



## 1.3mm Axial Flat Top Phototransistor

MODEL NO : PT28-21C

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### ■ Features :

- Fast response time
- High photo sensitivity

### ■ Description :

- PT28-21C is a phototransistor in miniature SMD package which is molded in a water clear plastic with flat top view lens. The device is spectrally matched to infrared emitting diode.

### ■ 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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### ■ 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	
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 μA Ee=0mW/cm <sup>2</sup>
Emitter-Collector Breakdown Voltage	BV <sub>ECO</sub>	5	----	----	V	I <sub>E</sub> =100 μA 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	----	μS	V <sub>CE</sub> =5V I <sub>C</sub> =1mA R <sub>L</sub> =1000Ω
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>	0.1	0.3	----	mA	V <sub>CE</sub> =5V Ee=1mW/cm <sup>2</sup>
Wavelength of Peak Sensitivity	λ <sub>p</sub>	----	980	----	nm	----
Rang of Spectral Bandwidth	λ <sub>0.5</sub>	----	400---1200	----	nm	----

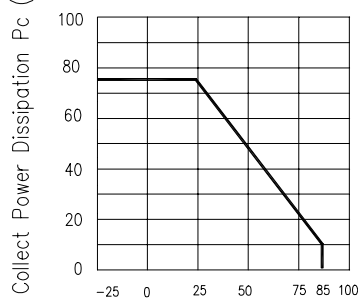


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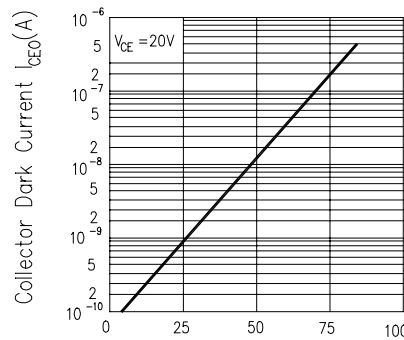
### ■ Typical Electrical/Optical/Characteristics Curves

Fig.1 Collector Power Dissipation vs. Ambient Temperature



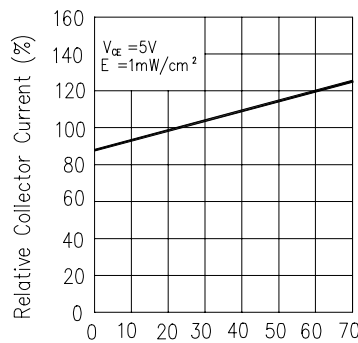
Ambient Temperature Ta (°C)

Fig.2 Collector Dark Current vs. Ambient Temperature



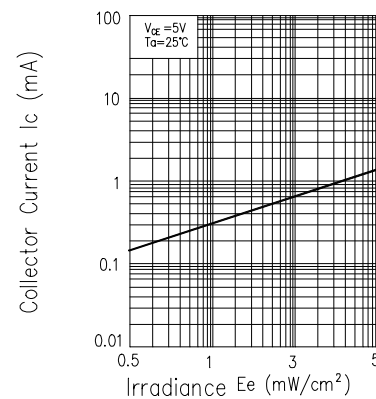
Ambient Temperature Ta (°C)

Fig. 3 Relative Collector Current vs. Ambient Temperature



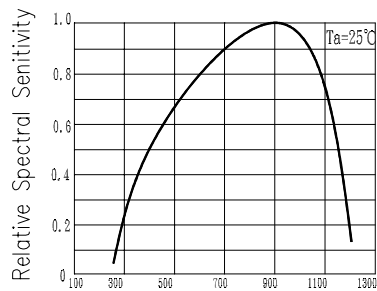
Ambient Temperature Ta (°C)

Fig.4 Collector Current vs. Irradiance



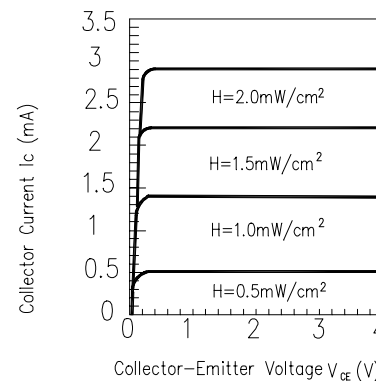
Irradiance E\_e (mW/cm<sup>2</sup>)

Fig.5 Spectral Sensitivity



Wavelength λ (nm)

Fig.6 Collector Current vs. Collector-Emitter Voltage



Collector-Emitter Voltage V<sub>CE</sub> (V)



# EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DPT-028-028 REV : 1.3ECN : \_\_\_\_\_ PAGE : 5/7

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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 Sizes	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP : 260°C ± 5 °C	5 secs	22 pcs		0/1
2	Temperature Cycle	H : +85°C    30 mins <div style="text-align: center;"> </div> L : -55°C    30 mins	50 cycles	22 pcs	$I_R \geq U \times 2$ $E_e \leq L \times 0.8$ $V_F \geq U \times 1.0$	0/1
3	Thermal Shock	H : +100°C    5 mins <div style="text-align: center;"> </div> L : -10°C    5 mins	50 cycles	22 pcs	U :Upper specification limit L :Lower specification limit	0/1
4	High Temperature Storage	TEMP. : +100°C	1000 hrs	22 pcs		0/1
5	Low Temperature Storage	TEMP. : -55°C	1000 hrs	22 pcs		0/1
6	DC Operating Life	$I_F = 20\text{mA}$	1000 hrs	22 pcs		0/1
7	High Temperature / High Humidity	85°C / 85% R.H.	1000 hrs	22 pcs		0/1

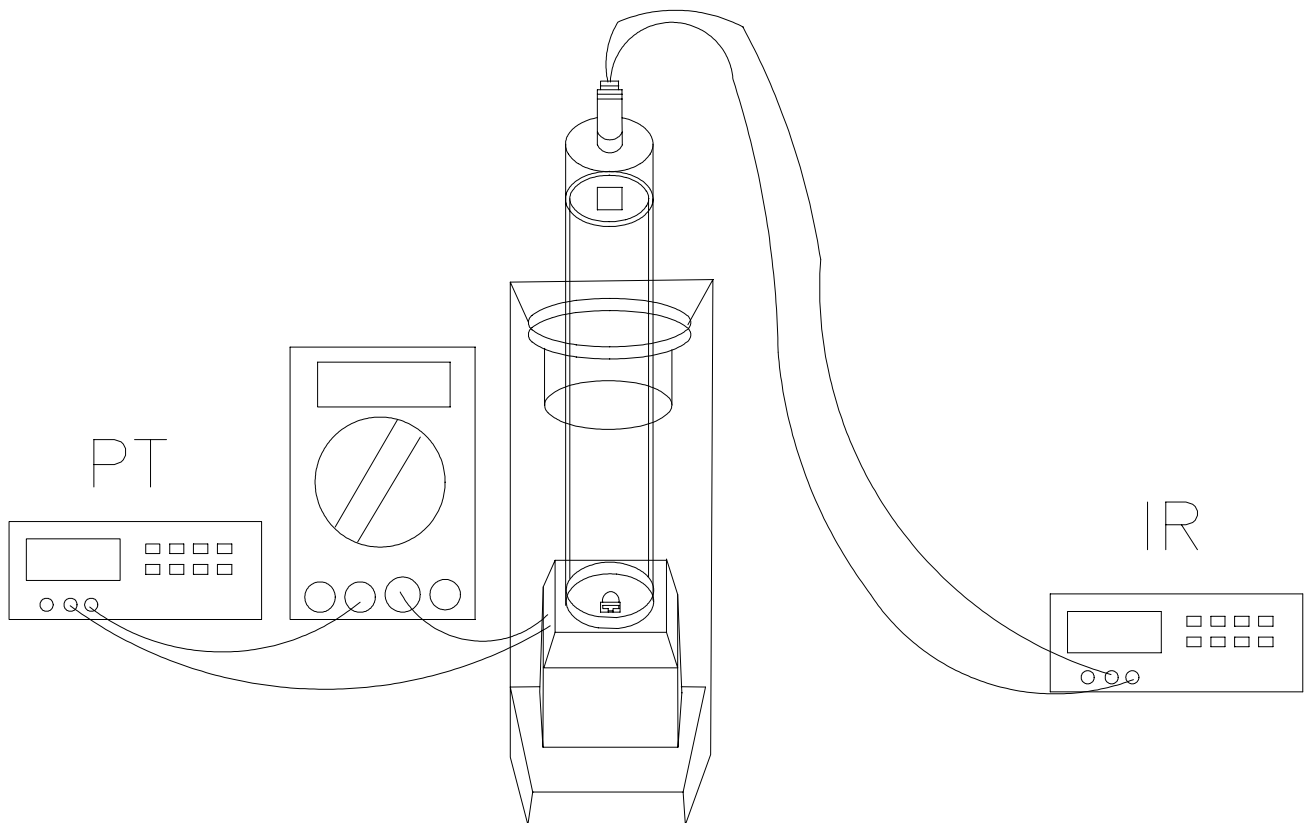
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### ■ Test Method For On State Collector Current :

Condition :  $E_e=1\text{mW}/\text{cm}^2$  ,  $V_{CE}=5\text{V}$ Test Item : Collector Current [ $I_{C(on)}$ ]

Unit : mA



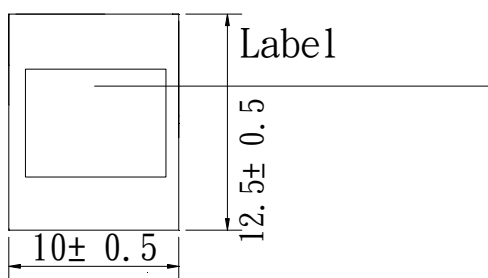


## 1.3mm Axial Flat Top Phototransistor

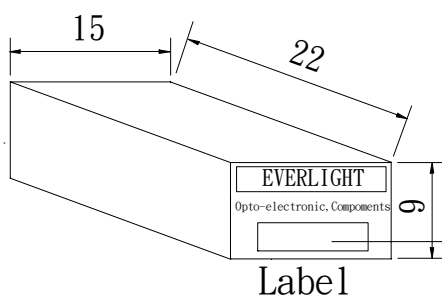
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### ■ Packing Specifications

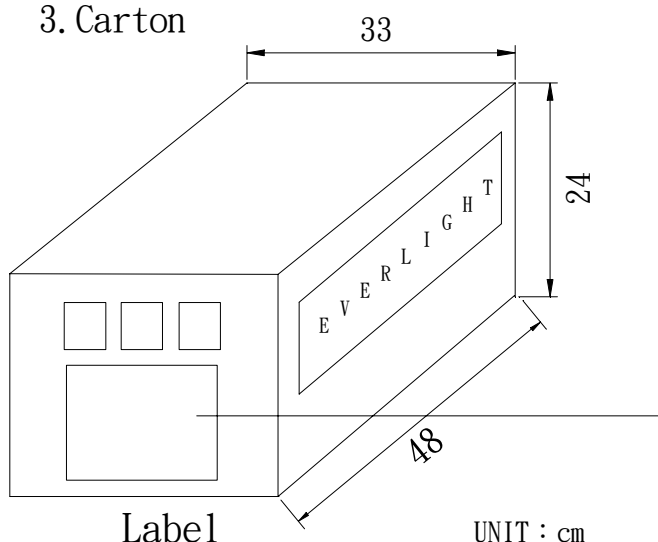
1. Bag



2. Box



3. Carton



UNIT : cm

EVERLIGHT

CPN:

P/N:

PT28-21C

QTY:

LOT NO:

CAT:

HUE:

REF:

MADE IN TAIWAN

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. 1000 Pcs/1Bag , 20 Bags/1Box

2. 10 Boxes/1Carton