



DEVICE NUMBER : DTD-015-033      REV : 1.0  
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## 1206 Package Silicon Pin Photodiode

MODEL NO : PD15-21C/TR8

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### ■ Features :

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

### ■ Description :

- PD15-21C is a high speed and high sensitive PIN photodiode in miniature SMD which is molded in a water clear with flat top view lens. The device is spectrally matched with the infrared emitting diode.

### ■ Applications :

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

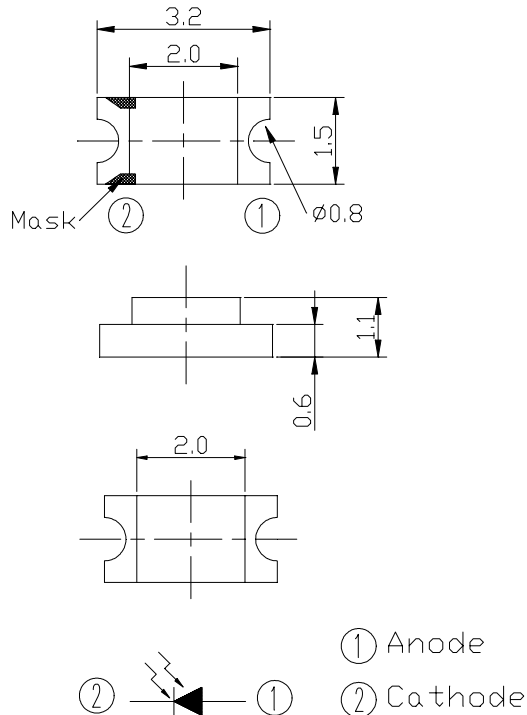
| PART NO. | CHIP     | LENS COLOR  |
|----------|----------|-------------|
|          | MATERIAL |             |
| PD       | Silicon  | Water clear |

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### ■ 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.
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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.



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### ■ Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

| Parameter                  | Symbol    | Rating    | Unit             | Notice                                    |
|----------------------------|-----------|-----------|------------------|---|
| Reverse Voltage            | $V_R$     | 32        | V                |   |
| Power Dissipation          | $P_d$     | 150       | mW               |   |
| Lead Soldering Temperature | $T_{sol}$ | 260       | $^\circ\text{C}$ | 4mm from mold body<br>less than 5 seconds |
| Operating Temperature      | $T_{opr}$ | -25 ~ +85 | $^\circ\text{C}$ |   |
| Storage Temperature        | $T_{stg}$ | -40 ~ +85 | $^\circ\text{C}$ |   |

### ■ 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             | $E_e=5\text{mW}/\text{cm}^2$<br>$\lambda_p=940\text{nm}$                    |
| Short-Circuit Current          | $I_{SC}$        | ---- | 3.0        | ---- | $\mu\text{A}$ |   |
| Reverse Light Current          | $I_L$           | ---- | 3.0        | ---- | $\mu\text{A}$ | $E_e=5\text{mW}/\text{cm}^2$<br>$\lambda_p=940\text{nm}$<br>$V_R=5\text{V}$ |
| Dark Current                   | $I_D$           | ---- | ----       | 10   | nA            | $E_e=0\text{mW}/\text{cm}^2$<br>$V_R=10\text{V}$                            |
| Reverse Breakdown Voltage      | $B_{VR}$        | 32   | 170        | ---- | V             | $E_e=0\text{mW}/\text{cm}^2$<br>$I_R=100\mu\text{A}$                        |
| Total Capacitance              | $C_t$           | ---- | 5          | ---- | pF            | $E_e=0\text{mW}/\text{cm}^2$<br>$f=1\text{MHZ}$<br>$V_R=5\text{V}$          |
| Rise/Fall Time                 | $t_r/t_f$       | ---- | 6/6        | ---- | nS            | $R_L=1000\Omega$<br>$V_R=10\text{V}$  |



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### ■ Typical Electrical/Optical/Characteristics Curves

Fig. 1 Power Dissipation vs. Ambient Temperature

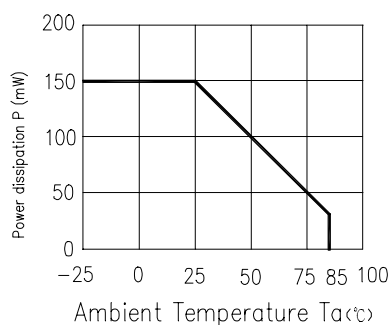


Fig.2 Spectral Sensitivity

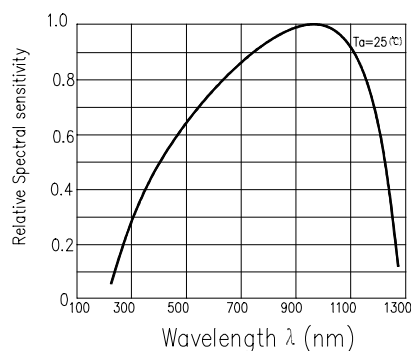


Fig.3 Dark Current vs. Ambient Temperature

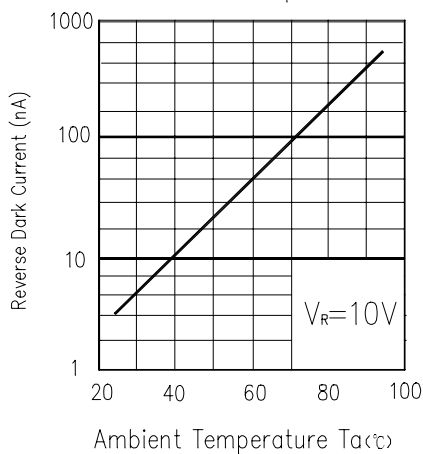


Fig.4 Reverse Light Current vs.  $E_e$

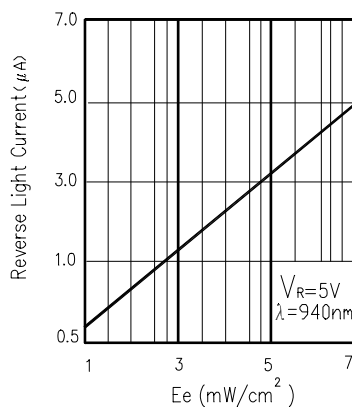


Fig.5 Terminal Capacitance vs. Reverse Voltage

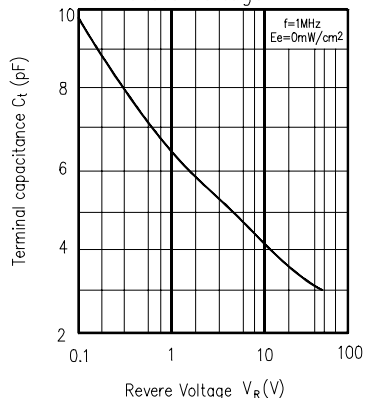
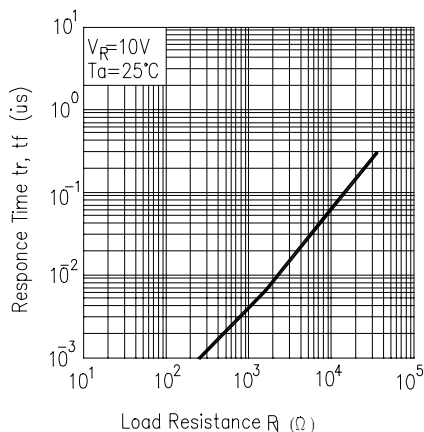


Fig.6 Response Time vs. Load Resistance





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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/<br>Cycles | Sample<br>Sizes | Failure<br>Judgement<br>Criteria                                  | Ac/Re |
|-----|----------------------------------|--|-----------------------|-----------------|---|-------|
| 1   | REFLOW                           | TEMP : 240°C ± 5 °C<br>5 sec   | 6 min                 | 22 pcs          | More than<br>90% of lead to<br>be covered by<br>soldering         | 0/1   |
| 2   | Temperature Cycle                | H : +85°C      30 mins<br>↕<br>5 mins<br>↕<br>L : -55°C      30 mins | 50 cycles             | 22 pcs          | $I_L \leq L \times 0.8$<br><br>L :Lower<br>specification<br>limit | 0/1   |
| 3   | Thermal Shock                    | H : +100°C      5 mins<br>↕<br>10 secs<br>↕<br>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   |



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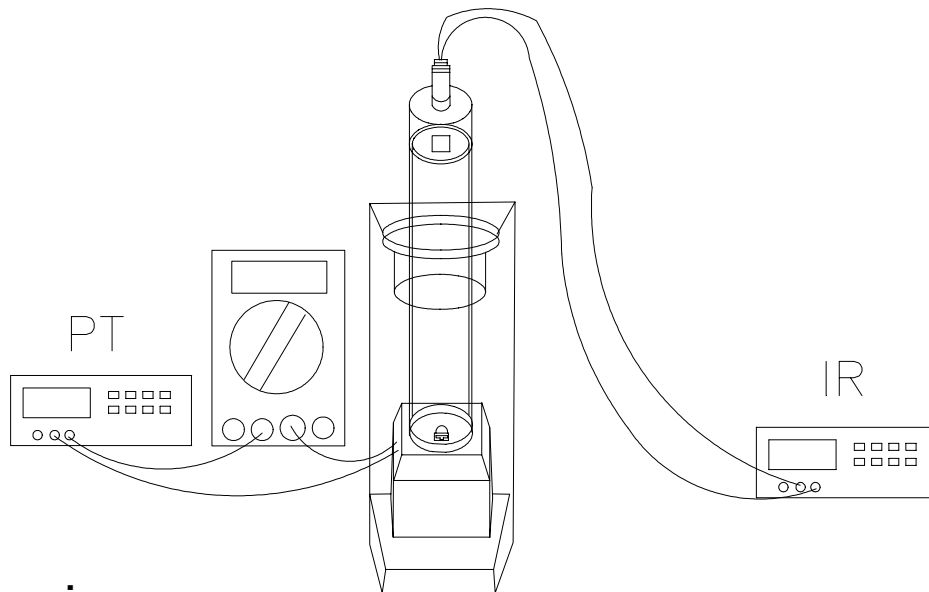
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### ■ Test Method For Reverse Light Current

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

Test Item: Reverse Light Current)

Unit :  $\mu\text{A}$



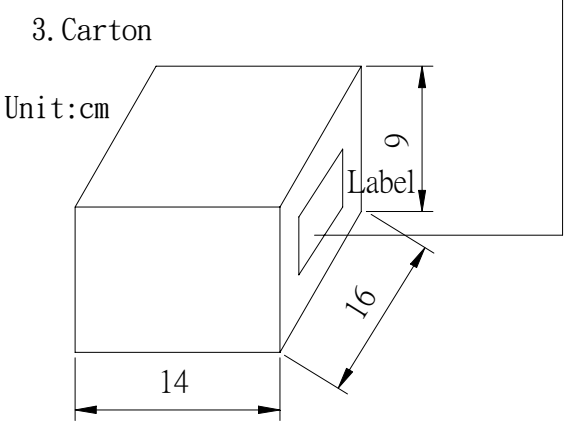
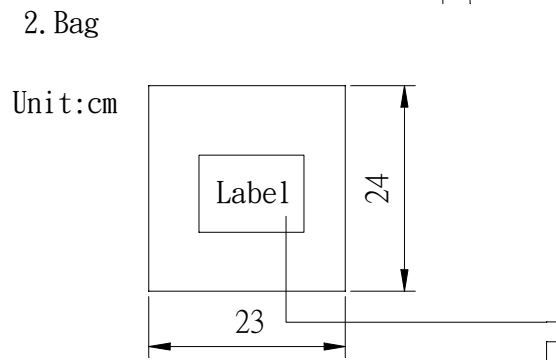
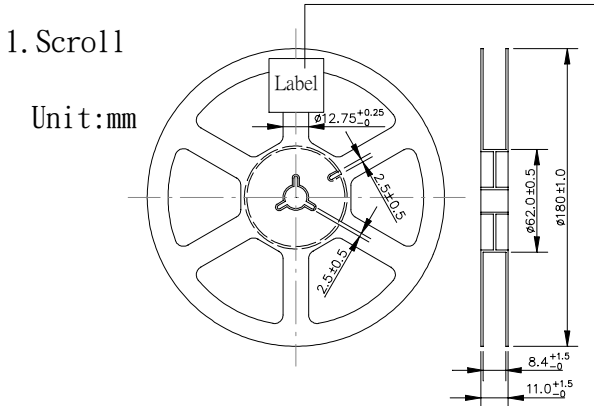
### ■ Taping Dimensions:



**1206 Package Silicon Pin Photodiode**

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**■ Packing Specifications**



CPN:  
P/N:  
  
 PD15-21C/TR8  
 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. 2000 Pcs/1 Volume , 1 Volume/1Bag
- 2. 55 Bags/1Carton