



EVERLIGHT ELECTRONICS CO., LTD.

DATA SHEET

MODEL NO : PD438B/S46

DATE : JUN, 27, 2000

DEPARTMENT : R&D 2

REVISION : 2.0

RECEIVED			
<input checked="" type="checkbox"/> MASS PRODUCTION			
<input type="checkbox"/> PRELIMINARY			
<input type="checkbox"/> CUSTOMER DESIGN			
DEVICE NUMBER : DPD-043-002			
PAGE :7			
CUSTOMER	DESIGNER	CHECKER	APPROVER

2.0	Adding feature 、 description 、 application of PD438B/S46 Adding package specification	JUN,27,2000
REV	DESCRIPTION	RELEASE DATE

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<http://www.everlight.com>



4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/S46

■ Features :

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

■ Description :

PD438B/S46 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 :

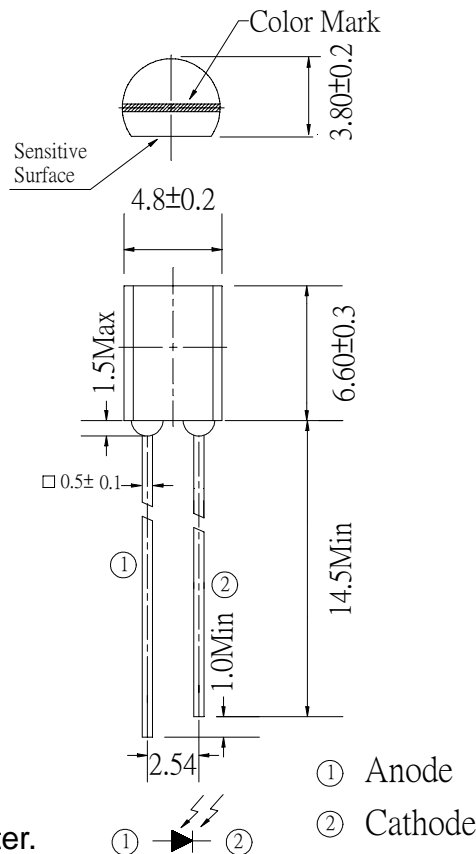
- High speed photo detector
- Camera
- Infrared remote controller for TVs VCR, audio equipment, air conditioner, etc.

PART NO.	CHIP	LENS COLOR
	MATERIAL	
PD	Silicon	Black

4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/S46

■ 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.
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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/S46

■ Absolute Maximum Ratings at Ta = 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	$\lambda_{0.5}$	----	840---1200	----	nm	----
Wavelength of Peak Sensitivity	λ_p	----	980	----	nm	----
Open-Circuit Voltage	V_{OC}	----	0.35	----	V	$E_e=5mW/cm^2$ $\lambda_p=940nm$
Short-Circuit Current	I_{SC}	----	70	----	μA	
Reverse Light Current	I_L	----	70	----	μA	$E_e=5mW/cm^2$ $\lambda_p=940nm$ $V_R=5V$
Dark Current	I_D	----	5	30	nA	$E_e=0mW/cm^2$ $V_R=10V$
Reverse Breakdown Voltage	B_{VR}	32	170	----	V	$E_e=0mW/cm^2$ $I_R=100 \mu A$
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	$R_L=1000 \Omega$ $V_R=10V$



4.8mm Semi-Lens Silicon PIN Photodiode

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■ Typical Electrical/Optical/Characteristics Curves

Fig. 1 Power Dissipation vs. Ambient Temperature

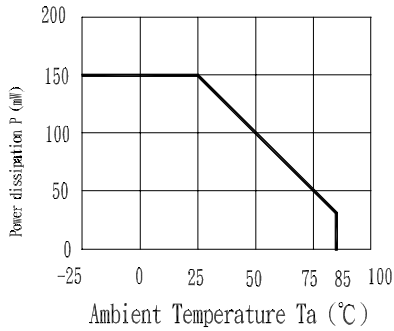


Fig. 2 Spectral Sensitivity

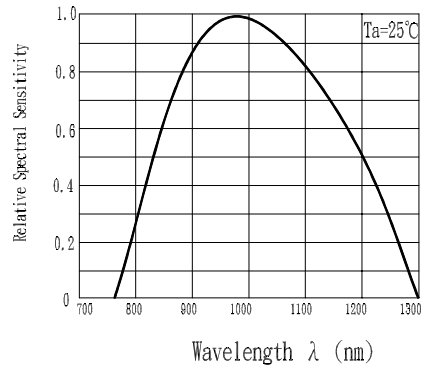


Fig. 3 Dark Current vs. Ambient Temperature

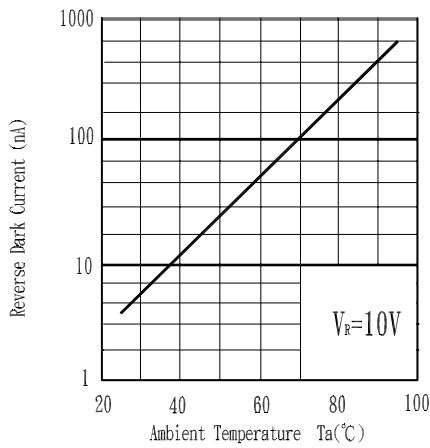


Fig. 4 Reverse Light Current vs. E_e

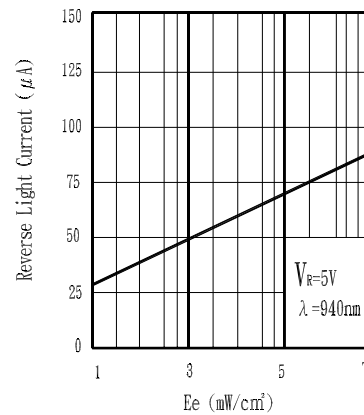


Fig. 5 Terminal Capacitance vs. Reverse Voltage

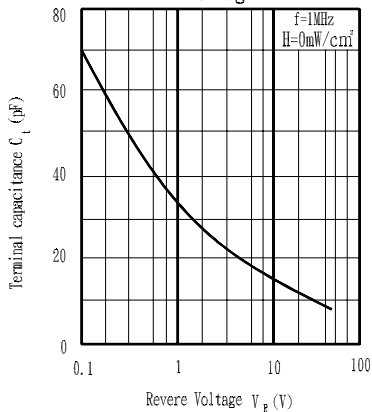
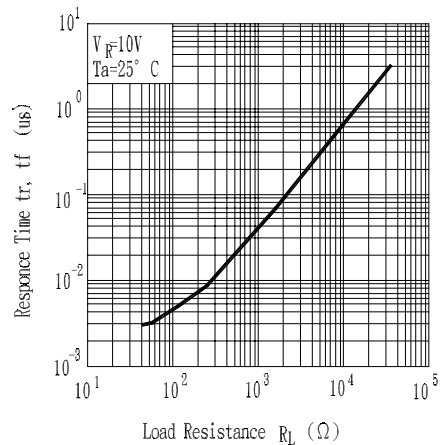


Fig. 6 Response Time vs. Load Resistance





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4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/S46

■ 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 ↑ 5 mins ↓ L : -55°C 30 mins	50 cycles	22 pcs		0/1
3	Thermal Shock	H : +100°C 5 mins ↑ 10 secs ↓ 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

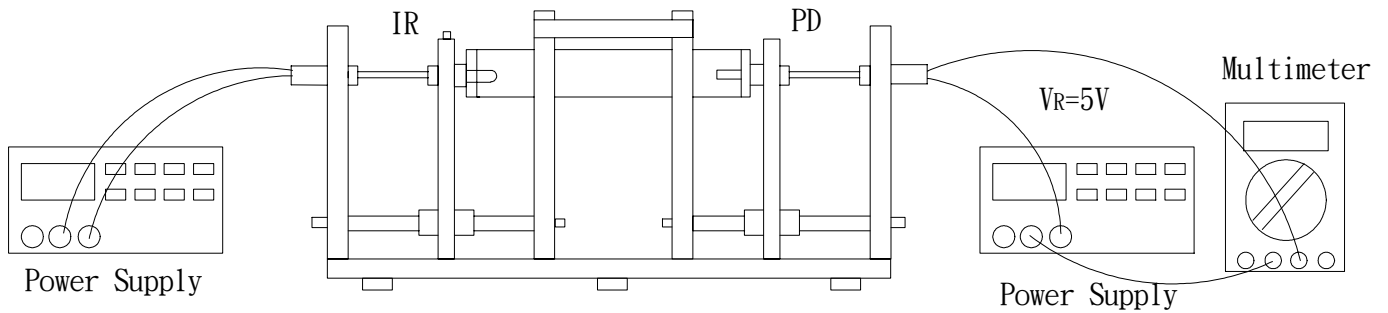
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■ Test Method For Reverse Light Current

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

Test Item: Reverse Light Current

Unit : μA





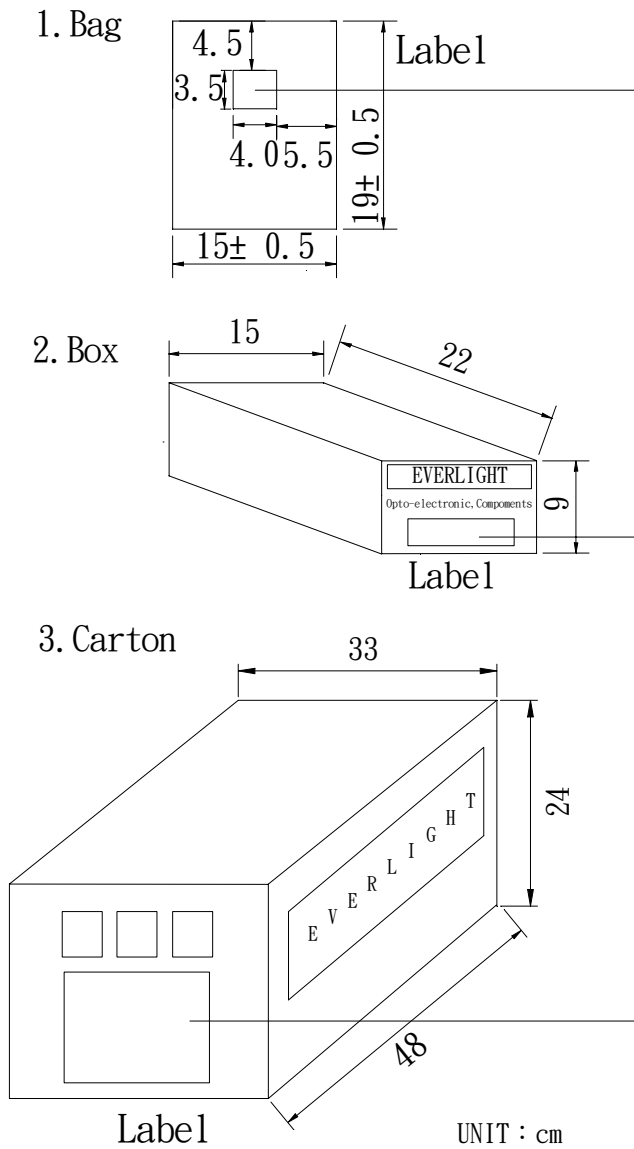
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4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438B/S46

■ Packing Specifications



EVERLIGHT

CPN:
P/N:

 PD438B/S46

QTY: CAT:
 HUE:
 LOT NO: 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. 500 Pcs/1Bag , 10 Bags/1Box
2. 10 Boxes/1Carton