Product Data Sheet

PN:509FIRYGC

5mm Through-hole LED-IR&YG LED

ATTENTION

OBSERVE PRECAUTIONS FOR HANDLING

ELECTROSTATIC DISCHARGE

SENSITIVE DEVICES

Features

- Dimensions:5mm×H8.7mm
- Color :IR+YG LED
- Lens: Water Clear Epoxy
- Chip Material:AlGaAs、GaP
- Chip Dimension:355um、255um
- Number of Chips:2pcs
- High reliability,High radiant intensity
- Low forward voltage
- Meet ROHS, Green Product

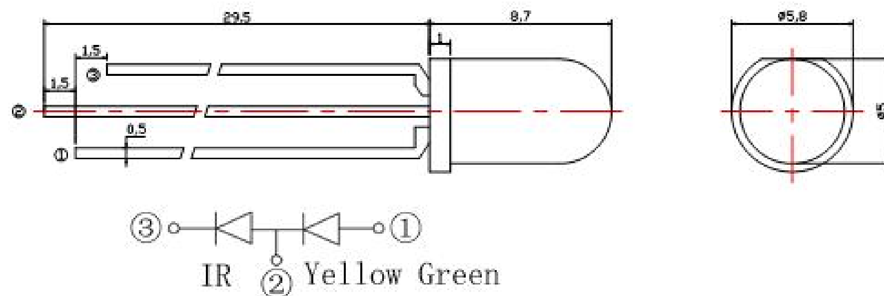
Applications

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.

Absolute Maximum Ratings (Tc=25℃)

Parameter	Symbol	Rating		Unit
		IR	Yelloe Green	
Power Dissipation	Pd	85	65	mW
Pulse Forward Current	IFP	1000	100	mA
Forward Current	IF	≤50	≤25	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	245		°C
Electro-Static-Discharge(HBM)	ESD	1000		V
Service life under normal conditions	Time	60000		H
Warranty	Time	2		Years
Antistatic bag	Piece	1000pcs		Bag
Net weight	Bag	160		g

***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	IR	VF	1.3	1.4	1.6	V	IF=20mA
	Green		1.9	2.2	2.5		
Luminous Intensity	IR	IV	150		250	mcd	IF=20mA
	Green		5		10	mw/sr	
Peak Wavelength	IR	λP	875	880	890	nm	IF=20mA
	Green		565	570	575		
Half Width		Δλ		15		nm	IF=20mA
Viewing Half Angle		2θ1/2		20		deg	IF=20mA
Reverse Current		IR			5	uA	VR=5V

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

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

Typical Electrical-Optical Characteristics Curves

IR:

Forward Curent - Forward Voltage

(ta=25°C, tw=10μs, Duty=1%)

Forward Current (mA)

Forward Voltage (V)

Relative Radiant Intensity - Forward Current

(ta=25°C, tw=10μs, Duty=1%)

50mA Standard

Relative Radiant Intensity (A.U.)

Forward Current (mA)

Forward Current - Pulse Duration

10kHz

1kHz

100Hz

10Hz

Forward Current Ifp [mA]

Duration tw [μs]

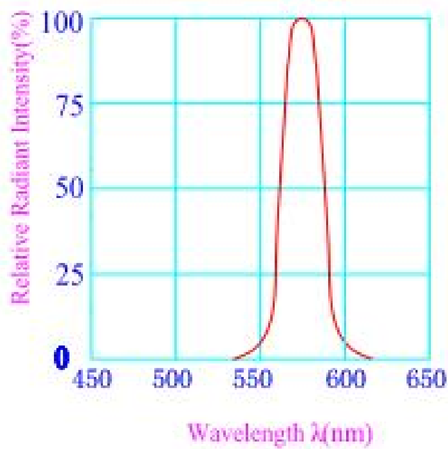
Allowable Forward Current - Ambient Temperature

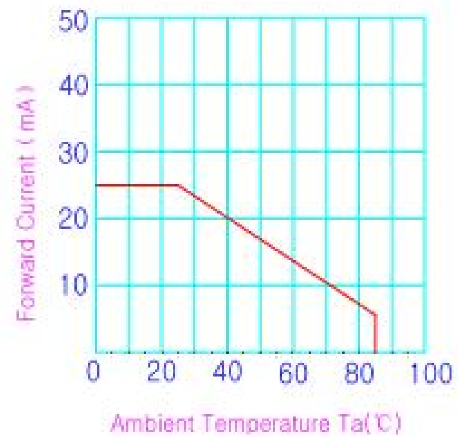
Rthja=80K/W

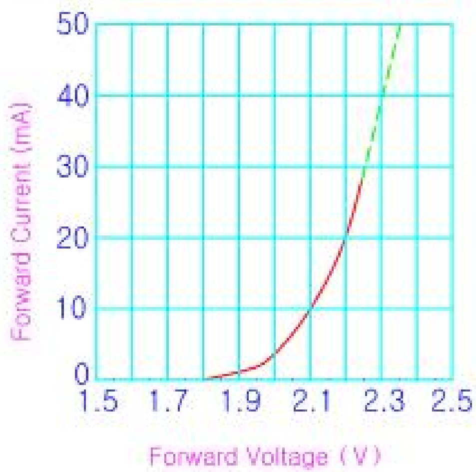
Allowable Forward Current(mA)

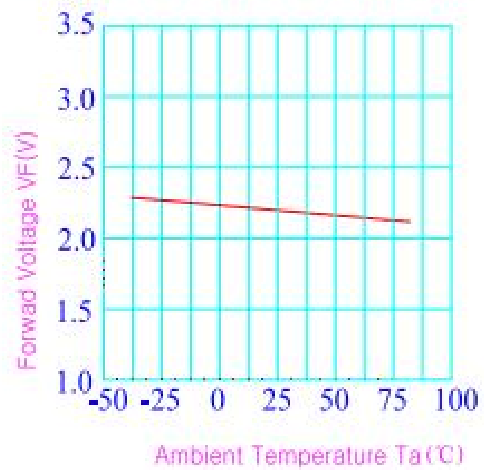
Ambient Temperature (°C)

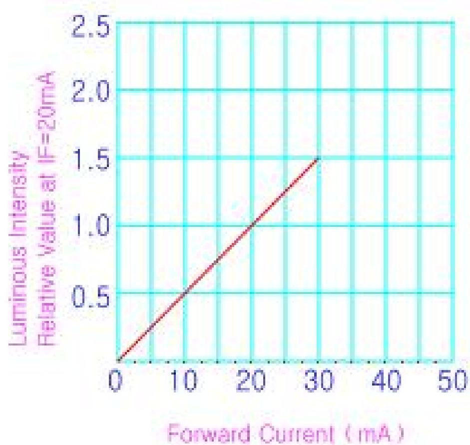
Green:

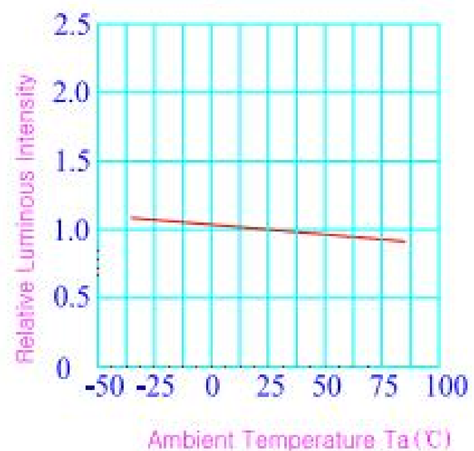












Reliability Test Items and Conditions

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

Cautions

Storage conditions

1、 avoid continued exposure to the condensing moisture environment and keep the product away from rapid transitions in ambient temperature.
2、LEDs should be stored with temperature ≤30℃ and relative humidity<60%
3、Product in the original sealed package is recommended to be assembled within 72 hours of opening
4、Product in opened package for more than a week should be baked for 6-8 hours at 85-10℃

LED MOUNTING METHOD

1、The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement.
Lead-forming may be required to insure the lead pitch matches the hole pitch.
Refer to the figure below for proper lead forming procedures.
Do not route PCB trace in the contact area between the leadframe and the PCB to prevent short-circuits

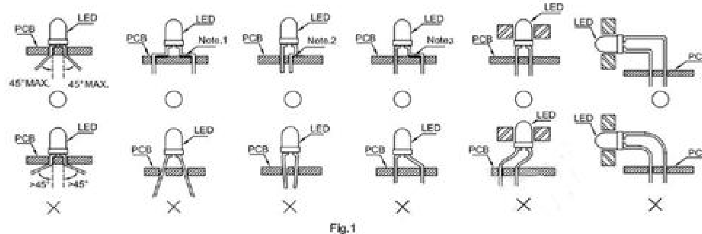


Fig.1

Note:
○ Correct mounting method
× Incorrect mounting method

2、When soldering wires to the LED, each wire joint should be separately insulated with heat-shrink tube to prevent short-circuit contact.
Do not bundle both wires in one heat shrink tube to avoid pinching the LED leads.
Pinching stress on the LED leads may damage the internal structures and cause failure.

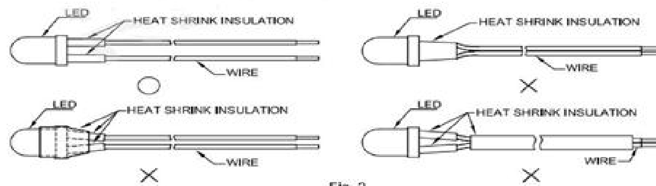


Fig. 2

Note:
○ Correct mounting method
× Incorrect mounting method

3、Use stand-offs (Fig.3) or spacers (Fig.4) to securely position the LED above the PCB.
4. Maintain a minimum of 3mm clearance between the base of the LED lens and the first lead bend (Fig. 5 ,Fig. 6).
5. During lead forming, use tools or jigs to hold the leads securely so that the bending force will not be transmitted to the LED lens and its internal structures. Do not perform lead forming once the component has been mounted onto the PCB.

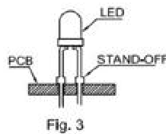


Fig. 3

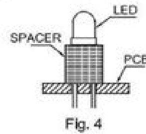


Fig. 4

Lead Forming Procedures

1、Lead Forming Procedures
2、Do not bend the leads more than twice. (Fig. 7)
3、During soldering, component covers and holders should leave clearance to avoid placing damaging stress on the LED during soldering. (Fig. 8)
4、The tip of the soldering iron should never touch the lens epoxy.
5、Through-hole LEDs are incompatible with reflow soldering.
6、If the LED will undergo multiple soldering passes or face other processes where the part may be subjected to intense heat, please check with Bestsmd for compatibility.

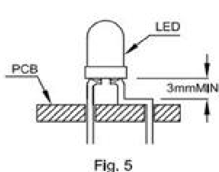


Fig. 5

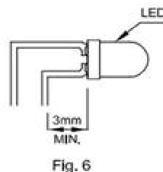


Fig. 6

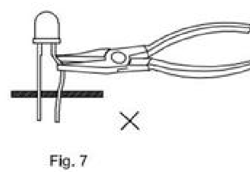


Fig. 7

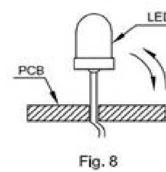
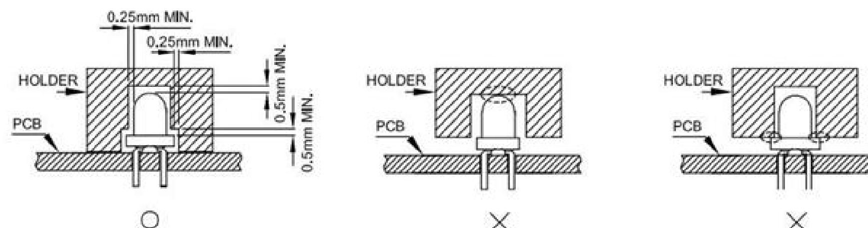


Fig. 8



Note: ○ Correct mounting method × Incorrect mounting method