



DEVICE NUMBER : DPT-028-028 REV : 1.3
ECN : _____ PAGE : 1/7

1.3mm Axial Flat Top Phototransistor

MODEL NO : PT28-21C

■ 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 :

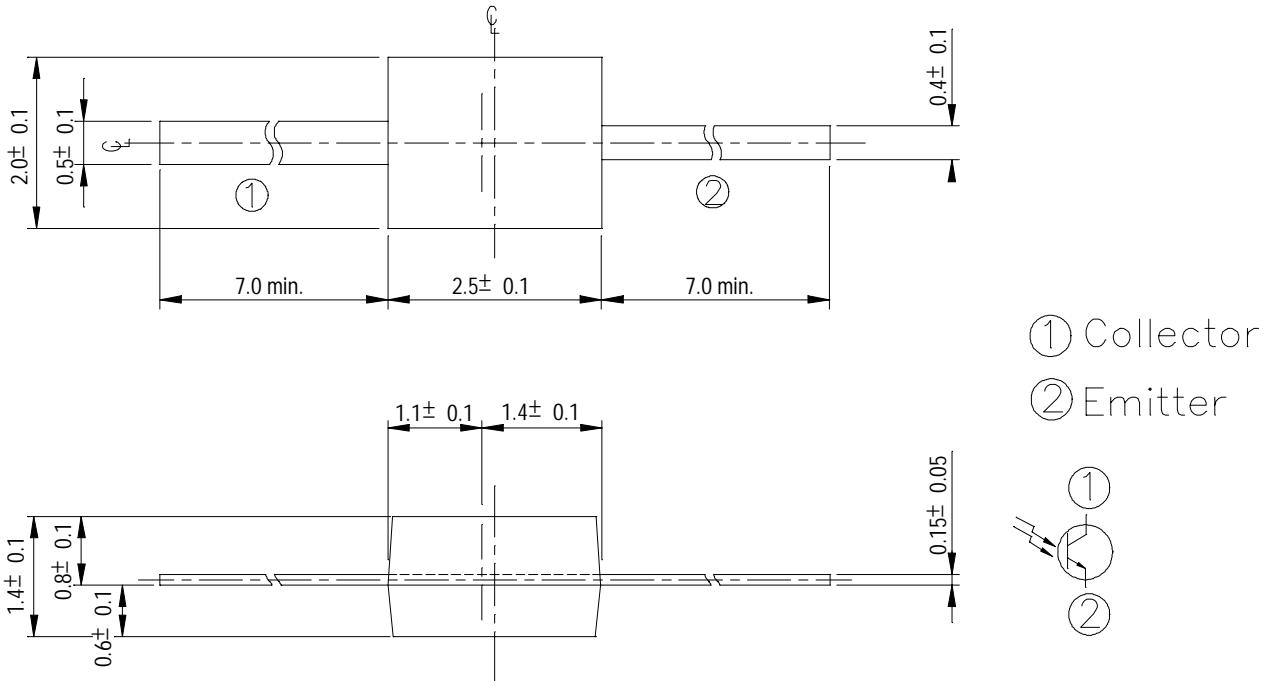
- Optoelectronic switch
- VCRs ,Video camera
- Floppy disk drive
- Infrared applied system

| PART NO. | CHIP | LENS COLOR |
|----------|----------|-------------|
| | MATERIAL | |
| PT | Silicon | Water clear |

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■ Package Dimensions:



■ Notes :

- 1.All dimensions are in millimeter.
- 2.General Tolerance: ± 0.1 mm
- 3.Lens color : Water clear.
- 4.Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
- 5.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.
- 6.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_A = 25°C

| Parameter | Symbol | Rating | Unit | Notice |
|---|------------------|-----------|------|--------|
| Collector-Emitter Voltage | V _{CEO} | 30 | V | |
| Emitter-Collector- Voltage | V _{ECO} | 5 | V | |
| Collector Current | I _C | 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 _{CEO} | 30 | ---- | ---- | V | I _C =100 μA Ee=0mW/cm ² |
| Emitter-Collector Breakdown Voltage | BV _{ECO} | 5 | ---- | ---- | V | I _E =100 μA Ee=0mW/cm ² |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | ---- | ---- | 0.4 | V | I _C =2mA Ee=1mW/cm ² |
| Rise Time | t _r | ---- | 15 | ---- | μS | V _{CE} =5V I _C =1mA R _L =1000Ω |
| Fall Time | t _f | ---- | 15 | ---- | | |
| Collector Dark Current | I _{CEO} | ---- | ---- | 100 | nA | V _{CE} =20V Ee=0mW/cm ² |
| On State Collector Current | I _{C(on)} | 0.1 | 0.3 | ---- | mA | V _{CE} =5V Ee=1mW/cm ² |
| Wavelength of Peak Sensitivity | λ _p | ---- | 980 | ---- | nm | ---- |
| Rang of Spectral Bandwidth | λ _{0.5} | ---- | 400---1200 | ---- | nm | ---- |



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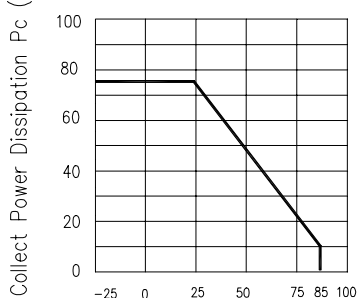
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1.3mm Axial Flat Top Phototransistor

MODEL NO : PT28-21C

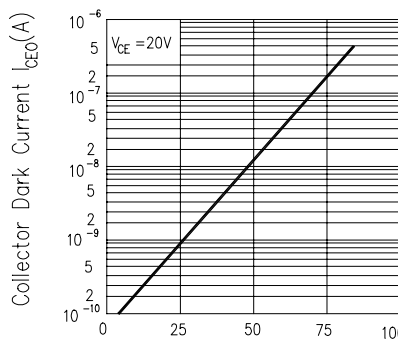
Typical Electrical/Optical/Characteristics Curves

Fig.1 Collector Power Dissipation vs. Ambient Temperature



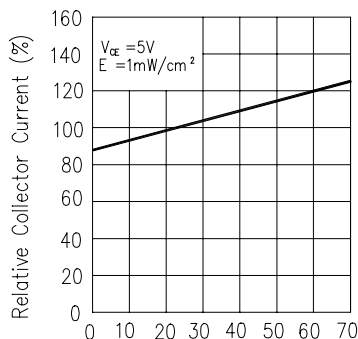
Ambient Temperature Ta (°C)

Fig.2 Collector Dark Current vs. Ambient Temperature



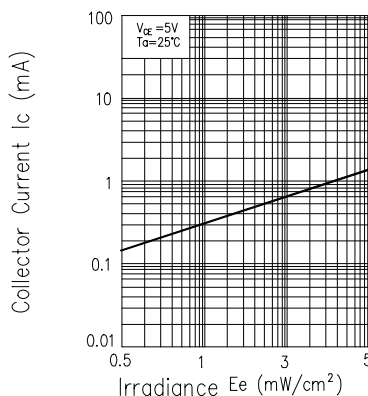
Ambient Temperature Ta (°C)

Fig. 3 Relative Collector Current vs. Ambient Temperature



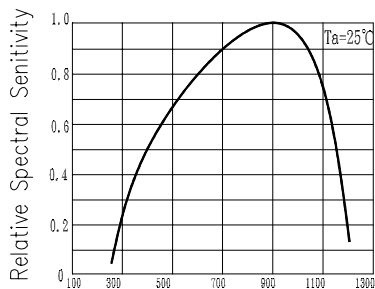
Ambient Temperature Ta (°C)

Fig.4 Collector Current vs. Irradiance



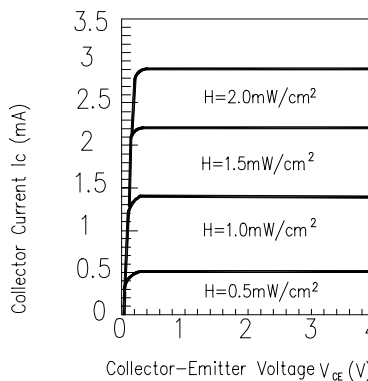
Irradiance E_e (mW/cm^2)

Fig.5 Spectral Sensitivity



Wavelength λ (nm)

Fig.6 Collector Current vs. Collector-Emitter Voltage



Collector-Emitter Voltage V_CE (V)

**EVERLIGHT ELECTRONICS CO., LTD.**DEVICE NUMBER : DPT-028-028 REV : 1.3ECN : _____ PAGE : 5/7**1.3mm Axial Flat Top Phototransistor**MODEL NO : PT28-21C**■ 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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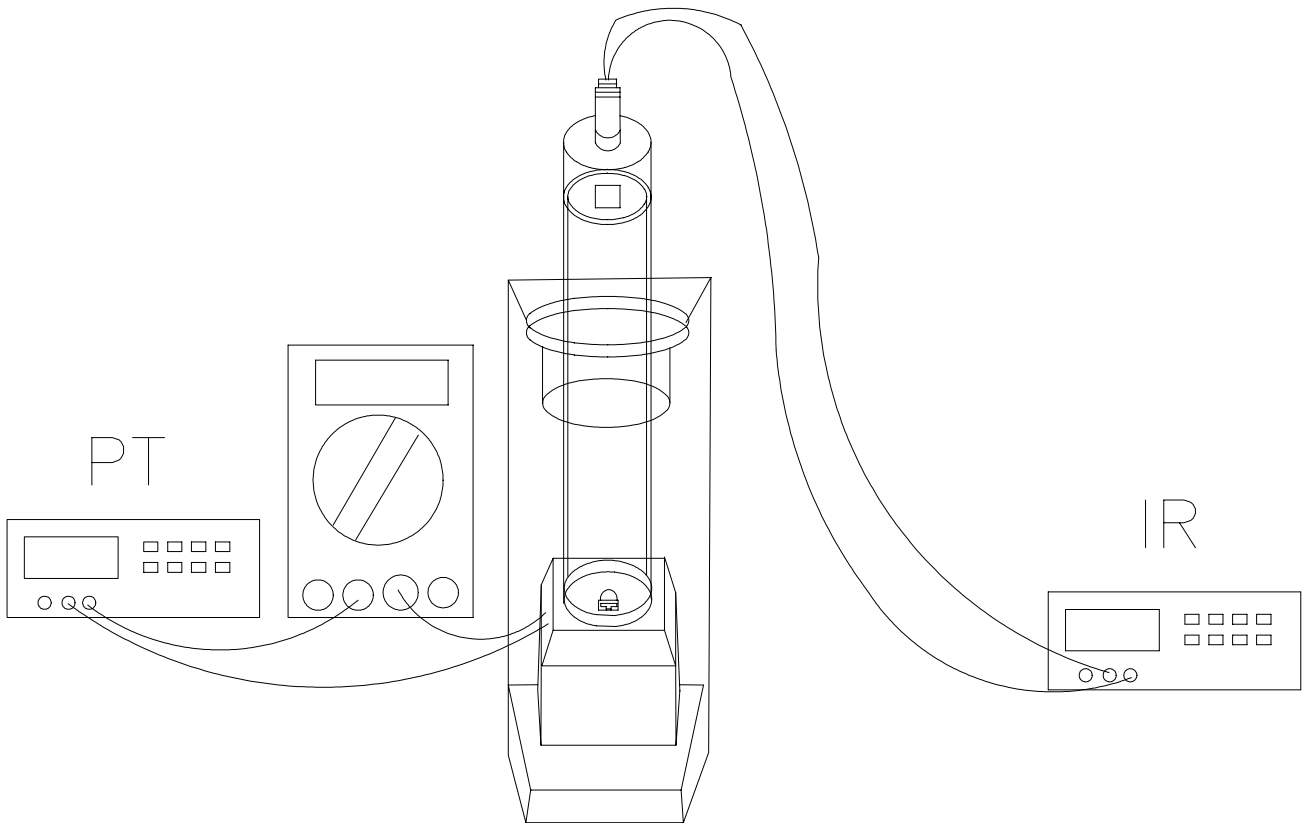
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■ Test Method For On State Collector Current :

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

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

Unit : mA





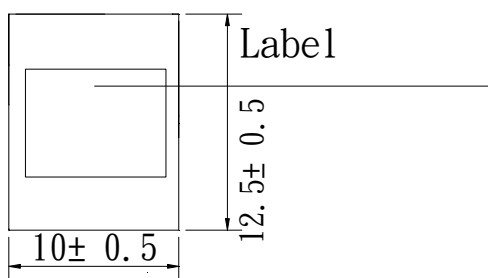
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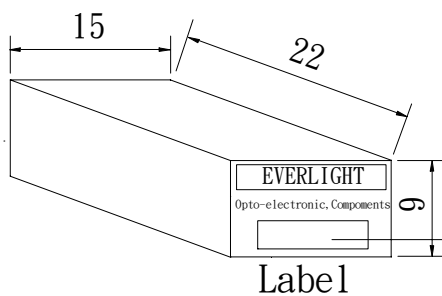
MODEL NO : PT28-21C

■ Packing Specifications

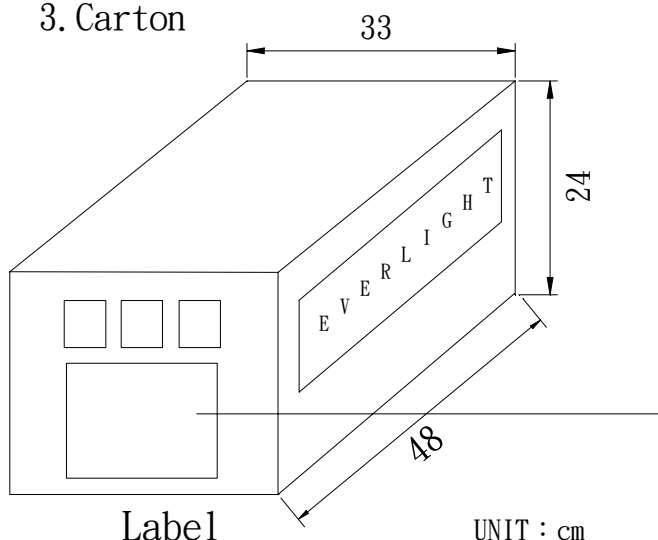
1. Bag



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

PT28-21C