

5mm Round Infrared Chip LED T-1 3/4

Technical Data Sheet

Part No: LL-503SIRC2E-1BD

Features

- ◇ Standard T-1 3/4 diameter package.
- ◇ Low forward voltage.
- ◇ Infrared Emitting Diode.
- ◇ Viewing angle =30°.
- ◇ Reliable and rugged
- ◇ RoHS compliant.

Descriptions

- ◇ The device is spectrally matched with silicon photodiode and phototransistor.
- ◇ The LEDs are available with different viewing angles.

Applications

- ◇ Floppy disk drive
- ◇ Optoelectronic switch
- ◇ Camera
- ◇ VCR
- ◇ Video
- ◇ Smoke detector
- ◇ Infrared applied system
- ◇ Free air transmission system
- ◇ Infrared remote control units

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Max.	Unit
Power Dissipation	PD	100	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	100	A
Forward Current	IF	35	mA
Reverse Voltage	VR	5	V
Operating Temperature Range	Topr	-40°C to +85°C	
Storage Temperature Range	Tstg	-40°C to +100°C	
Soldering Temperature	Tsld	260°C for 5 Seconds	

Electrical Optical Characteristics at Ta=25°C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Viewing Angle*	2θ _{1/2}	---	30	---	Deg	Note 1
Forward Voltage	VF	---	1.45	1.65	V	IF =70mA
Reverse Current	IR	---	---	10	μA	VR=5V
Peak Emission Wavelength	λ _p	---	850	---	nm	IF=20mA
Spectral Bandwidth	Δλ	---	45	---	nm	IF=20mA
Radiant Intensity	Ee	---	7.8	---	mW/sr	IF =20mA

Note:

1. θ_{1/2} is the off-axis angle at which the luminous intensity is half the axial luminous intensity.

Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level:90%

LTPD:10%

1) Test Items and Results

No.	Test Item	Test Hours/Cycles	Test Conditions	Sample Size	Ac/Re
1	Resistance to Soldering Heat	6 Min	Tsld=260±5°C, Min. 5sec	25pcs	0/1
2	Thermal Shock	300 Cycles	H:+100°C 5min] 10 sec L:-10°C 5min	25pcs	0/1
3	Temperature Cycle	300 Cycles	H:+100°C 15min]5min L:-40°C 15min	25pcs	0/1
4	High Temperature Storage	1000Hrs.	Temp:100°C	25pcs	0/1
5	DC Operating Life	1000Hrs.	If=20mA	25pcs	0/1
6	Low Temperature Storage	1000Hrs.	Temp:-40°C	25pcs	0/1
7	High Temperature/ High Humidity	1000Hrs.	85°C/85%RH	25pcs	0/1

2) Criteria For Judging The Damage

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward Voltage	VF	$I_F = 20mA$	—	F.V.*)×1.1
Reverse Current	IR	$V_R = 5V$	—	F.V.*)×2.0

*) F.V.: First Value

Typical Electrical / Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

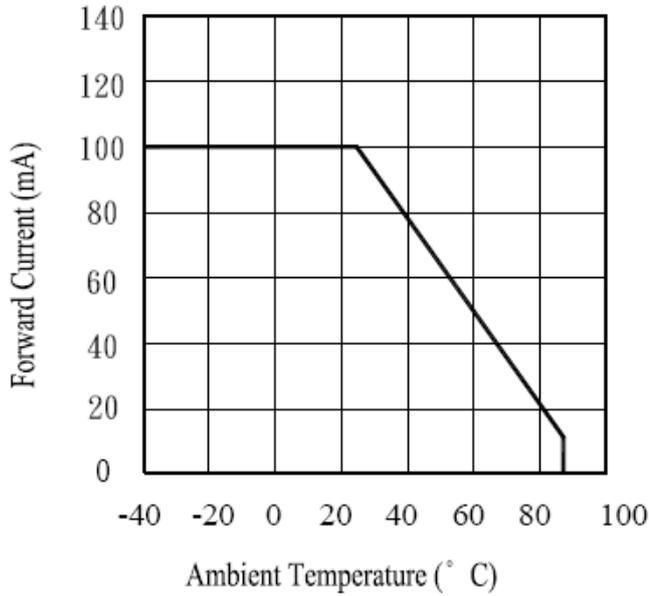


Fig.2 Spectral Distribution

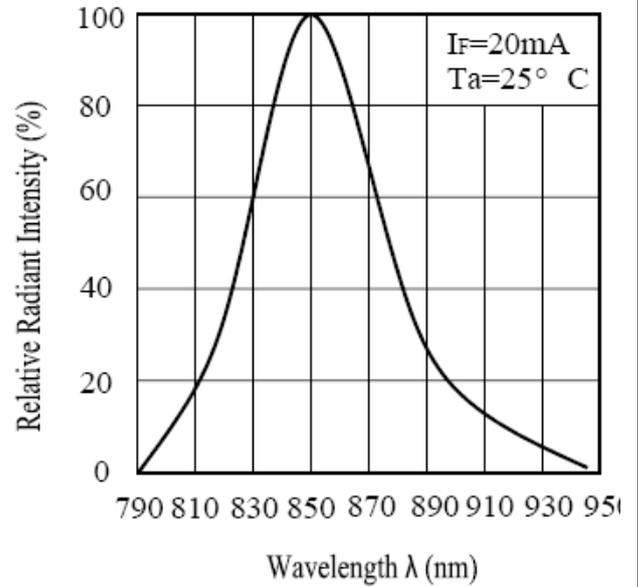


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

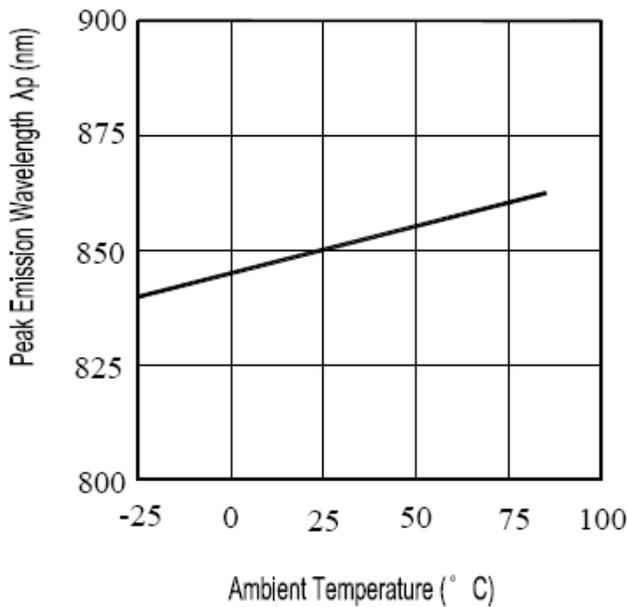
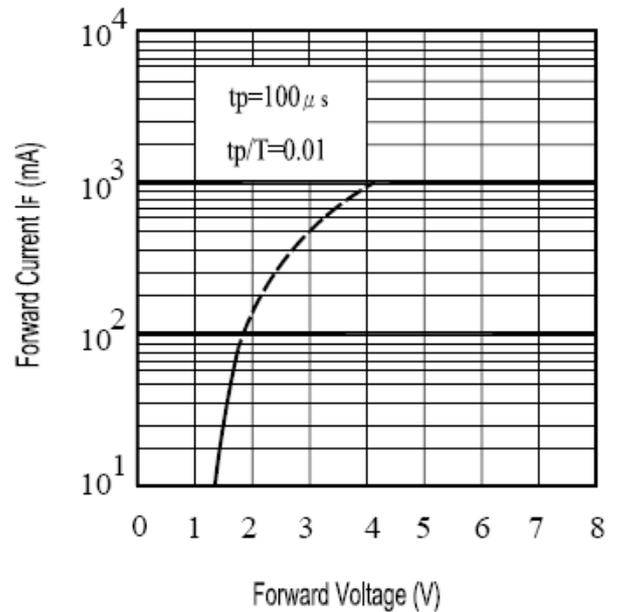


Fig.4 Forward Current vs. Forward Voltage



Typical Electrical / Optical Characteristics Curves

Fig.5 Relative Intensity vs.
Forward Current

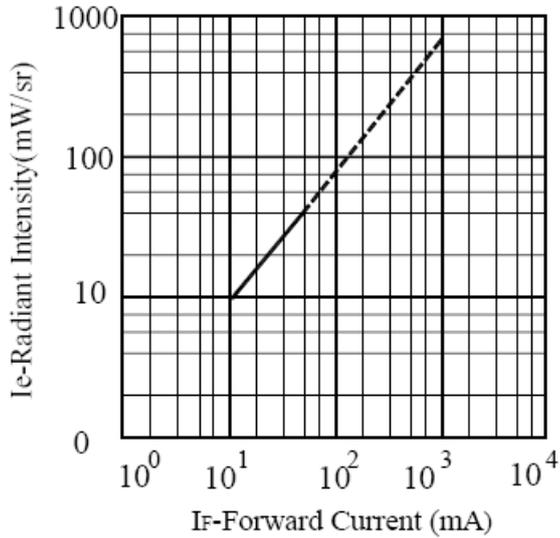


Fig.6 Relative Radiant Intensity vs.
Angular Displacement

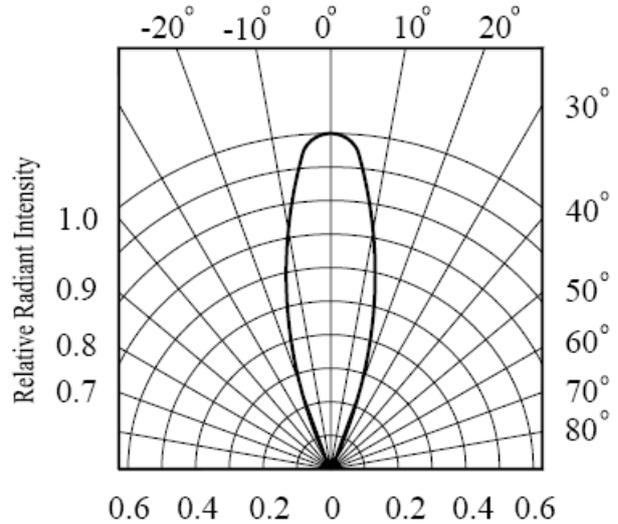


Fig.7 Relative Intensity vs.
Ambient Temperature(° C)

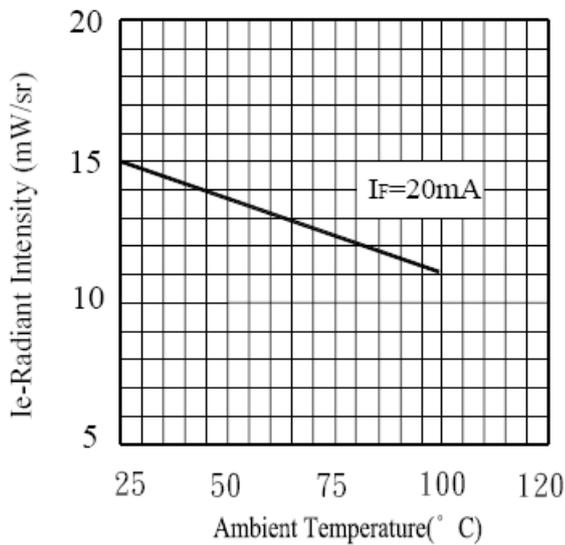
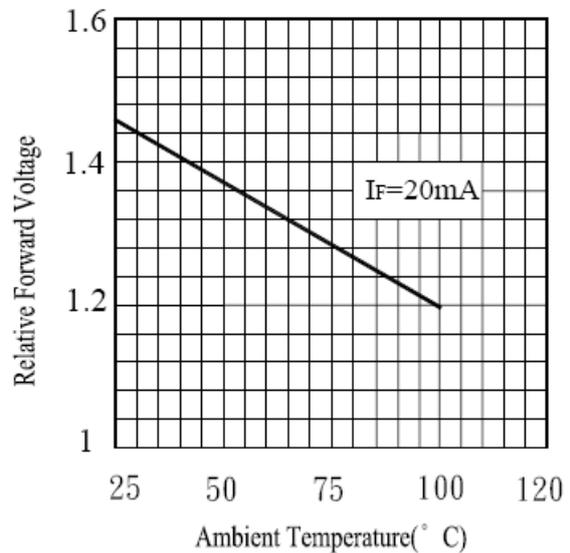


Fig.8 Forward Voltage vs.
Ambient Temperature(° C)



Please read the following notes before using the datasheets

1. Over-current-proof

Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change (Burn out will happen). s

2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the LEDs should be kept at 30°C or less and 90%RH or less.

2.3 The LEDs should be used within a year.

2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

3. Soldering Condition

3.1 Pb-free solder temperature profile

3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

3.4 After soldering, do not warp the circuit board.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260°C for 5 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used. It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.