



EVERLIGHT ELECTRONICS CO., LTD.

# DATA SHEET

MODEL NO : PD438C/L1

DATE : JUN, 27 , 2000

DEPARTMENT : R&D 2

REVISION : 1.1

<b>RECEIVED</b>			
<input checked="" type="checkbox"/> MASS PRODUCTION			
<input type="checkbox"/> PRELIMINARY			
<input type="checkbox"/> CUSTOMER DESIGN			
DEVICE NUMBER : DPD-043-022			
PAGE :7			
CUSTOMER	DESIGNER	CHECKER	APPROVER

1.1	Adding feature 、 description 、 application of PD438C/L1 Adding package specification	JUN,27,2000
REV	DESCRIPTION	RELEASE DATE

OFFICE:.NO.25,LANE76,SEC.3,CHUNG YANG RD.,TUCHENG 236,TAIPEI,TAIWAN,R.O.C

TEL : 886-2-22672000,2267-9936

FAX : 886-2-22676244,22676189,22676306

<http://www.everlight.com>



## 4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438C/L1

---

### ■ Features :

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

### ■ Description :

PD438C/L1 is a high speed and sensitive PIN photodiode in a cylindrical side view plastic package. Due to its water clear epoxy the device is sensitive to visible and infrared radiation.

### ■ 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	Water clear

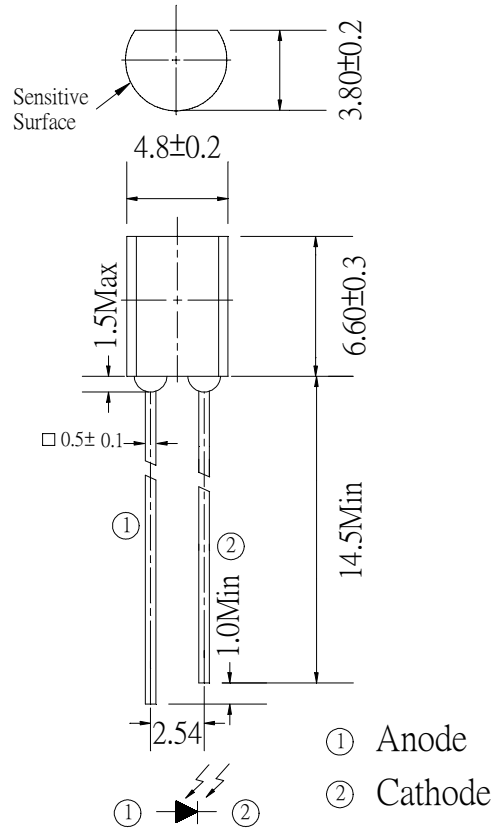
---



## 4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438C/L1

### ■ 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 : Water clear.
- 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 : PD438C/L1

### ■ 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	$\lambda_{0.5}$	----	400---1200	----	nm	----
Wavelength of Peak Sensitivity	$\lambda_p$	----	980	----	nm	----
Open-Circuit Voltage	$V_{OC}$	----	0.41	----	V	$E_e=5mW/cm^2$ $\lambda_p=940nm$
Short-Circuit Current	$I_{SC}$	----	30	----	$\mu A$	
Reverse Light Current	$I_L$	----	30	----	$\mu A$	$E_e=5mW/cm^2$ $\lambda_p=940nm$ $V_R=5V$
Dark Current	$I_D$	----	----	10	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	$C_t$	----	6	----	pF	$E_e=0mW/cm^2$ $f=1MHZ$ $V_R=5V$
Rise/Fall Time	$t_r/t_f$	----	10/10	----	nS	$R_L=1000 \Omega$ $V_R=10V$



## 4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438C/L1

### ■ Typical Electrical/Optical/Characteristics Curves

Fig. 1 Power Dissipation vs. Ambient Temperature

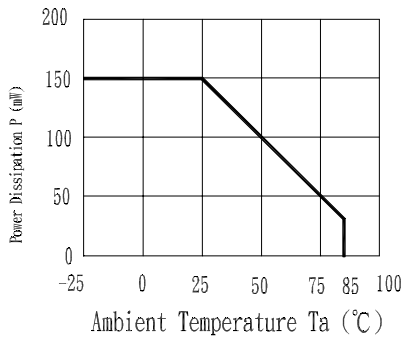


Fig. 2 Spectral Sensitivity

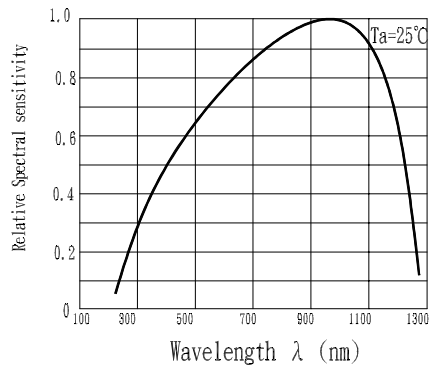


Fig. 3 Dark Current vs. Ambient Temperature

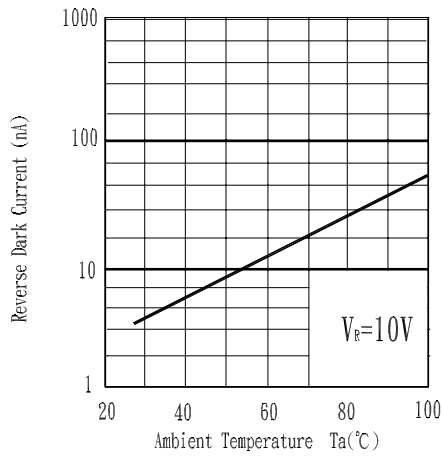


Fig. 4 Reverse Light Current vs.  $E_e$

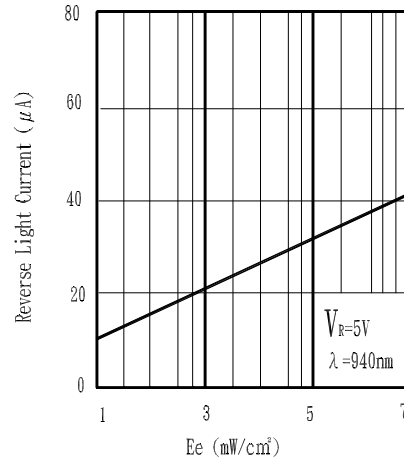


Fig. 5 Terminal Capacitance vs. Reverse Voltage

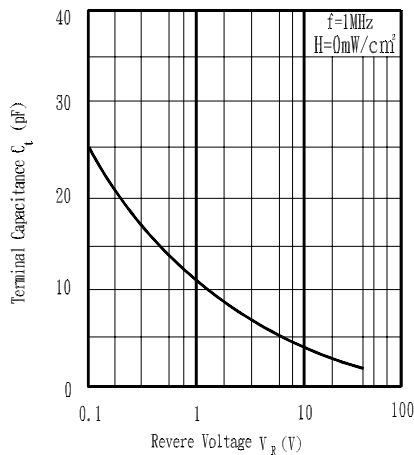
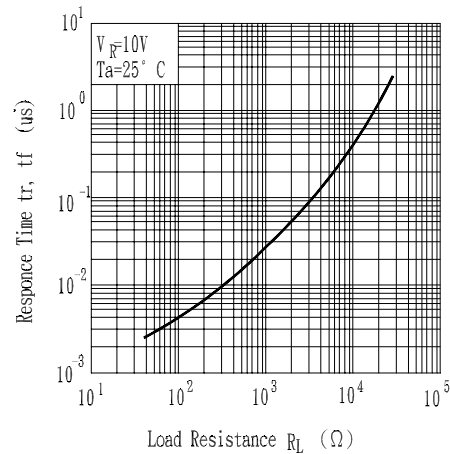


Fig. 6 Response Time vs. Load Resistance





# EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DPD-043-022      REV : 1.1  
 ECN : \_\_\_\_\_      PAGE : 5/7

## 4.8mm Semi-Lens Silicon PIN Photodiode

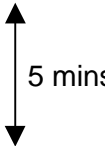
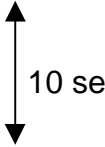
MODEL NO : PD438C/L1

### ■ 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



DEVICE NUMBER : DPD-043-022      REV : 1.1  
ECN : \_\_\_\_\_      PAGE : 6/7

## 4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438C/L1

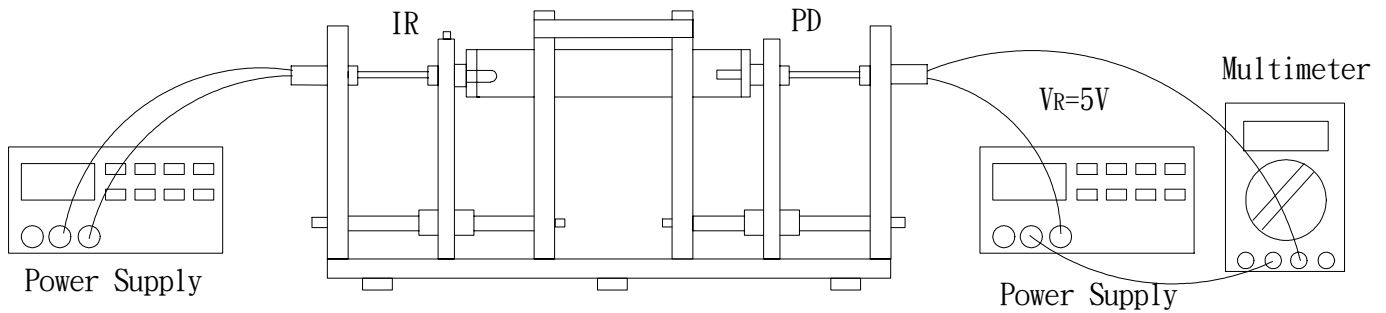
---

### ■ 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 :  $\mu\text{A}$





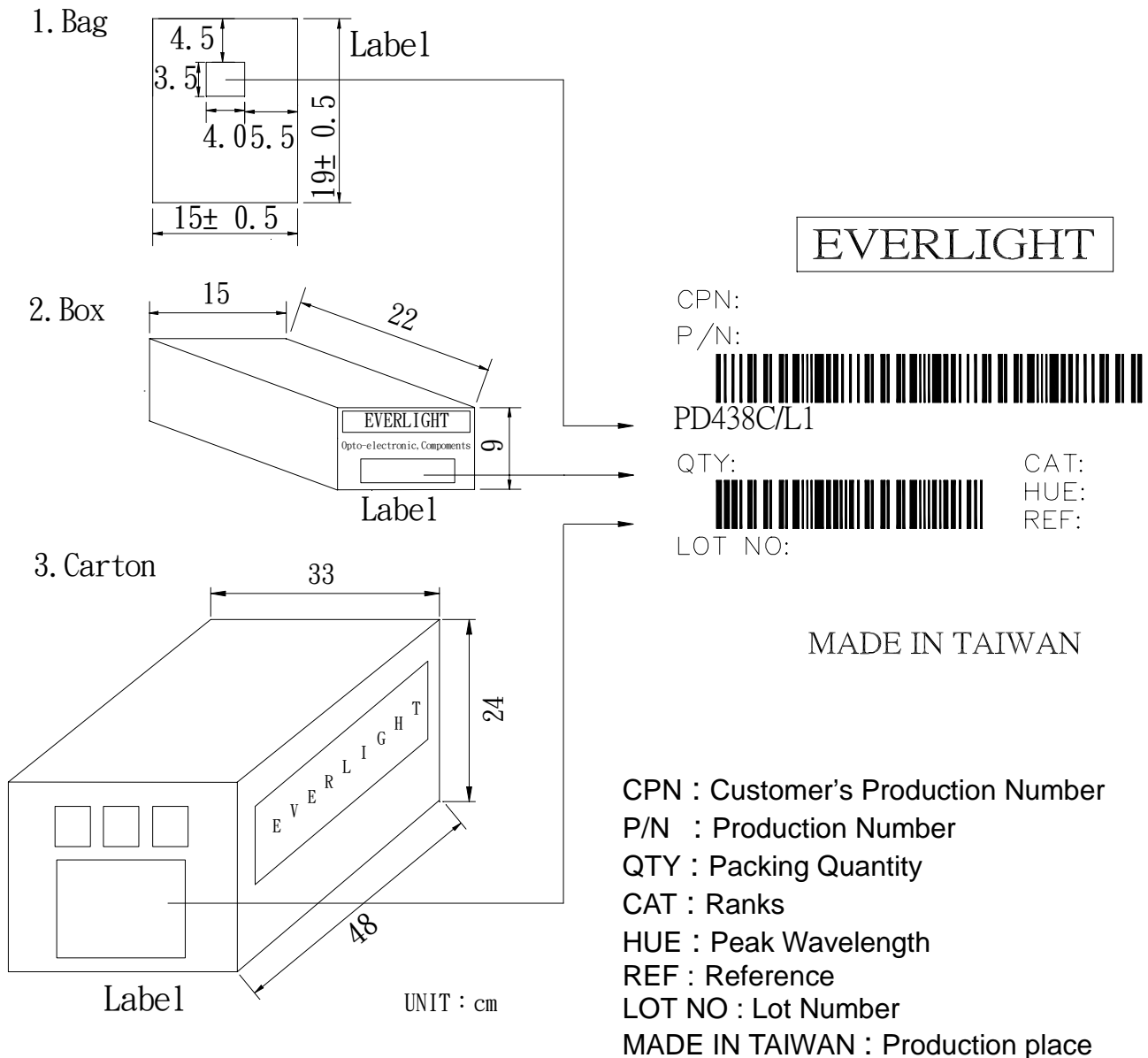
# EVERLIGHT ELECTRONICS CO., LTD.

DEVICE NUMBER : DPD-043-022      REV : 1.1  
ECN : \_\_\_\_\_      PAGE : 7/7

## 4.8mm Semi-Lens Silicon PIN Photodiode

MODEL NO : PD438C/L1

### ■ Packing Specifications



### ■ Packing Quantity Specification

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