

Technical Data Sheet

.9mm Round Subminiature "Z-Bend" Lead Infrared LED

SIR91-21C/TR9



Features

- Good spectral matching to Si photodetector
- Low forward voltage
- Peak wavelength λ p=875nm
- Package in 12mm tape on 7" diameter reel
- Pb free
- The product itself will remain within RoHS compliant version.

Descriptions

• SIR91-21C/TR9 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 remote control units with high power requirement
- Scanner
- Infrared applied system

Device Selection Guide

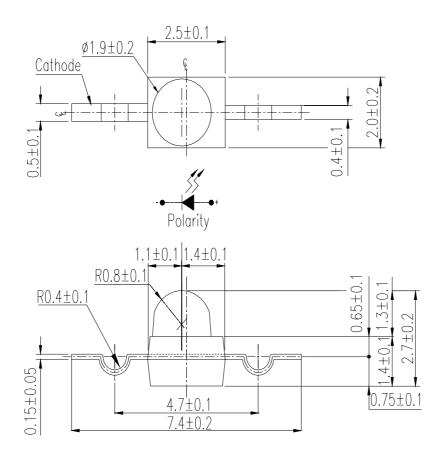
I ED Dowt No	Chip	Lens Color	
LED Part No.	Material	Lens Color	
SIR	GaAlAs	Water clear	

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Package Dimensions



Notes: 1.All dimensions are in millimeters

2.Tolerances unless dimensions ±0.1mm

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Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Units
Continuous Forward Current	I_{F}	65	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-40 ~ +85	$^{\circ}\!\mathbb{C}$
Storage Temperature	$T_{\rm stg}$	-40 ~ +85	$^{\circ}\!\mathbb{C}$
Soldering Temperature	T_{sol}	260	$^{\circ}\!\mathbb{C}$
Power Dissipation at(or below)	P_d	110	mW
25°C Free Air Temperature			

Notes: * Soldering time \leq 5 seconds.

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units	
		I _F =20mA	3.0	5.0			
Radiant Intensity	Ee	$I_F = 100 mA$ Pulse Width $\leq 100 \mu\text{s}$,Duty $\leq 1\%$		20		mW/sr	
Peak Wavelength	λp	I _F =20mA		875		nm	
Spectral Bandwidth	Δλ	I _F =20mA		80		nm	
	V_{F}	I _F =20mA		1.3	1.6		
Forward Voltage		$I_F = 100 mA$ Pulse Width $\leq 100 \mus$,Duty $\leq 1\%$		1.4	1.8	V	
Reverse Current	I_R	V _R =5V			10	μ A	
View Angle	Tiew Angle $2 \theta 1/2$ $I_F=20mA$			20		deg	

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Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs.

Ambient Temperature

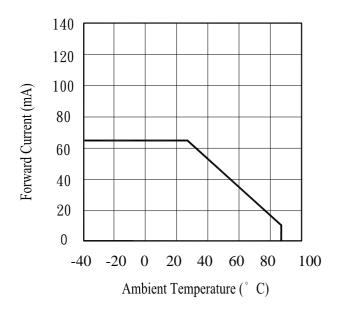


Fig.2 Spectral Distribution

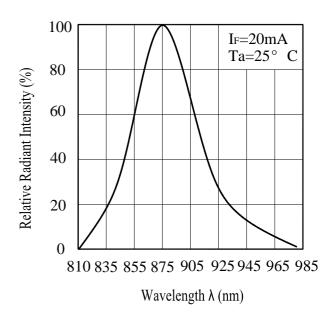


Fig.3 Peak Emission Wavelength
Ambient Temperature

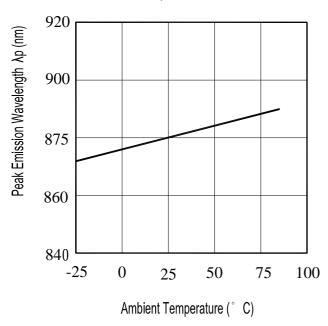
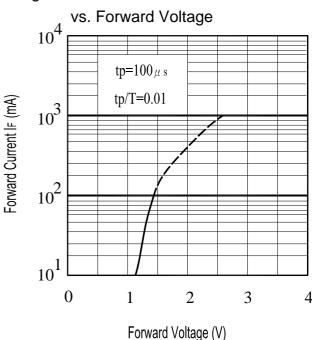


Fig.4 Forward Current



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Typical Electro-Optical Characteristics Curves

Fig.5 Relative Intensity vs.
Forward Current

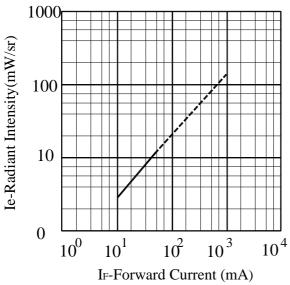


Fig.7 Relative Intensity vs.

Ambient Temperature(°C)

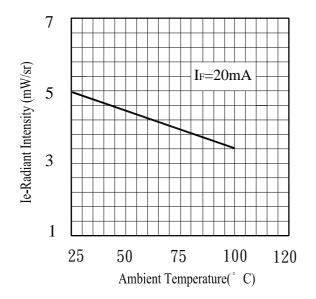


Fig.6 Relative Radiant Intensity vs.

Angular Displacement

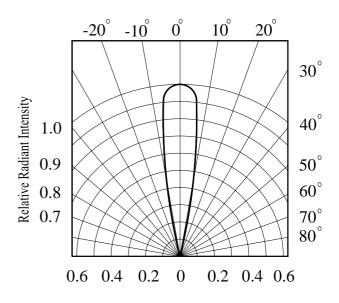
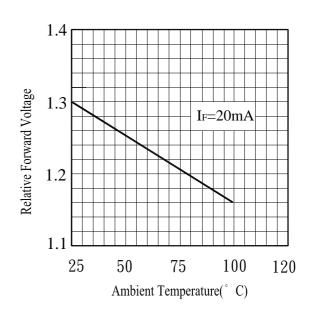


Fig.8 Forward Current vs.

Ambient Temperature(°C)



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Precautions For Use

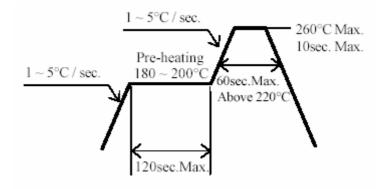
1. Over-current-proof

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 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.
 - 2.4 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 hour

- 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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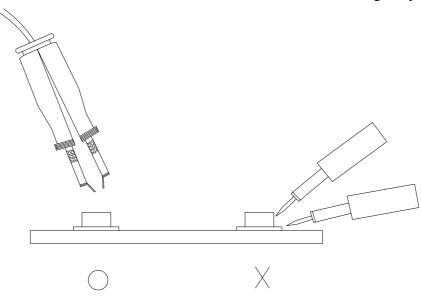


4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350° 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%

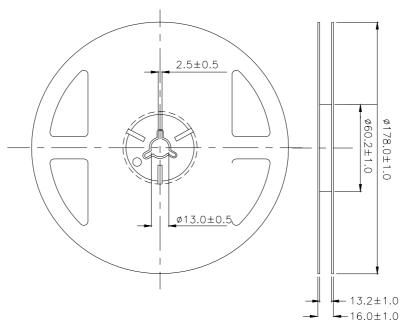
NO.	Item	Test Conditions	Test Hours/	Sample	Failure	Ac/Re
			Cycles	Sizes	Judgement	
					Criteria	
1	REFLOW Soldering	TEMP. : 260°C±5°C	6Mins	22pcs		0/1
		10secs				
2	Temperature Cycle	$H:+100^{\circ}C$ 15mins	50Cycles	22pcs	$I_{C(ON)} \leq L \times 0.8$	0/1
		5mins				
		L:-40°C 15mins			L: Lower	
3	Thermal Shock	H :+100°C ↑ 5mins	50Cycles	22pcs	Specification	0/1
		↓ 10secs			Limit	
		L:- 10° C 5mins				
4	High Temperature	TEMP. ∶ +100°C	1000hrs	22pcs		0/1
	Storage					
5	Low Temperature	TEMP. : -40°C	1000hrs	22pcs		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					

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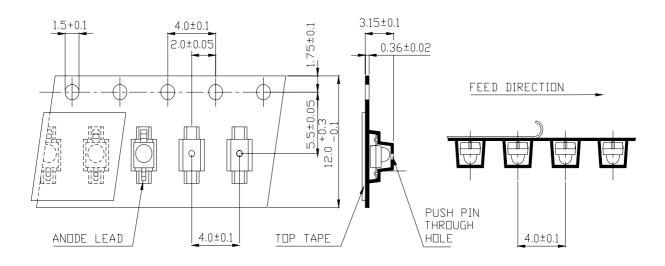
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Package Dimensions



Loaded Quantity Per Reel 1000PCS/Reel



Unit:mm

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Packing Quantity Specification

- 1.1000Pcs/1Volume, 1Volume/1Bag
- 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.
- 3. These specification sheets include materials protected under copyright of EVERLIGHT corporation. Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.

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