

1.8mm Round Subminiature Silicon PIN Photodiode PD42-21C/TR8



Features

- Fast response time
- High photo sensitivity
- Small junction capacitance
- Package in 12mm tape on 7" diameter reel
- Pb free
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH
- Compliance Halogen Free.(Br<900 ppm,Cl<900 ppm,Br+Cl<1500 ppm)

Descriptions

- PD42-21C/TR8 is a high speed and high sensitive PIN photodiode in miniature spherical top view lens SMD package and it is molded in a black plastic .The device is spectrally matched with the infrared emitting diode.

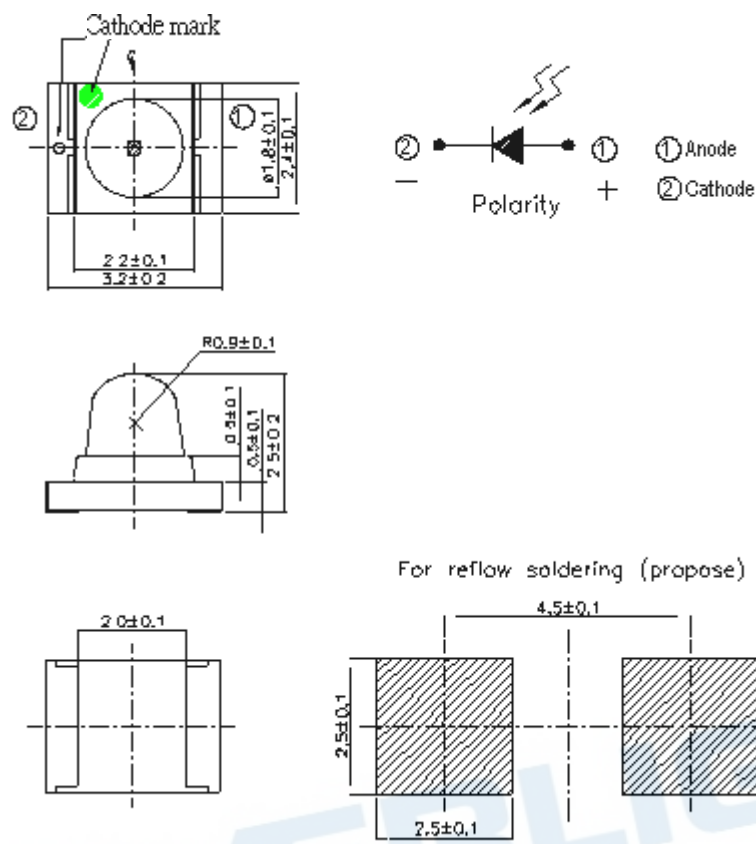
Applications

- High speed photo detector
- Copier
- Game machine
- Infrared applied system

Device Selection Guide

Part Category	Chip Material	Lens Color
PD	Silicon	Water Clear

Package Dimensions



- Notes:**
- 1.All dimensions are in millimeters
 - 2.Tolerances unless dimensions ± 0.1 mm
 - 3.Suggested pad dimension is just for reference only
- Please modify the pad dimension based on individual need

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	32	V
Operating Temperature	T_{opr}	-25 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +85	°C
Soldering Temperature *1	T_{sol}	260	°C
Power Dissipation at(or below) 25°C Free Air Temperature	P_d	150	mW

Notes: *1:Soldering time ≤ 5 seconds.

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Rang Of Spectral Bandwidth	$\lambda_{0.5}$	---	730	---	1100	nm
Wavelength Of Peak Sensitivity	λ_p	---	---	940	---	nm
Open-Circuit Voltage	V_{OC}	$E_e=5mW/cm^2$ $\lambda_p=940nm$	---	0.42	---	V
Short-Circuit Current	I_{SC}	$E_e=1mW/cm^2$ $\lambda_p=875nm$	2.0	5.0	12	μA
Reverse Light Current	I_L	$E_e=1mW/cm^2$ $\lambda_p=875nm$ $V_R=5V$	2.0	5.0	12	μA
Dark Current	I_D	$E_e=0mW/cm^2$ $V_R=10V$	---	---	10	nA
Reverse Breakdown Voltage	V_{BR}	$E_e=0mW/cm^2$ $I_R=100\mu A$	32	170	---	V
Total Capacitance	C_t	$E_e=0mW/cm^2$ $F=1MHz$ $V_R=5V$	---	5	---	Pf
Rise Time	t_r	$V_R=10V$ $R_L=1000\Omega$	---	6	---	nS
Fall Time	t_f		---	6	---	

Typical Electro-Optical Characteristics Curves

Fig.1 Power Dissipation vs.
Ambient Temperature

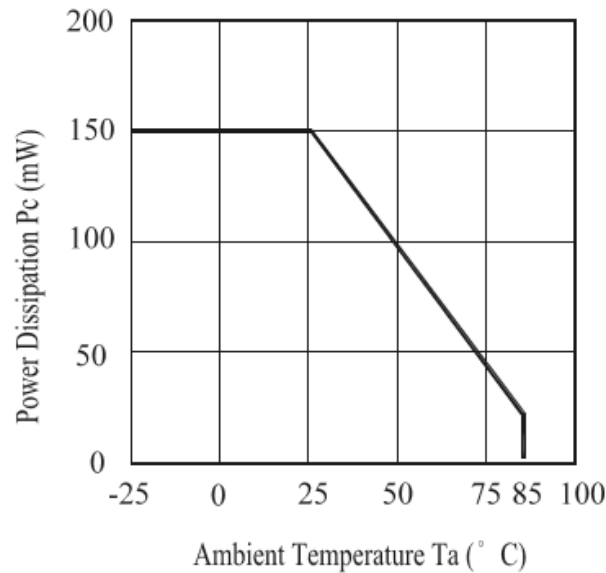


Fig.2 Spectral Sensitivity

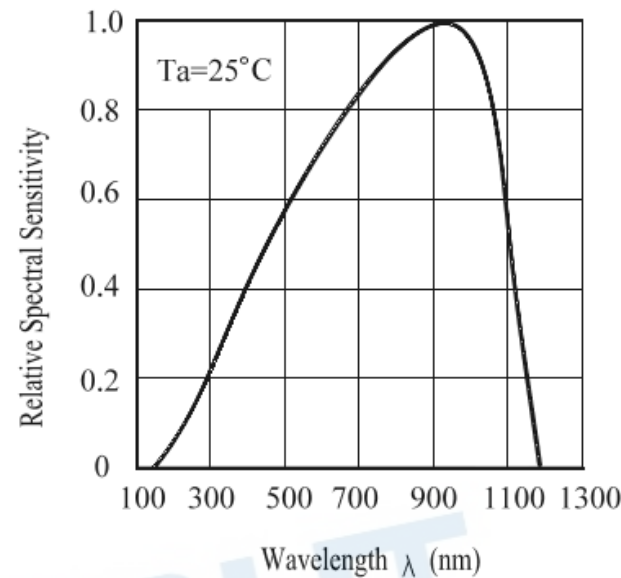


Fig.3 Dark Current vs.
Ambient Temperature

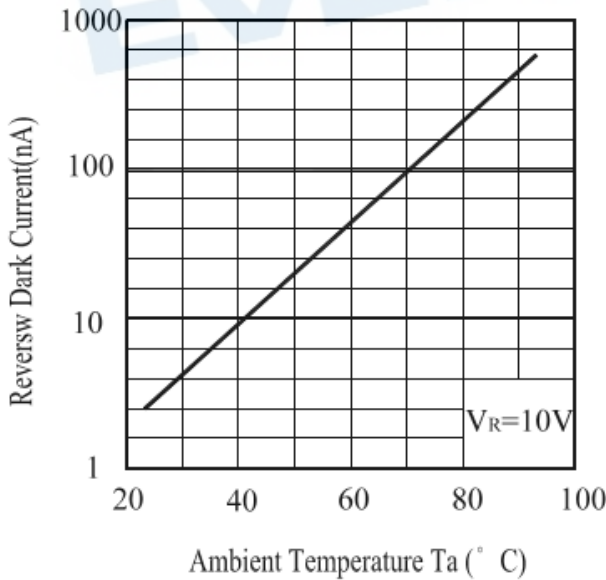
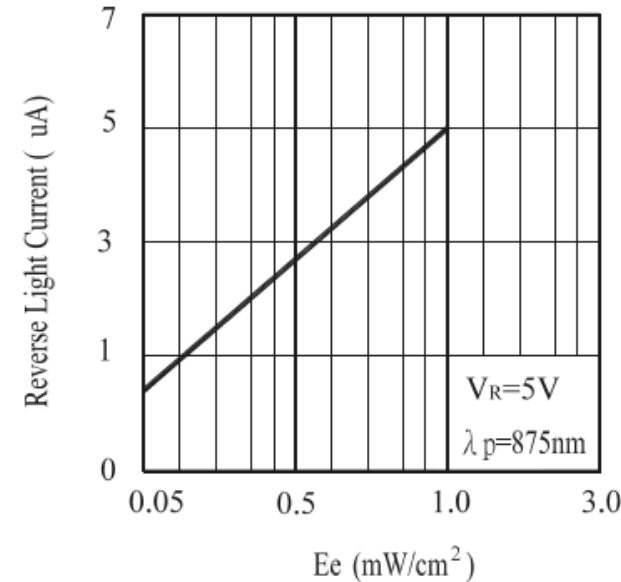


Fig.4 Reverse Light Current vs.
 E_e



Typical Electro-Optical Characteristics Curves

Fig.5 Terminal Capacitance vs.
Reverse Voltage

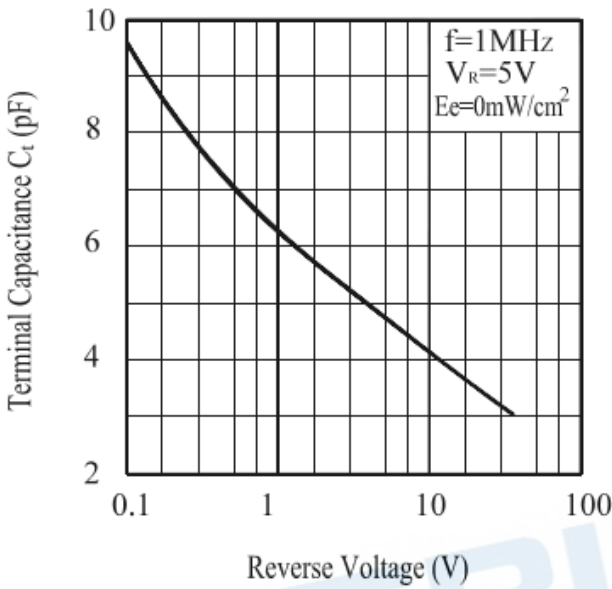
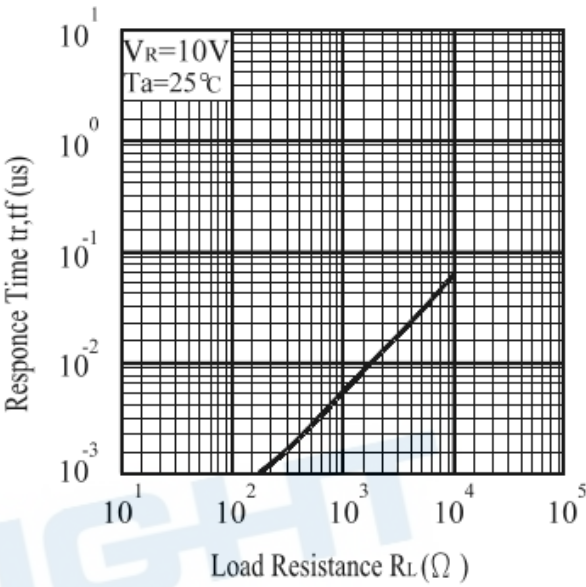


Fig.6 Response Time vs.
Load Resistance



Precautions For Use

1. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package, the Photodiode should be kept at 10°C~30°C and 90%RH or less.

2.3 The Photodiode suggested be used within one year.

2.4 After opening the package, the devices must be stored at 10°C~30°C and ≤ 60%RH, and used within 168 hours (floor life). If unused Photodiode remain, it should be stored in moisture proof packages.

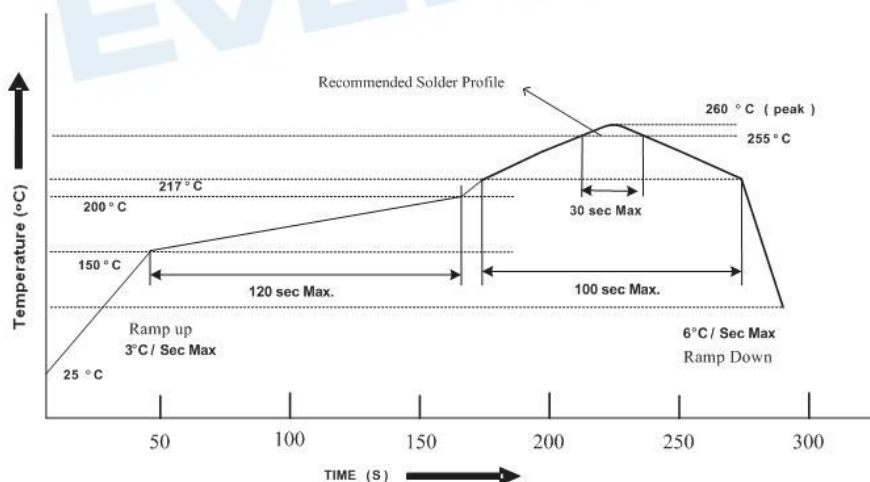
2.5 If the moisture absorbent material (desiccant material) has faded or unopened bag has exceeded the shelf life or devices (out of bag) have exceeded the floor life, baking treatment is required.

2.6 If baking is required, refer to IPC/JEDEC J-STD-033 for bake procedure or recommend the following conditions:

96 hours at 60°C ± 5°C and < 5 % RH (reeled/tubed/loose units)

3. Soldering Condition

3.1 Lead solder temperature profile



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the Photodiode during heating.

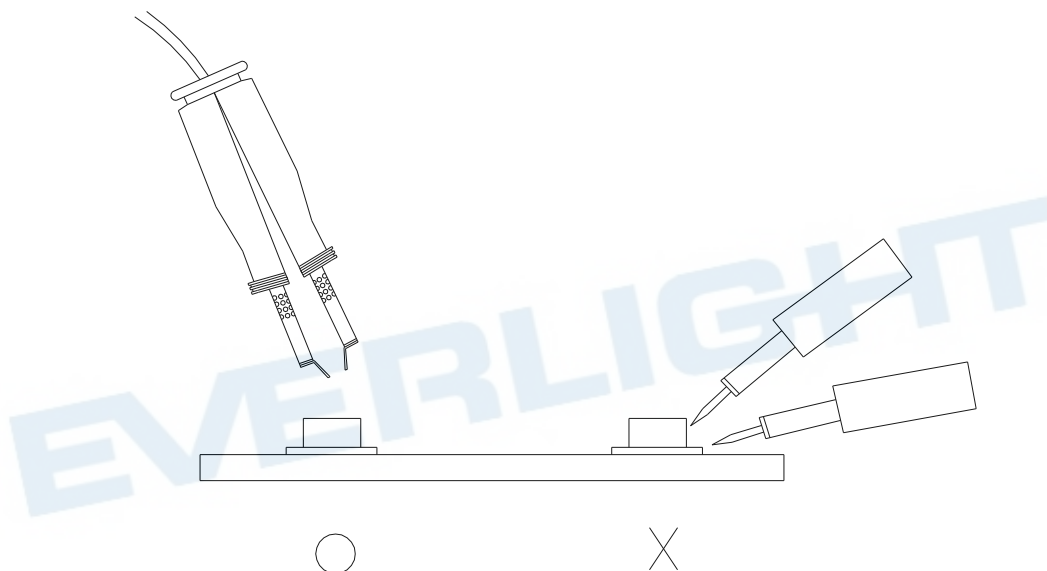
3.4 After soldering, do not warp the circuit board.

4.Soldering Iron

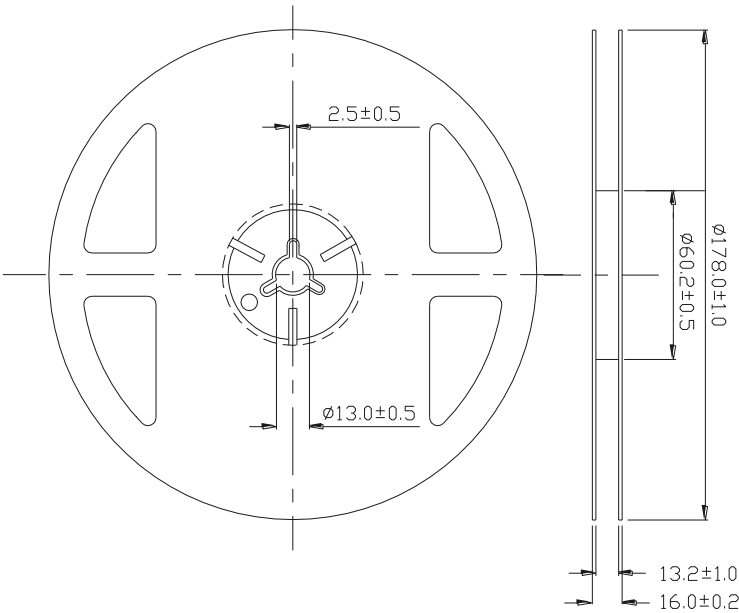
Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5.Repairing

Repair should not be done after the Photodiode have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the Photodiode will or will not be damaged by repairing.

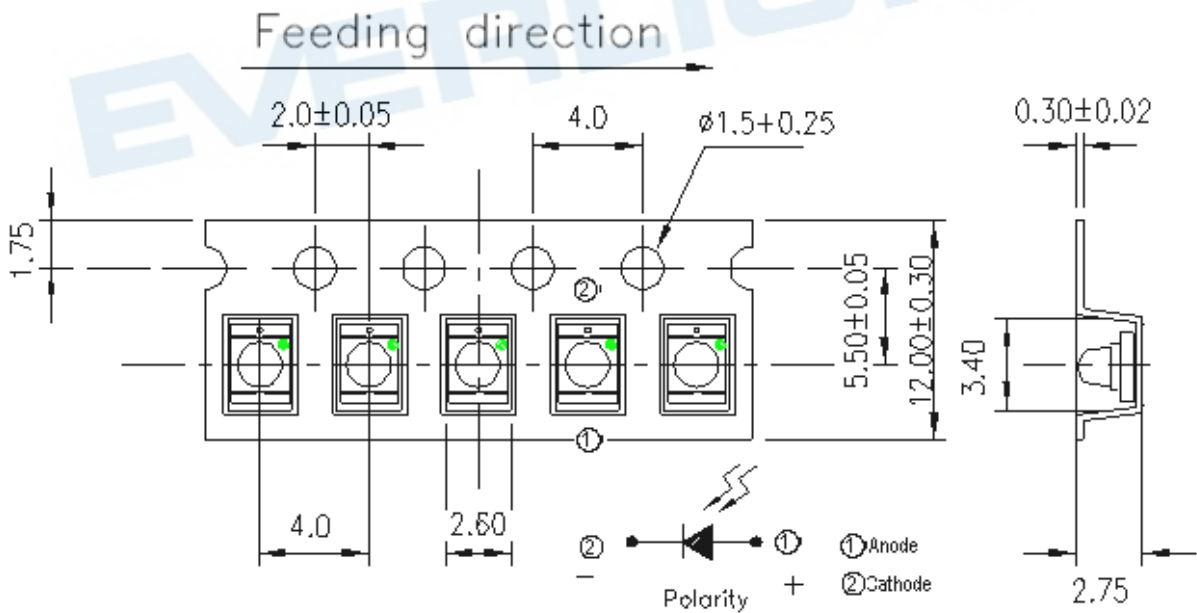


Package Specification



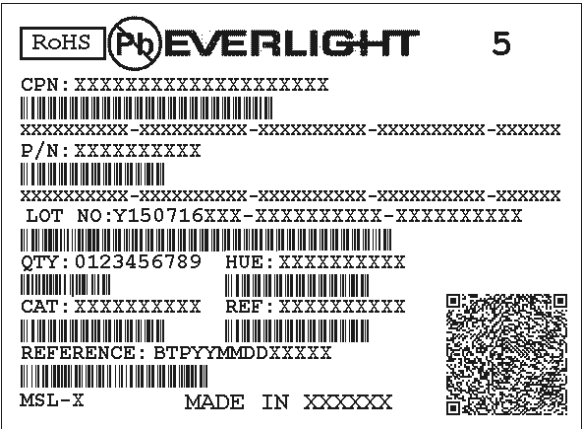
Note: The tolerances unless mentioned is ± 0.1 mm ,Unit = mm

Carrier Tape Dimensions:(Quantity: 1000pcs/reel)



Note: The tolerances unless mentioned is ± 0.1 mm ,Unit = mm

Label Form Specification



CPN: Customer's Production Number
P/N : Production Number
LOT No: Lot Number
QTY: Packing Quantity
HUE: Peak Wavelength
CAT: Ranks
REF: Reference
MSL-X: MSL Level
Made In: Manufacture place

DISCLAIMER

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