

### **Technical Data Sheet**

## 0.8mm Height Flat Top Infrared LED

### HIR19-21C/L11/TR8

#### **Features**

- High reliability
- Small double-end package
- Peak wavelength  $\lambda$  p=850nm
- Package in 8mm tape on 7" diameter reel
- Low forward voltage
- Pb free
- The product itself will remain within RoHS compliant version.



- HIR19-21C/L11/TR8 is an infrared emitting diode in miniature SMD package which is molded in a water clear plastic with flat top view lens.
- The device is spectrally matched with silicon photodiode and phototransistor.

### **Applications**

- PCB mounted infrared sensor
- Infrared remote control units with high power requirement
- Smoke detector
- Infrared applied system

#### **Device Selection Guide**

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

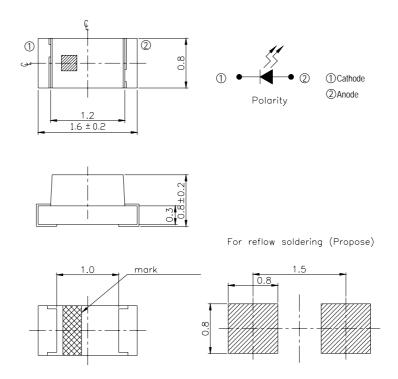
http:\\www.everlight.com Everlight Electronics Co., Ltd. Rev 2 Page: 1 of 10 Device No: DTH-019-001

Prepared date: 07-20-2005 Prepared by : Jaine Tsai





## **Package Dimensions**



**Notes:** 1.All dimensions are in millimeters

2.Tolerances unless dimensions ±0.1mm

## **Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Units
Continuous Forward Current	$I_{\mathrm{F}}$	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	$T_{\rm stg}$	-40 ~ +85	$^{\circ}\!\mathbb{C}$
Soldering Temperature	$T_{sol}$	260	$^{\circ}\!\mathbb{C}$
Power Dissipation at(or below)	$P_d$	130	mW
25°C Free Air Temperature			

**Notes:** \*1: $I_{FP}$  Conditions--Pulse Width  $\leq$  100  $\mu$  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	
		$I_F=20\text{mA}$	0.2	0.8			
Radiant Intensity	Ee	. $I_F\!\!=\!\!100mA$ Pulse Width $\!\leq\!100\mus$ ,Duty $\!\leq\!1\%$		4.2		mW /sr	
Peak Wavelength	λp	$I_F=20\text{mA}$		850		nm	
Spectral Bandwidth	Δλ	I <sub>F</sub> =50mA		45		nm	
	$V_{\mathrm{F}}$	$I_F=20\text{mA}$		1.45	1.65		
Forward Voltage		. $I_F\!\!=\!\!100mA$ Pulse Width $\!\leq\!100\mu$ s ,Duty $\!\leq\!1\%$		1.80	2.40	V	
Reverse Current	$I_R$	$V_R=5V$			10	$\mu$ A	
View Angle	2 \theta 1/2	I <sub>F</sub> =20mA		145		deg	

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20

0

-25

## HIR19-21C/L11/TR8

## **Typical Electro-Optical Characteristics Curves**

Fig.1 Forward Current vs.

Ambient Temperature

140
120
(W)
100
80
60
40

Ambient Temperature (°C)

20

40

60

80

100

Fig.3 Peak Emission Wavelength
Ambient Temperature

0

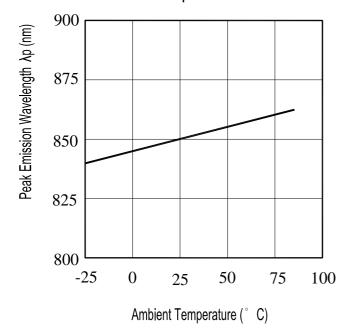


Fig.2 Spectral Distribution

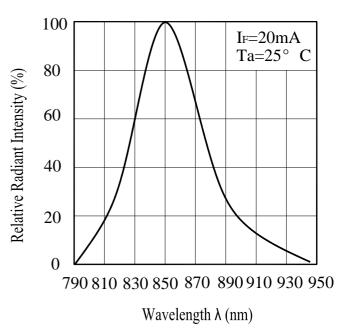
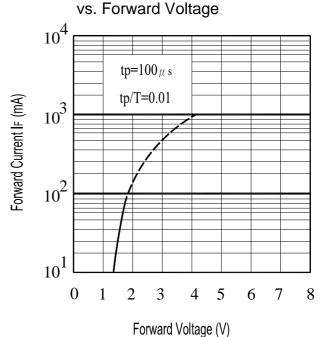


Fig.4 Forward Current



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## **Typical Electro-Optical Characteristics Curves**

Fig.5 Relative Intensity vs.

Forward Current

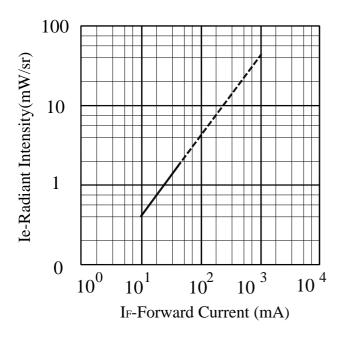


Fig.6 Relative Radiant Intensity vs.

Angular Displacement

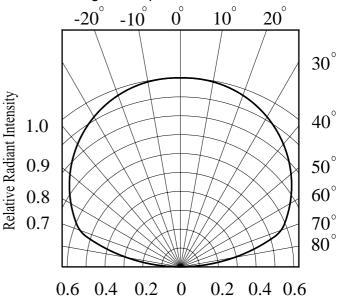


Fig.7 Relative Intensity vs.

Ambient Temperature(°C)

1.0

O.8

IF=20mA

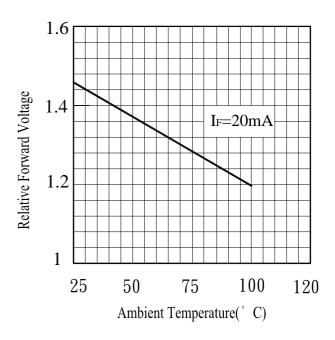
O.4

25 50 75 100 120

Ambient Temperature(°C)

Fig.8 Forward Voltage vs.

Ambient Temperature(°C)



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#### **Precautions For Use**

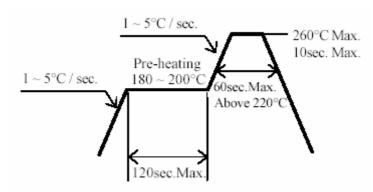
1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

- 2. Storage
  - 2.1 Do not open moisture proof bag before the products are ready to use.
  - 2.2 Before opening the package, the LEDs should be kept at 30°C or less and 90%RH or less.
  - 2.3 The LEDs should be used within a year.
- 2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.
- 2.5 The LEDs should be used within 168 hours (7 days) after opening the package.
- 2.6 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment :  $60\pm5^{\circ}$ C for 24 hours.

- 3. Soldering Condition
- 3.1 Pb-free solder temperature profile



- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

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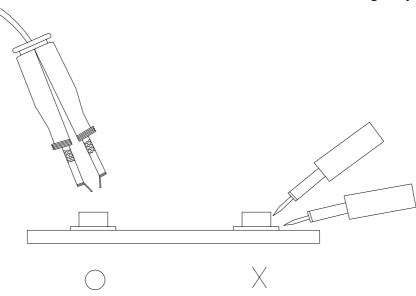


#### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than  $280^{\circ}$ C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

#### 5.Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



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## HIR19-21C/L11

### **Reliability Test Item And Condition**

The reliability of products shall be satisfied with items listed below.

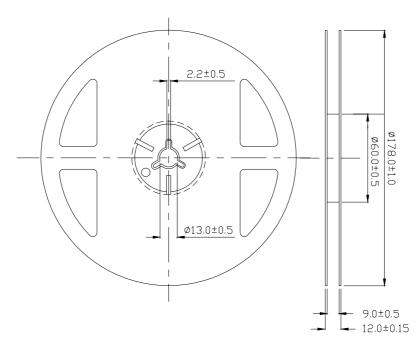
Confidence level: 90%

LTPD: 10%

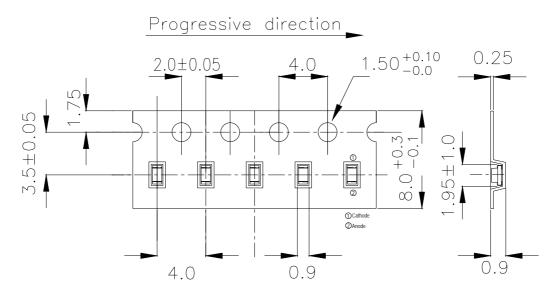
NO.	Item	Test Conditions	Test Hours/	Sample	Failure	Ac/Re
			Cycles	Sizes	Judgement	
					Criteria	
1	REFLOW Soldering	TEMP. : 260°C±5°C	6Mins	22pcs		0/1
		5secs			$I_R \ge U \times 2$	
2	Temperature Cycle	$H:+100^{\circ}C$ 15mins	50Cycles	22pcs	Ee≦Lx0.8	0/1
		5mins			$V_F \ge U \times 1.2$	
		$L: -40^{\circ}C$ 15mins				
3	Thermal Shock	H :+100°C	50Cycles	22pcs	U: Upper	0/1
		↓ 10secs			Specification	
		L:-10°C 5mins			Limit	
4	High Temperature	TEMP. ∶ +100°C	1000hrs	22pcs	L: Lower	0/1
	Storage				Specification	
5	Low Temperature	TEMP. : -40°C	1000hrs	22pcs	Limit	0/1
	Storage					
6	DC Operating Life	I <sub>F</sub> =20mA	1000hrs	22pcs		0/1
7	High Temperature/	85°C / 85% R.H	1000hrs	22pcs		0/1
	High Humidity					



### **Package Dimensions**



### **Taping Dimensions**



#### **Unit:mm**

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### **Packing Quantity Specification**

 $1.3000 Pcs/1 Volume \ , \ 1 Volume/1 Bag$ 

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.
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