



### 4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B

■ **Features :**

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

■ **Description :**

PD438B 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 :**

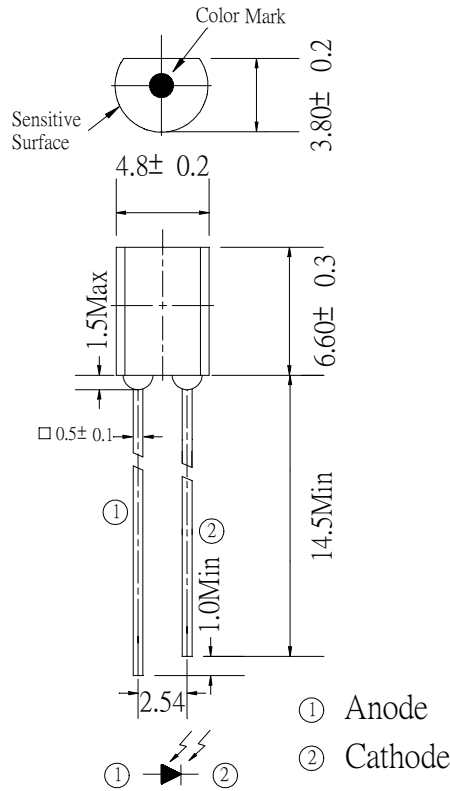
- High speed photo detector
- Camera
- Infrared remote controller for TVs VCR, audio equipment, air conditioner, etc.

PART NO.	CHIP	LENS COLOR
	MATERIAL	
PD	Silicon	Black

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**Package Dimension :**



**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.
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#### ■ Absolute Maximum Ratings at T<sub>A</sub> = 25°C

Parameter	Symbol	Rating	Unit	Notice
Reverse Voltage	V <sub>R</sub>	32	V	
Power Dissipation	P <sub>d</sub>	150	mW	
Lead Soldering Temperature	T <sub>sol</sub>	260	°C	4mm from mold body less than 5 seconds
Operating Temperature	T <sub>opr</sub>	-25 ~ +85	°C	
Storage Temperature	T <sub>stg</sub>	-40 ~ +85	°C	

#### ■ Electronic Optical Characteristics :

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Rang of Spectral Bandwidth	$\lambda_{0.5}$	----	840---1200	----	nm	----
Wavelength of Peak Sensitivity	$\lambda_p$	----	980	----	nm	----
Open-Circuit Voltage	V <sub>OC</sub>	----	0.35	----	V	E <sub>e</sub> =5mW/cm <sup>2</sup> $\lambda_p$ =940nm
Short-Circuit Current	I <sub>SC</sub>	----	70	----	$\mu$ A	
Reverse Light Current	I <sub>L</sub>	----	70	----	$\mu$ A	E <sub>e</sub> =5mW/cm <sup>2</sup> $\lambda_p$ =940nm V <sub>R</sub> =5V
Dark Current	I <sub>D</sub>	----	5	30	nA	E <sub>e</sub> =0mW/cm <sup>2</sup> V <sub>R</sub> =10V
Reverse Breakdown Voltage	B <sub>VR</sub>	32	170	----	V	E <sub>e</sub> =0mW/cm <sup>2</sup> I <sub>R</sub> =100 $\mu$ A
Total Capacitance	C <sub>t</sub>	----	25	----	pF	E <sub>e</sub> =0mW/cm <sup>2</sup> f=1MHZ V <sub>R</sub> =3V
Rise/Fall Time	t <sub>r</sub> /t <sub>f</sub>	----	50/50	----	nS	R <sub>L</sub> =1000 $\Omega$ V <sub>R</sub> =10V

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**Typical Electrical/Optical/Characteristics Curves**

Fig. 1 Power Dissipation vs. Ambient Temperature

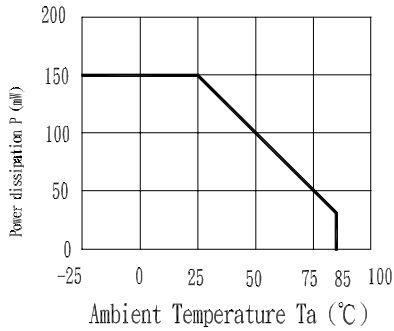


Fig. 2 Spectral Sensitivity

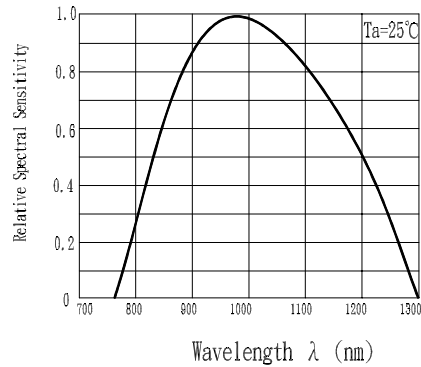


Fig. 3 Dark Current vs. Ambient Temperature

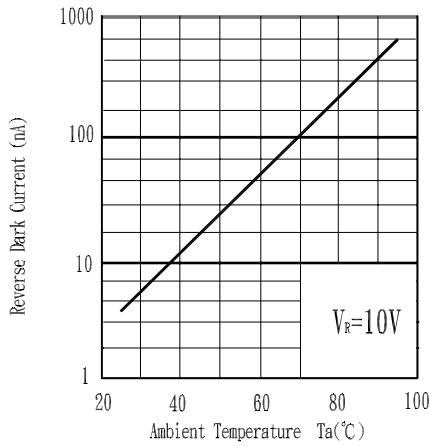


Fig. 4 Reverse Light Current vs.  $E_e$

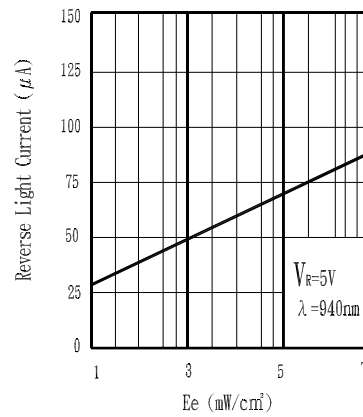


Fig. 5 Terminal Capacitance vs. Reverse Voltage

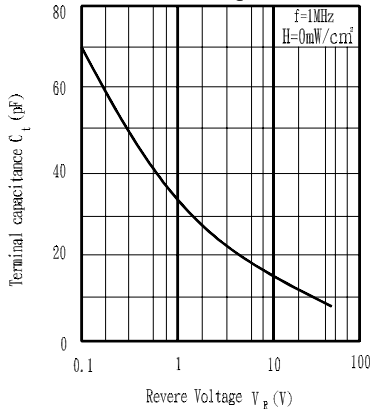
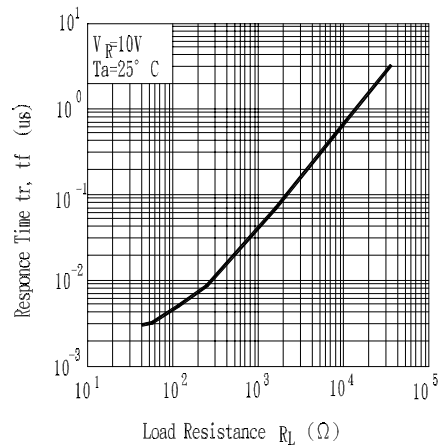


Fig. 6 Response Time vs. Load Resistance





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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/ Cycle	Sample Size	Failure Judgement Criteria	Ac/Re
1	Solder Heat	TEMP : 260°C ± 5 °C	5 sec	22 PCs	I <sub>L</sub> ≤ Lx 0.8  L :Lower specification limit	0/1
2	Temperature Cycle	H : +85°C    30 min ↑ 5 min ↓ L : -55°C    30 min	50 cycle	22 PCs		0/1
3	Thermal Shock	H : +100°C    5 min ↑ 10 sec ↓ L : -10°C    30 min	50 cycle	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 <sub>R</sub> =5V	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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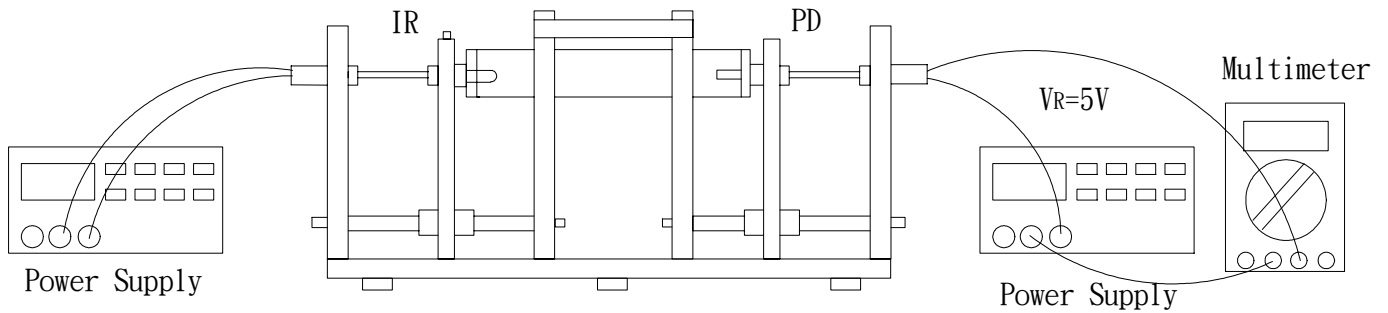
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#### ■ Test Method For Reverse Light Current

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

Test Item: Reverse Light Current)

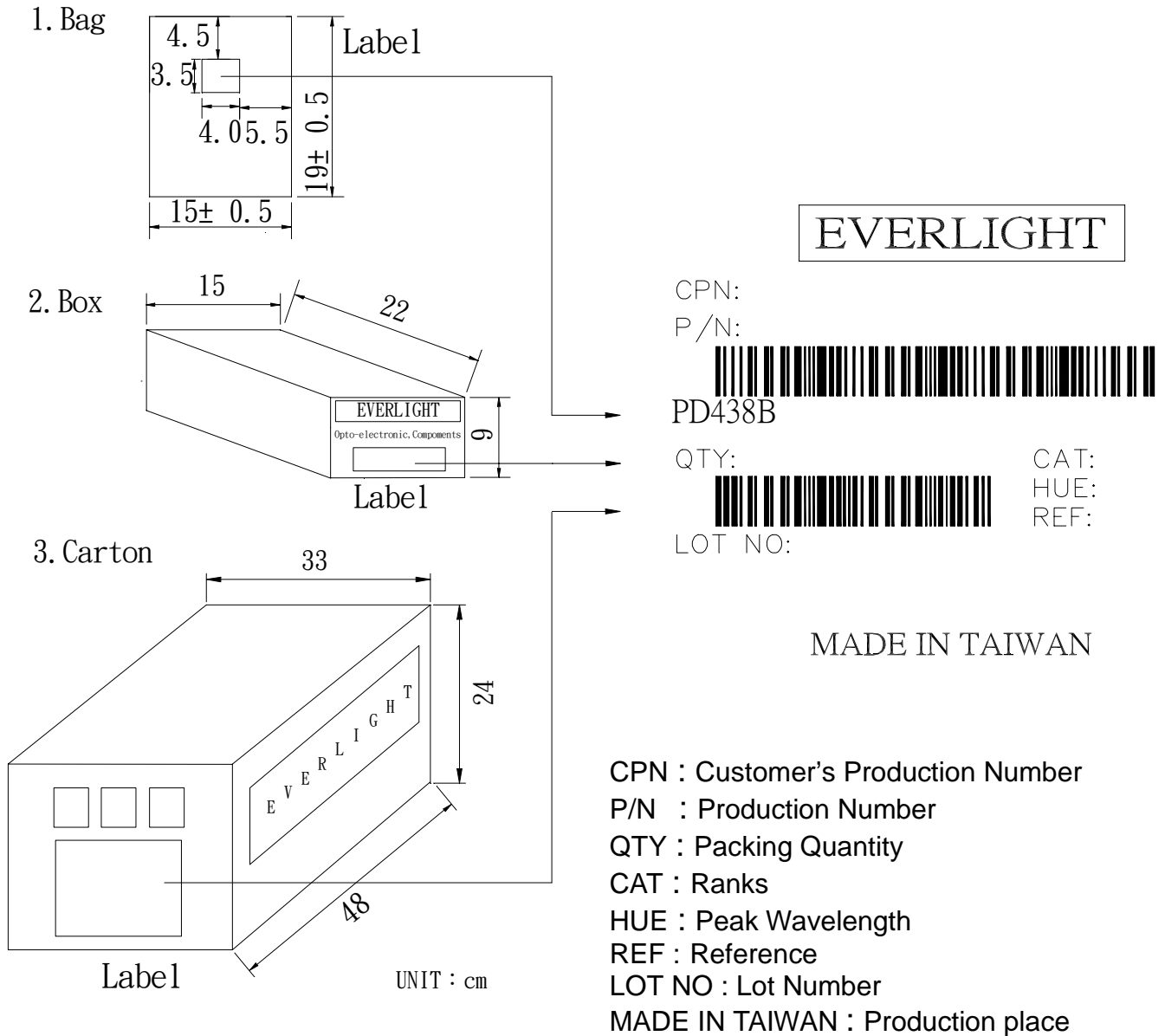
Unit :  $\mu\text{A}$



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**■ Packing Specifications**



**■ Packing Quantity Specification**

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

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