

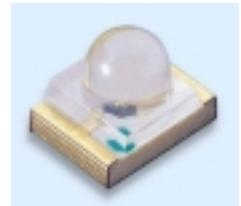
Technical Data Sheet

1.8mm Round Subminiature Infrared LED

HIR42-21C/TR8

Features

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



Descriptions

HIR42-21C/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.

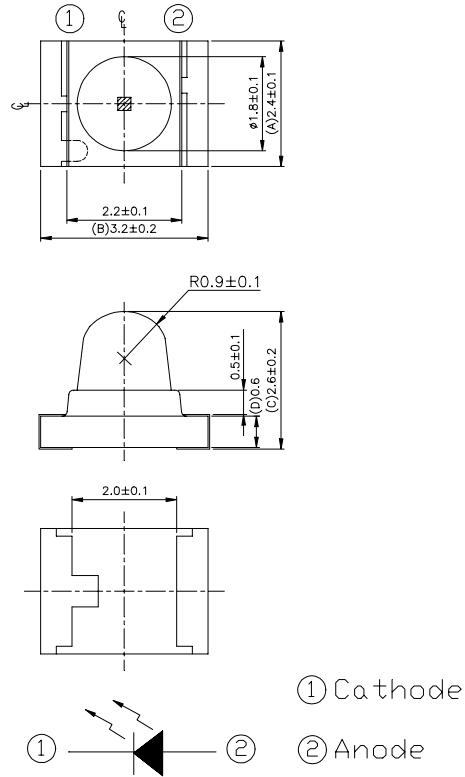
Applications

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

Device Selection Guide

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

Device No:DTH-042-024

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 ≤ 5 seconds.

Device No:DTH-042-024

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
Radiant Intensity	Ee	I _F =20mA	2.0	5.0	--	mW/sr
		I _F =100mA Pulse Width≤100 μs ,Duty≤1%.	--	20	--	
Peak Wavelength	λ p	I _F =20mA	--	850	--	nm
Spectral Bandwidth	Δ λ	I _F =20mA	--	45	--	nm
Forward Voltage	V _F	I _F =20mA	--	1.45	1.65	V
		I _F =100mA Pulse Width≤100 μs ,Duty≤1%.	--	1.80	2.40	
Reverse Current	I _R	V _R =5V	--	--	10	μA
View Angle	2θ 1/2	I _F =20mA	--	20	--	deg

Typical Electro-Optical Characteristics Curves

Fig.1 Forward Current vs. Ambient Temperature

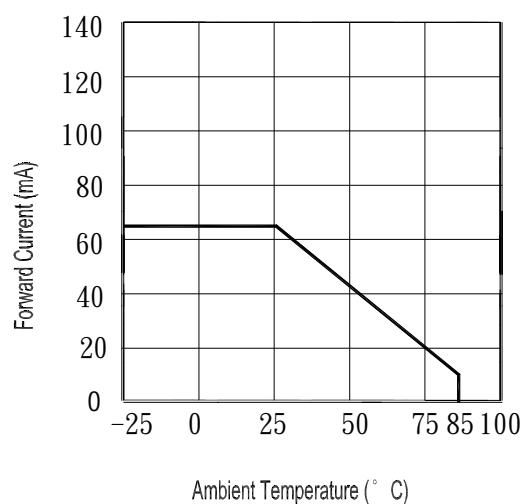


Fig.2 Spectral Distribution

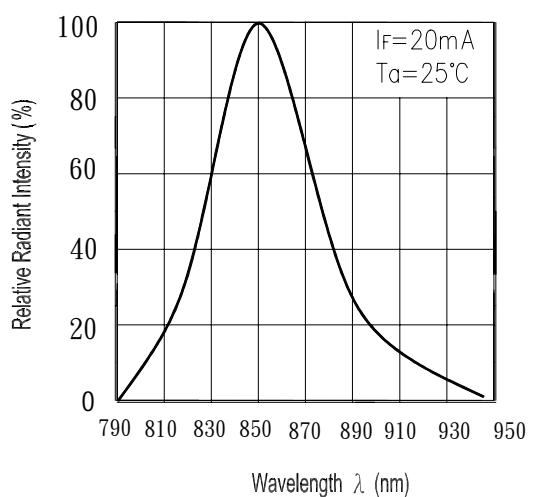


Fig.3 Peak Emission Wavelength vs. Ambient Temperature

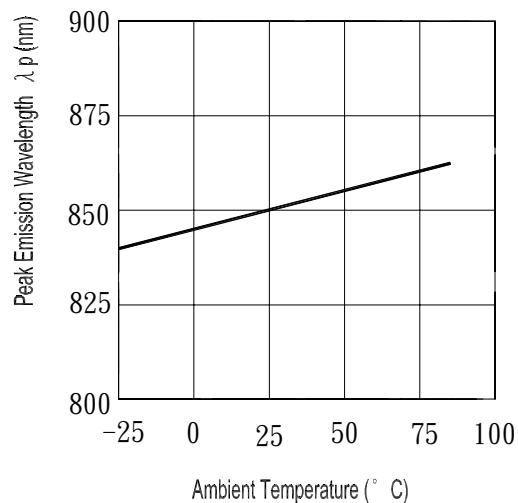
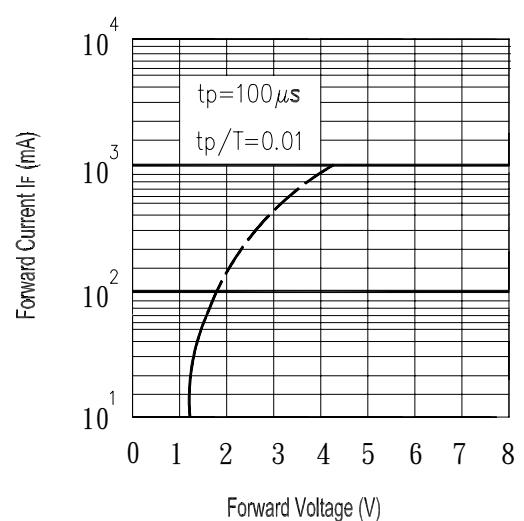


Fig.4 Forward Current vs. Forward Voltage



Device No:DTH-042-024

Typical Electro-Optical Characteristics Curves

Fig. 5 Relative Intensity vs.
Forward Current

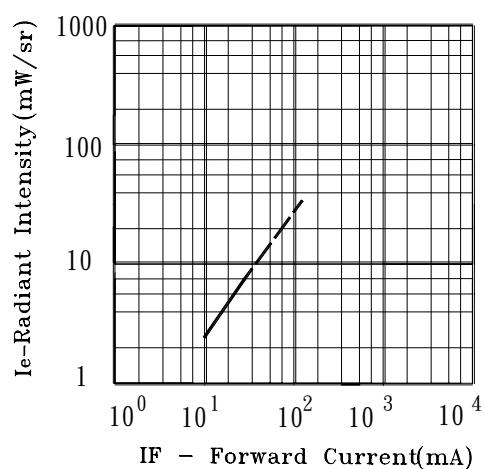


Fig. 6 Relative Radiant Intensity vs.
Angular Displacement

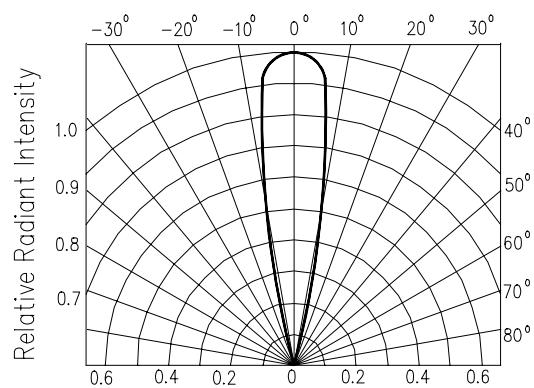


Fig. 7 Relative Intensity vs.
Ambient Temperature (°C)

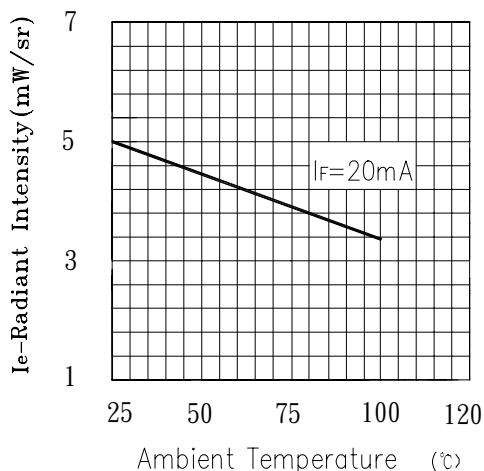
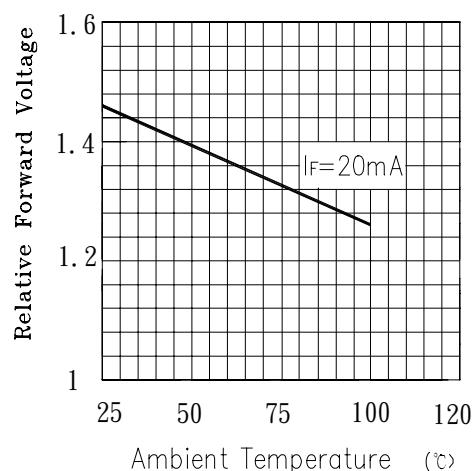
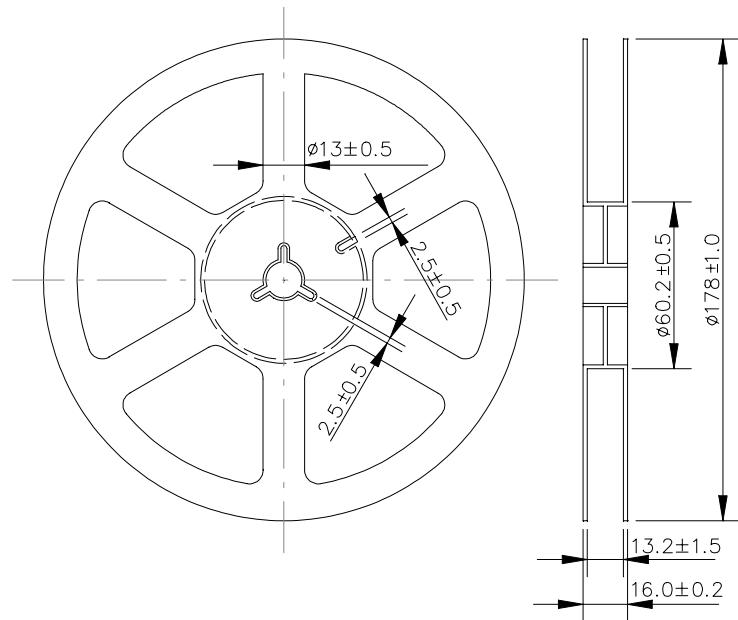


Fig. 8 Forward Current vs.
Ambient Temperature (°C)

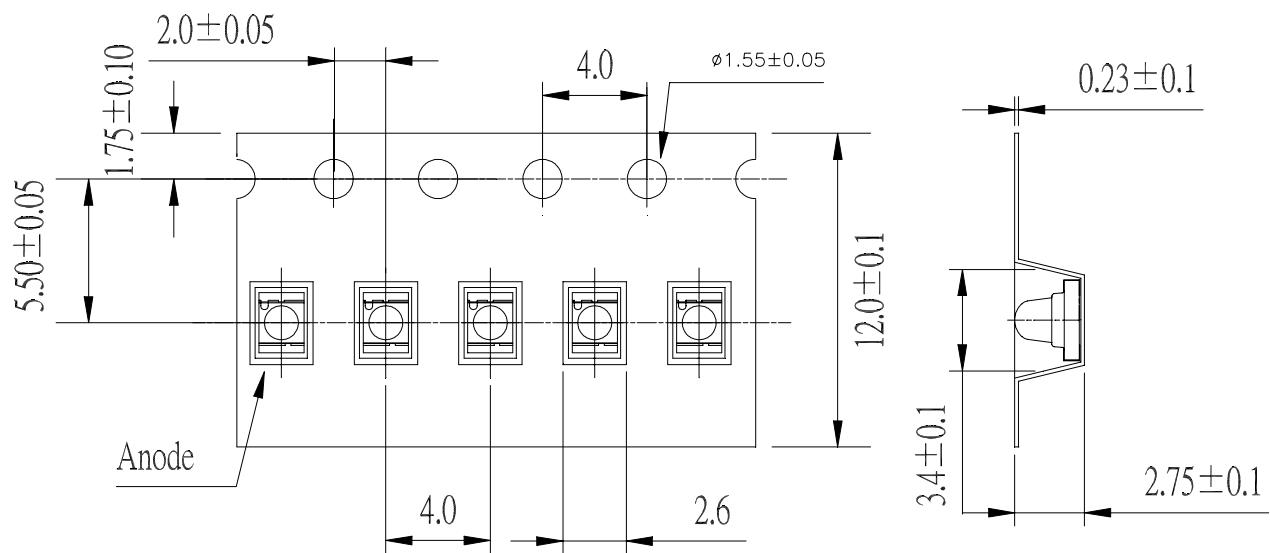


HIR42-21C/TR8

Package Dimensions



Loaded Quantity Per Reel 1000PCS/Reel



TOLERANCES UNLESS DIMENSION ± 0.1

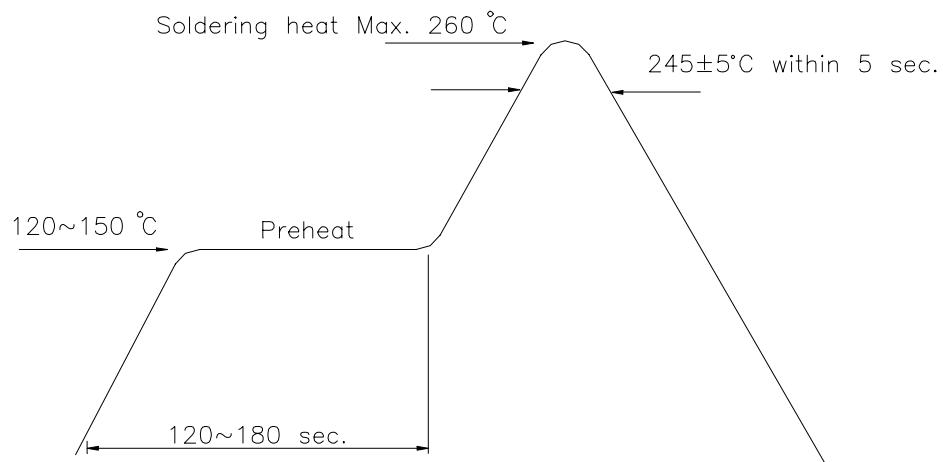
ANGLE ± 0.5

Unit : mm

Device No:DTH-042-024

Soldering heat reliability(DIP)

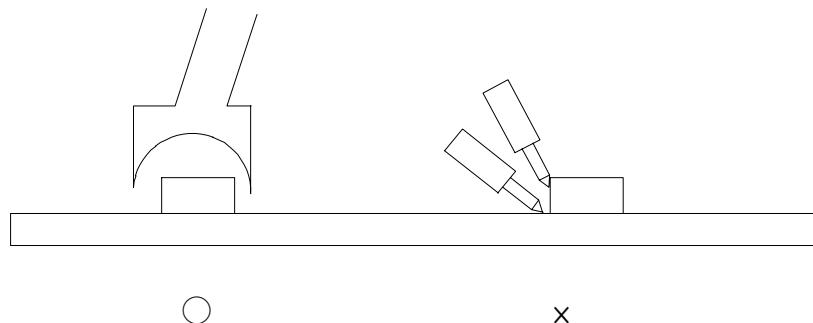
Please refer to the following figure

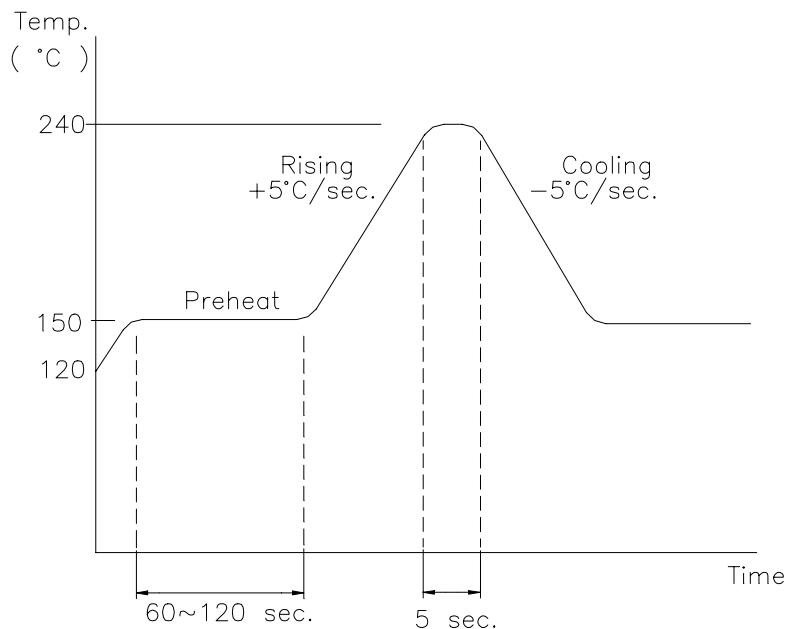
**Soldering Iron**

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 $260\text{ }^{\circ}\text{C}$.
2. The head of iron can not touch copper foil.
3. Twin-head type is preferred.

**Device No:DTH-042-024**

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

Device No:DTH-042-024

HIR42-21C/TR8**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	50Cycles	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	50Cycles	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