

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.

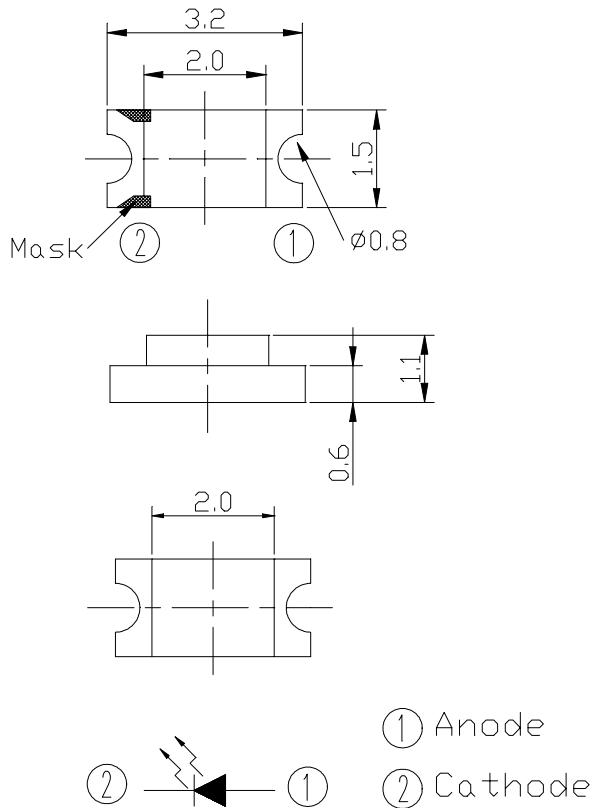
Applications

- 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 |

Device No: DIR-152-124

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 ≤ 5 seconds.

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Electro-Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Units |
|--------------------|----------------|----------------------|------|------|------|-------|
| Radiant Intensity | E _e | I _F =20mA | 0.2 | 0.8 | -- | mW/sr |
| Peak Wavelength | λ _p | I _F =20mA | -- | 940 | -- | nm |
| Spectral Bandwidth | Δ λ | I _F =20mA | -- | 45 | -- | nm |
| Forward Voltage | V _F | I _F =20mA | -- | 1.2 | 1.5 | V |
| Reverse Current | I _R | V _R =5V | -- | -- | 10 | μA |
| View Angle | 2θ 1/2 | I _F =20mA | -- | 160 | -- | deg |

Intensity Specifications for Bin Grading

| Rank | Test Condition | Min | Max | Unit |
|------|----------------------|-----|-----|-------|
| E | I _F =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

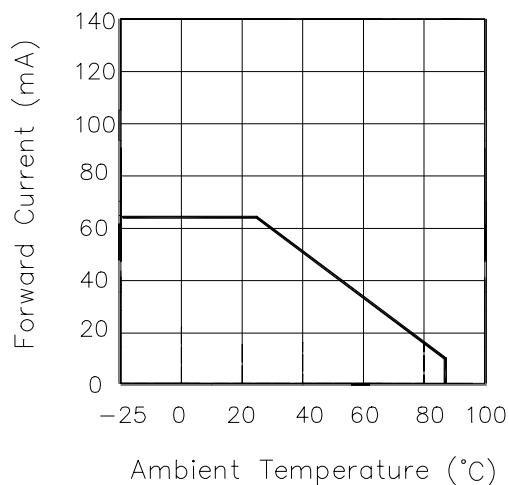


Fig.2 Spectral Distribution

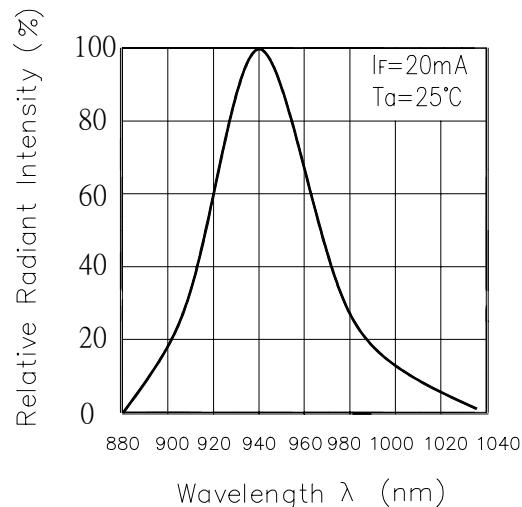


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

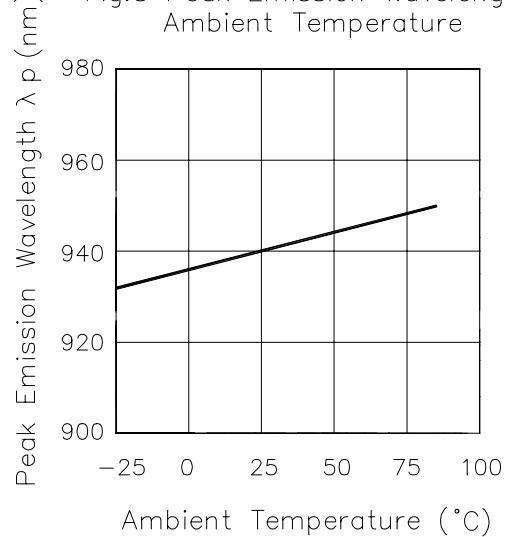
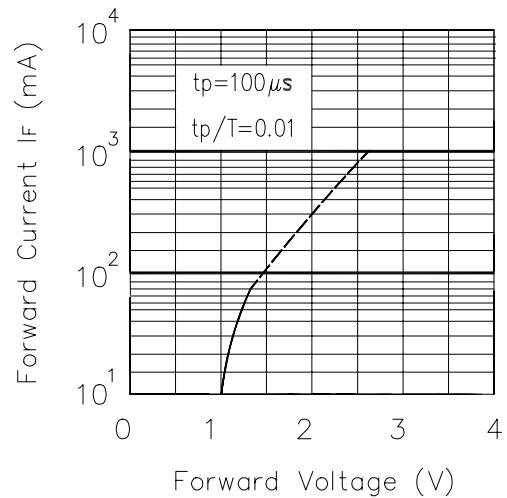


Fig.4 Forward Current vs. Forward Voltage

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Typical Electro-Optical Characteristics Curves

Fig.5 Relative Intensity vs. Forward Current

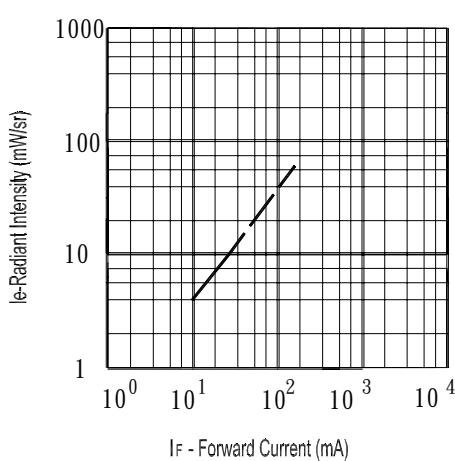
 I_F - Forward Current (mA)

Fig.6 Relative Radiant Intensity vs. Angular Displacement

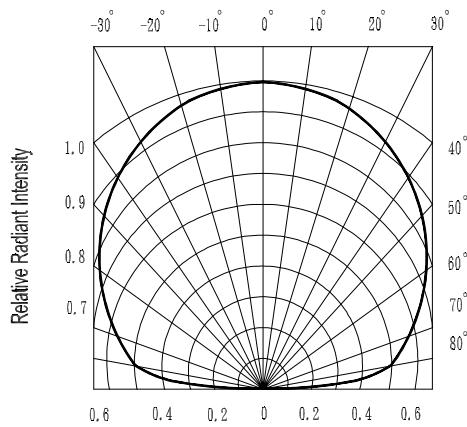
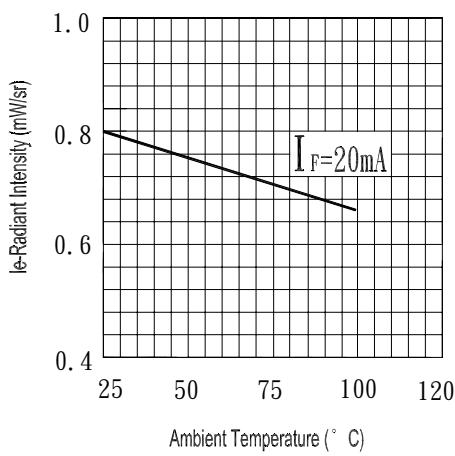
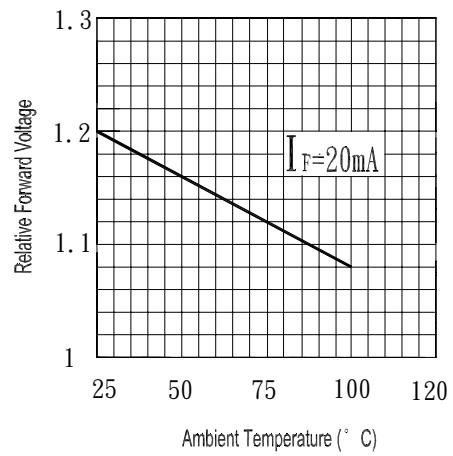


Fig.7 Relative Intensity vs. Ambient Temperature (° C)



Ambient Temperature (° C)

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

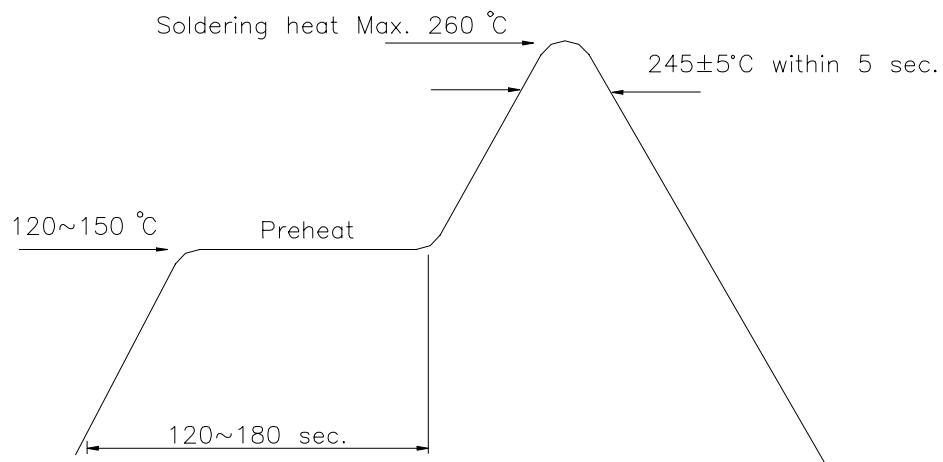


Ambient Temperature (° C)

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Soldering heat reliability(DIP)

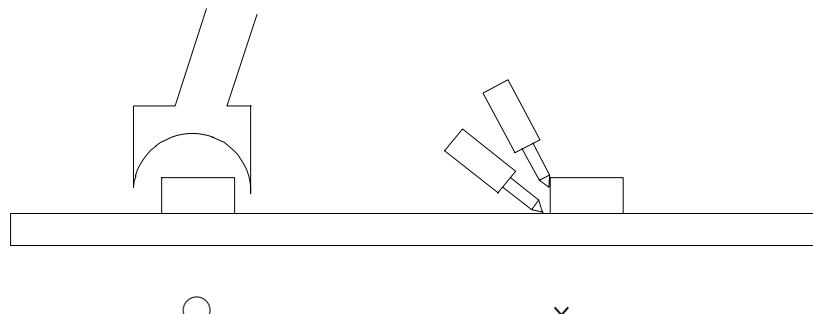
Please refer to the following figure

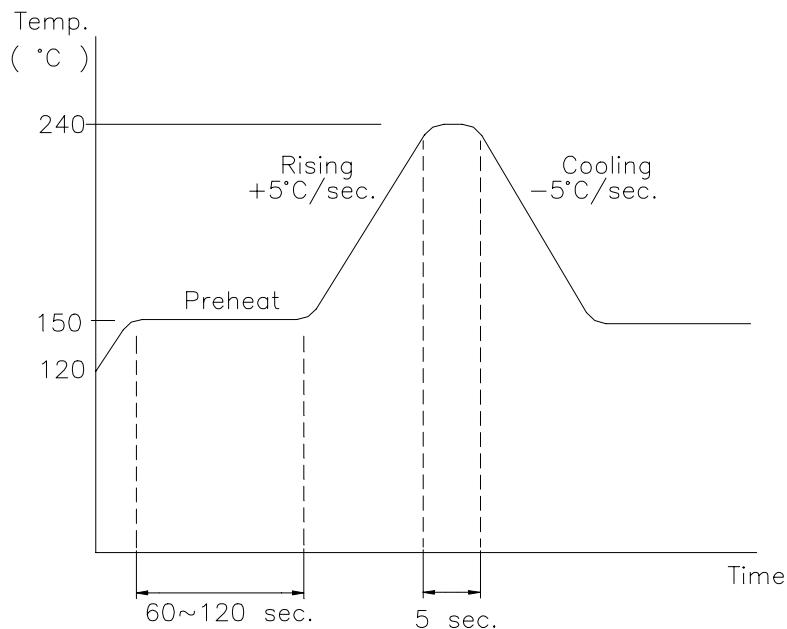
**Soldering Iron**

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

Rework

1. Customer must finish rework within 5 sec under $245\text{ }^{\circ}\text{C}$.
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 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 as 2.3

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IR15-21C/L10**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 : $+85^{\circ}\text{C}$ L : -55°C | 30mins 5mins 30mins | 50Cycle | 22pcs | $I_R \geq U_x \cdot 2$ $E_e \leq L_x \cdot 0.8$ |
| 3 | Thermal Shock | H : $+100^{\circ}\text{C}$ L : -10°C | 5mins 10secs 5mins | 50Cycle | 22pcs | $V_F \geq U_x \cdot 1.2$ U : Upper Specification Limit |
| 4 | High Temperature Storage | TEMP. : $+100^{\circ}\text{C}$ | 1000hrs | 22pcs | | 0/1 |
| 5 | Low Temperature Storage | TEMP. : -55°C | 1000hrs | 22pcs | | 0/1 |
| 6 | DC Operating Life | $I_F = 20\text{mA}$ | 1000hrs | 22pcs | | 0/1 |
| 7 | High Temperature/ High Humidity | $85^{\circ}\text{C} / 85\% \text{ R.H}$ | 1000hrs | 22pcs | | 0/1 |

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