TOP LED:BYT-5050RGB







CUSTOMER APPOVED SIGNATURES	SALES	APPROVED	CHECKED	PREPARED
	APPROVED	BY	BY	BY



1. Features

• Color : red+green+blue

• Lens: water clear

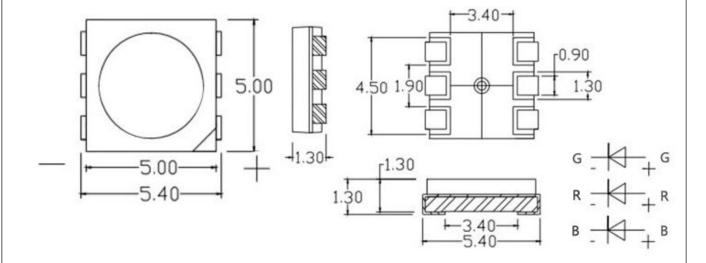
EIA STD Package

• Meet ROHS, Green Product

• Compatible With SMT Automatic Equipment

• Compatible With Infrared Reflow Solder And Wave Solder Process

2. Package Profile & Soldering PAD Suggested

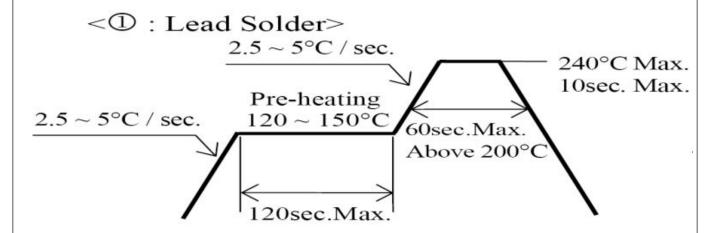


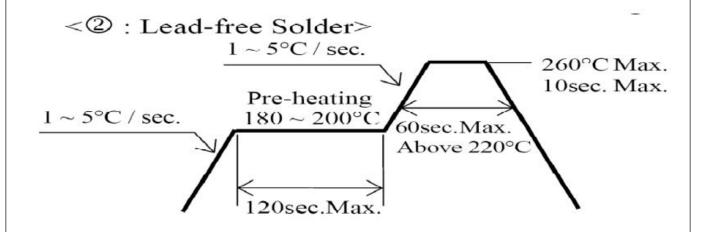
Notes: 1. All dimensions are in millimeters;

2. Tolerance is \pm 0.10 mm unless otherwise noted.

3. Soldering Profile Suggested

Reflow Soldering			Hand Soldering	
34	Lead Solder	Lead-free Solder		
Pre-heat	120 ~ 150°C	180 ~ 200°C	Temperature	350°C Max.
Pre-heat time	120 sec. Max.	120 sec. Max.	Soldering time	3 sec. Max.
Peak temperature	240°C Max.	260°C Max.		(one time only)
Soldering time	10 sec. Max.	10 sec. Max.		
Condition	refer to	refer to		
	Temperature - profile ①.	Temperature - profile ②.		
		(N ₂ reflow is recommended.)		





4. Absolute Maximum Ratings At Ta=25℃

D 4	Cl1	Absolute ma	Unit		
Parameter	Symbol	Red	Red Green/Blue		
Power Dissipation	Pd	65	85	mW	
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	100	80	mA	
DC Forward Current	IF	60		mA	
Reverse Voltage	VR	5		V	
Operating Temperature Range	Topr	-25°C ~ +80°C			
Storage Temperature Range	Tstg	-40°C ~ +80°C			
Soldering Condition	Tsol	Reflow soldering : 260 °C For 5 Seconds Hand soldering: 300 °C For 3 Seconds			



5. Electrical Optical Characteristics At Ta=25℃

Par	ameter	Symbol	Min.	Тур.	Max.	Unit	Test Condition
	Red		300	400	500		
Luminous Intensity	Green	IV	700	800	1000	mcd	IF=20mA
	Blue		300	500			
	Red			1.9-2.4			IF=20mA
Forward Voltage	Green	VF		2.9-3.5		V	
, orange	Blue		2.9-3.5				
	Red	WD	620	623	628	nm	
Dominant Wavelength	Green		517	525	527	nm	IF=20mA
	Blue		462	468	472	nm	
Viewi	ng Angle	201/2		120		deg	IF=30mA
Reverse Current	Red/Green/Blue	IR			5/5/5	uA	VR=5V

- Notes: 1. Luminous intensity is measured with a light sensor and filter combination that approximates the CIE eye-response curve.
 - 2. θ 1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
 - 3. The dominant wavelength, λd 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

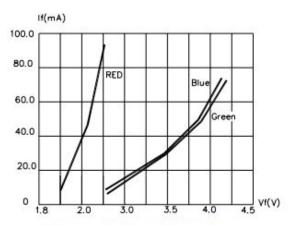


Fig.1 Forward Current vs. Forward Voltage

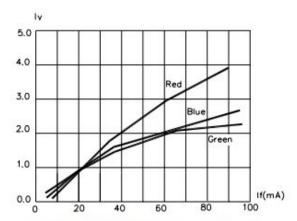


Fig.2 Relative Luminous Intensity vs. Forward Current

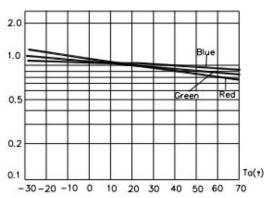


Fig.5 Relative Luminous Intensity vs. Ambient Temperature

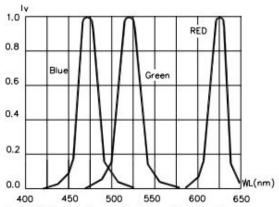


Fig.4 Relative Luminous Intensity vs. Wavelength

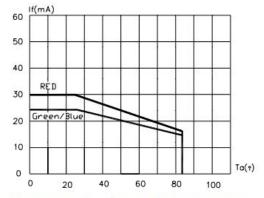
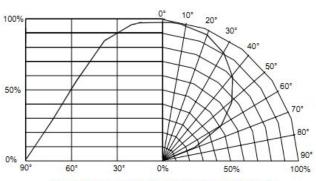
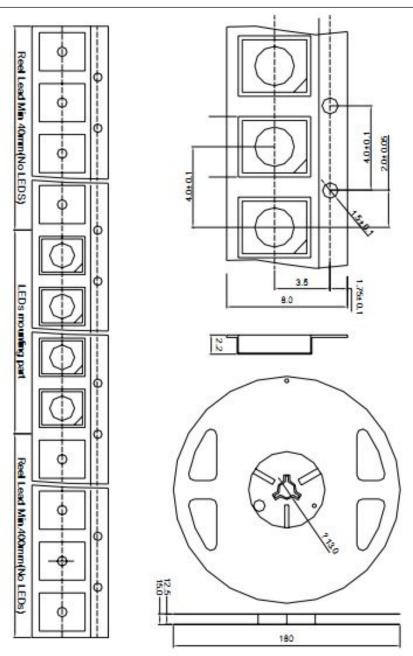


Fig.6 Maximum Forward Current vs.Ambient Temperature



Relative Luminous Intensity vs.Radiation Angle

7. 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



9. Reliability Test

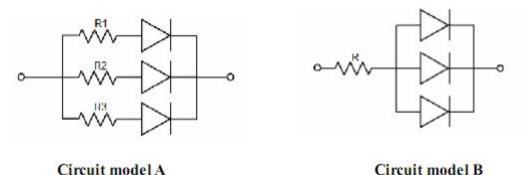
Classification Test Item Tes		Test Condition	Reference Standard	Reference
Ciassification	rest reem	rest condition	Reference Standard	Standard
O		Ta= Under Room Temperature As Per	1000HRS	MIL-STD-750D:1020 MIL-STD-883D:100:
Operat	Operation Life	Data Sheet Maximum Rating	(-24HRS,+72HRS)*@20mA	JIS C 7021:B-1
	High			
	Temperature,	ID Defless In Decad 2 Times		
	High	IR-Reflow In-Board, 2 Times	240HRS±2HRS	MIL-STD-202F:103E JIS C 7021:B-11
Endurance	Humidity	Ta= 65±5°C,RH= 90~95%		
Test	Storage			
	High Temperature	T 105.5°C	1000HRS	MIL-STD-883D:1008 JIS C 7021:В-10
	Storage	Ta= 105±5 °C	(-24HRS,+72HRS)	
	Low		1000HRS	JIS C 7021:B-12
	Temperature	Ta= -55±5°C	(-24HRS,+72H RS)	
	Storage		(-2411K3,+7211 K3)	
	Temperature	105°C ~ 25°C ~ -55°C ~	10 Cycles	MIL-STD-202F:107I
	·	25℃	To Cycles	MIL-STD-750D:105 MIL-STD-883D:1010
	Cycling	30mins 5mins 30mins		JIS C 7021:A-4
		IR-Reflow In-Board, 2 Times		
	Thermal	85 ± 5°C ~ -40°C ± 5°C	10 Cycles	MIL-STD-202F:107E MIL-STD-750D:1051 MIL-STD-883D:1011
	Shock	10mins 10mins		
	Solder	TOTHINS TOTHINS) (T. CTD 2027 210
		T.sol= 260 ± 5 °C	$10 \pm 1 \text{secs}$	MIL-STD-202F:210A MIL-STD-750D:203
	Resistance			JIS C 7021:A-1
		Ramp-up rate(183 °C to Peak) +3 °C / second		
Environmental		max Temp. maintain at 125(±25) ℃ 120 seconds		
Test	IR-Reflow Normal Process	max Temp. maintain above 183 °C 60-150 seconds		MIL-STD-750D:2031 J-STD-020C
1031		Peak temperature range 235 °C+5/-0 °C Time within 5 °C of actual Peak Temperature		
		(tp) 10-30 seconds		
		Ramp-down rate $+6^{\circ}$ C/second max Ramp-up rate(217 $^{\circ}$ C to Peak) $+3^{\circ}$ C / second		
IR-Reflow Pb Free Process Solderability		max Temp. maintain at 175(±25) °C 180 seconds		
	IR-Reflow	max Temp. maintain above 217°C 60-150 seconds		MIL-STD-750D:2031.: J-STD-020C
	Pb Free Process	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		
		T.sol= 235 ± 5 °C	Immersion time 2±0.5	MIL-STD-202F:208
	Solderability	Immersion rate 25±2.5 mm/sec		MIL-STD-750D:2020 MIL-STD-883D:2003 IEC 68 Part 2-20
		Coverage ≥95% of the dipped surface	sec	IEC 68 Part 2-20 JIS C 7021:A-2



10. 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.



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

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.