



1.3mm Axial Flat Top Phototransistor

MODEL NO : PT28-21B/F8

■ Features :

- Fast response time
- High photo sensitivity

■ Description :

- PT28-21B/F8 is a phototransistor in miniature SMD package which is molded in a black plastic with flat top view lens. The device is spectrally matched to infrared emitting diode.

■ Applications :

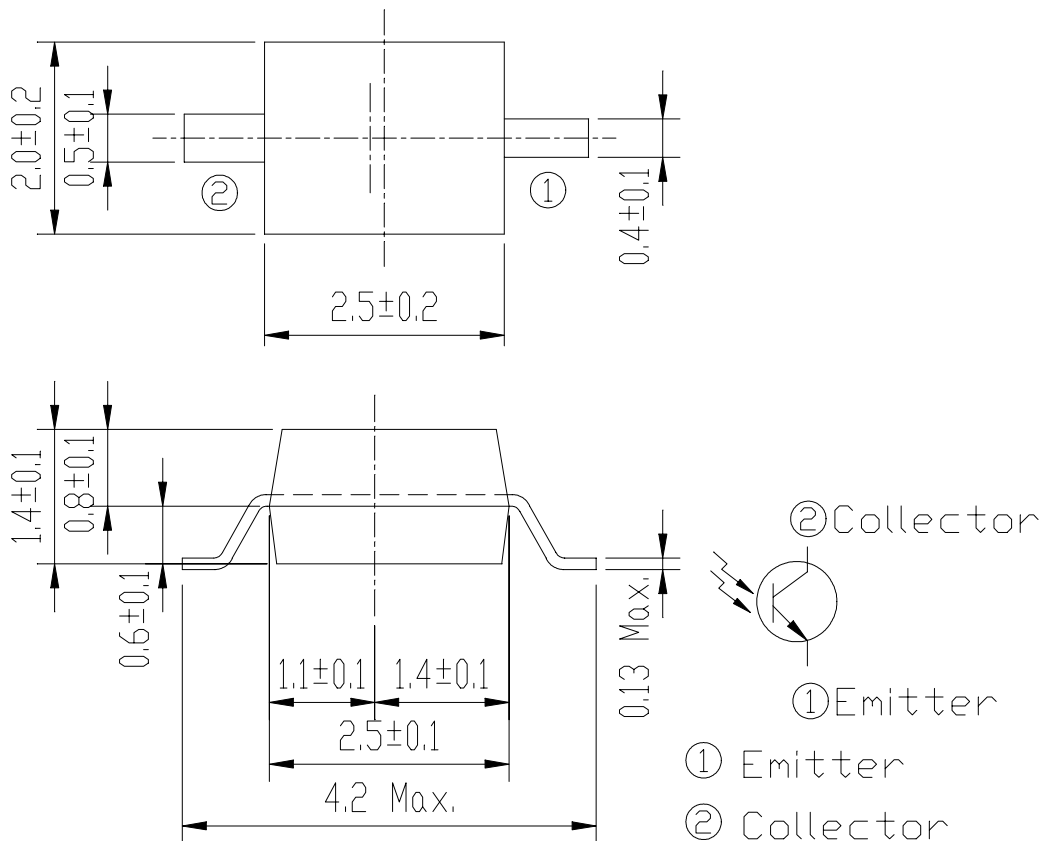
- Optoelectronic switch
- VCRs ,Video camera
- Floppy disk drive
- Infrared applied system

| PART NO. | CHIP | LENS COLOR |
|----------|----------|------------|
| | MATERIAL | |
| PT | Silicon | Black |

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■ Package Dimensions:



■ Notes :

1. All dimensions are in millimeter.
2. General Tolerance: ± 0.1 mm
3. Lens color : Black.
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 $T_A = 25^\circ\text{C}$

| 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 | T_{opr} | -25 ~ +85 | $^\circ\text{C}$ | |
| Storage Temperature | T_{stg} | -40 ~ +85 | $^\circ\text{C}$ | |
| Soldering Temperature | T_{sol} | 260 | $^\circ\text{C}$ | |
| Power Dissipation at(or below) 25 $^\circ\text{C}$ Free Air Temperature | P_c | 75 | mW | |

■ Electronic Optical Characteristics :

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|---|-----------------|------|------------|------|---------------|--|
| Collector-Emitter Breakdown Voltage | BV_{CEO} | 30 | ---- | ---- | V | $I_C=100\mu\text{A}$ $E_e=0\text{mW}/\text{cm}^2$ |
| Emitter-Collector Breakdown Voltage | BV_{ECO} | 5 | ---- | ---- | V | $I_E=100\mu\text{A}$ $E_e=0\text{mW}/\text{cm}^2$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | ---- | ---- | 0.4 | V | $I_C=2\text{mA}$ $E_e=1\text{mW}/\text{cm}^2$ |
| Rise Time | t_r | ---- | 15 | ---- | μS | $V_{CE}=5\text{V}$ $I_C=1\text{mA}$ $R_L=1000\Omega$ |
| Fall Time | t_f | ---- | 15 | ---- | | |
| Collector Dark Current | I_{CEO} | ---- | ---- | 100 | nA | $V_{CE}=20\text{V}$ $E_e=0\text{mW}/\text{cm}^2$ |
| On State Collector Current | $I_{C(on)}$ | 0.1 | 0.3 | ---- | mA | $V_{CE}=5\text{V}$ $E_e=1\text{mW}/\text{cm}^2$ |
| Wavelength of Peak Sensitivity | λ_p | ---- | 980 | ---- | nm | ---- |
| Rang of Spectral Bandwidth | $\lambda_{0.5}$ | ---- | 770---1200 | ---- | nm | ---- |



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■ Typical Electrical/Optical/Characteristics Curves

Fig.1 Collector Power Dissipation vs. Ambient Temperature

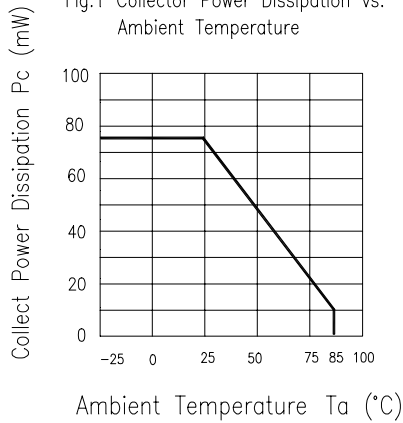


Fig.2 Collector Dark Current vs. Ambient Temperature

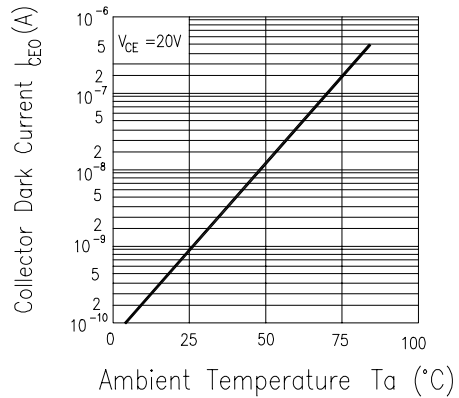


Fig. 3 Relative Collector Current vs. Ambient Temperature

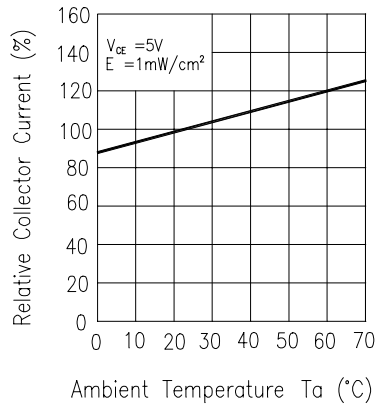


Fig.4 Collector Current vs. Irradiance

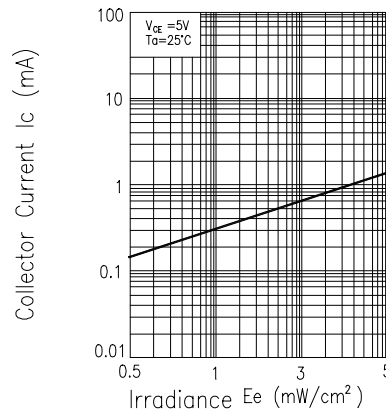


Fig.5 Spectral Sensitivity

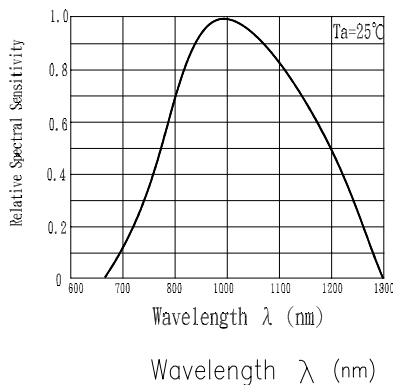
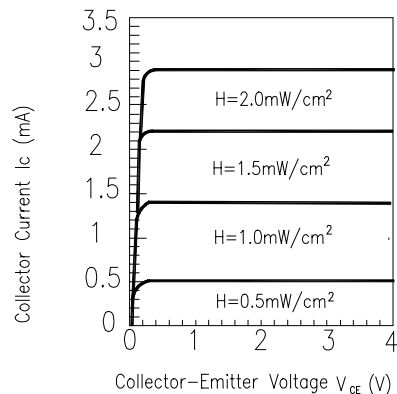


Fig.6 Collector Current vs. Collector-Emitter Voltage





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DEVICE NUMBER : DPT-028-117 REV : 1.0
 ECN : _____ 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 Size | Failure Judgement Criteria | Ac/Re |
|-----|----------------------------------|---|-----------------------|-------------|---|-------|
| 1 | REFLOW | TEMP : 240°C ± 5 °C 5 secs | 6 Mins | 22 pcs | More than 90% of lead to be covered by soldering | 0/1 |
| 2 | Temperature Cycle | H : +85°C 30 mins  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  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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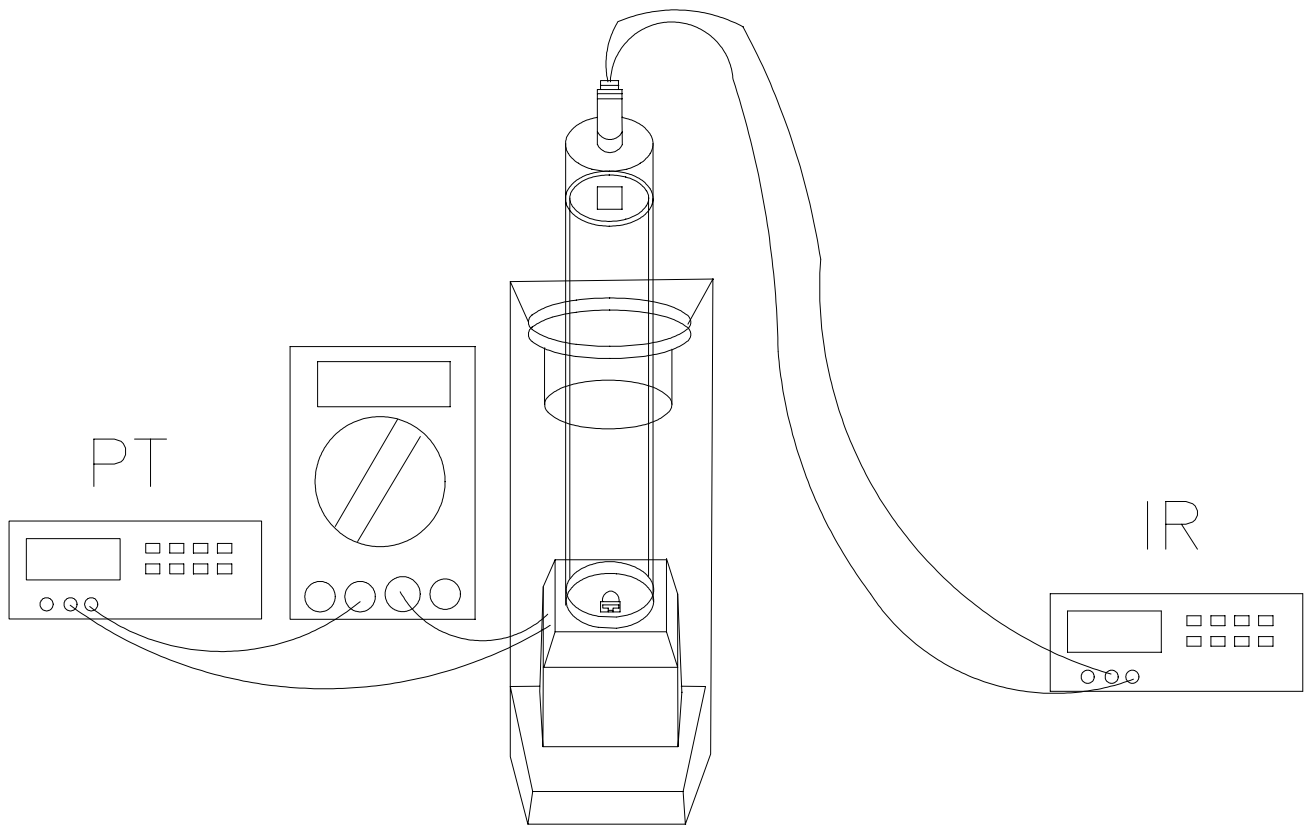
MODEL NO : PT28-21B/F8

■ 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



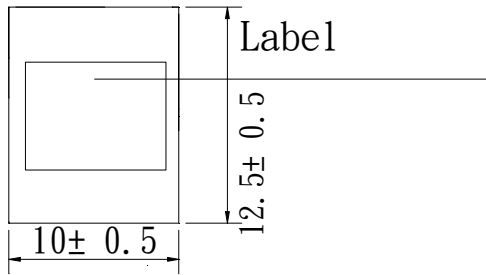


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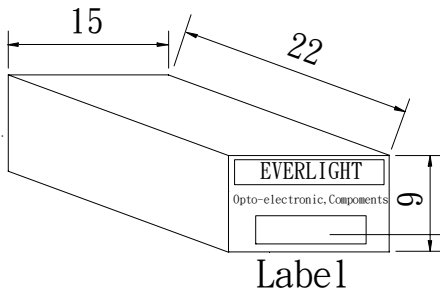
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■ Packing Specifications

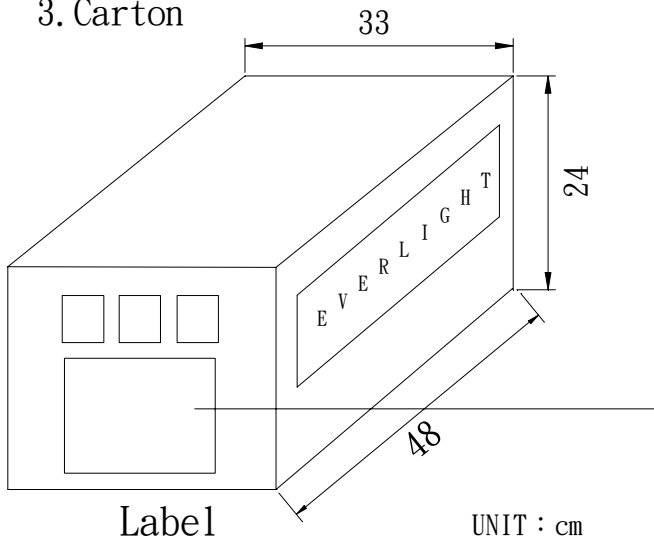
1. Bag



2. Box



3. Carton



UNIT : cm

EVERLIGHT

CPN:
P/N:

PT28-21B/F8

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

- 1000 Pcs/1Bag , 20 Bags/1Box
- 10 Boxes/1Carton