

Technical Data Sheet

1.8mm Round Subminiature Infrared LED

Features

- Compatible with infrared and vapor phase reflow solder process.
- Low forward voltage
- Good spectral matching to Si photodetector
- Pb free
- The product itself will remain within RoHS compliant version.

Descriptions

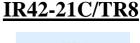
- IR42-21C/TR8 is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with spherical top view lens.
- The device is spectrally matched with silicon photodiode and phototransistor.

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

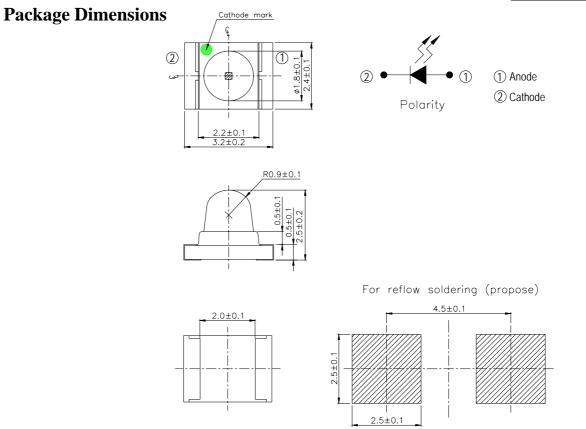


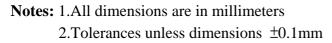


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IR42-21C/TR8





Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Units
Continuous Forward Current	I _F	65	mA
Peak Forward Current	I _{FP}	1.0	А
Reverse Voltage	V _R	5	V
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +85	°C
Soldering Temperature	T _{sol}	260	°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.



Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Тур.	Max.	Units	
Radiant Intensity	Ee	I _F =20mA	1.0	3.0			
		$I_F = 100 \text{mA}$ Pulse Width $\leq 100 \mu \text{s}$,Duty $\leq 1\%$		14		mW /sr	
Peak Wavelength	λp	I _F =20mA		940		nm	
Spectral Bandwidth	Δλ	I _F =20mA		45		nm	
	V _F	I _F =20mA		1.2	1.5	v	
Forward Voltage		. $I_F\!\!=\!\!100mA$ Pulse Width $\!\leq\!100\mus$,Duty $\!\leq\!1\%$		1.4	1.8		
Reverse Current	I _R	V _R =5V			10	μA	
View Angle	2 0 1/2	I _F =20mA		30		deg	

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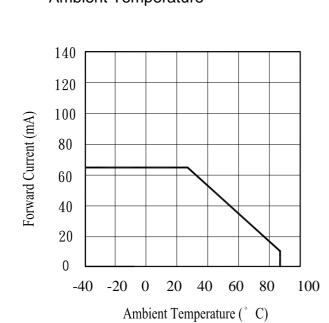
IF=20mA

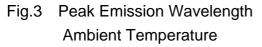
Typical Electro-Optical Characteristics Curves

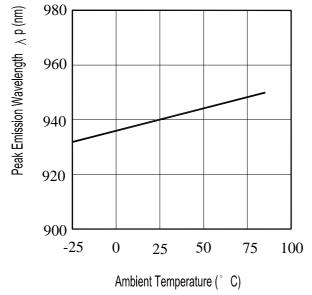
Fig.1 Forward Current vs. Ambient Temperature

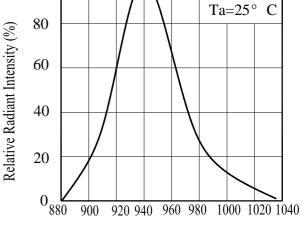
Fig.2 Spectral Distribution

100

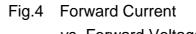


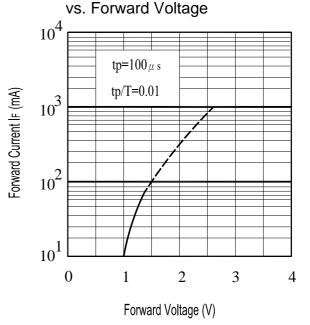






Wavelength λ (nm)





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 10°

 20°

Typical Electro-Optical Characteristics Curves

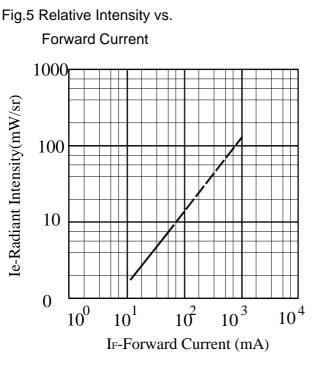
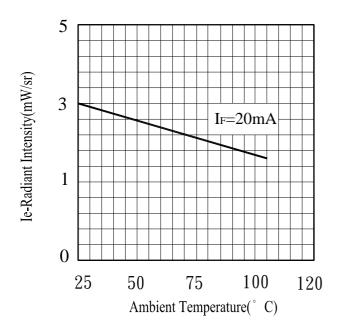


Fig.7 Relative Intensity vs. Ambient Temperature(°C)



 30° Relative Radiant Intensity 40° 1.0 50° 0.9 60° 0.8 70° 0.7 80° 0.4 0.2 0 0.2 0.4 0.6 0.6

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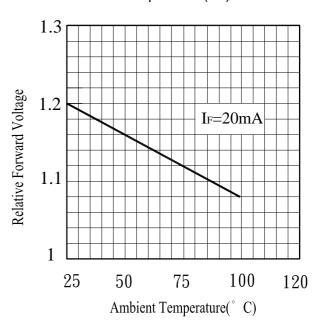
Fig.6 Relative Radiant Intensity vs.

Angular Displacement

-10[°]

-20°

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



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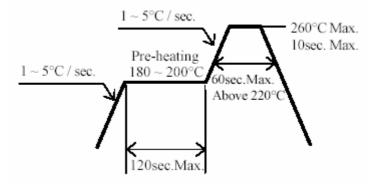


Precautions For Use

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 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±5°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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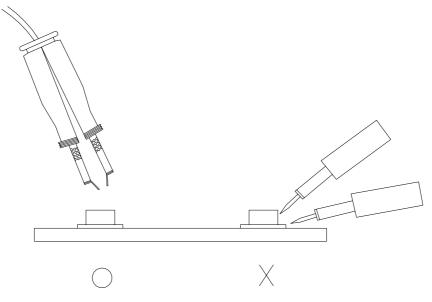


4.Soldering Iron

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.





Reliability Test Item And Condition

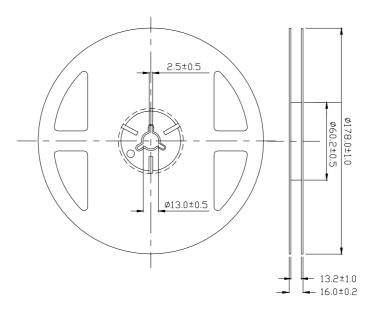
The reliability of products shall be satisfied with items listed below. Confidence level : 90%

LTPD: 10%

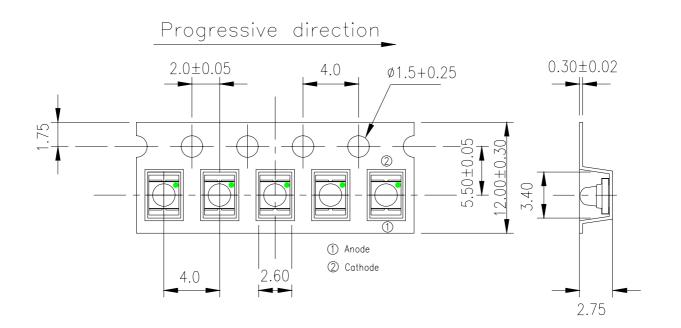
NO.	Item	Test Conditions	Test Hours/	Sample	Failure	Ac/Re
			Cycles	Sizes	Judgement	
					Criteria	
1	REFLOW Soldering	TEMP. $: 260^{\circ}C \pm 5^{\circ}C$	6Mins	22pcs		0/1
		5secs			$I_R \ge U \times 2$	
2	Temperature Cycle	$H:+100^{\circ}C$ 15mins	50Cycles	22pcs	$Ee \leq Lx0.8$	0/1
		5mins			$V_F \ge U x 1.2$	
		$L:-40^{\circ}C$ 15mins				
3	Thermal Shock	H :+100°C \blacktriangle 5mins	50Cycles	22pcs	U: Upper	0/1
		✓ 10secs			Specification	
		$L:-10^{\circ}C$ 5mins			Limit	
4	High Temperature	TEMP. ∶ +100°C	1000hrs	22pcs	L: Lower	0/1
	Storage				Specification	
5	Low Temperature	ТЕМР. : -40° С	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					



Package Dimensions



Taping Dimensions



Unit: mm

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Packing Quantity Specification

 $1.1000 Pcs/1 Volume \ , \ 1 Volume/1 Bag$

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.

EVERLIGHT ELECTRONICS CO., LTD. Office: No 25, Lane 76, Sec 3, Chung Yang Rd, Tucheng, Taipei 236, Taiwan, R.O.C *Tel:* 886-2-2267-2000, 2267-9936 *Fax:* 886-2267-6244, 2267-6189, 2267-6306 *http:*\\www.everlight.com

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