

TOP LED:2835RGB-12S

(2835 SMD LED - RGB LED Flashing Fast)





CUSTOMER APPOVED SIGNATURES	SALES	APPROVED	CHECKED	PREPARED
	APPROVED	BY	BY	BY

1. Features

• Color :R+G+B+IC

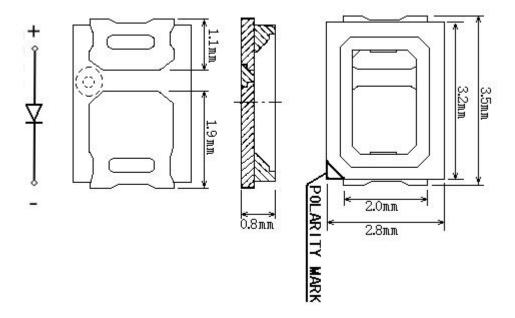
• Lens: water clear

• High Luminous LEDs

Flashing Type

• 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 \pm 0.10 mm unless otherwise noted.

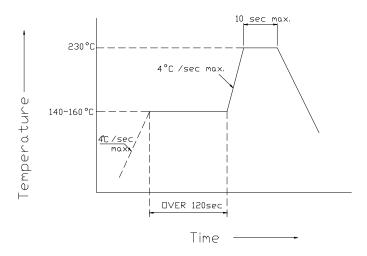


BEST.LED SHENZHEN BEST LED OPTO-ELECTRONIC CO.,LTD

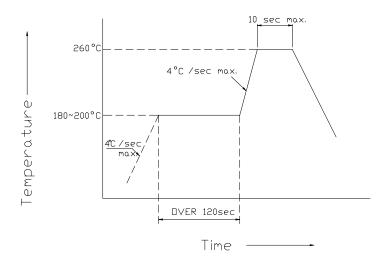
3. Soldering Profile Suggested

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.	
Pre-heat time	120 sec. Max.	120 sec. Max.		(one time	
Peak temperature	230°C Max.	260°C Max.		only)	
Soldering time	10 sec. Max.	10 sec. Max.		•	
Condition					

Lead Solder:



Lead-Free Solder:





4. Absolute Maximum Ratings At Ta=25℃

Parameter		Symbo I	Min	Тур	Max	Unit	Test Condition
	Red		200		400	mcd	IF=20mA
Luminous Intensity	Blue	VF	200		400		
	Green		1000		1500		
	Red		620	625	630		IF=20mA
Peak emission wavelength	Blue	λD	460	465	472	nm	
	Green		520	525	530		
Viewing Half Angle		201/2		±60		deg	IF=20mA
Power Supply		Voltage	5		V		
Operating Temperatu	Operating Temperature		-40 ~ +80		°C		
Storage Temperature	Storage Temperature Range		-40 ~ +100		°C		
Soldering Temperature		Tsol	260		°C		
Electro-Static-Discharge(HBM)		ESD	1000		V		
Service life under not conditions	rmal	Time	80000		80000 H		Н
Warranty		Time	5		5 Years		Years
Antistatic bag		Piece	4000		Back		

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



5.Direct Current Characteristics (Tc=25℃)

Parameter	Symbo	Min	Тур	Max	Unit	Test Condition
Operating Voltage	VDD	3.8	4.5	5.0	V	
Oscillator Frequency	Fled		12		S	V _{DD} =4.5V
Driver Current	Iol		25		mA	
Power Consumption	PO		120		mW	V _{DD} =4.5V

^{*}Luminous Intensity is measured by ZWL600.

 $^{*\}theta1/2$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

^{*\}D is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

6. Typical Electrical-Optical Characteristics Curves Forward Voltage vs. Forward Current Ta=25° C Forward Current vs. Relative Intensity Ta=25° C 电流与电压曲线关系 电流与相对亮度曲线关系 1.5 80 Relative Intensity相对亮度 Forward current 电流(mA) 1.0 0.5 0 0.0 2.0 2.5 3.0 3.5 4.0 4.5 40 60 80 Forward current 电流(mA) Forward voltage 电压(V) Ambient Temperature vs. Forward Current Relative Intensity vs. Ambient temperature 环境温度与正向电流曲线关系 环境温度与相对亮度曲线关系 90 EEEEEE Forward Current 电流(mA) 75 Relative Intensity相对亮度 1.0 60 45 0.5 30 15 0.1 -50 0

20

40

60

Ambient Temperature Ta 环境温度(°C)

80

100

50

Ambient Temperature Ta 环境温度(°C)

100

0



7. Reliability Test

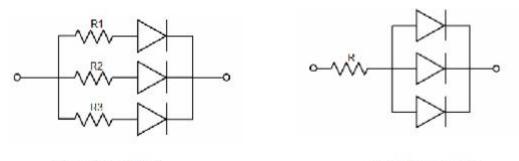
Classification	Test Item	Test Condition	Reference Standard	Reference Standard
Operation Life		Ta= Under Room Temperature As Per Data Sheet Maximum Rating	1000HRS (-24HRS,+72HRS)*@20mA	MIL-STD-750D:102 MIL-STD-883D:100 JIS C 7021:B-1
High Temperature, High Endurance Humidity Storage High Temperature Storage Low Temperature Storage	Temperature, High Humidity	IR-Reflow In-Board, 2 Times Ta= 65±5°C,RH= 90∼95%	240HRS±2HRS	MIL-STD-202F:103 JIS C 7021:B-11
	High Temperature	Ta= 105±5°C	1000HRS (-24HRS,+72HRS)	MIL-STD-883D:10 JIS C 7021:B-10
		Ta= -55±5°C	1000HRS (-24HRS,+72H RS)	JIS C 7021:B-12
Temperature Cycling Thermal Shock Solder Resistance Environmental Test IR-Reflow Normal Process IR-Reflow Pb Free Process	•	105°C ~ 25°C ~ -55°C ~ 25°C 30mins 5mins 30mins	10 Cycles	MIL-STD-202F:10 MIL-STD-750D:10 MIL-STD-883D:10 JIS C 7021:A-4
		IR-Reflow In-Board, 2 Times $85 \pm 5^{\circ}$ C \sim -40° C $\pm 5^{\circ}$ C 10mins 10mins	10 Cycles	MIL-STD-202F:10 MIL-STD-750D:10 MIL-STD-883D:10
		T.sol= 260 ± 5 °C	10 ± 1secs	MIL-STD-202F:21 MIL-STD-750D:20 JIS C 7021:A-1
		Ramp-up rate(183 °C to Peak) +3 °C / second max Temp. maintain at 125(±25) °C 120 seconds max Temp. maintain above 183 °C 60-150 seconds Peak temperature range 235 °C+5/-0 °C Time within 5 °C of actual Peak Temperature (tp) 10-30 seconds Ramp-down rate +6 °C/second max		MIL-STD-750D:20: J-STD-020C
		Ramp-up rate(217 °C to Peak) +3 °C / second max Temp. maintain at 175(±25) °C 180 seconds max Temp. maintain above 217 °C 60-150 seconds Peak temperature range 260 °C+0/-5 °C Time within 5 °C of actual Peak Temperature (tp) 20-40 seconds Ramp-down rate +6 °C/second max		MIL-STD-750D:203 J-STD-020C
	Solderability	T.sol= 235 ± 5 °C Immersion rate 25 ± 2.5 mm/sec Coverage $\geq 95\%$ of the dipped surface	Immersion time 2±0.5	MIL-STD-202F:20 MIL-STD-750D:2 MIL-STD-883D:2 IEC 68 Part 2-2: 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 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°C~30°C Humidity: 85%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 168hrs (7 days) 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 168hrs (7 days), baking treatment should be performed using the conditions: 60°C at least 24 hours.

ESD (Electrostatic Discharge)-Protection

Circuit model A

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 100V.

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 300°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.