

Technical Data Sheet

1.9mm Round Subminiature Axial Infrared LED

IR91-21C

Features

- Small double-end package
- High reliability
- Low forward voltage
- Good spectral matching to Si photodetector
- Pb free



Descriptions

IR91-21C is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with spherical top view lens. The device is spectrally matched with silicon photodiode and phototransistor.

Applications

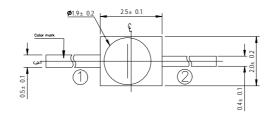
- PCB mounted infrared sensor
- Infrared emitting for miniature light barrier
- Floppy disk drive
- Optoelectronic switch
- Smoke detector

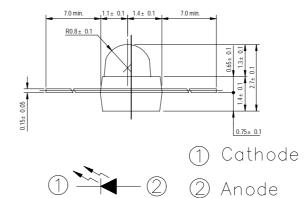
Device Selection Guide

LED Part No.	Chip		
	Material	Lens Color	
IR	GaAlAs	Water Clear	

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Package Dimensions





Notes: 1.All dimensions are in millimeters

2.Tolerances unless dimensions ±0.1mm

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Units
Continuous Forward Current	I_{F}	65	mA
Peak Forward Current	I_{FP}	1.0	A
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40 ~ +85	$^{\circ}\!\mathbb{C}$
Storage Temperature	T_{stg}	-40 ~ +85	$^{\circ}\!\mathbb{C}$
Soldering Temperature	T_{sol}	260	$^{\circ}\!\mathbb{C}$
Power Dissipation at(or below)	P_d	130	mW
25°C Free Air Temperature			

Notes: *1: I_{FP} Conditions--Pulse Width \leq 100 μ s and Duty \leq 1%.

*2:Soldering time \leq 5 seconds.

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Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	
	Ee	I _F =20mA	3.0	5.0		mW /sr	
Radiant Intensity		$I_F = 100 mA$ Pulse Width $\leq 100 \mu\text{s}$, Duty $\leq 1\%$	ľ	25			
Peak Wavelength	λр	$I_F=20\text{mA}$		940		nm	
Spectral Bandwidth	Δλ	I _F =20mA		45		nm	
	V_{F}	I _F =20mA		1.2	1.5		
Forward Voltage		$I_F = 100 mA$ Pulse Width $\leq 100 \mu$ s ,Duty $\leq 1\%$		1.4	1.8	V	
		$I_F=1A$		2.6	4.0		
Reverse Current	I_R	$V_R=5V$	1		10	μ A	
View Angle	2 \theta 1/2	I _F =20mA		25		deg	

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Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs.

Ambient Temperature

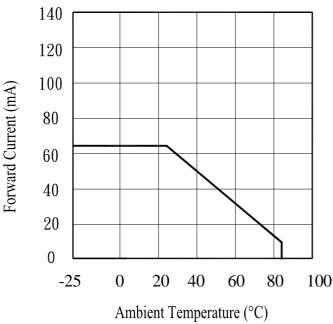


Fig.3 Peak Emission Wavelength Ambient Temperature

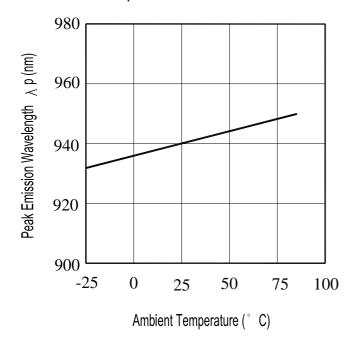


Fig.2 Spectral Distribution

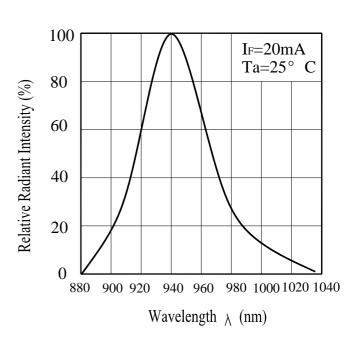
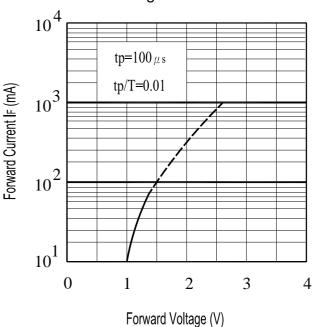


Fig.4 Forward Current vs. Forward Voltage



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Typical Electro-Optical Characteristics Curves

Fig.5 Relative Intensity vs.

Forward Current

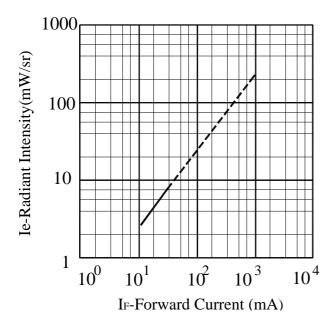


Fig.6 Relative Radiant Intensity vs.

Angular Displacement

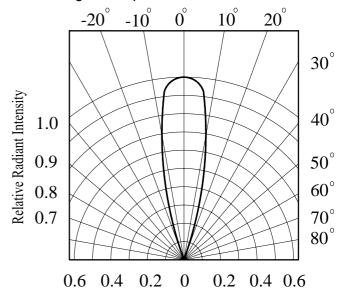


Fig.7 Relative Intensity vs.

Ambient Temperature(°C)

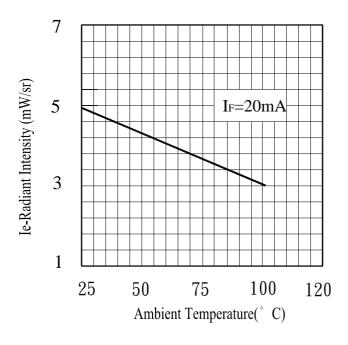
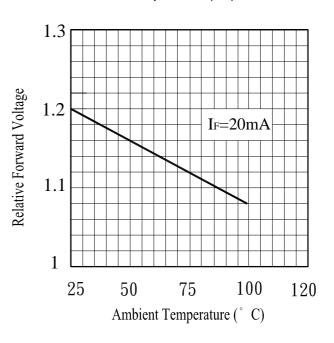


Fig.8 Forward Voltage vs.

Ambient Temperature(°C)



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Precautions For Use

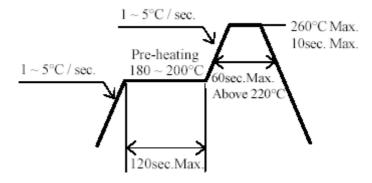
1. Over-current-proof

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

- 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.
 - 2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : $60\pm5^{\circ}$ C for 24 hours.

- 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.

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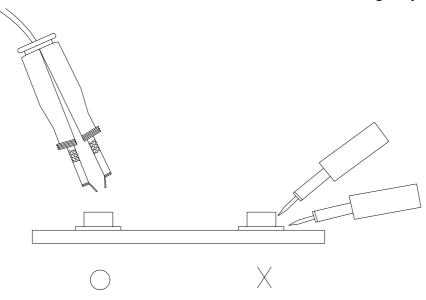


4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 280° C for 3 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 (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



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Reliability Test Item And Condition

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

Confidence level: 90%

LTPD: 10%

NO.	Item	Test Conditions	Test Hours/	Sample	Failure	Ac/Re
			Cycles	Sizes	Judgement	
					Criteria	
1	REFLOW Soldering	TEMP. : 260°C±5°C	6Mins	22pcs		0/1
		5secs			$I_R \ge U \times 2$	
2	Temperature Cycle	$H:+100^{\circ}C$ 15mins	50Cycles	22pcs	$Ee \leq Lx0.8$	0/1
		5mins			$V_F \ge U \times 1.2$	
		L: -40°C 15mins				
3	Thermal Shock	H :+100°C ▲ 5mins	50Cycles	22pcs	U: Upper	0/1
		▼ 10secs			Specification	
		L :-10°C 5mins			Limit	
4	High Temperature	TEMP. ∶ +100°C	1000hrs	22pcs	L: Lower	0/1
	Storage				Specification	
5	Low Temperature	TEMP. : -40°C	1000hrs	22pcs	Limit	0/1
	Storage					
6	DC Operating Life	I _F =20mA	1000hrs	22pcs		0/1
7	High Temperature/	85°C / 85% R.H	1000hrs	22pcs		0/1
	High Humidity					



Packing Quantity Specification

1.1000PCS/1Bag, 20Bags/1Box

2.10Boxes/1Carton

Label Form Specification



CPN: Customer's Production Number

P/N: Production Number QTY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number

MADE IN TAIWAN: Production Place

Notes

- 1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- 2. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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