

# ASDL-5880

## High Speed Photodiode in Top View Package



## Data Sheet

### Description

ASDL-5880 is a Silicon PIN Photodiode encapsulated in clear Top View low profile package. It is ideal for applications from 700nm to 1100nm that require high sensitivity with low dark current and short switching time.

### Features

- Top View Package
- Short Switching Time
- High Sensitivity
- Low Dark Current
- Low Junction Capacitance
- Wide viewing Angle
- Lead Free & ROHS Compliant
- Available in Tape & Reel

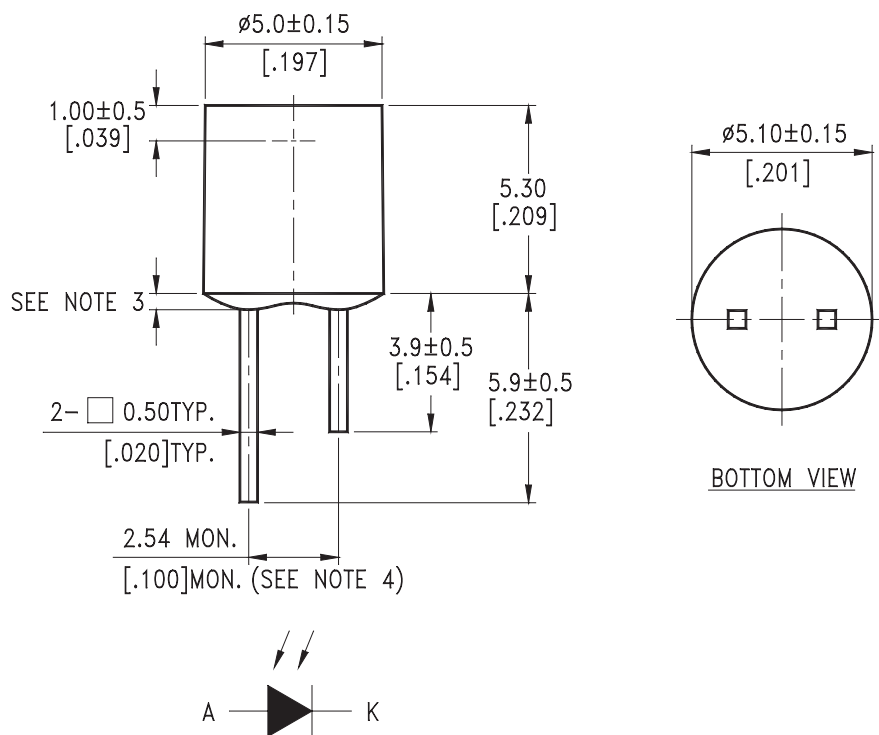
### Applications

- IR Remote Control for Consumer Device
- IR Remote Control for Industrial Electronics & Equipment
- High Speed IR data communication

## Ordering Information

| Part Number   | Lead Form | Color | Packaging   | Shipping Option  |
|---------------|-----------|-------|-------------|------------------|
| ASDL-5880-C22 | Straight  | Clear | Tape & Reel | 4000pcs          |
| ASDL-5880-C31 |           |       | Bulk        | 8000pcs / Carton |

## Package Dimensions



### Notes:

1. All dimensions are in millimeters (inches)
2. Tolerance is  $+0.25$ mm ( $.010$ " ) unless otherwise noted
3. Protuded resin under flange is  $1.5$ mm ( $.059$ " ) max
4. Lead spacing is measured where leads emerge from package
5. Active area:  $49 \times 49$  mm<sup>2</sup>
6. Refractive index of epoxy:  $n_f = 1.5$ .
7. Specifications are subject to change without notice.

### Absolute Maximum Ratings at T<sub>A</sub>=25°C

| Parameter                                                 | Symbol            | Min.                | Max | Unit |
|-----------------------------------------------------------|-------------------|---------------------|-----|------|
| Power Dissipation                                         | P <sub>DISS</sub> |                     | 150 | mW   |
| Reverse Voltage (I <sub>r</sub> =100uA)                   | V <sub>R</sub>    |                     | 30  | V    |
| Operating Temperature                                     | T <sub>O</sub>    | -40                 | 85  | °C   |
| Storage Temperature                                       | T <sub>S</sub>    | -55                 | 100 | °C   |
| Junction temperature                                      | T <sub>J</sub>    |                     | 110 | °C   |
| Lead Soldering Temperature<br>[ .6mm (0.063") From Body ] |                   | 260°C for 5 seconds |     |      |

### Electrical Characteristics at 25°C

| Parameter                              | Symbol           | Min. | Typ. | Max. | Unit | Condition                                                               |
|----------------------------------------|------------------|------|------|------|------|-------------------------------------------------------------------------|
| Forward Voltage                        | V <sub>F</sub>   |      | 1    | 1.3  | V    | I <sub>f</sub> = 50mA                                                   |
| Breakdown Voltage                      | V <sub>BR</sub>  | 30   |      |      | V    | I <sub>r</sub> = 100uA<br>E <sub>e</sub> = 0mW/cm <sup>2</sup>          |
| Reverse Dark Current                   | I <sub>D</sub>   |      |      | 30   | nA   | V <sub>R</sub> =10V<br>E <sub>e</sub> =0mW/cm <sup>2</sup>              |
| Diode Capacitance                      | C <sub>O</sub>   | -    | 25   |      | pF   | V <sub>r</sub> = 3V<br>F = 1MHZ<br>E <sub>e</sub> = 0mW/cm <sup>2</sup> |
| Open Circuit Voltage                   | V <sub>OC</sub>  |      | 350  |      | mV   | λ = 940nm<br>E <sub>e</sub> =0.5mW/cm <sup>2</sup>                      |
| Thermal Resistance,<br>Junction to Pin | R <sub>θJP</sub> | -    | 375  |      | °C/W |                                                                         |

### Optical Characteristics at 25°C

| Parameter                      | Symbol            | Min. | Typ. | Max. | Unit            | Condition                                                                  |
|--------------------------------|-------------------|------|------|------|-----------------|----------------------------------------------------------------------------|
| Photocurrent                   | I <sub>PH</sub>   | 1    | 3    |      | uA              | E <sub>e</sub> = 0.5mW/cm <sup>2</sup><br>λ = 940nm<br>V <sub>r</sub> = 5V |
| Radiant Sensitive Area         | A                 |      | 1.55 |      | mm <sup>2</sup> |                                                                            |
| Absolute Spectral Sensitivity  | S                 |      | 0.6  |      | A/W             | λ = 940nm<br>V <sub>r</sub> = 5V                                           |
| Viewing Angle                  | 2θ <sub>1/2</sub> |      | 180  |      | Deg             |                                                                            |
| Wavelength of Peak sensitivity | λ <sub>PK</sub>   |      | 900  |      | nm              |                                                                            |
| Spectral BandWidth             | Δλ                | 700  | 900  | 1100 | nm              |                                                                            |
| Rise Time                      | t <sub>r</sub>    |      | 5    |      | ns              | V <sub>R</sub> = 10V<br>λ = 850nm<br>R <sub>L</sub> = 1K Ω                 |
| Fall Time                      | t <sub>f</sub>    |      | 5    |      | ns              | V <sub>R</sub> = 10V<br>λ = 850nm<br>R <sub>L</sub> = 1K Ω                 |

# Typical Electrical/Optical Characteristics Curves ( $T_A=25^{\circ}\text{C}$ unless otherwise indicated)

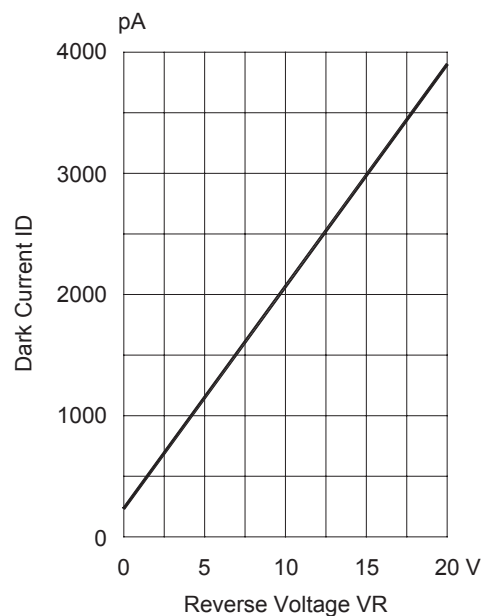


Figure 1. DARK CURRENT VS. REVERSE VOLTAGE  
 $T_A=25^{\circ}\text{C}$ ,  $E_e=0\text{ mW/cm}^2$

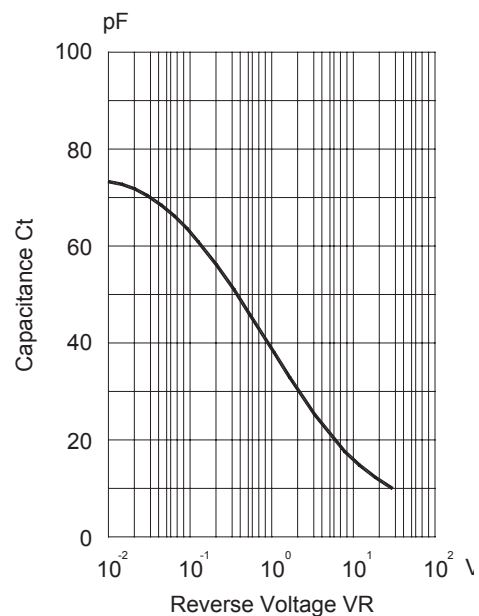


Figure 2. CAPACITANCE VS. REVERSE VOLTAGE  
 $F=1\text{MHz}$ ;  $E_e=0\text{mW/cm}^2$

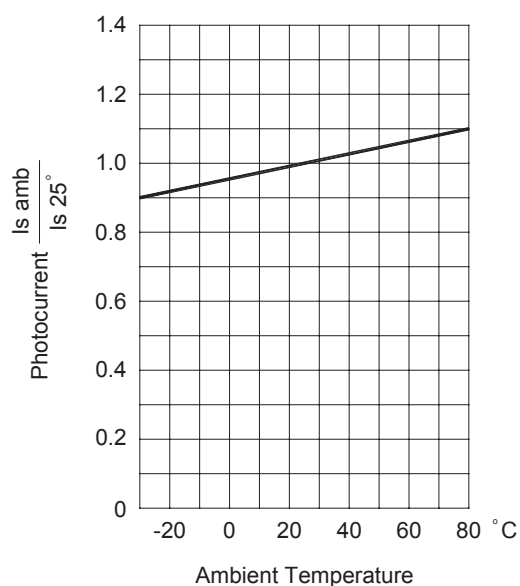


Figure 3. PHOTOCURRENT VS. AMBIENT TEMPERATURE

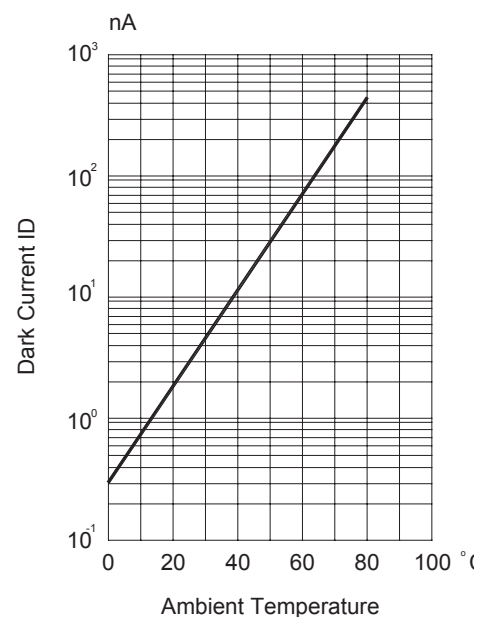


Figure 4. DARK CURRENT AMBIENT TEMPERATURE  
 $VR=10$ ,  $E_e=0\text{mW/cm}^2$

Typical Electrical/Optical Characteristics Curves ( $T_A=25^\circ\text{C}$  unless otherwise indicated) Cont.

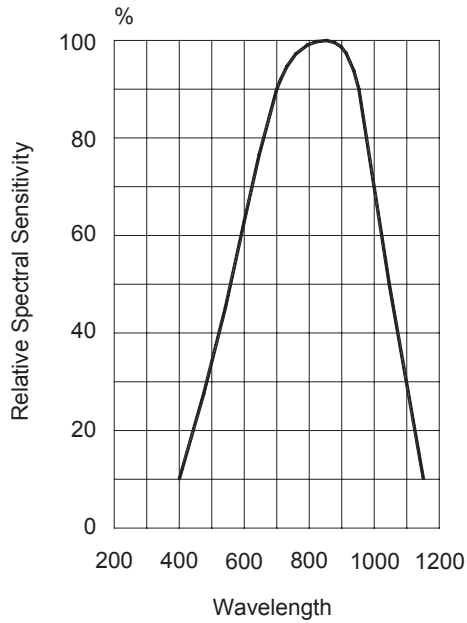


Figure 5. RELATIVE SPECTRAL SENSITIVITY VS WAVELENGTH

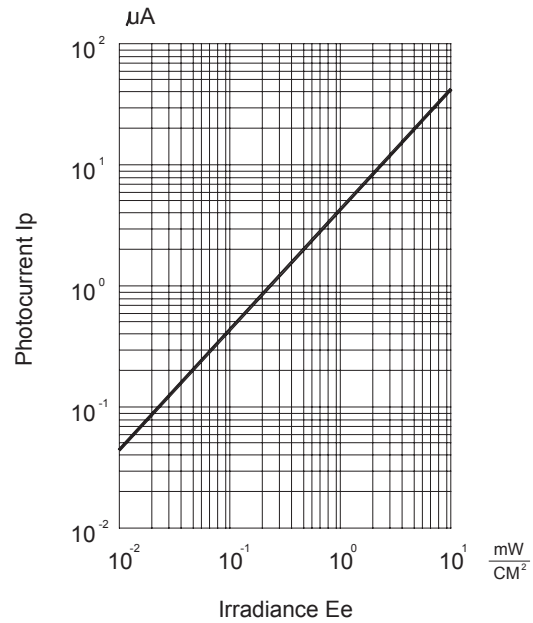


Figure 6. PHOTOCURRENT VS IRRADIANCE  $\lambda = 940\text{ nm}$

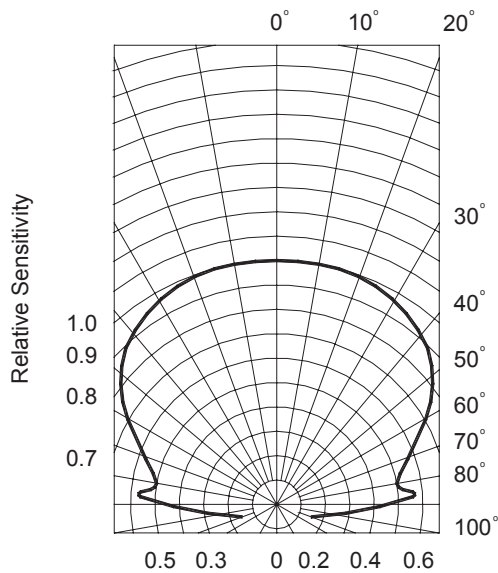


Figure 7. SENSITIVITY DIAGRAM

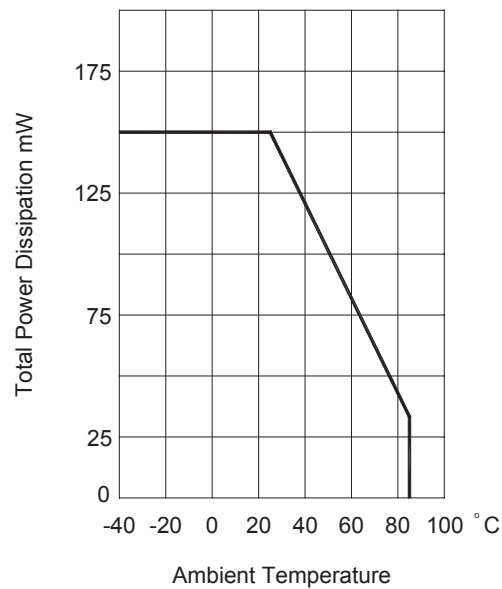


Figure 8. TOTAL POWER DISSIPATION VS AMBIENT TEMPERATURE

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