

## Technical Data Sheet

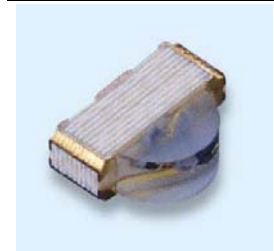
### Chip Infrared LED With Right Angle Lens

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#### IR12-21C/TR8

#### Features

- Small double-end package
- Package in 8mm tape on 7" diameter reels.
- Low forward voltage
- Good spectral matching to Si photo detector



#### Descriptions

IR12-21C/TR8 is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with right angle lens. The device is spectrally matched with silicon photodiode and phototransistor.

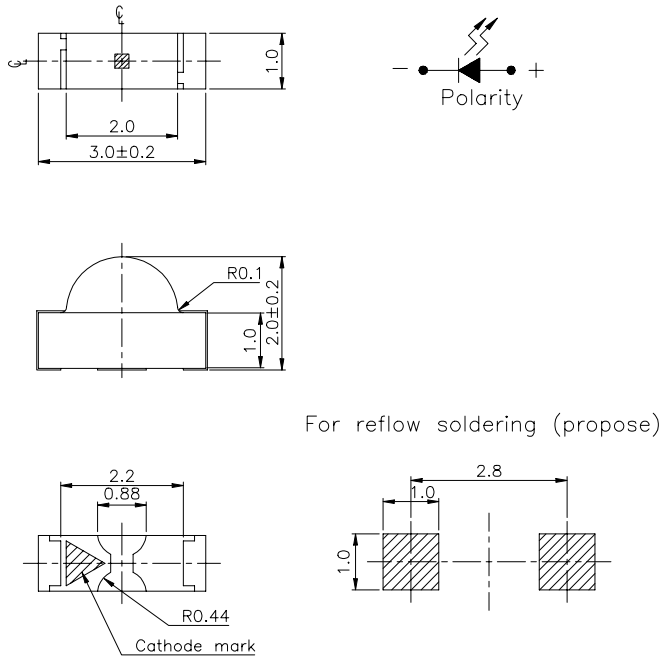
#### Applications

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

#### Device Selection Guide

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

**Package Dimensions**



- Notes:** 1.All dimensions are in millimeters  
 2.Tolerances unless dimensions  $\pm 0.1\text{mm}$

**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	$T_{opr}$	-25 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +85	°C
Soldering Temperature	$T_{sol}$	260	°C
Power Dissipation at(or below) 25°C Free Air Temperature	$P_d$	130	mW

- Notes:** \*1: $I_{FP}$  Conditions--Pulse Width  $\leq 100 \mu\text{s}$  and Duty  $\leq 1\%$ .  
 \*2:Soldering time  $\leq 5$  seconds.

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Radiant Intensity	Ee	I <sub>F</sub> =20mA	0.5	0.8		mW /sr
		I <sub>F</sub> =100mA Pulse Width ≤ 100 μs ,Duty ≤ 1%	--	4.0	--	
Peak Wavelength	λ p	I <sub>F</sub> =20mA	--	940	--	nm
Spectral Bandwidth	Δ λ	I <sub>F</sub> =20mA	--	45	--	nm
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	--	1.2	1.5	V
		I <sub>F</sub> =100mA Pulse Width ≤ 100 μs ,Duty ≤ 1%	--	1.4	1.8	
		I <sub>F</sub> =1A	--	2.6	4.0	
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	--	--	10	μ A
View Angle	2 θ 1/2	I <sub>F</sub> =20mA	--	160	--	deg

**Typical Electro-Optical Characteristics Curves**

Fig.1 Forward Current vs. Ambient Temperature

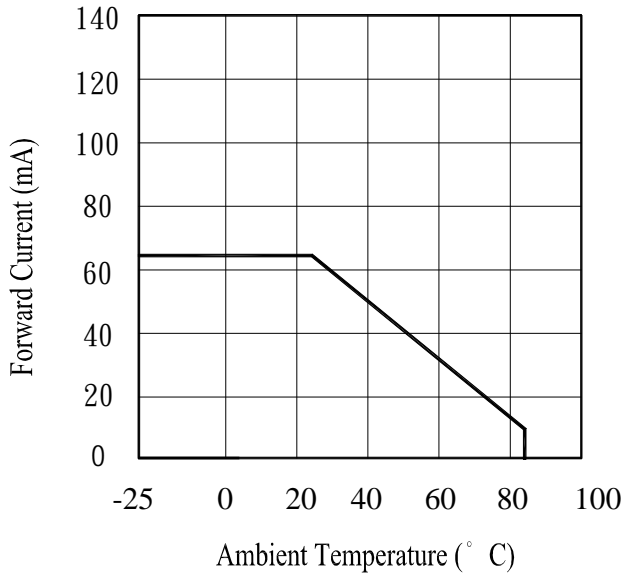


Fig.2 Spectral Distribution

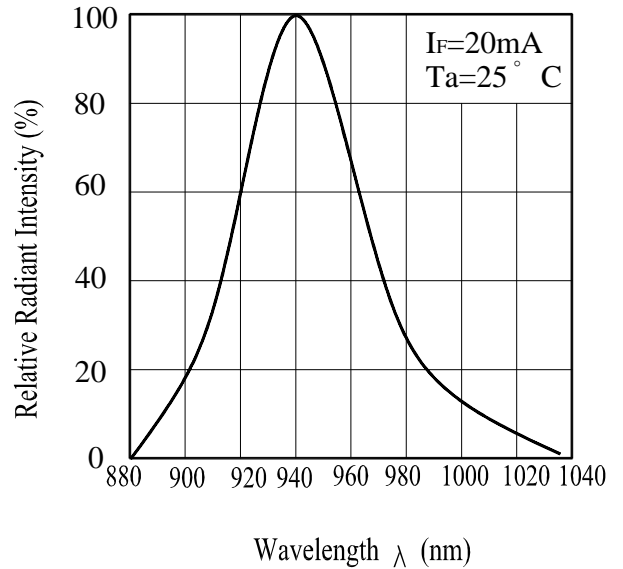


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

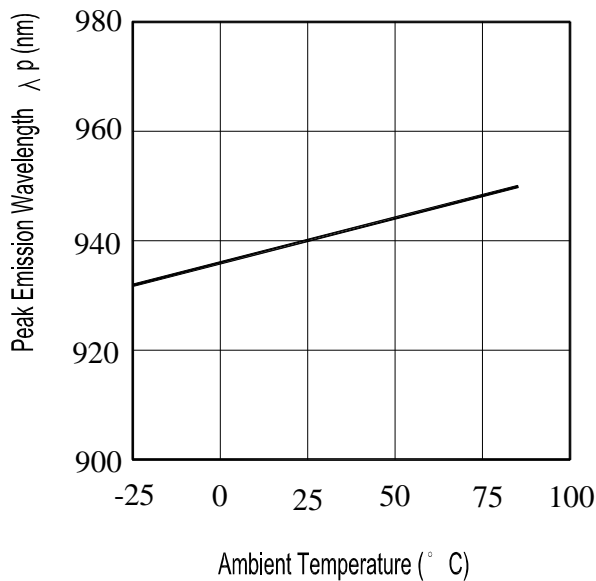
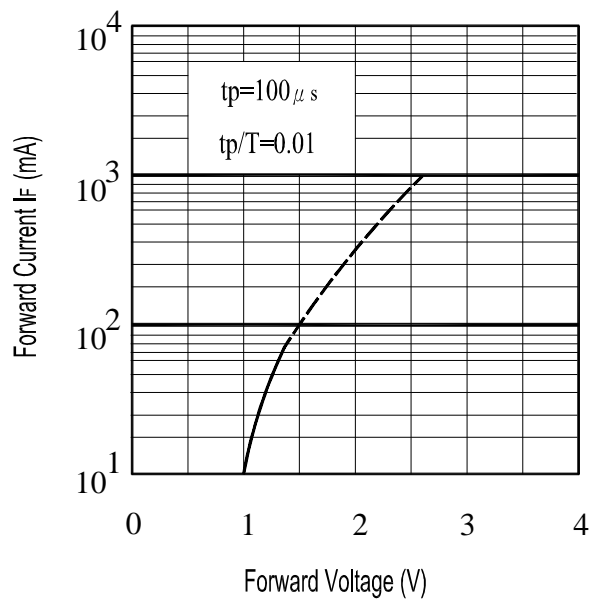


Fig.4 Forward Current vs. Forward Voltage



**Typical Electro-Optical Characteristics Curves**

Fig.5 Relative Intensity vs. Forward Current

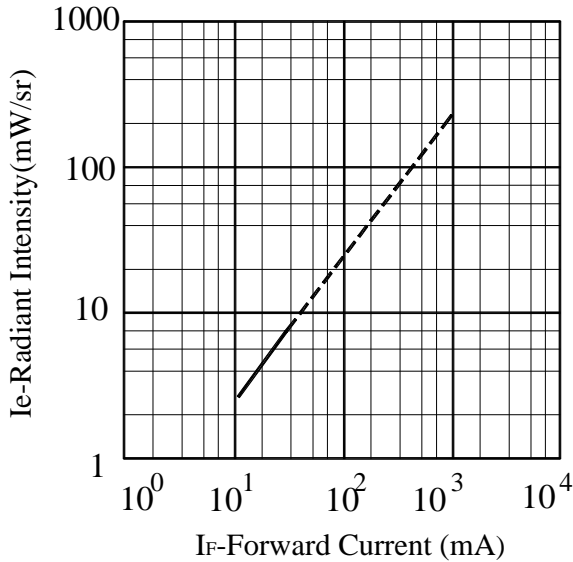


Fig.6 Relative Radiant Intensity vs. Angular Displacement

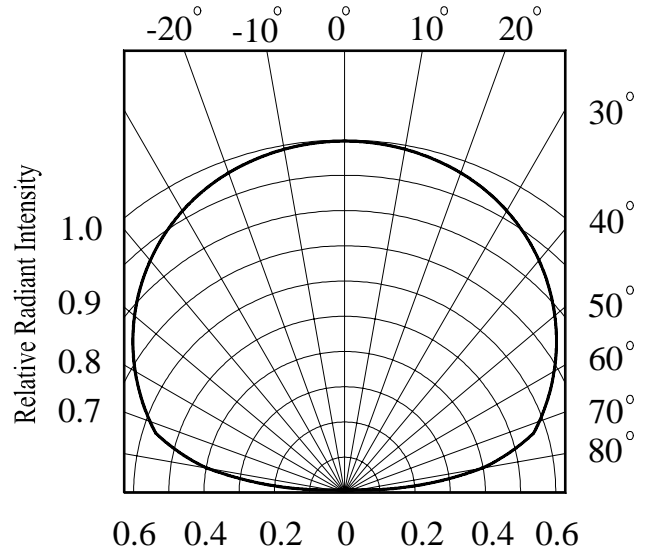


Fig.7 Relative Intensity vs. Ambient Temperature(° C)

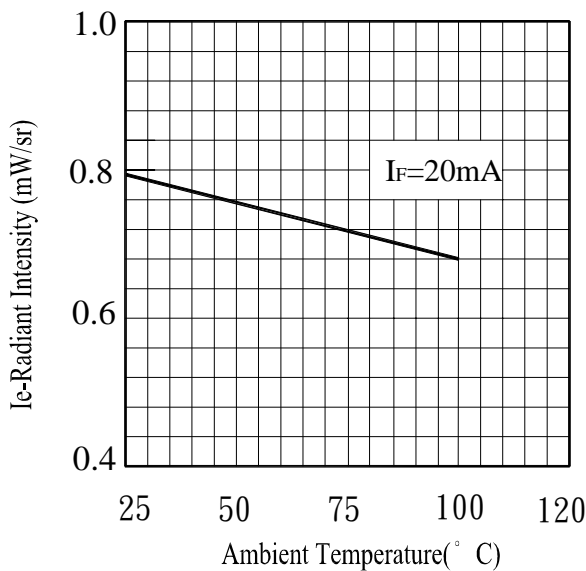
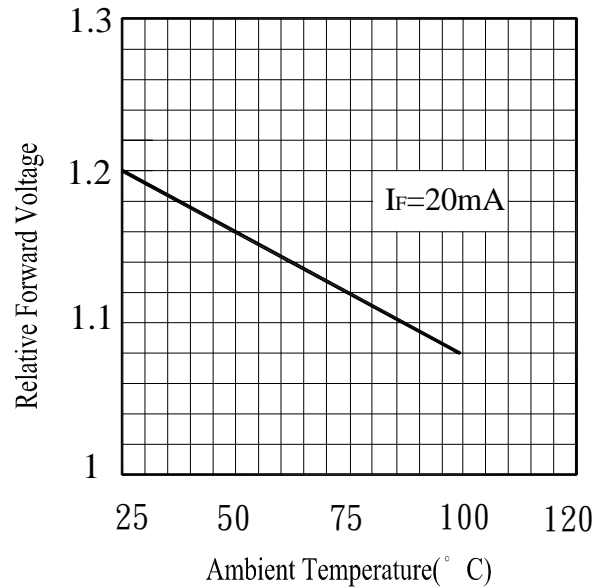


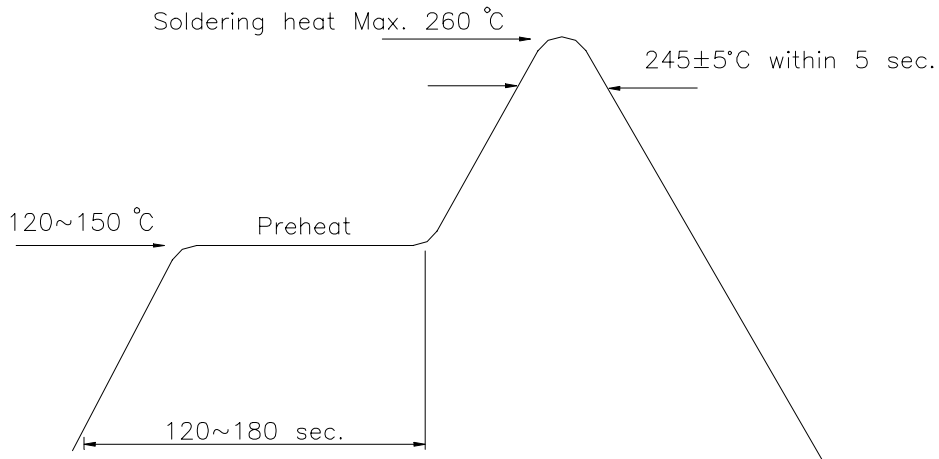
Fig.8 Forward Voltage vs. Ambient Temperature(° C)





**Soldering heat reliability(DIP)**

Please refer to the following figure

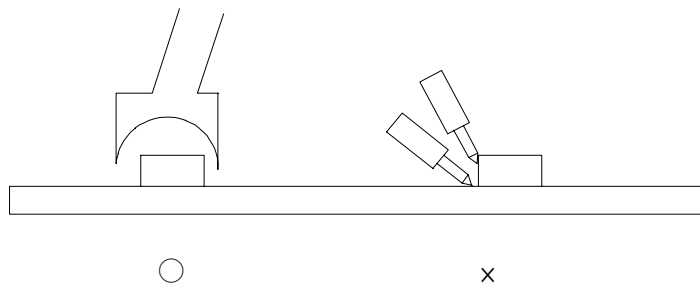


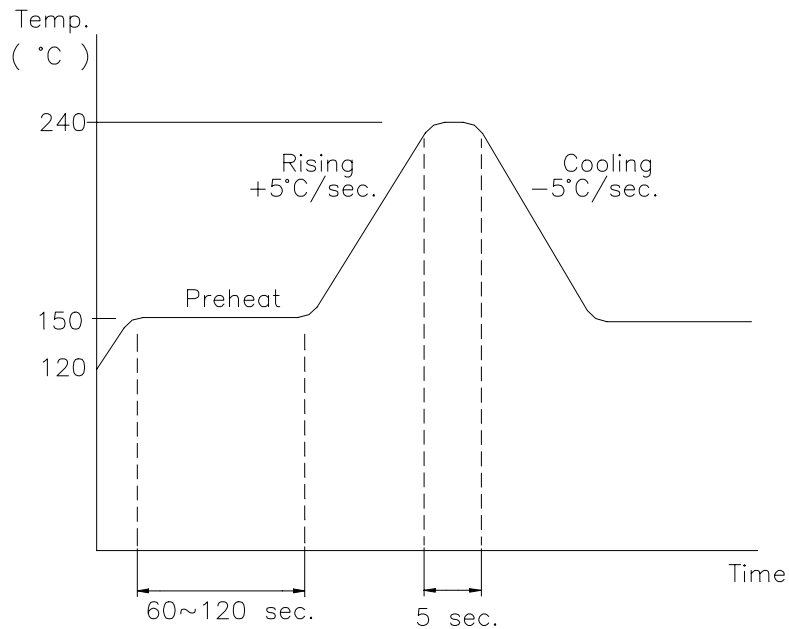
**Soldering Iron**

Basic spec is  $\leq 5$  sec when  $260^{\circ}\text{C}$ . If temperature is higher, time should be shorter ( $+10^{\circ}\text{C} \rightarrow -1\text{sec}$ ). Power dissipation of Iron should be smaller than 15W , and temperature should be controllable. Surface temperature of the device should be under  $230^{\circ}\text{C}$ .

**Rework**

- 1.Customer must finish rework within 5 sec under  $245^{\circ}\text{C}$ .
- 2.The head of iron can not touch copper foil.
- 3.Twin-head type is preferred.



**Reflow Temp./Time**

**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 The operation of temperature and R.H are : 5°C~35°C , R.H.60%.

2.2 Once the package is opened , the products be should be used within a week.

Otherwise , they should be keep in a damp proof box with desiccating anent.

Considering the tape life , we suggest our customers to use our products within a year (from production date).

2.3 If opened more than one week in an atmosphere 5°C~35°C , R.H.60% . , they should be treated at 60°C± 5°C for 15hrs.

2.4 When you discover that the desiccant in the package has a pink color(normal=blue), you should treat them in the same conditions as2.3



**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/ Cycles	Sample Sizes	Failure Judgement Criteria	Ac/Re
1	REFLOW Soldering	TEMP. : 240°C ± 5°C 5secs	6mins	22pcs	More than 90% of lead to be covered by soldering	0/1
2	Temperature Cycle	H : +100°C    15mins ↕ 5mins L : -40°C      15mins	50Cycles	22pcs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$ $V_F \geq U \times 1.2$ U : Upper Limit L : Lower Specification Limit	0/1
3	Thermal Shock	H : +100°C    5mins ↕ 10secs L : -10°C      5mins	50Cycles	22pcs		0/1
4	High Temperature Storage	TEMP. : +100°C	1000hrs	22pcs		0/1
5	Low Temperature Storage	TEMP. : -40°C	1000hrs	22pcs	0/1	
6	DC Operating Life	$I_F = 20\text{mA}$	1000hrs	22pcs	0/1	
7	High Temperature/ High Humidity	85°C / 85% R.H	1000hrs	22pcs	0/1	

**Packing Quantity Specification**

- 1. 2000Pcs/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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