rating	1000HRS (-24HRS,+72HRS)*@20mA	MIL-STD-750D:1026 MIL-STD-883D:1005 JIS C 7021:B-1
	High Temperature, High Humidity Storage	IR-Reflow In-Board, 2 Times Ta= 65±5℃,RH= 90～95%	240HRS±2HRS	MIL-STD-202F:103B JIS C 7021:B-11
	High Temperature Storage	Ta= 105±5℃	1000HRS (-24HRS,+72HRS)	MIL-STD-883D:1008 JIS C 7021:B-10
	Low Temperature Storage	Ta= -55±5℃	1000HRS (-24HRS,+72H RS)	JIS C 7021:B-12
Environmental Test	Temperature Cycling	105℃ ～ 25℃ ～ -55℃ ～ 25℃ 30mins 5mins 30mins	10 Cycles	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1010 JIS C 7021:A-4
	Thermal Shock	IR-Reflow In-Board, 2 Times 85 ± 5℃ ～ -40℃ ± 5℃ 10mins 10mins	10 Cycles	MIL-STD-202F:107D MIL-STD-750D:1051 MIL-STD-883D:1011
	Solder Resistance	T.sol= 260 ± 5℃	10 ± 1secs	MIL-STD-202F:210A MIL-STD-750D:2031 JIS C 7021:A-1
	IR-Reflow Normal Process	Ramp-up rate(183 ℃ to Peak) +3 ℃/ second max Temp. maintain at 125(±25)℃ 120 seconds max Temp. maintain above 183℃ 60-150 seconds Peak temperature range 235℃+5/-0℃ Time within 5°C of actual Peak Temperature (tp) 10-30 seconds Ramp-down rate +6℃/second max	----	MIL-STD-750D:2031.2 J-STD-020C
	IR-Reflow Pb Free Process	Ramp-up rate(217 ℃ to Peak) +3 ℃/ second max Temp. maintain at 175(±25)℃ 180 seconds max Temp. maintain above 217℃ 60-150 seconds Peak temperature range 260℃+0/-5℃ Time within 5°C of actual Peak Temperature (tp) 20-40 seconds Ramp-down rate +6℃/second max	----	MIL-STD-750D:2031.2 J-STD-020C
	Solderability	T.sol= 235 ± 5℃ Immersion rate 25±2.5 mm/sec Coverage ≧95% of the dipped surface	Immersion time 2±0.5 sec	MIL-STD-202F:208D MIL-STD-750D:2026 MIL-STD-883D:2003 IEC 68 Part 2-20 JIS C 7021:A-2

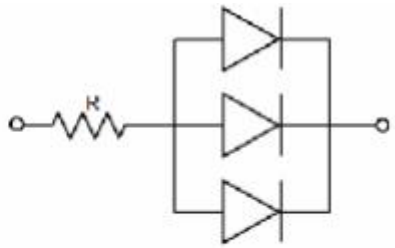
8. Cautions

Application

1. A LED is a current-operated device. The slight shift of voltage will cause big change of current, which will damage LEDs. Customer should use resistors in series for the Over-Current-Proof.
2. In order to ensure intensity uniformity on multiple LEDs connected in parallel in an application, it is recommended to use individual resistor separately, as shown in Circuit A below. The brightness of each LED shown in Circuit B might appear difference due to the differences in the I-V characteristics of those LEDs.



Circuit model A



Circuit model B

3. High temperature may reduce LEDs' intensity and other performances, so keeping it away from heat source to get good performance is necessary.

Storage

1.Before opening original package, it is recommended to store them in the following environment:

Temperature: 5℃~30℃ Humidity: 70%RH max.

2. After opening original package, the storage ambient for the LEDs should be in 5~30°C temperature and 60% or less relative humidity.
3. In order to avoid moisture absorption, it is recommended that the LEDs that out of the original package should be stored in a sealed container with appropriate desiccant, or in desiccators with nitrogen ambient.
4. The LEDs should be used within 8hrs after opening the package. Once been mounted, soldering should be quick.
5. If the moisture absorbent material (silica gel) has faded away or the LEDs stored out of original package for more than 7days, baking treatment should be performed using the conditions: 70℃ at least 24 hours.
6. Number of reflow process shall be less than 1 times

ESD (Electrostatic Discharge)-Protection

A LED (especially the Blue、White and Green product) is an ESD sensitive component, and static electricity or power surge will damage the LED. ESD-damaged LEDs will exhibit abnormal characteristics such as high reverse leakage current, low forward voltage, or "no light-up" at low currents, etc.

Some advice as below should be noticed:

1. A conductive wrist strap or anti-electrostatic glove should be worn when handling these LEDs.

2. All devices, equipment, machinery, work tables and storage racks, etc. must be properly grounded.

3. Use anti-static package or boxes to carry and storage LEDs. And ordinary plastic package or boxes is forbidden to use.
4. Use ionizer to neutralize the static charge during handling or operating.
5. All surfaces and objects within 1 ft close to LEDs measure less than 1000V.

Cleaning

Use alcohol-based cleaning solvents such as IPA (isopropyl alcohol) to clean LEDs if necessary.

Soldering

1. Soldering condition refer to the draft "Soldering Profile Suggested" on page 1.
2. Reflow soldering should not be done more than 2 times.
3. Manual soldering is only suggested on repair and rework. The maximum soldering temperature should not exceed 350°C within 3 sec. And the maximum capacity of soldering iron is 30W in power.
4. During the soldering process, do not touch the lens at high temperature.
5. After soldering, any mechanical force on the lens or any excessive vibration shall not be accepted to apply, also the circuit board shall not be bent as well.

Others

1. The LEDs described here are intended to be used for ordinary electronic equipment (such as office equipment, communication equipment and household applications).Consult BYT's Sales in advance for the applications in which exceptional reliability is required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health. (such as in aviation, transportation, traffic control equipment, medical and life support systems and safety devices).
2. The light output from the high luminous intensity LEDs may cause injury to human eyes when viewed directly.
3. The appearance and specifications of the product may be modified for improvement without prior notice.