Data Sheet

PN:503FOC60D3L14

5mm Through-hole LED-600nm LED

ATTENTION

OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC DISCHARGE
SENSITIVE DEVICES

Features

Dimensions:φ5mm*H8.7mm

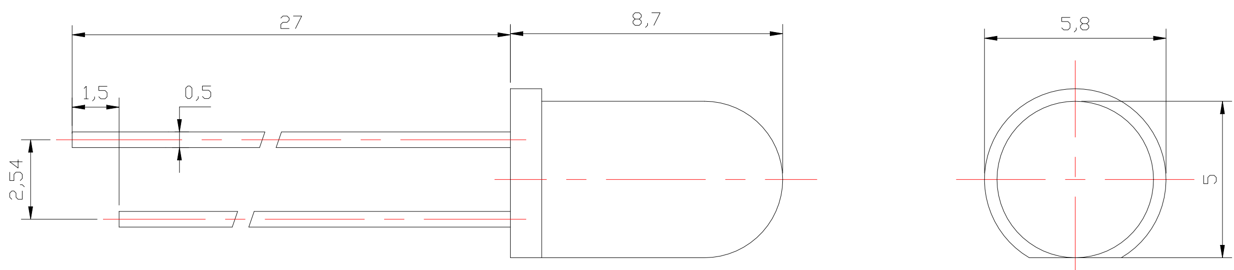
- Color :600nm Orange LED
- Lens: Water Clear Epoxy
- Chip Material:AlGaInP
- Chip Dimension:350um*350um
- Number of Chips:1pcs
- High reliability,High radiant intensity
- Low forward voltage
- Meet ROHS, Green Product

Applications

Horticulture lighting

Medical appliances

Package Dimensions



Notes:

1.All dimensions are in millimeters ;

2.Tolerance is ± 0.10 mm unless otherwise noted.

3.Short pin is cathode.

Absolute Maximum Ratings (Tc=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation	Pd	70	mW
Pulse Forward Current	IFP	100	mA
Forward Current	IF	≤70	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	260	°C
Electro Static Discharge(HBM)	ESD	2000	V
Service life under normal conditions	Time	80000	H
Warranty	Time	5	Years
Antistatic bag	Piece	1000	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	VF	1.8	2.0	2.4	V	IF=20mA
Luminous Intensity	IV	18000		28000	mcd	IF=20mA
Peak Wavelength	λP		605		nm	IF=20mA
Dominant Wavelength	λd	600	603	612	nm	IF=20mA
Half Width	Δλ		14		nm	IF=20mA
Viewing Half Angle	2θ1/2		±10		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.**

Bin code definition

● IV Rank@IF=20mA

Rank	Min	Max	Unit
I1	18000	23000	mcd
I2	23000	28000	mcd

*Tolerance::±15%

● VF Rank@IF=20mA

Rank	Min	Max	Unit
V1	1.8	2.0	V
V2	2.0	2.2	V
V3	2.2	2.4	V

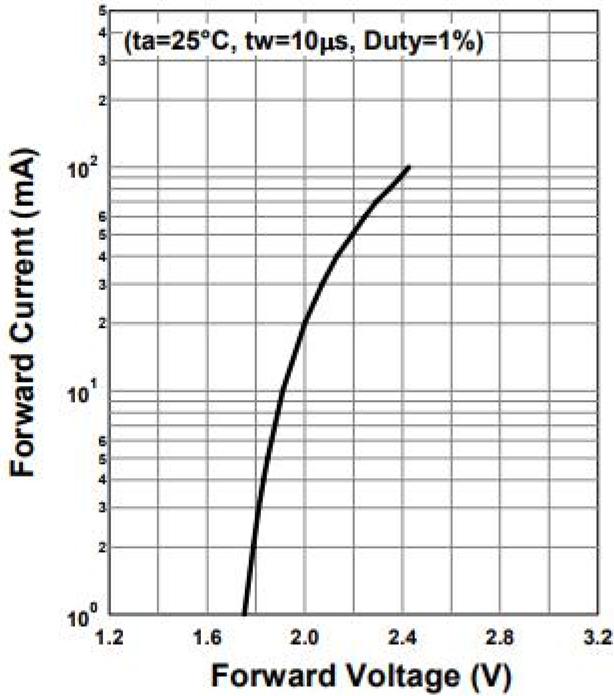
*Tolerance::±15%

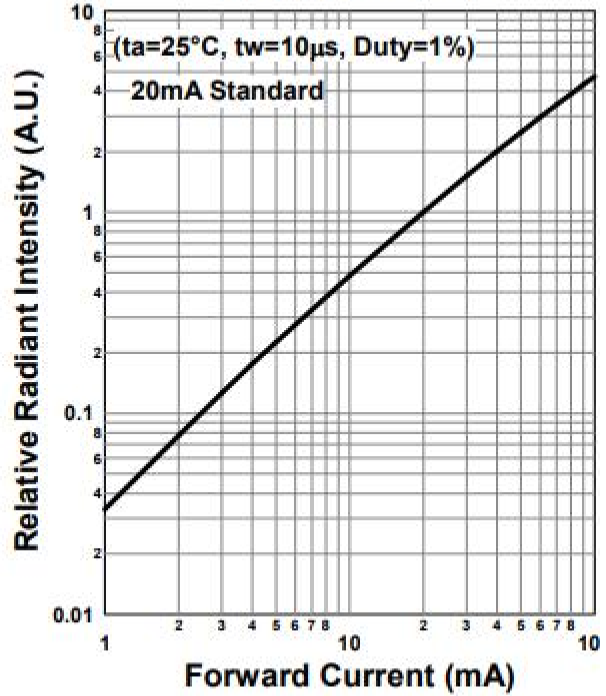
● WD Rank@IF=20mA

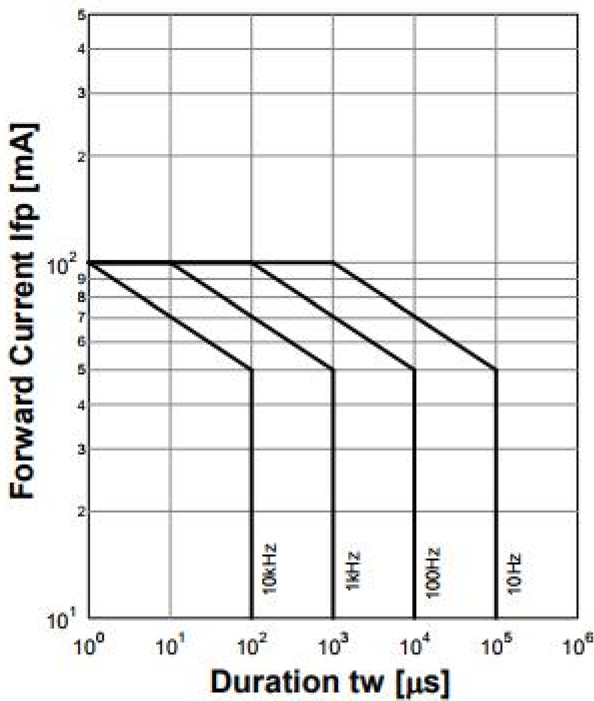
Rank	Min	Max	Unit
W1	600	603	nm
W2	603	606	nm
W3	606	609	nm
W4	609	612	nm

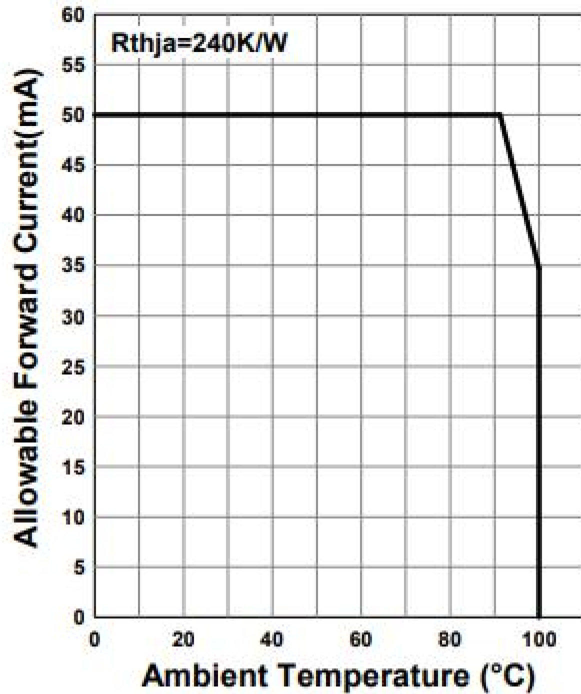
*Tolerance::±15%

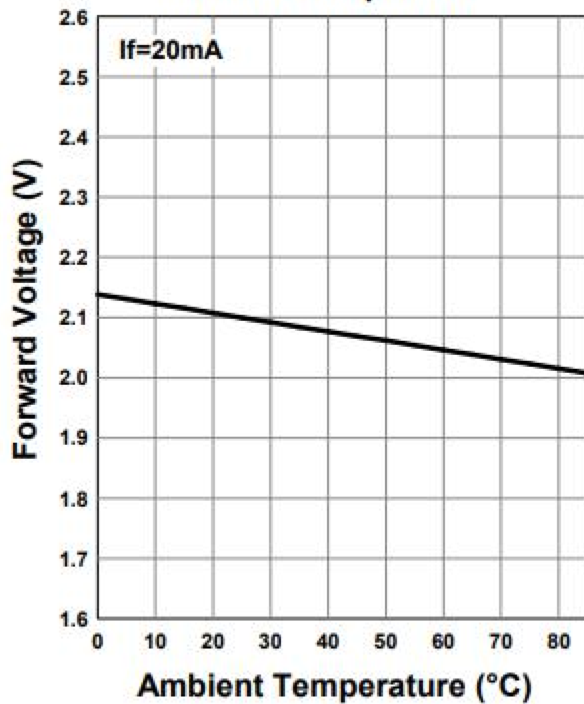
Typical Electrical-Optical Characteristics Curves

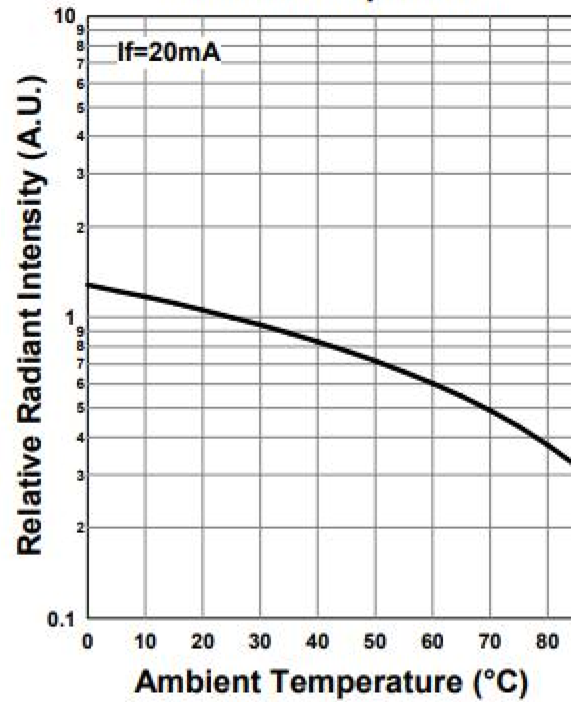


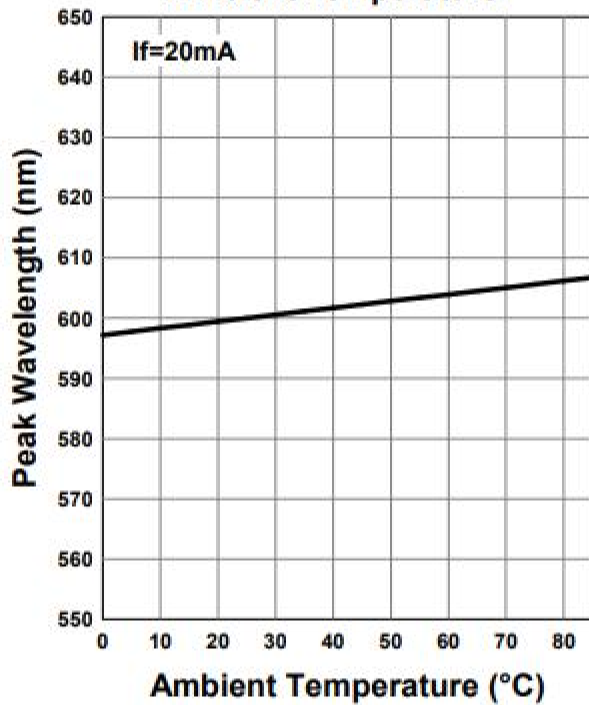


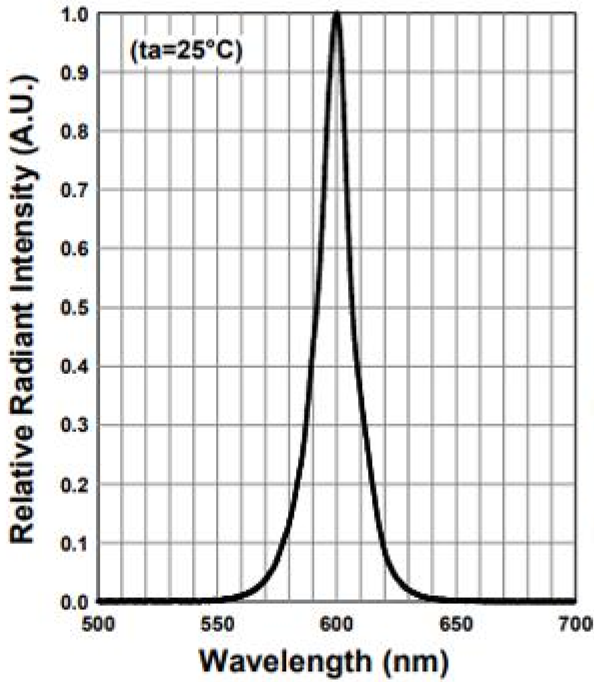


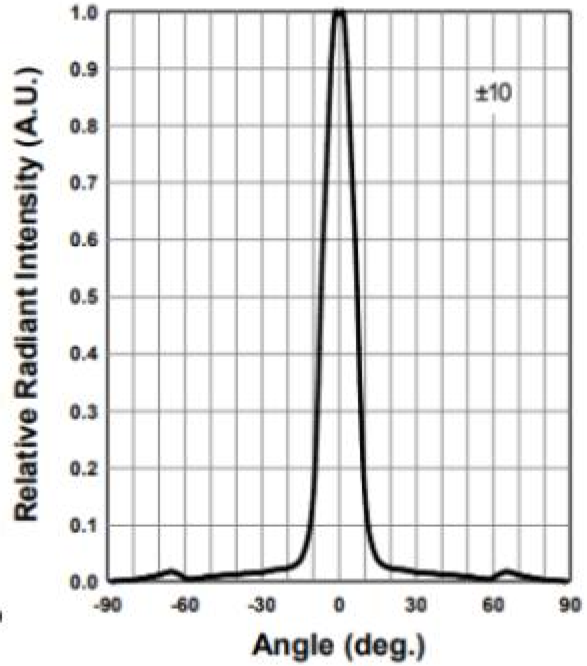


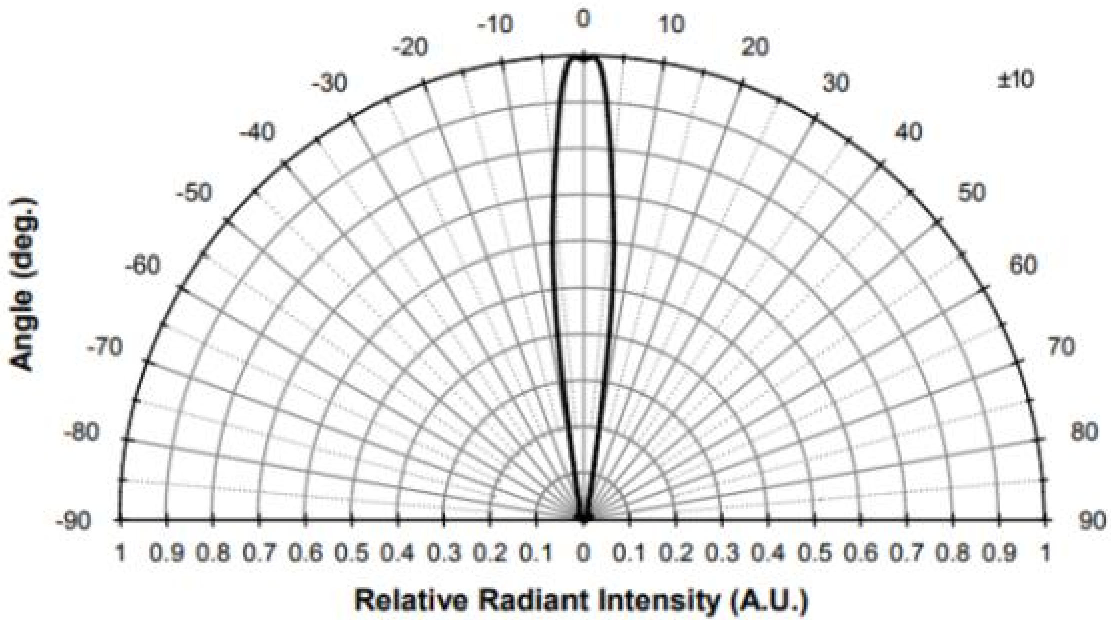

Forward Voltage -
Ambient Temperture
If=20mA
Forward Voltage (V)
2.6
2.5
2.4
2.3
2.2
2.1
2.0
1.9
1.8
1.7
1.6
0
10
20
30
40
50
60
70
80
Ambient Temperature (°C)


Relative Radiant Intensity -
Ambient Temperature
If=20mA
Relative Radiant Intensity (A.U.)
10
1
0.1
0
10
20
30
40
50
60
70
80
Ambient Temperature (°C)


Peak Wavelength -
Ambient Temperature
If=20mA
Peak Wavelength (nm)
650
640
630
620
610
600
590
580
570
560
550
0
10
20
30
40
50
60
70
80
Ambient Temperature (°C)


Relative Spectral Emission
(ta=25°C)
Relative Radiant Intensity (A.U.)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
500
550
600
650
700
Wavelength (nm)


Radiation Characteristics
±10
Relative Radiant Intensity (A.U.)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-90
-60
-30
0
30
60
90
Angle (deg.)


Radiation Characteristics
±10
Angle (deg.)
-90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90
1 0.9 0.8 0.7 0.6 0.5 0.4 0.3 0.2 0.1 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
Relative Radiant Intensity (A.U.)

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

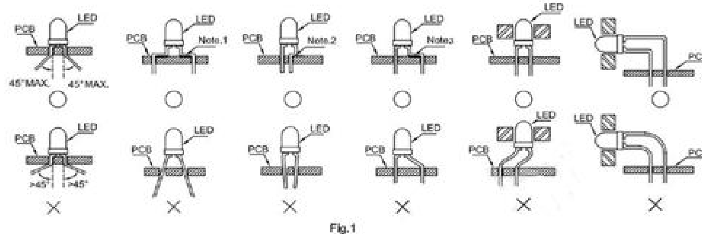


Fig.1

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.

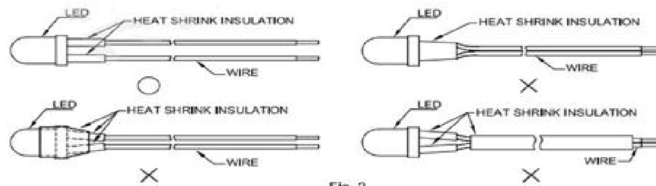


Fig. 2

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.

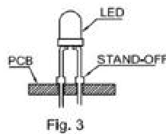


Fig. 3

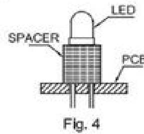


Fig. 4

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.

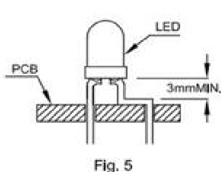


Fig. 5

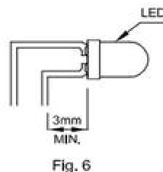


Fig. 6

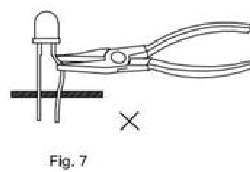


Fig. 7

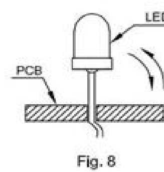
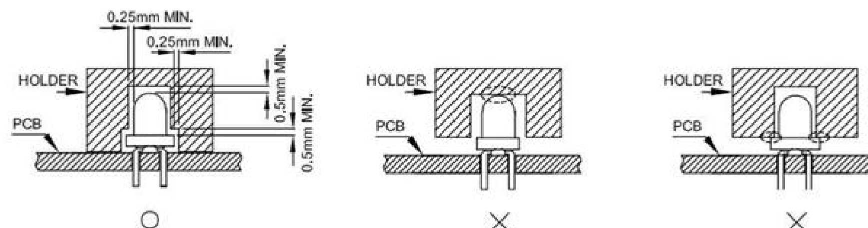


Fig. 8



Note: ○ Correct mounting method × Incorrect mounting method