



# PP3G07S

Through-hole PIN Photodiode/ $\phi$  3 Type

## Features

|                             |                                                                                                                                                                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Package                     | $\phi$ 3 type, Water clear epoxy                                                                                                                                                                                                    |
| Product features            | <ul style="list-style-type: none"><li>• Flat Lenz type</li><li>• High Photo Current : 1.5 <math>\mu</math> A TYP. (<math>V_R=5V, E_e=1.0mW/cm^2</math>)</li><li>• Lead-free soldering compatible</li><li>• RoHS compliant</li></ul> |
| Peak Sensitivity Wavelength | 950nm                                                                                                                                                                                                                               |
| Half Intensity Angle        | 155 deg.                                                                                                                                                                                                                            |
| Die materials               | Si                                                                                                                                                                                                                                  |
| Soldering methods           | TTW (Through The Wave) soldering and manual soldering<br>※Please refer to Soldering Conditions about soldering.                                                                                                                     |
| ESD                         | 2kV (HBM)                                                                                                                                                                                                                           |
| Packing                     | Bulk : 200pcs(MIN.)                                                                                                                                                                                                                 |

## Recommended Applications

Electric Household Appliances, OA/FA, PC/Peripheral Equipment, Other General Applications

## Absolute Maximum Ratings

(Ta=25°C)

| Item                  | Symbol    | Absolute Maximum Ratings | Unit |
|-----------------------|-----------|--------------------------|------|
| Power Dissipation     | $P_d$     | 30                       | mW   |
| Reverse Voltage       | $V_R$     | 30                       | V    |
| Operating Temperature | $T_{opr}$ | -30~+85                  | °C   |
| Storage Temperature   | $T_{stg}$ | -30~+100                 | °C   |

## Electro-Optical Characteristics

(Ta=25°C)

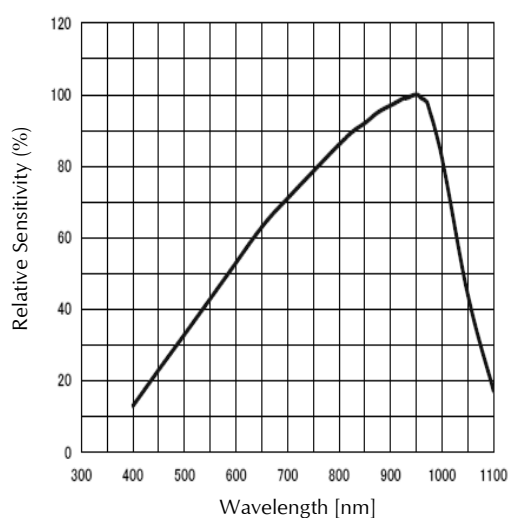
| Item                        | Conditions                        | Symbol          | Characteristics |       | Unit    |
|-----------------------------|-----------------------------------|-----------------|-----------------|-------|---------|
|                             |                                   |                 |                 |       |         |
| Photo Current               | $V_R=5V$ ,<br>$E_e=1.0mW/cm^2$ ※1 | $I_p$           | Min.            | 1.0   | $\mu A$ |
|                             |                                   |                 | TYP.            | 1.5   | $\mu A$ |
| Response Time               | $V_R=10V$ ,<br>$R_L=1,000\Omega$  | $tr/tf$         | TYP.            | 20/20 | ns      |
| Capacity                    | $V_R=10V$ ,<br>$f=1MHz$           | $C_T$           | TYP.            | 7     | pF      |
| Dark Current                | $V_R=10V$                         | $I_D$           | TYP.            | 1     | nA      |
|                             |                                   |                 | Max.            | 10    | nA      |
| Peak Sensitivity Wavelength | $V_R=0V$                          | $\lambda_p$     | TYP.            | 950   | nm      |
| Spatial Half Width          | $V_R=5V$                          | $\angle \theta$ | TYP.            | 155   | deg.    |

※1 Color temperature is 2,856K. Employs a standard tungsten lamp.

## Technical Data

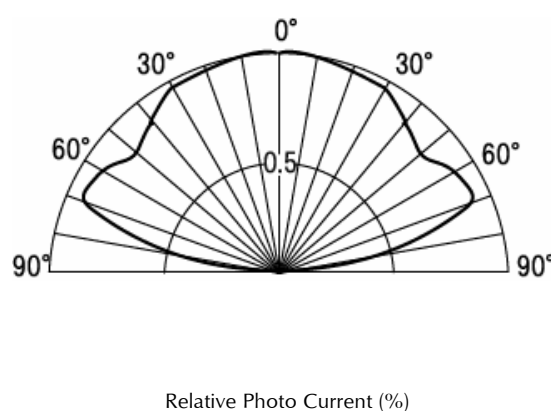
Wavelength vs. Relative Sensitivity

Condition :  $T_a = 25^\circ\text{C}$ ,  $V_R = 0\text{V}$



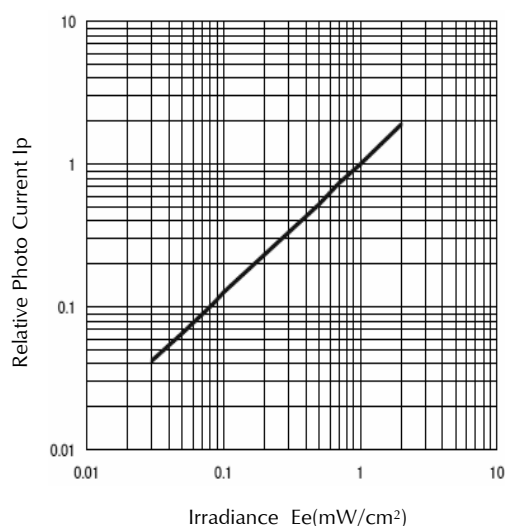
Spatial Distribution Example

Condition :  $V_R = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$



Irradiance vs. Relative Photo Current

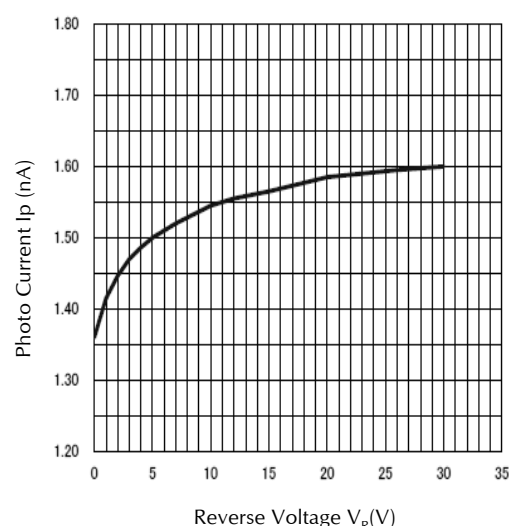
Condition :  $T_a = 25^\circ\text{C}$ ,  $V_R = 5\text{V}$



It is based on  $E_e = 1\text{mW/cm}^2$ .  
Employs a standard tungsten lamp of 2,856K.

Reverse Voltage vs. Photo Current

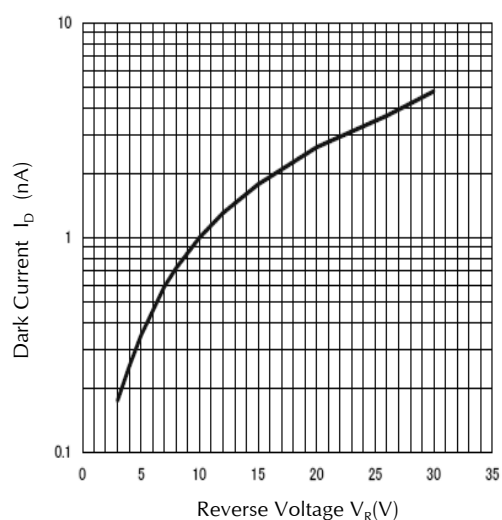
Condition :  $T_a = 25^\circ\text{C}$ ,  $E_e = 1\text{mW/cm}^2$



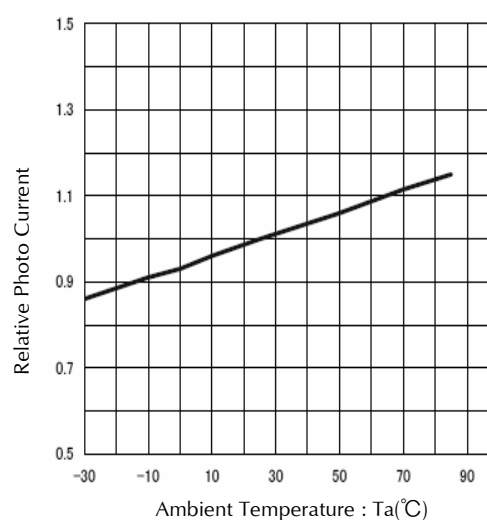
Employs a standard tungsten lamp of 2,856K.

## Technical Data

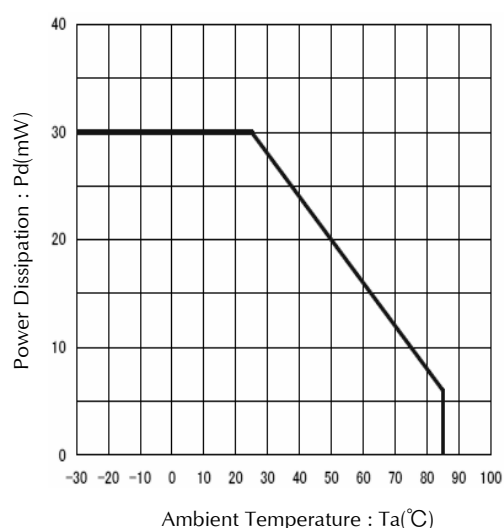
Reverse Voltage vs. Dark Current  
Condition :  $T_a = 25^\circ\text{C}$



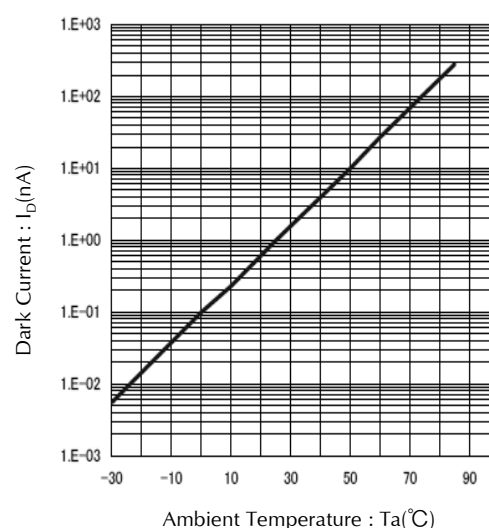
Ambient Temperature vs. Relative Photo Current  
Condition :  $V_R = 5\text{V}$



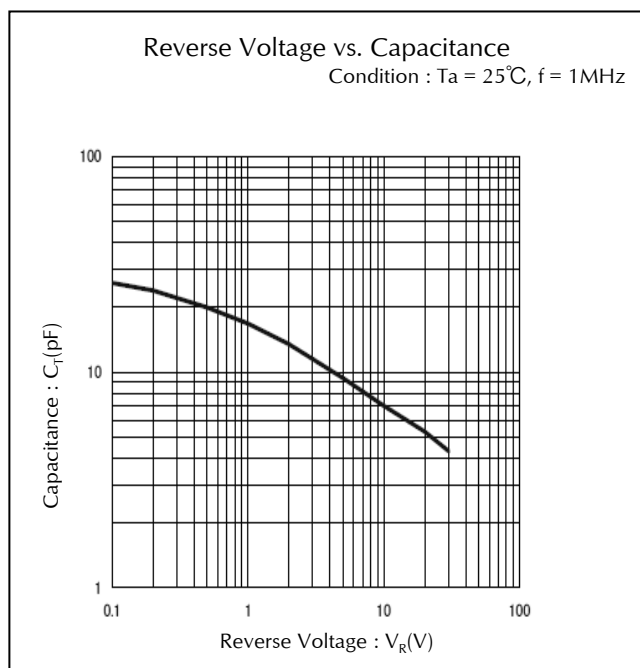
Ambient Temperature vs. Power Dissipation



Ambient Temperature vs. Dark Current  
Condition :  $V_R = 10\text{V}$

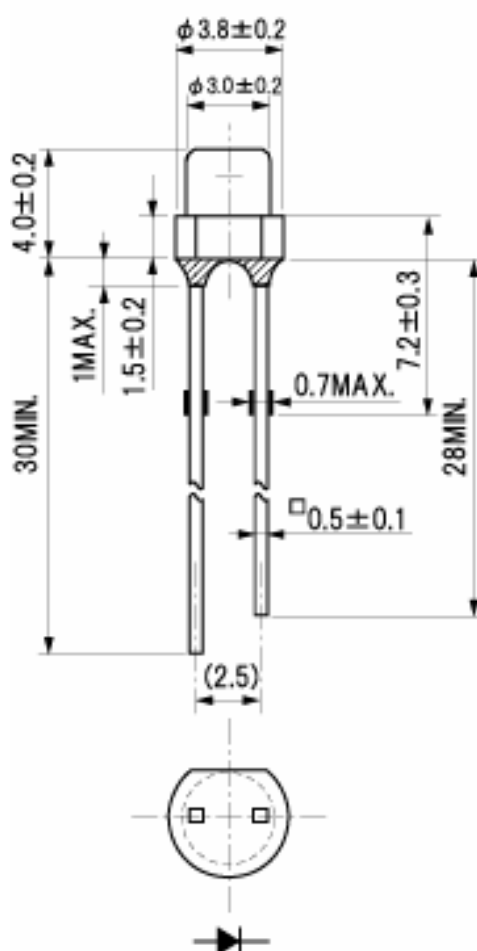


## Technical Data



## Package Dimensions

(Unit: mm)



## TTW (Through The Wave) soldering Conditions

|                   |                                            |                                  |
|-------------------|--------------------------------------------|----------------------------------|
| Pre-heating       | 100 °C                                     | (MAX.) Resin surface temperature |
| Solder Bath Temp. | 265 °C                                     | (MAX.)                           |
| Dipping Time      | 5 s                                        | (MAX.)                           |
| Position          | At least 3.0 mm away from the root of lead |                                  |

- 1) The dip soldering process shall be twice maximum.
- 2) The product shall be cooled to normal temperature before the second dipping process.  
 ※The detail is described to LED and Photodetector handling precautions of home page:  
 "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

## Manual Soldering Conditions

|                              |                                            |                    |
|------------------------------|--------------------------------------------|--------------------|
| Iron tip temp.               | 400 °C                                     | (MAX.) (30 W Max.) |
| Soldering time and frequency | 3 s                                        | (MAX.)             |
|                              | 1 time                                     | (MAX.)             |
| Position                     | At least 3.0 mm away from the root of lead |                    |

※The detail is described to LED and Photodetector handling precautions of home page:  
 "Mounting through-hole Type Devices" and "Soldering", and use it after the confirmation, please.

## Reliability Testing Result

| Reliability Testing Result    | Applicable Standard   | Testing Conditions                                                                                                                                | Duration | Failure |
|-------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|
| Room Temp. Operating Life     | EIAJ ED-4701/100(101) | Ta = 25°C, Pd = Maximum Rated Power Dissipation                                                                                                   | 1,000 h  | 0/16    |
| Resistance to Soldering Heat  | EIAJ ED-4701/300(302) | 265±5°C, 3mm from package base                                                                                                                    | 5s       | 0/16    |
| Temperature Cycling           | EIAJ ED-4701/100(105) | Minimum Rated Storage Temperature(30min)<br>~Normal Temperature(15min)<br>~Maximum Rated Storage Temperature(30min)<br>~Normal Temperature(15min) | 5 cycles | 0/16    |
| Wet High Temp. Storage Life   | EIAJ ED-4701/100(103) | Ta = 60±2°C, RH = 90±5%                                                                                                                           | 1,000 h  | 0/16    |
| High Temp. Storage Life       | EIAJ ED-4701/200(201) | Ta = Maximum Rated Storage Temperature                                                                                                            | 1,000 h  | 0/16    |
| Low Temp. Storage Life        | EIAJ ED-4701/200(202) | Ta = Minimum Rated Storage Temperature                                                                                                            | 1,000 h  | 0/16    |
| Lead Tension                  | EIAJ ED-4701/400(401) | 5N, 1time                                                                                                                                         | 10s      | 0/16    |
| Vibration, Variable Frequency | EIAJ ED-4701/400(403) | 98.1m/s <sup>2</sup> (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction                                                                       | 2 h      | 0/16    |

## Failure Criteria

| Items               | Symbols        | Conditions                                                                                                                                   | Failure criteria                                                                     |
|---------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Photo Current       | I <sub>P</sub> | E <sub>E</sub> Value of each product<br>Irradiance of Photo Current<br>V <sub>R</sub> Value of each product Reverse Voltage of Photo Current | Testing Max. Value ≥ Initial Value x 1.3<br>Testing Min. Value ≤ Initial Value x 0.7 |
| Dark Current        | I <sub>D</sub> | V <sub>R</sub> Value of each product Reverse Voltage of Dark Current                                                                         | Testing Max. Value ≥ Spec. Max. Value x 1.2                                          |
| Cosmetic Appearance | -              | -                                                                                                                                            | Occurrence of notable decoloration, deformation and cracking                         |



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