



EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DPD-043-004 REV : 2.0
ECN : _____ PAGE : 1/7

4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/C2

■ Features :

- Fast response time
- High photo sensitivity
- Small junction capacitance

■ Description :

- PD438B/C2 is a high speed and sensitive PIN photodiode in a flat side view plastic package. The epoxy package itself is an IR filter, spectrally matched to GaAs or GaAlAs IR emitter.

■ Applications :

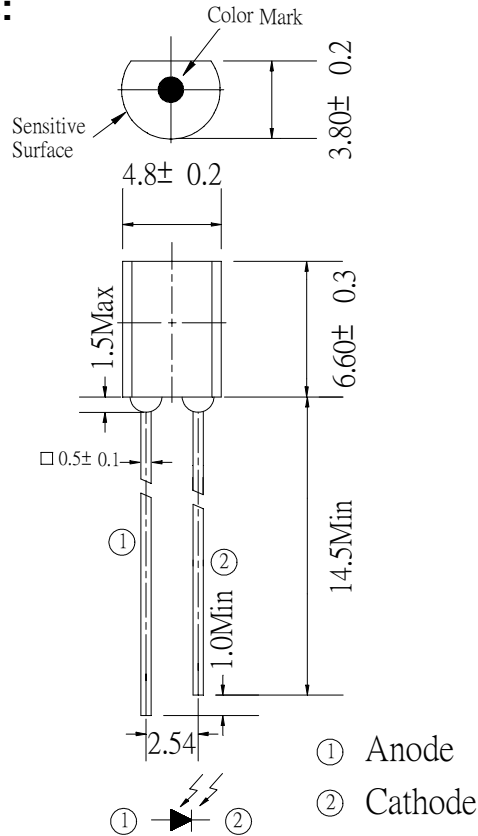
- High speed photo detector
- Camera
- Infrared remote controller for TVs VCR, audio equipment, air conditioner, etc.

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

4.8mm Semi-Lens Silicon PIN Photodiode

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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 : Black.
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.



4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/C2

■ Absolute Maximum Ratings at T_A = 25°C

| Parameter | Symbol | Rating | Unit | Notice |
|----------------------------|------------------|-----------|------|---|
| Reverse Voltage | V _R | 32 | V | |
| Power Dissipation | P _d | 150 | mW | |
| Lead Soldering Temperature | T _{sol} | 260 | °C | 4mm from mold body less than 5 seconds |
| Operating Temperature | T _{opr} | -25 ~ +85 | °C | |
| Storage Temperature | T _{stg} | -40 ~ +85 | °C | |

■ Electronic Optical Characteristics :

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|--------------------------------|--------------------------------|------|------------|------|---------|---|
| Rang of Spectral Bandwidth | $\lambda_{0.5}$ | ---- | 700---1200 | ---- | nm | ---- |
| Wavelength of Peak Sensitivity | λ_p | ---- | 980 | ---- | nm | ---- |
| Open-Circuit Voltage | V _{OC} | ---- | 0.35 | ---- | V | E _e =5mW/cm ² λ_p =940nm |
| Short-Circuit Current | I _{SC} | ---- | 70 | ---- | μ A | |
| Reverse Light Current | I _L | ---- | 70 | ---- | μ A | E _e =5mW/cm ² λ_p =940nm V _R =5V |
| Dark Current | I _D | ---- | 5 | 30 | nA | E _e =0mW/cm ² V _R =10V |
| Reverse Breakdown Voltage | B _{VR} | 32 | 170 | ---- | V | E _e =0mW/cm ² I _R =100 μ A |
| Total Capacitance | C _t | ---- | 25 | ---- | pF | E _e =0mW/cm ² f=1MHZ V _R =3V |
| Rise/Fall Time | t _r /t _f | ---- | 50/50 | ---- | nS | R _L =1000 Ω V _R =10V |



4.8mm Semi-Lens Silicon PIN Photodiode

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Typical Electrical/Optical/Characteristics Curves

Fig. 1 Power Dissipation vs. Ambient Temperature

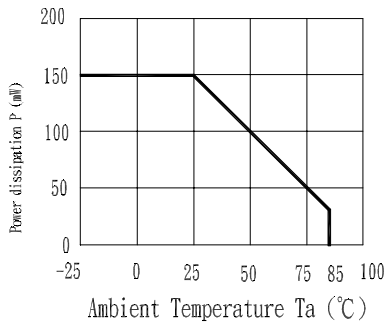


Fig. 2 Spectral Sensitivity

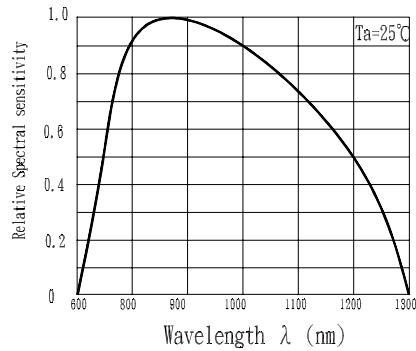


Fig. 3 Dark Current vs. Ambient Temperature

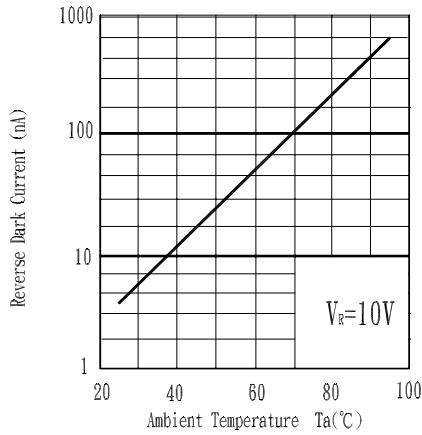


Fig. 4 Reverse Light Current vs. Ee

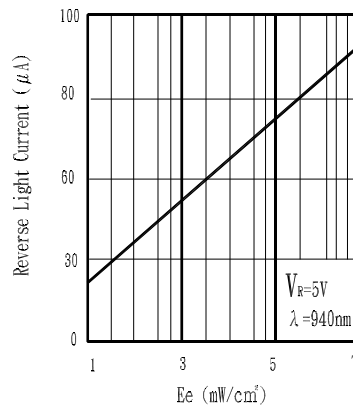


Fig. 5 Terminal Capacitance vs. Reverse Voltage

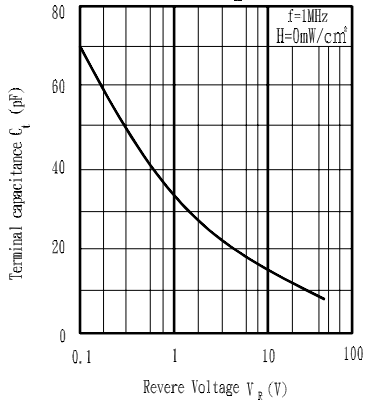
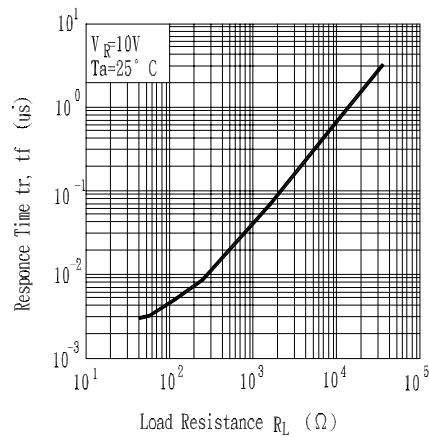


Fig. 6 Response Time vs. Load Resistance





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4.8mm Semi-Lens Silicon PIN Photodiode

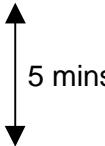
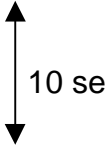
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■ Reliability Test Item And Condition

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°C ± 5 °C | 5 secs | 22 pcs | $I_L \leq L_x \times 0.8$ L :Lower specification limit | 0/1 |
| 2 | Temperature Cycle | H : +85°C 30 mins  L : -55°C 30 mins | 50 cycles | 22 pcs | | 0/1 |
| 3 | Thermal Shock | H : +100°C 5 mins  L : -10°C 5 mins | 50 cycles | 22 pcs | | 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 | $V_R=5V$ | 1000 hrs | 22 pcs | | 0/1 |
| 7 | High Temperature / High Humidity | 85°C / 85% R.H. | 1000 hrs | 22 pcs | | 0/1 |



4.8mm Semi-Lens Silicon PIN Photodiode

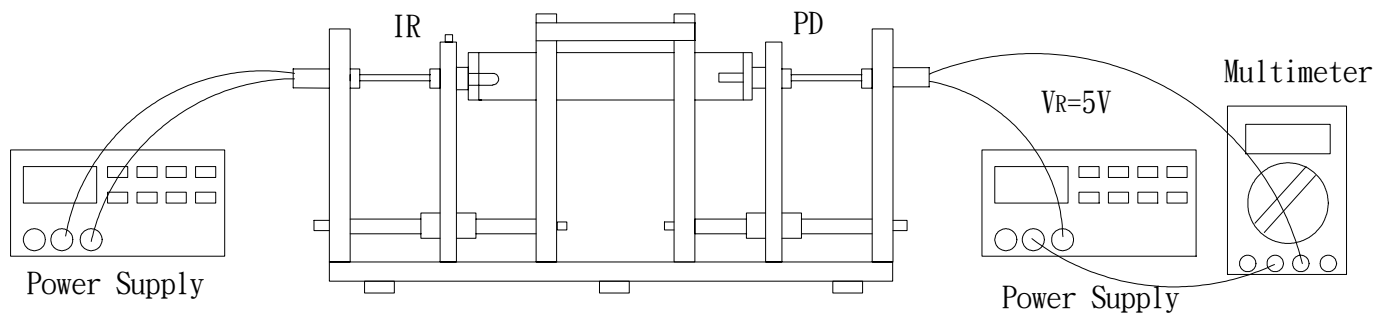
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■ Test Method For Reverse Light Current

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

Test Item: Reverse Light Current)

Unit : μA

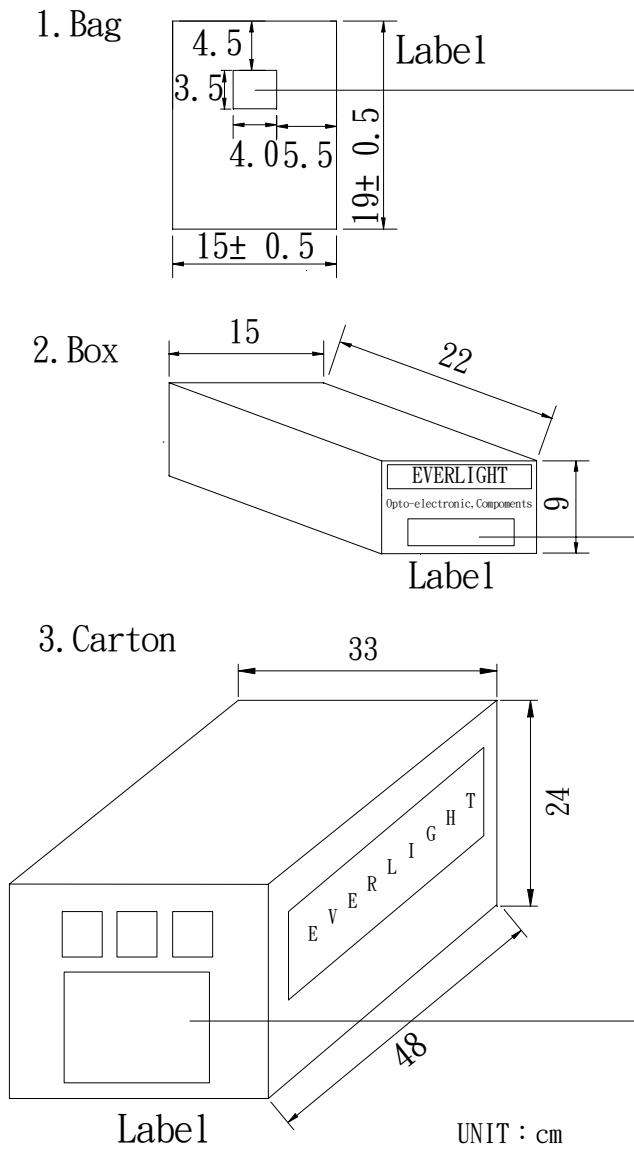




4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/C2

■ Packing Specifications



EVERLIGHT

CPN:
P/N:

 PD438B/C2
 QTY:
 CAT:
 HUE:
 REF:
 LOT NO:

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