

Technical Data Sheet

1206 Package Infrared Chip LED

HIR15-21C/TR8

Features

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



Descriptions

HIR15-21C/TR8 is an infrared emitting diode in miniature SMD package molded in a water clear plastic with flat top view lens. The spectrally device is matched silicon with photodiode and phototransistor.

Applications

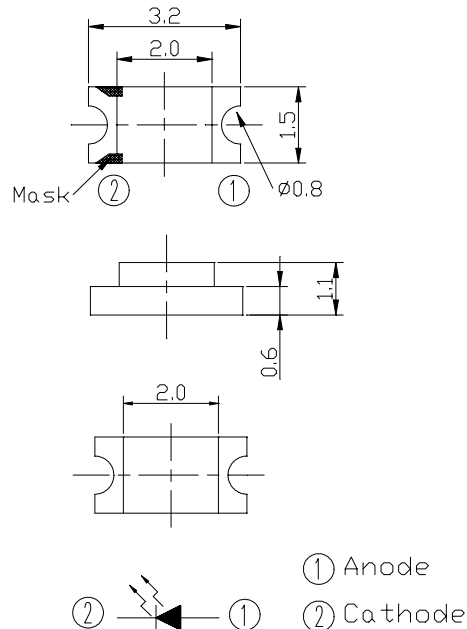
- PCB mounted infrared sensor
- Infrared emitting for miniature light barrier
- Floppy disk drive
- Optoelectronic switch
- Smoke detector

Device Selection Guide

| LED Part No. | Chip | Lens Color |
|--------------|----------|-------------|
| | Material | |
| HIR | GaAlAs | Water Clear |

Device No:DTH-.015-001

Package Dimensions



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

Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

| 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 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 ~ +85 | $^\circ\text{C}$ |
| Soldering Temperature | T_{sol} | 260 | $^\circ\text{C}$ |
| Power Dissipation at(or below) 25 $^\circ\text{C}$ 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.

Device No:DTH-015-001

Electro-Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Condition | Min. | Typ. | Max. | Units |
|--------------------|------------------|----------------------|------|------|------|---------|
| Radiant Intensity | Ee | I _F =20mA | 0.5 | 1.5 | -- | mW/sr |
| Peak Wavelength | λ_p | I _F =20mA | -- | 850 | -- | nm |
| Spectral Bandwidth | $\Delta \lambda$ | I _F =20mA | -- | 45 | -- | nm |
| Forward Voltage | V _F | I _F =20mA | -- | 1.45 | 1.65 | V |
| Reverse Current | I _R | V _R =5V | -- | -- | 10 | μ A |
| View Angle | 2 θ 1/2 | I _F =20mA | -- | 150 | -- | deg |

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Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

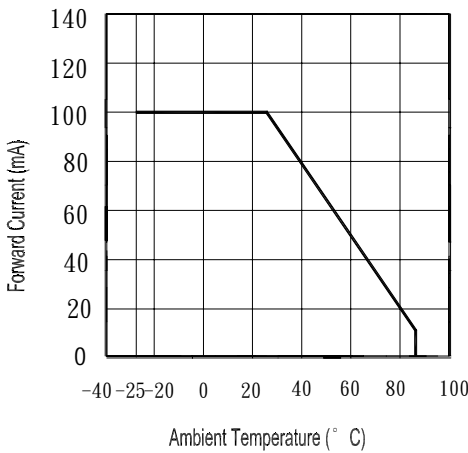


Fig.2 Spectral Distribution

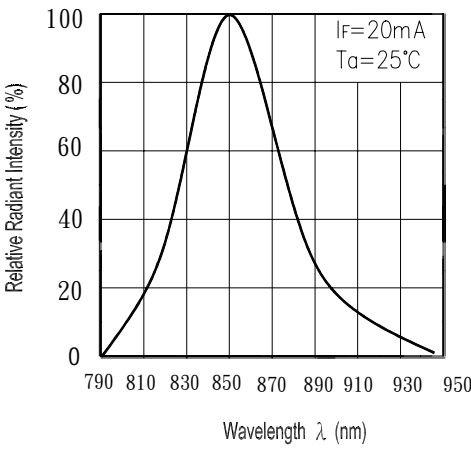


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

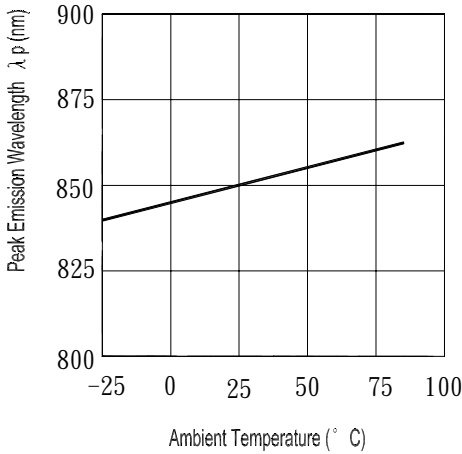
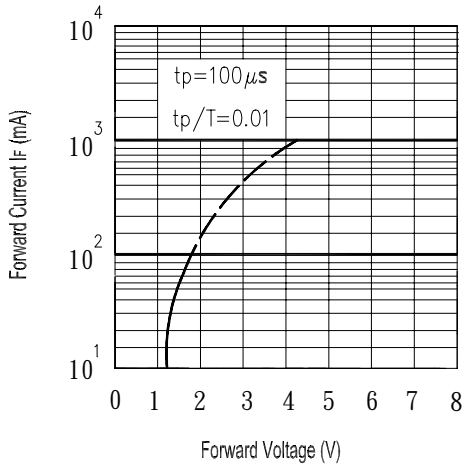


Fig.4 Forward Current vs. Forward Voltage



Typical Electro-Optical Characteristics Curves

Fig. 5 Relative Intensity vs. Forward Current

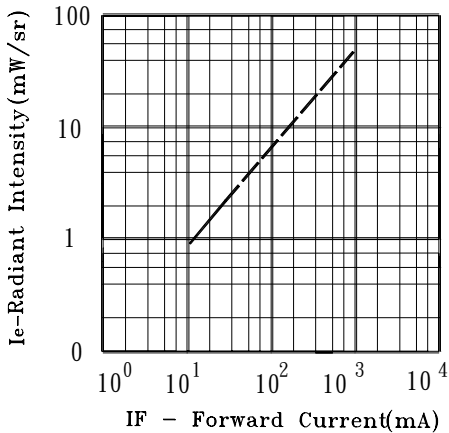


Fig. 6 Relative Radiant Intensity vs. Angular Displacement

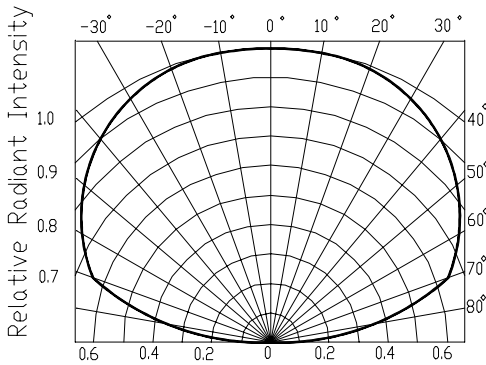


Fig. 7 Relative Intensity vs. Ambient Temperature (°C)

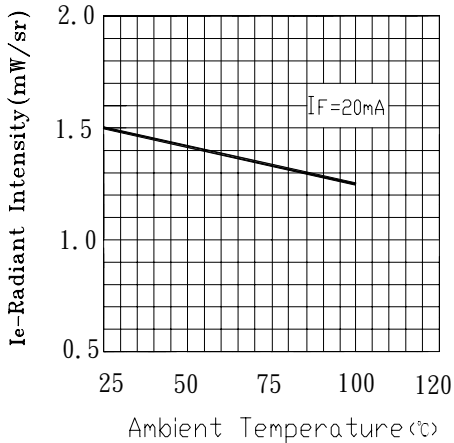
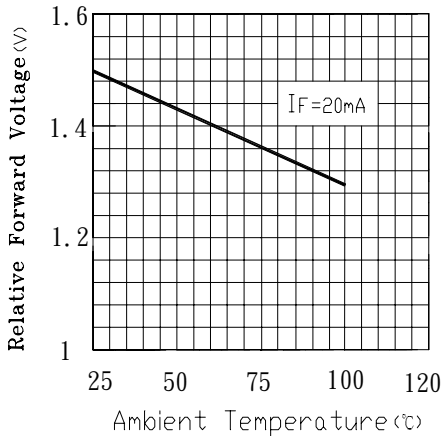
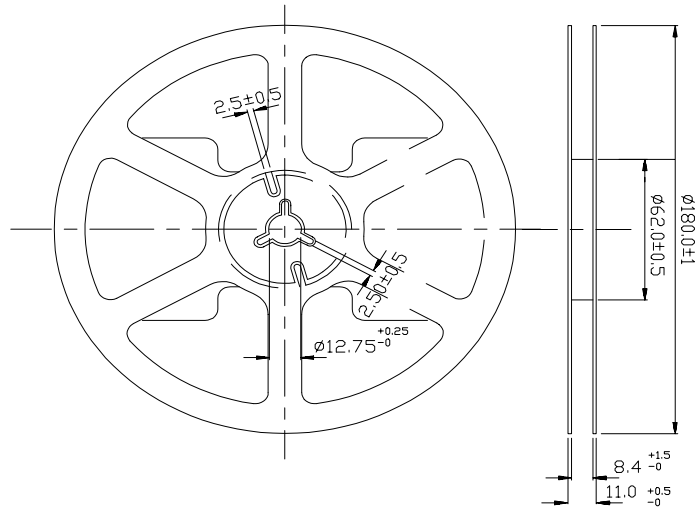


Fig. 8 Forward Voltage vs. Ambient Temperature (°C)

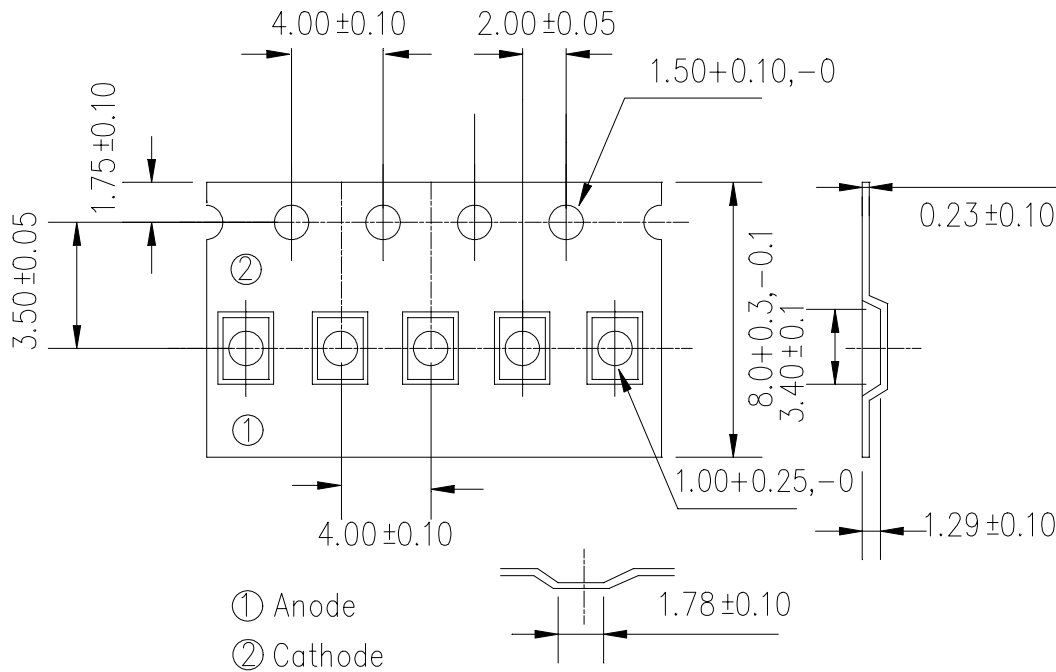


Device No:DTH-015-001

Package Dimensions



Loaded Quantity Per Reel 3000PCS/Reel

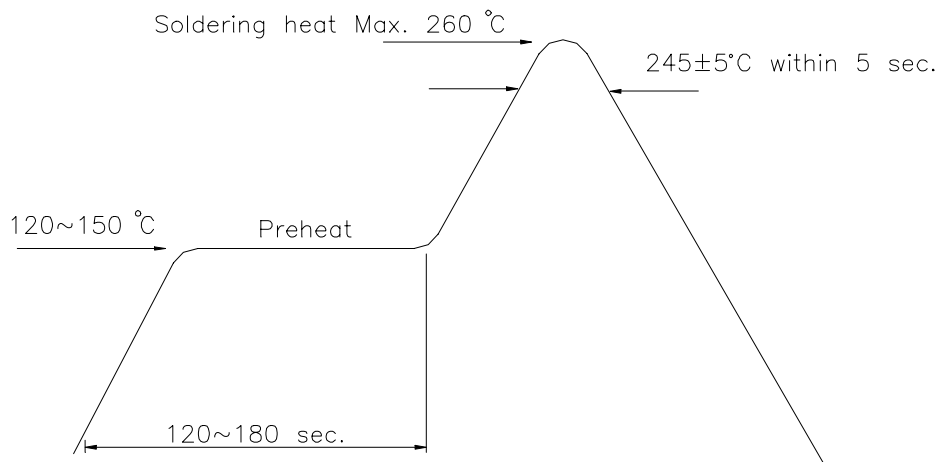


Unit : mm

Device No:DTH-015-001

Soldering heat reliability(DIP)

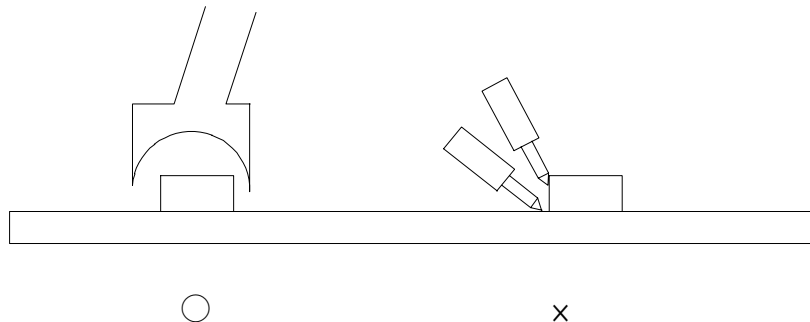
Please refer to the following figure

**Soldering Iron**

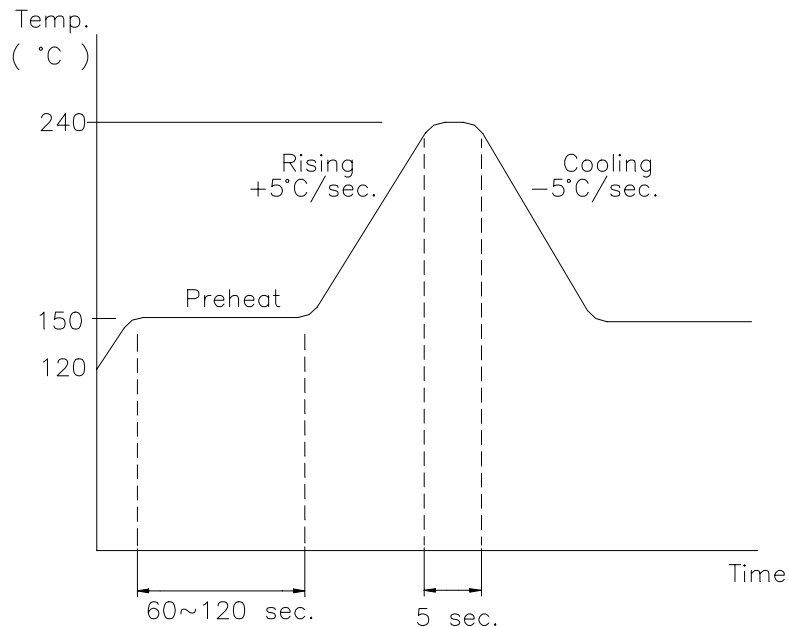
Basic spec is ≤ 5 sec when 260°C. If temperature is higher, time should be shorter (+10°C → -1sec). Power dissipation of Iron should be smaller than 15W, and temperature should be controllable. Surface temperature of the device should be under 230°C.

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.



Device No:DTH-015-001

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

Device No: DTH-015-001

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°C 30mins | 50Cycles | 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°C 5mins | 50Cycles | 22pcs | $V_F \geq U \times 1.2$ U : Upper | 0/1 |
| 4 | High Temperature Storage | TEMP. : $+100^{\circ}\text{C}$ | 1000hrs | 22pcs | Specification Limit | 0/1 |
| 5 | Low Temperature Storage | TEMP. : -55°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 | $85^{\circ}\text{C} / 85\% \text{ R.H}$ | 1000hrs | 22pcs | | 0/1 |