



DEVICE NUMBER : DPT-033-001  
ECN : \_\_\_\_\_

REV : 1.1  
PAGE : 1/7

## 5mm Phototransistor

MODEL NO : PT331C

### ■ Features :

- Fast response time
- High photo sensitivity

### ■ Description :

PT331C is a high speed and high sensitive silicon NPN epitaxial planar phototransistor in a standard  $\phi 5$  mm package. Due to its water clear epoxy the device is sensitive to visible and near infrared radiation.

### ■ Applications :

- Optoelectronic switch
- VCRs ,Video camera
- Floppy disk drive
- Infrared applied system

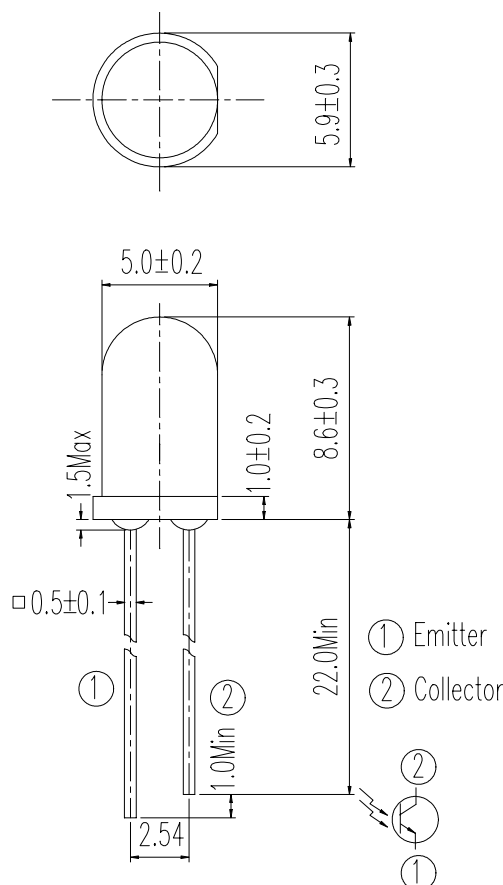
PART NO.	CHIP	LENS COLOR
	MATERIAL	
PT	Silicon	Water Clear



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### ■ Package Dimensions :



### ■ Notes :

1. All dimensions are in millimeter.
2. Protruded resin under flange 1.5 mm Max.
3. Lead spacing is measured where the lead emerge from the package.
4. Lens color : Water clear.
5. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
6. These specification sheets include materials protected under copyright of EVERLIGHT corporation . Please don't reproduce or cause anyone to reproduce them without EVERLIGHT's consent.
7. When using this product , please observe the absolute maximum ratings and the instructions for use 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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### ■ Absolute Maximum Ratings at T<sub>A</sub> = 25°C

Parameter	Symbol	Rating	Unit	Notice
Collector-Emitter Voltage	V <sub>CEO</sub>	30	V	
Emitter-Collector- Voltage	V <sub>ECO</sub>	5	V	
Collector Current	I <sub>C</sub>	20	mA	
Operating Temperature	Topr	-25 ~ +85	°C	
Storage Temperature	Tstg	-40 ~ +85	°C	
Soldering Temperature	Tsol	260	°C	4mm from mold body less than 5 seconds
Power Dissipation at(or below) 25°C Free Air Temperature	Pc	75	mW	

### ■ Electronic Optical Characteristics :

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	30	----	----	V	I <sub>C</sub> =100 $\mu$ A Ee=0mW/cm <sup>2</sup>
Emitter-Collector Breakdown Voltage	BV <sub>ECO</sub>	5	----	----	V	I <sub>E</sub> =100 $\mu$ A Ee=0mW/cm <sup>2</sup>
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	----	----	0.4	V	I <sub>C</sub> =2mA Ee=1mW/cm <sup>2</sup>
Rise Time	t <sub>r</sub>	----	15	----	$\mu$ S	V <sub>CE</sub> =5V I <sub>C</sub> =1mA R <sub>L</sub> =1000 $\Omega$
Fall Time	t <sub>f</sub>	----	15	----		
Collector Dark Current	I <sub>CEO</sub>	----	----	100	nA	V <sub>CE</sub> =20V Ee=0mW/cm <sup>2</sup>
On State Collector Current	I <sub>C(on)</sub>	0.7	2.0	----	mA	V <sub>CE</sub> =5V Ee=1mW/cm <sup>2</sup>
Wavelength of Peak Sensitivity	$\lambda_p$	----	860	----	nm	----
Rang of Spectral Bandwidth	$\lambda_{0.5}$	----	400---1200	----	nm	----



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### Typical Electrical/Optical/Characteristics Curves

Fig.1 Collector Power Dissipation vs. Ambient Temperature

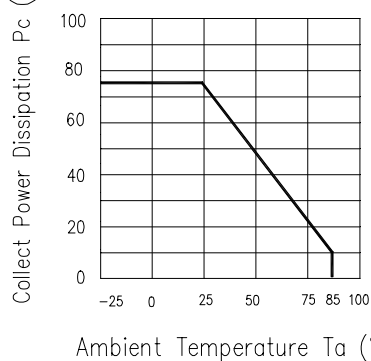


Fig.2 Collector Dark Current vs. Ambient Temperature

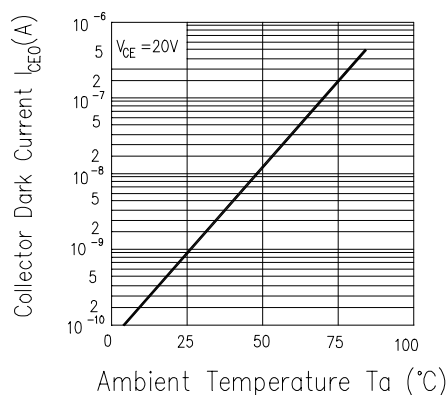


Fig. 3 Relative Collector Current vs. Ambient Temperature

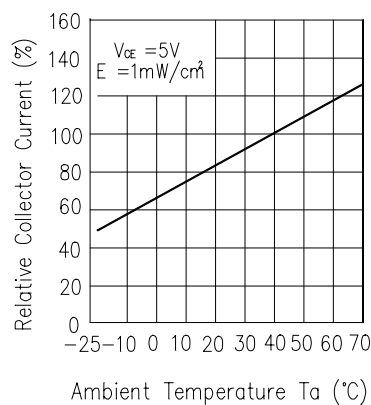


Fig.4 Collector Current vs. Irradiance

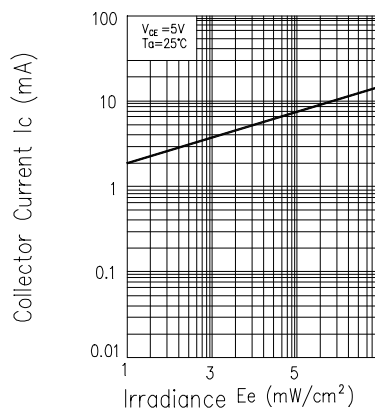


Fig.5 Spectral Sensitivity

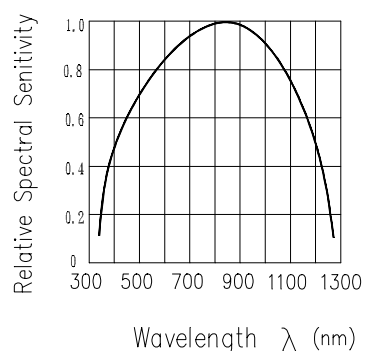
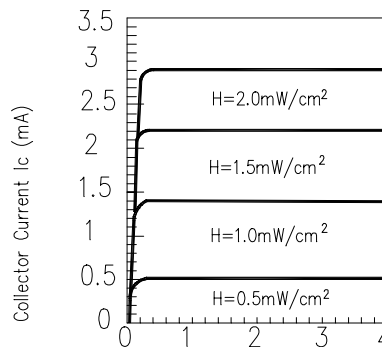


Fig.6 Collector Current vs. Collector-Emitter Voltage





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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 Size	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP : 260℃ ± 5 ℃	5 secs	22 pcs	$I_{c(on)} \leq L \times 0.8$  L :Lower specification limit	0/1
2	Temperature Cycle	H : +85℃    30 mins ↑ 5 mins ↓ L : -55℃    30 mins	50 cycles	22 pcs		0/1
3	Thermal Shock	H : +100℃    5 mins ↑ 10 secs ↓ L : -10℃    5 mins	50 cycles	22 pcs		0/1
4	High Temperature Storage	TEMP. : +100℃	1000 hrs	22 pcs		0/1
5	Low Temperature Storage	TEMP. : -55℃	1000 hrs	22 pcs		0/1
6	DC Operating Life	$V_{CE}=5V$	1000 hrs	22 pcs		0/1
7	High Temperature / High Humidity	85℃ / 85% R.H.	1000 hrs	22 pcs		0/1



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PAGE : 6/7

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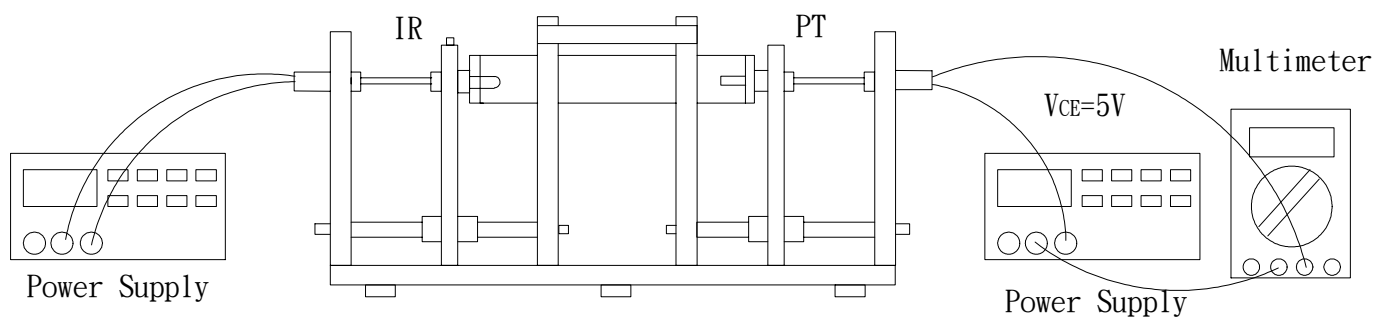
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### ■ Test Method For On State Collector Current :

Condition :  $E_e=1\text{mW/cm}^2$  ,  $V_{CE}=5\text{V}$

Test Item : Collector Current [ $I_{C(on)}$ ]

Unit : mA





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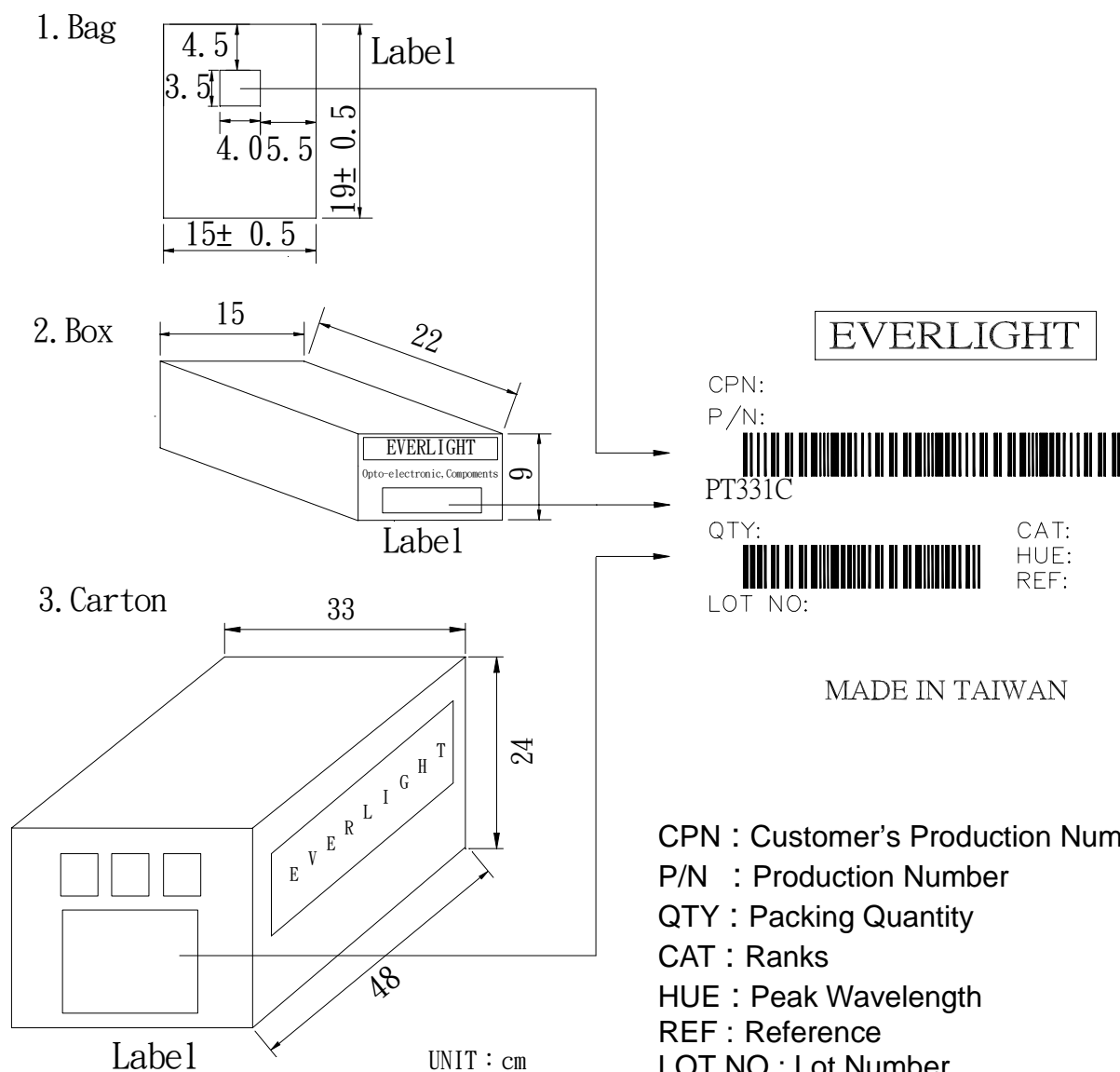
ECN : \_\_\_\_\_

PAGE : 7/7

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### ■ Packing Specifications



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

### ■ Packing Quantity Specification

1. 500 Pcs/1Bag , 6 Bags/1Box
2. 10 Boxes/1Carton