



# DATA SHEET

MODEL NO : PD93-21C

DATE : JUN ,27, 2000

DEPARTMENT : R&D 2

REVISION : 1.0

<b>RECEIVED</b>			
<input checked="" type="checkbox"/> MASS PRODUCTION			
<input type="checkbox"/> PRELIMINARY			
<input type="checkbox"/> CUSTOMER DESIGN			
DEVICE NUMBER : DPD-093-069			
PAGE :7			
CUSTOMER	DESIGNER	CHECKER	APPROVER

REV	DESCRIPTION	RELEASE DATE

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<http://www.everlight.com>



## Top Silicon PIN Photodiode

MODEL NO : PD93-21C

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### ■ Features :

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

### ■ Description :

PD93-21C is a PIN photodiode in miniature SMD package which is molded in a water clear with flat top view lens. The device is spectrally matched to infrared emitting diode.

### ■ Applications :

- High speed photo detector
- Camera
- Infrared applied system
- Optoelectronic switch
- Floppy disk drive

PART NO.	CHIP	LENS COLOR
	MATERIAL	
PD	Silicon	Water Clear

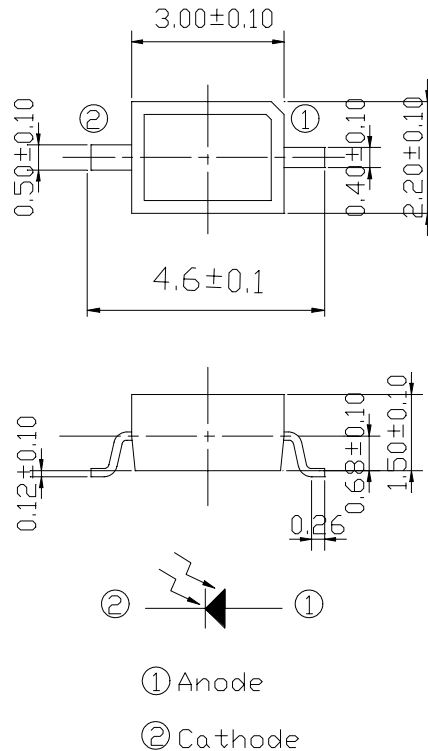
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## Top Silicon PIN Photodiode

MODEL NO : PD93-21C

### ■ Package Dimensions :



### ■ Notes :

1. All dimensions are in millimeter.
2. General Tolerance:  $\pm 0.1$ mm
3. Lens color : Water clear.
4. Above specification may be changed without notice. EVERLIGHT will reserve authority on material change for above specification.
5. 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.
6. 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.



## Top Silicon PIN Photodiode

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### ■ 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	
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	$V_{oc}$	----	0.42	----	V	$E_e=5m\ W/c\ m^2$ $\lambda_p=940nm$
Short-Circuit Current	$I_{sc}$	----	4.5	----	$\mu A$	
Reverse Light Current	$I_L$	----	4.5	----	$\mu A$	$E_e=5m\ W/c\ m^2$ $\lambda_p=940nm$ $V_R=5V$
Dark Current	$I_d$	----	----	10	nA	$E_e=0m\ W/c\ m^2$ $V_R=10V$
Reverse Breakdown Voltage	$BV_R$	32	170	----	V	$E_e=0m\ W/c\ m^2$ $I_R=100\mu A$
Total Capacitance	$C_t$	----	5	----	pF	$E_e=0m\ W/c\ m^2$ $V_R=5V, f=1MHz$
Rise/Fall Time	$t_r/t_f$	----	6/6	----	nS	$V_R=10V$ $R_L=1K\Omega$



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### ■ Typical Electrical/Optical/Characteristics Curves

Fig. 1 Power Dissipation vs. Ambient Temperature

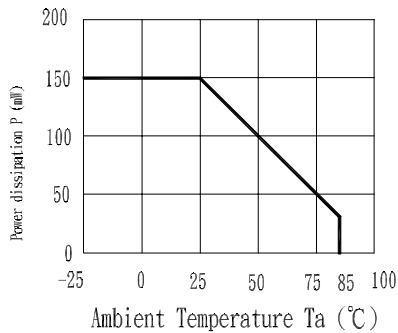


Fig. 2 Spectral Sensitivity

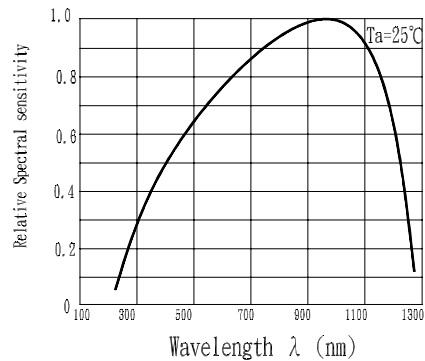


Fig. 3 Dark Current vs. Ambient Temperature

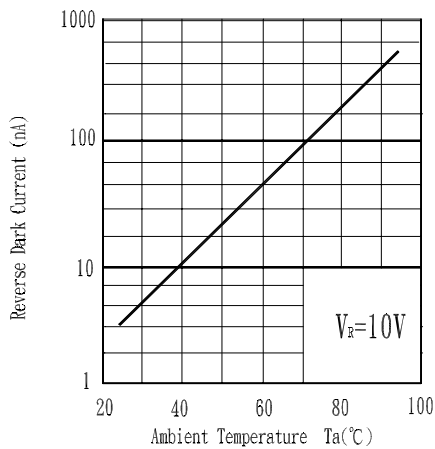


Fig. 4 Reverse Light Current vs.  $E_e$

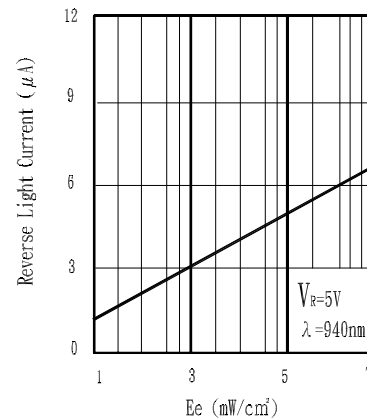


Fig. 5 Terminal Capacitance vs. Reverse Voltage

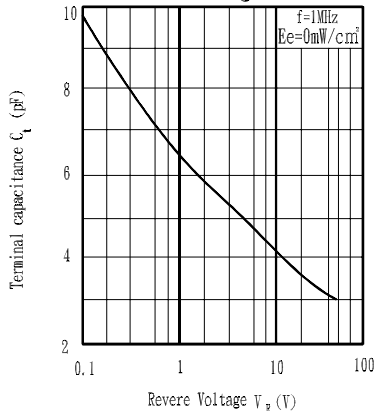
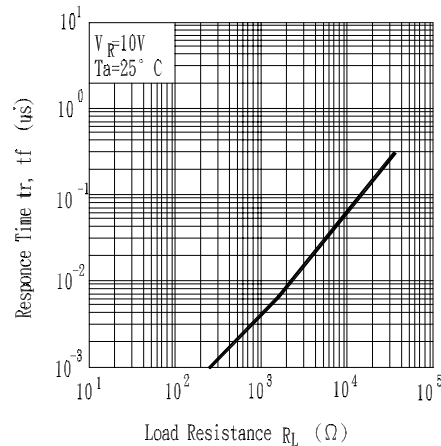


Fig. 6 Responce Time vs. Load Resistance





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## Top Silicon PIN Photodiode



MODEL NO : PD93-21C

### ■ 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	REFLOW	TEMP : 240°C ± 5 °C 5 secs	6 Mins	22 pcs	More than 90% of lead to be covered by soldering	0/1
2	Temperature Cycle	H : +85°C      30 mins  L : -55°C      30 mins	50 cycles	22 pcs	$I_L \leq L \times 0.8$  L : Lower specification limit	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



**Top Silicon PIN Photodiode**

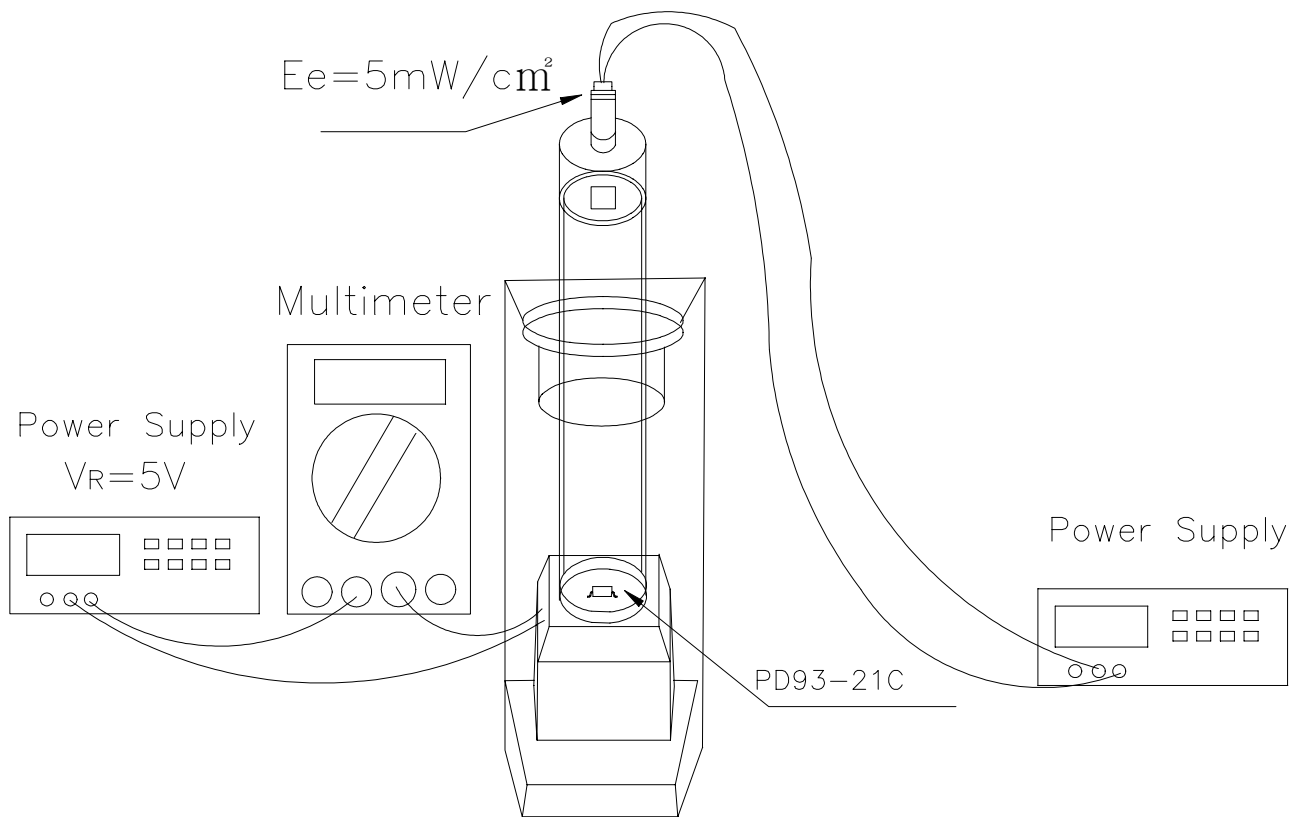
MODEL NO : PD93-21C

**■ 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 :  $\mu\text{A}$



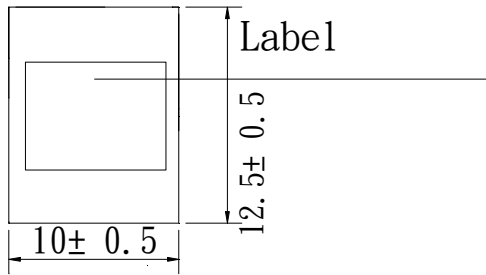


## Top Silicon PIN Photodiode

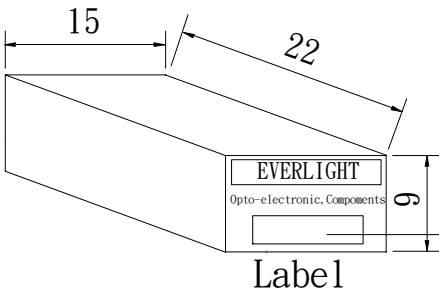
MODEL NO : PD93-21C

### ■ Packing Specifications

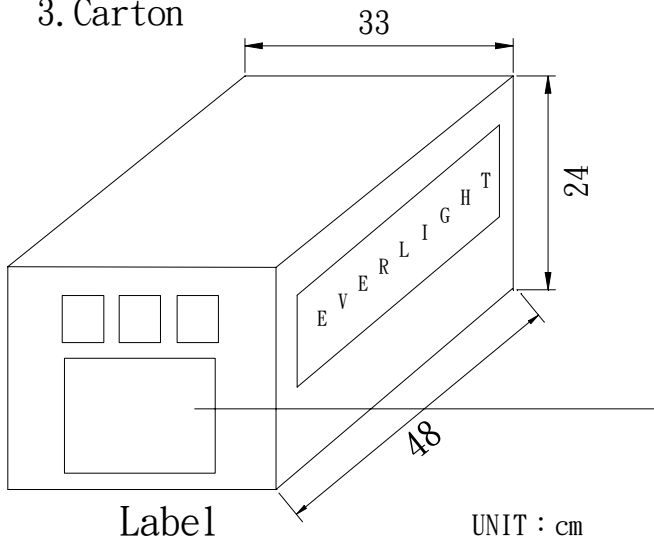
1. Bag



2. Box



3. Carton



UNIT : cm



CPN:

P/N:

PD93-21C

QTY:

LOT NO:

CAT:

HUE:

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. 1000 Pcs/1Bag , 20 Bags/1Box
2. 10 Boxes/1Carton



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