



# Technical Data Sheet

## 1206 Package Chip Infrared LED

### IR15-21C/L10

#### Features

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



#### Descriptions

IR15-21C/L10 is an infrared emitting diode in miniature top view flat SMD package and it is molded in a water clear plastic. The device is spectrally matched with silicon photodiode and phototransistor.

#### Applications

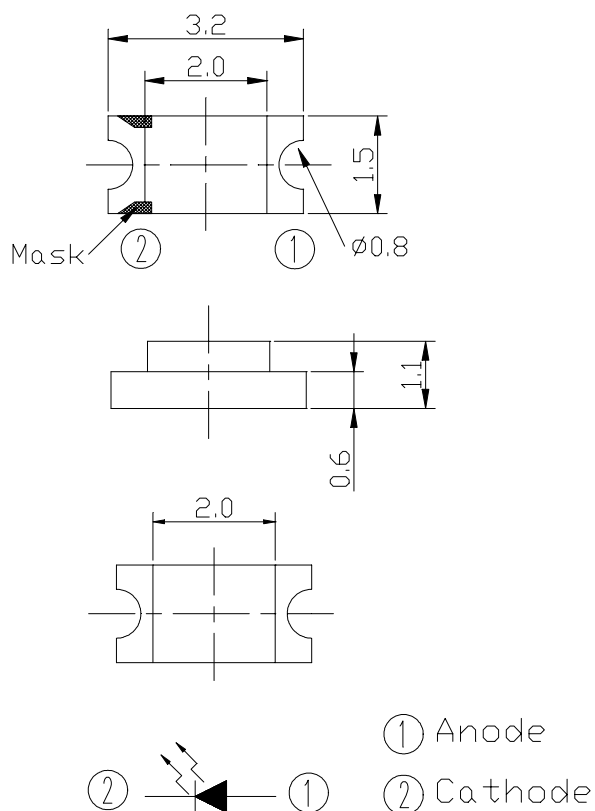
- PCB mounted infrared sensor
- Infrared emitting for miniature light barrier
- Floppy disk drive
- Optoelectronic switch
- Smoke detector

#### Device Selection Guide

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

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## 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	$T_{opr}$	-40 ~ +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.

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Radiant Intensity	E <sub>e</sub>	I <sub>F</sub> =20mA	0.2	0.8	--	mW/sr
Peak Wavelength	λ <sub>p</sub>	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
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

**Intensity Specifications for Bin Grading**

Rank	Test Condition	Min	Max	Unit
E	I <sub>F</sub> =20mA	0.2	1.0	mW/sr
F		0.5	1.5	
G		1.0	2.5	
H		2.0	3.5	

## Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

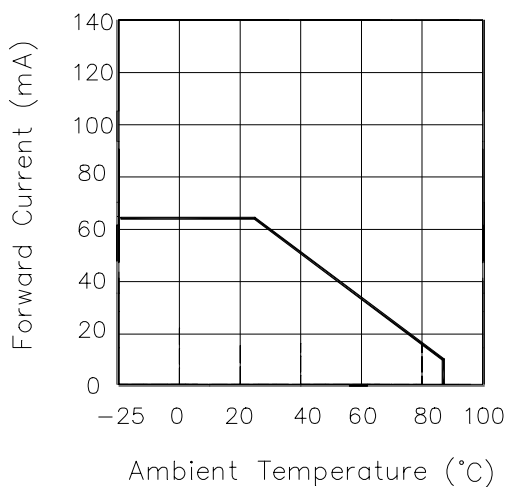


Fig.2 Spectral Distribution

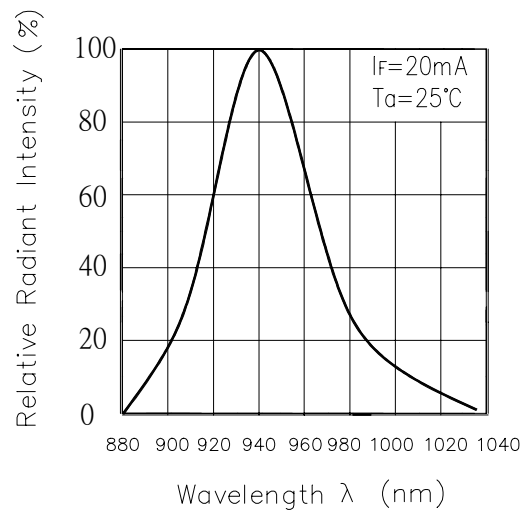


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

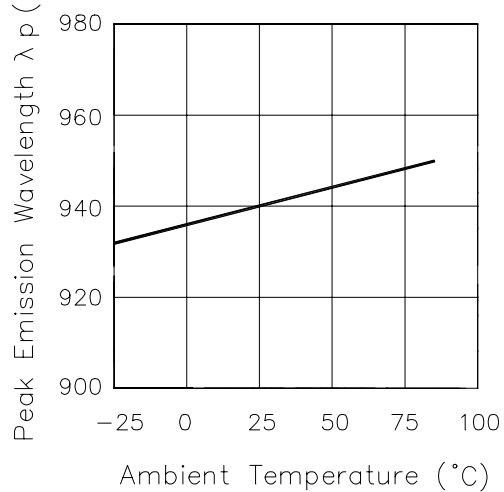
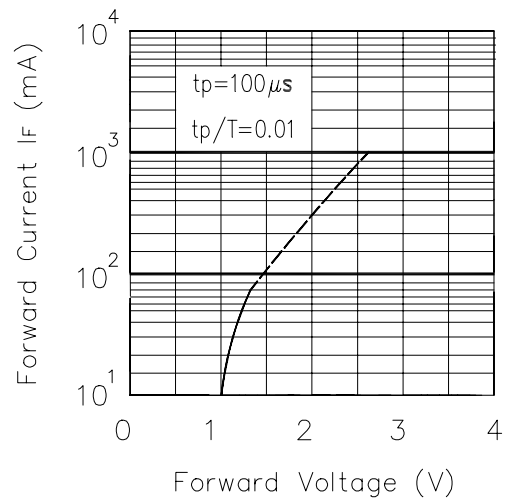


Fig.4 Forward Current vs. Forward Voltage



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# Typical Electro-Optical Characteristics Curves

Fig.5 Relative Intensity vs. Forward Current

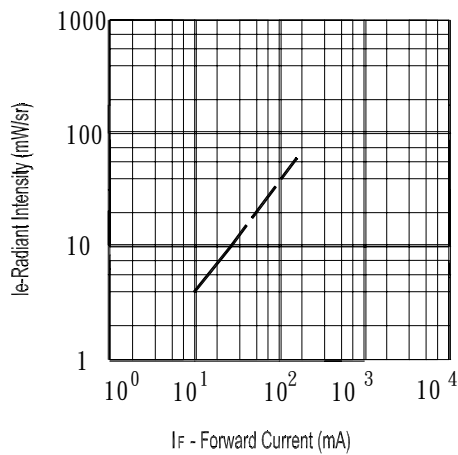


Fig.6 Relative Radiant Intensity vs. Angular Displacement

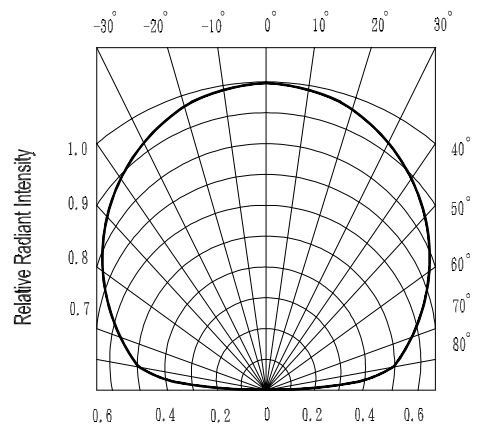


Fig.7 Relative Intensity vs. Ambient Temperature (° C)

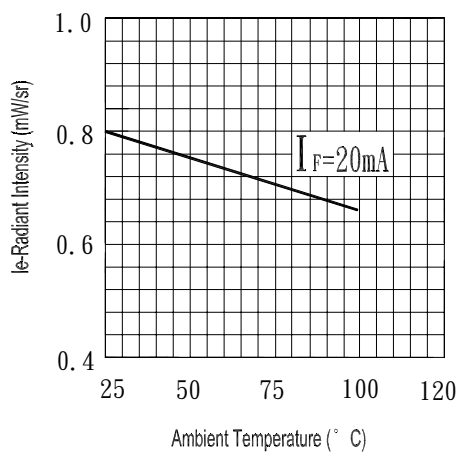
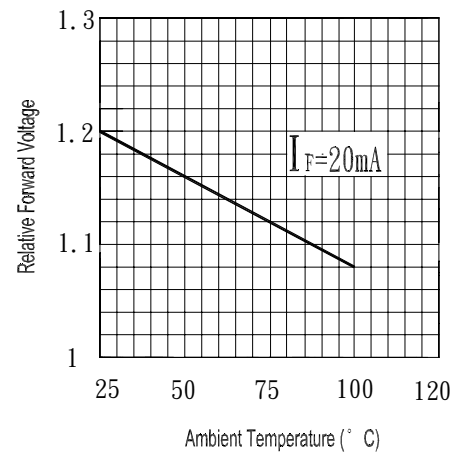


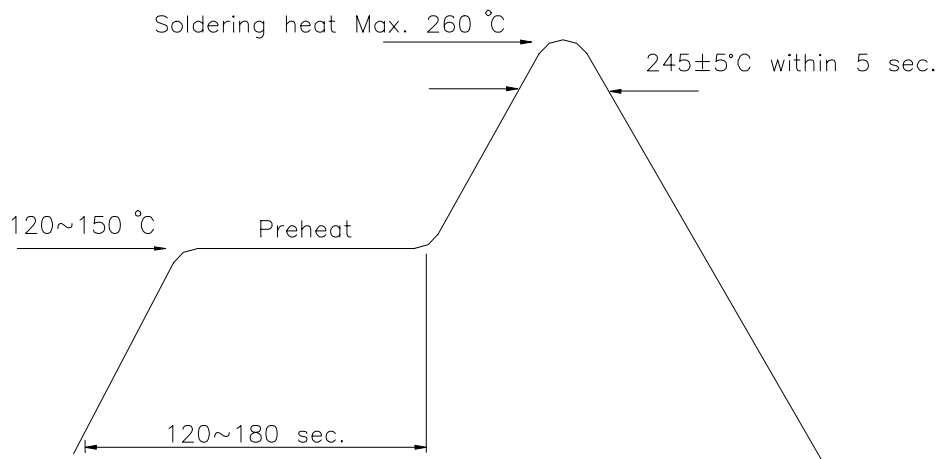
Fig.8 Forward Current vs. Ambient Temperature (° C)



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### Soldering heat reliability(DIP)

Please refer to the following figure

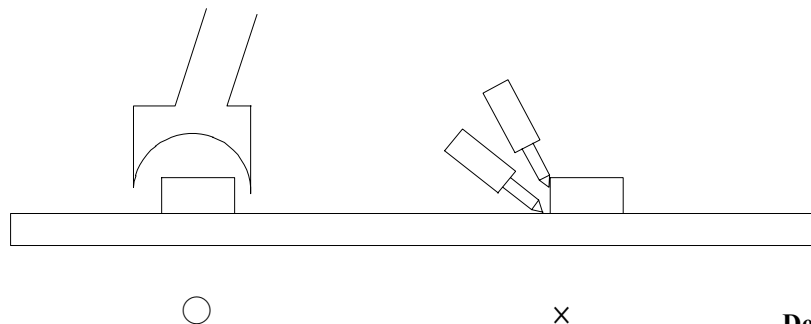


### Soldering Iron

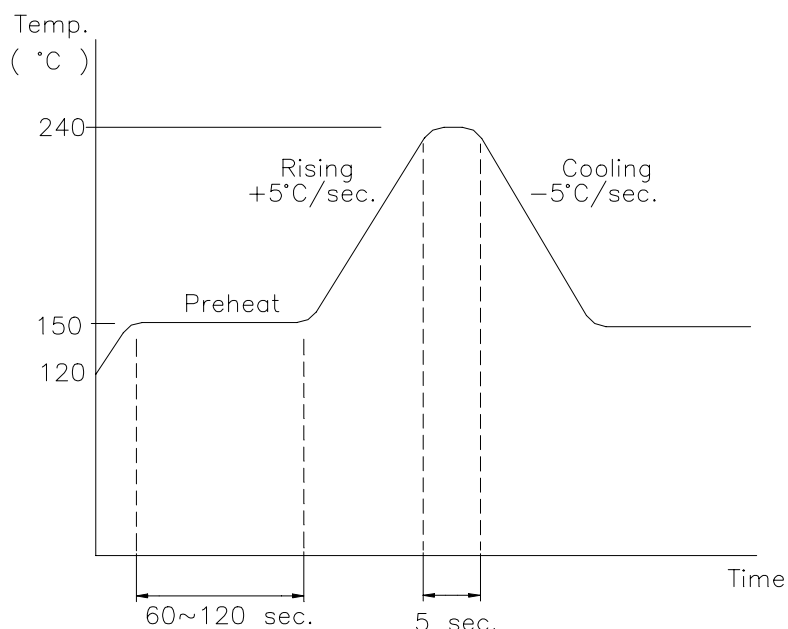
Basic spec is  $\leq 5$  sec when 260°C. If temperature is higher, time should be shorter (+10°C  $\rightarrow$  -1sec). Power dissipation of Iron should be smaller than 15W, and temperature should be controllable. Surface temperature of the device should be under 230°C.

### Rework

- 1.Customer must finish rework within 5 sec under 245°C.
- 2.The head of iron can not touch copper foil.
- 3.Twin-head type is preferred.



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**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 should be used within a week.

Otherwise, they should be kept in a damp proof box with desiccating agent.

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 as 2.3

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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/ Cycles	Sample Sizes	Failure Judgement Criteria	Ac/Re
1	REFLOW	TEMP. : $240^{\circ}\text{C} \pm 5^{\circ}\text{C}$ 5secs	6mins	22pcs	More than 90% of lead to be covered by soldering	0/1
2	Temperature Cycle	H : $+85^{\circ}\text{C}$ 30mins ↕ 5mins L : $-55^{\circ}\text{C}$ 30mins	50Cycle	22pcs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$	0/1
3	Thermal Shock	H : $+100^{\circ}\text{C}$ 5mins ↕ 10secs L : $-10^{\circ}\text{C}$ 5mins	50Cycle	22pcs	$V_F \geq U \times 1.2$	0/1
4	High Temperature Storage	TEMP. : $+100^{\circ}\text{C}$	1000hrs	22pcs	Specification Limit	0/1
5	Low Temperature Storage	TEMP. : $-55^{\circ}\text{C}$	1000hrs	22pcs	L : Lower Specification	0/1
6	DC Operating Life	$I_F = 20\text{mA}$	1000hrs	22pcs	Limit	0/1
7	High Temperature/ High Humidity	$85^{\circ}\text{C}$ / 85% R.H	1000hrs	22pcs		0/1

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