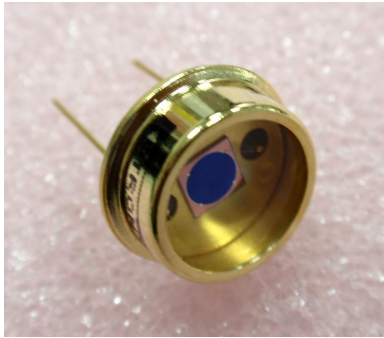


## High Speed Silicon Photodiode



### Description

The OSD4-HT is high-output, high-speed silicon photodiode packaged in TO-8 with a clear glass window cap. The OTRON device OSD126-HT is  $\phi$  4mm diameter active area device.

### Features

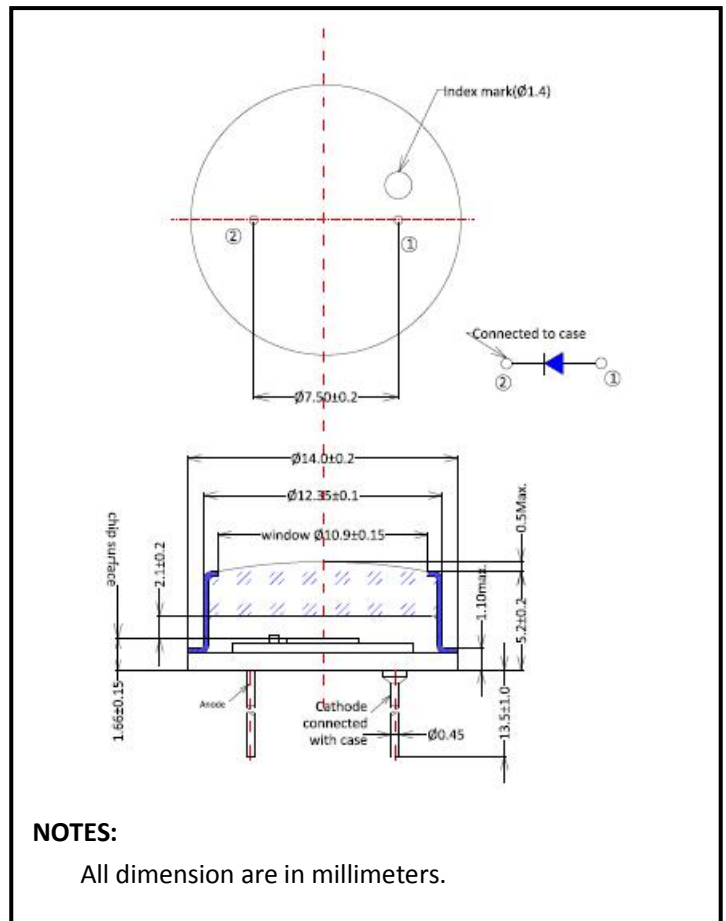
- \* High-speed response
- \* Wide angular response
- \* High reliability in demanding environments
- \* Operating temperature is from  $-40$  to  $+80^{\circ}\text{C}$
- \* Storage temperature is from  $-40$  to  $+80^{\circ}\text{C}$
- \* soldering temperature is  $260^{\circ}\text{C}$  @Max.5 seconds at the position of 2mm from the PIN legs.

### General Ratings

- \* Type Silicon Photodiode
- \* High linearity
- \* Chip active area:  $\phi$ 4mm
- \* Low dark current

### Applications

- \* HeNe and GaAs laser detection systems
- \* Industrial Control
- \* High-speed switching applications
- \* Laser Monitoring
- \* Optical demodulation
- \* Data transmission and ranging
- \* Guidance Systems



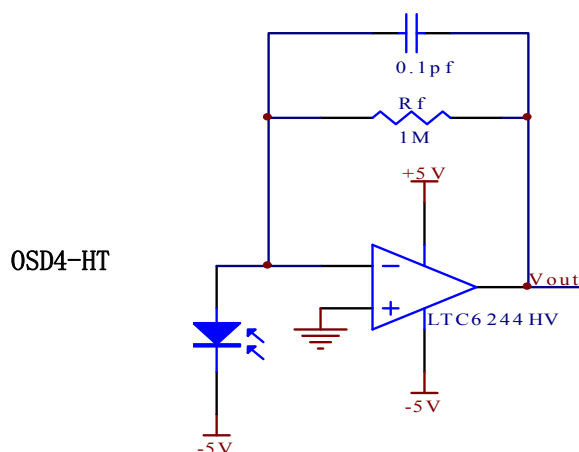
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## Absolute Maximum Ratings (Ta=25 °C)

| Parameter                          | Symbol             | Condition                                      | Min. | Typ.                   | Max. | Unit                    |
|------------------------------------|--------------------|------------------------------------------------|------|------------------------|------|-------------------------|
| Short circuit Current              | I <sub>sc</sub>    | Ev=100lx fc=2856k*                             |      | 32                     |      | μA                      |
| Isc Temperature Coefficient        | TC I <sub>sc</sub> | 2856k                                          |      | 1.1                    |      | %/°C                    |
| Open Circuit Voltage               | V <sub>oc</sub>    | Ev=100lx fc=2856k*                             |      | 355                    |      | mV                      |
| Voc Temperature Coefficient        | TC Voc             | 2856k                                          |      | -2.2                   |      | mV/°C                   |
| Dark current                       | I <sub>D</sub>     | V <sub>R</sub> =10mV                           |      | 11                     |      | nA                      |
|                                    |                    | V <sub>R</sub> =10V                            |      | 50                     |      |                         |
| Rise time                          | t <sub>R</sub>     | V <sub>R</sub> =5V;λ=850nm;R <sub>L</sub> =50Ω |      | 14                     |      | ns                      |
| Tempcoeffi-cient of I <sub>D</sub> | T <sub>CD</sub>    |                                                |      | 0.18                   |      | times/°C                |
| Reverse breakdown voltage          | V <sub>(BR)R</sub> | I <sub>R</sub> =100μA Ev=0lx                   |      | 50                     |      | V                       |
| Junction Capacitance               | C <sub>J</sub>     | V <sub>R</sub> =0V f=1MHz                      |      | 95                     |      | pF                      |
|                                    |                    | V <sub>R</sub> =10V f=1MHz                     |      | 23                     |      |                         |
| Photo sensitivity                  | S <sub>R</sub>     | 650nm                                          |      | 0.37                   |      | A/W                     |
|                                    |                    | 900nm                                          |      | 0.58                   |      |                         |
| Spectral Application Range         | λ <sub>range</sub> |                                                | 400  |                        | 1100 | nm                      |
| Spectral Response-Peak             | λ <sub>p</sub>     |                                                |      | 900                    |      | nm                      |
| Shunt resistance                   | R <sub>sh</sub>    | V <sub>R</sub> =10mV                           |      | 0.1                    |      | GΩ                      |
| Rsh Temperature Coefficient        | TC R <sub>sh</sub> |                                                |      | 0.18                   |      | %/°C                    |
| Angular Resp 50% Resp Pt           | θ <sub>1/2</sub>   |                                                |      | ±55                    |      | Degrees                 |
| Noise Equivalent Power             | NEP                | V <sub>R</sub> =10V λ=900nm                    |      | 1.15×10 <sup>-15</sup> |      | W/Hz <sup>1/2</sup>     |
| Specific Detectivity               | D*                 | V <sub>R</sub> =10V λ=900nm                    |      | 3.09×10 <sup>14</sup>  |      | cm(Hz/W) <sup>1/2</sup> |

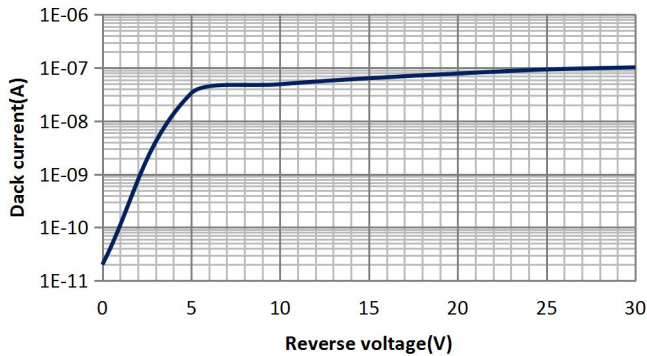
\* Ev: Illuminance by CIE standard light source A (tungsten lamp)

## Typical application circuit

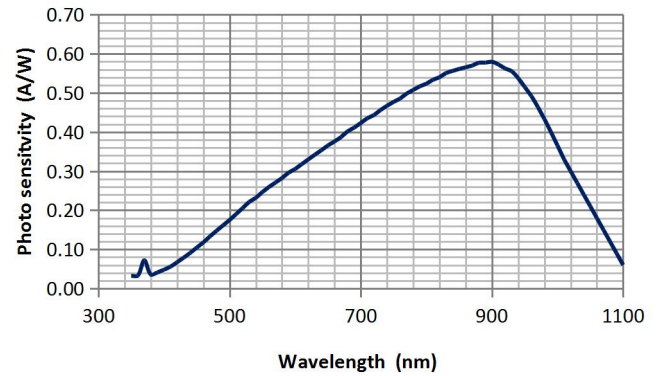


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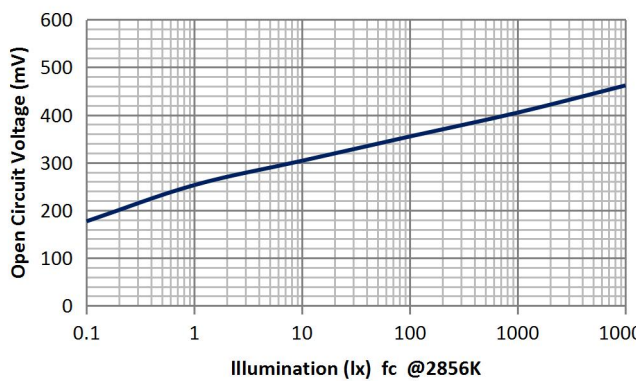
## ■ Dark current vs. reverse voltage



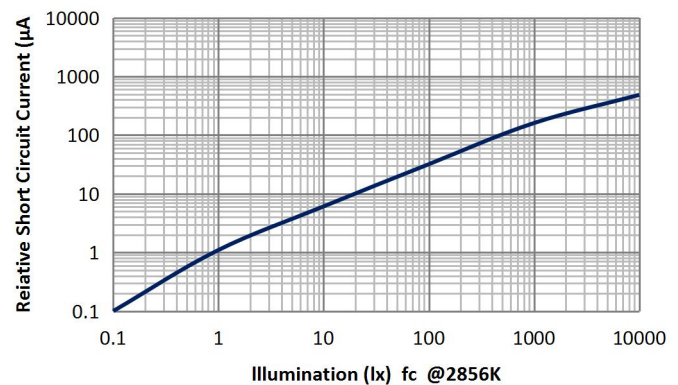
## ■ Spectral response



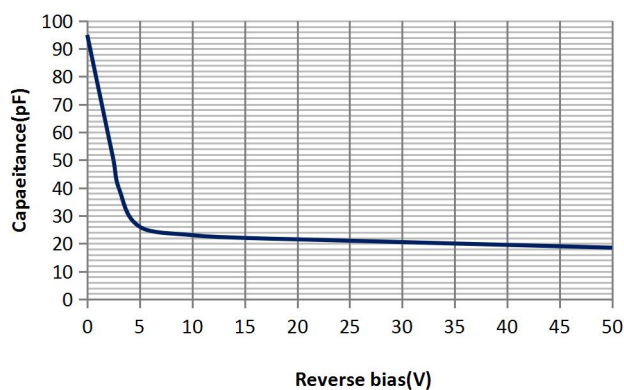
## ■ Open circuit Voltage vs Illumination



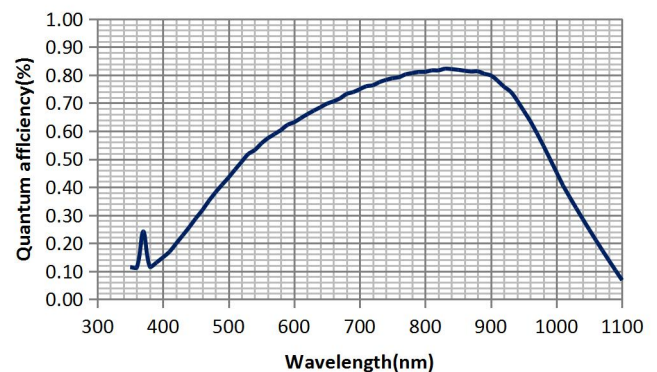
## ■ Relative Short Circuit Current vs. Illumination



## ■ Relative Junction Capacitance VS. Voltage



## ■ Quantum efficiency



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