



## Technical Data Sheet

### 4.8mm Semi-Lens Silicon PIN Photodiode

#### PD438B/C1

#### Features

- Fast response times
- High photo sensitivity
- Small junction capacitance
- Pb free
- The product itself will remain within RoHS compliant version.



#### Descriptions

PD438B/C1 is a high speed and sensitive PIN photodiode in a cylindrical side view plastic package. The epoxy package itself is an IR filter , spectrally matched to IR emitter.

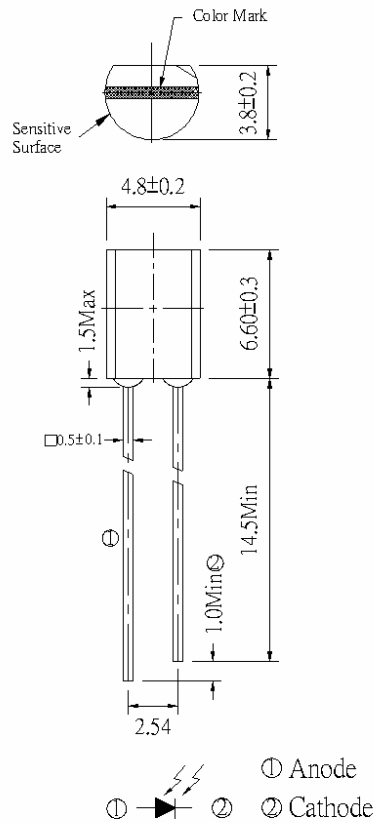
#### Applications

- High speed photo detector
- Camera
- Optoelectronic switch
- VCRs , Video camera

#### Device Selection Guide

| LED Part No. | Chip     | Lens Color |
|--------------|----------|------------|
|              | Material |            |
| PD           | Silicon  | Black      |

**Package Dimensions**



- Notes:** 1.All dimensions are in millimeters  
 2.Tolerances unless dimensions  $\pm 0.25$ mm

**Absolute Maximum Ratings (Ta=25°C)**

| Parameter                  | Symbol    | Rating    | Units |
|----------------------------|-----------|-----------|-------|
| Reverse Voltage            | $V_R$     | 32        | V     |
| Power Dissipation          | $P_d$     | 150       | mW    |
| Lead Soldering Temperature | $T_{sol}$ | 260       | °C    |
| Operating Temperature      | $T_{opr}$ | -25 ~ +85 | °C    |
| Storage Temperature        | $T_{stg}$ | -40 ~ +85 | °C    |

**Notes:** \*1:Soldering time  $\leq 5$  seconds.

**Electro-Optical Characteristics (Ta=25°C)**

| Parameter                      | Symbol          | Condition  | Min. | Typ.  | Max. | Units   |
|--------------------------------|-----------------|--|------|-------|------|---------|
| Rang of Spectral Bandwidth     | $\lambda_{0.5}$ | -----  | 760  | ---   | 1100 | nm      |
| Wavelength of Peak Sensitivity | $\lambda_p$     | -----  | ---  | 940   | ---  | nm      |
| Open-Circuit Voltage           | $V_{OC}$        | Ee=5m W/cm <sup>2</sup><br>$\lambda_p=940nm$             | ---  | 0.35  | ---  | V       |
| Short- Circuit Current         | $I_{SC}$        | Ee=1m W/cm <sup>2</sup><br>$\lambda_p=940nm$             | ---  | 18    | ---  | $\mu A$ |
| Reverse Light Current          | $I_L$           | Ee=1m W/cm <sup>2</sup><br>$\lambda_p=940nm$<br>$V_R=5V$ | 10.2 | 18    | ---  |         |
| Dark Current                   | $I_d$           | Ee=0m W/cm <sup>2</sup><br>$V_R=10V$                     | ---  | 5     | 30   | nA      |
| Reverse Breakdown              | $BV_R$          | Ee=0m W/cm <sup>2</sup><br>$I_R=100 \mu A$               | 32   | 170   | ---  | V       |
| Total Capacitance              | $C_t$           | Ee=0m W/cm <sup>2</sup><br>$V_R=3V$<br>$f=1MHZ$          | ---  | 25    | ---  | pF      |
| Rise/Fall Time                 | $t_r/t_f$       | $V_R=10V$<br>$R_L=1K \Omega$                             | ---  | 50/50 | ---  | nS      |

**Typical Electro-Optical Characteristics Curves**

Fig.1 Power Dissipation vs. Ambient Temperature

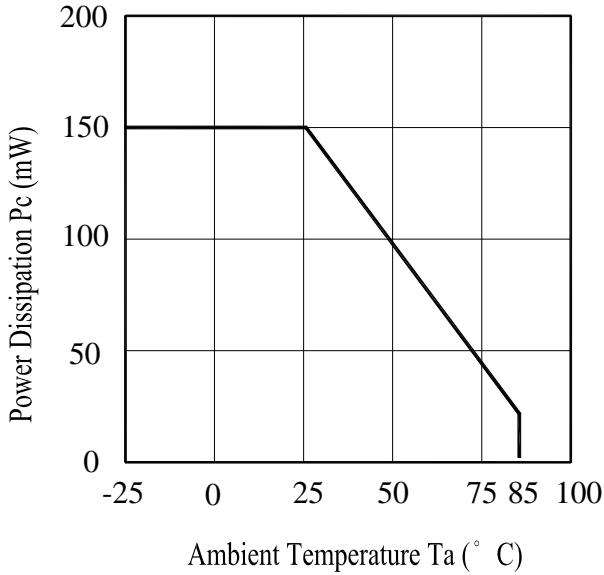


Fig.2 Spectral Sensitivity

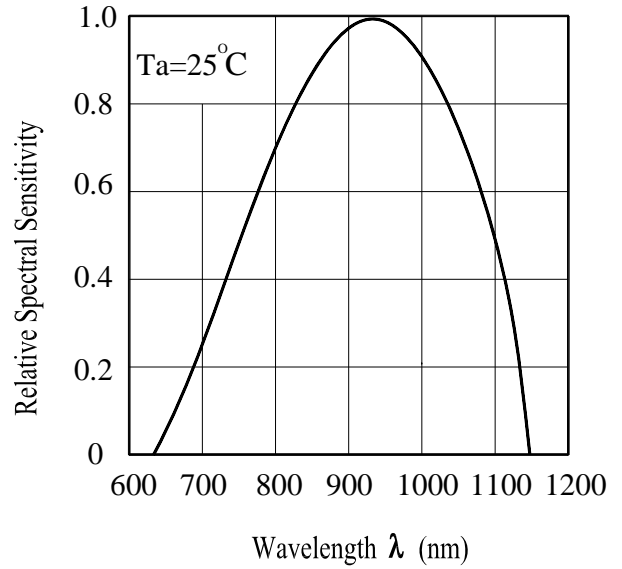


Fig.3 Dark Current vs. Ambient Temperature

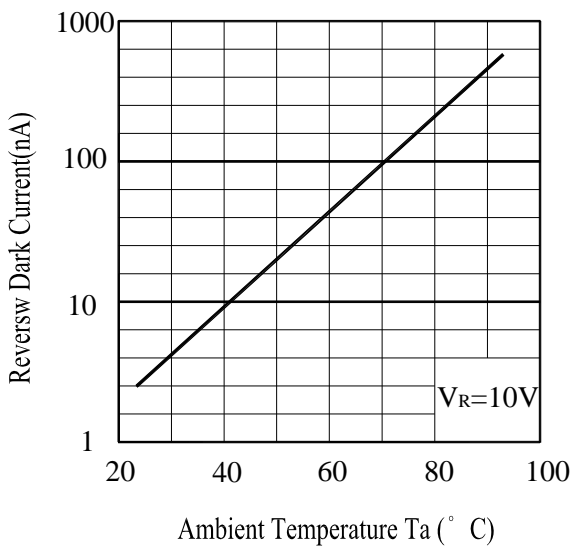
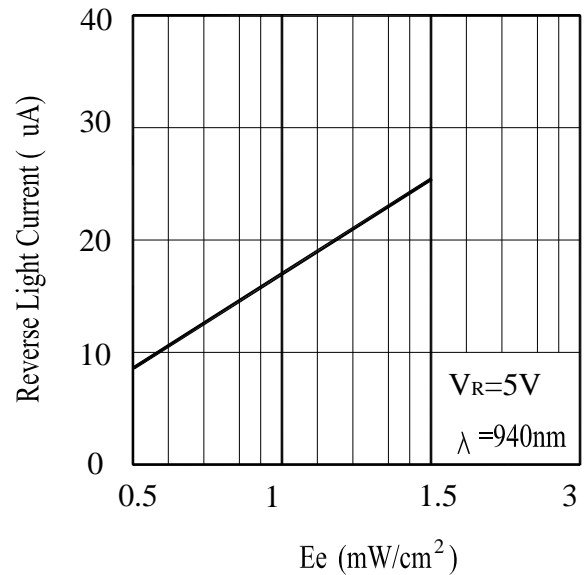


Fig. 4 Reverse Light Current vs.  $E_e$



**Typical Electro-Optical Characteristics Curves**

Fig.5 Terminal Capacitance vs. Reverse Voltage

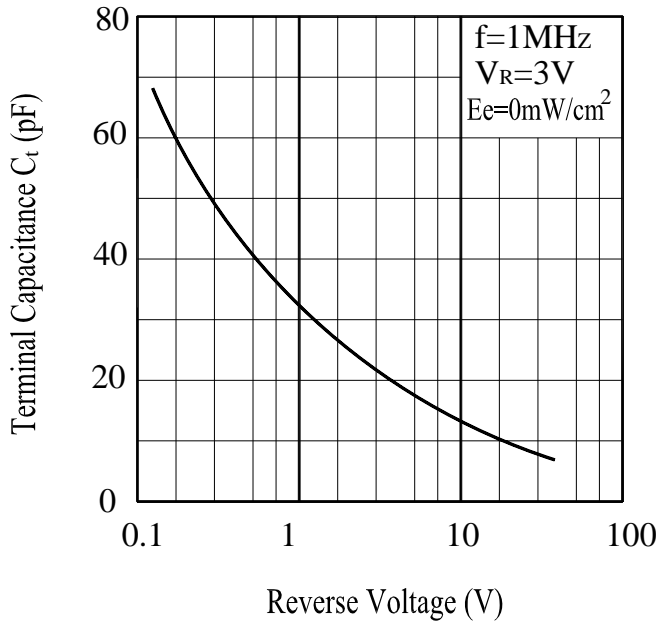
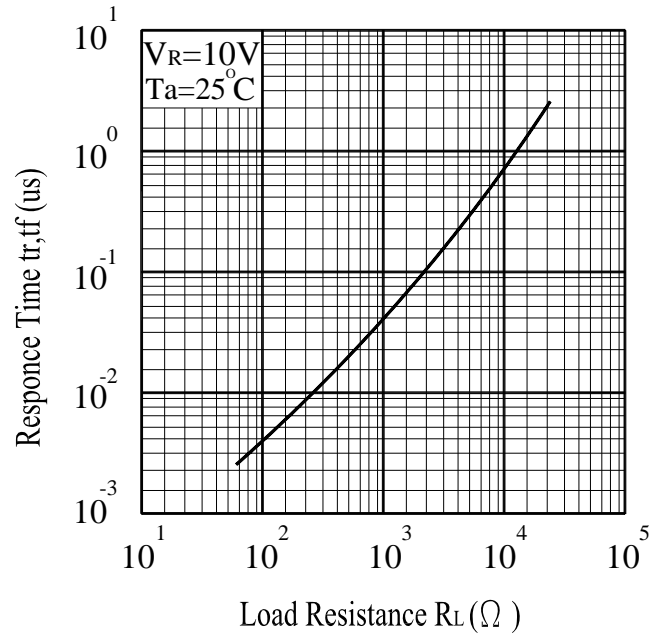


Fig.6 Response Time vs. Load Resistance



**Reliability Test Item And Condition**

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

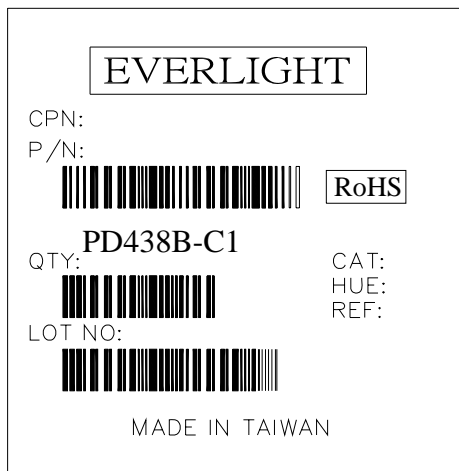
| NO. | Item                               | Test Conditions  | Test Hours/<br>Cycles | Sample<br>Sizes | Failure<br>Judgement<br>Criteria                                       | Ac/R<br>e |
|-----|------------------------------------|--|-----------------------|-----------------|--|-----------|
| 1   | Solder heat                        | TEMP. : 260°C±5°C  | 10secs                | 22pcs           | $I_L \leq L \times 0.8$<br><br>L : Lower<br><br>Specification<br>Limit | 0/1       |
| 2   | Temperature Cycle                  | H : +100°C    15mins<br>↑<br>5mins<br>↓<br>L : -40°C    15mins | 300Cycles             | 22pcs           |  | 0/1       |
| 3   | Thermal Shock                      | H : +100°C    5mins<br>↑<br>10secs<br>↓<br>L : -10°C    5mins  | 300Cycles             | 22pcs           |  | 0/1       |
| 4   | High Temperature<br>Storage        | TEMP. : +100°C   | 1000hrs               | 22pcs           |  | 0/1       |
| 5   | Low Temperature<br>Storage         | TEMP. : -40°C  | 1000hrs               | 22pcs           |  | 0/1       |
| 6   | DC Operating Life                  | $V_R=5V$   | 1000hrs               | 22pcs           |  | 0/1       |
| 7   | High Temperature/<br>High Humidity | 85°C / 85% R.H   | 1000hrs               | 22pcs           |  | 0/1       |

### **Packing Quantity Specification**

1.500PCS/1Bag , 6Bags/1Box

2.10Boxes/1Carton

### **Label Form Specification**



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

### **Notes**

1. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
2. When using this product, please observe the absolute maximum ratings and the instructions for using 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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