PD438B/S46

Features
- Fast response times
- High photo sensitivity
- Small junction capacitance
- Pb free
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH

Descriptions
PD438B/S46 is a high speed and sensitive PIN photodiode in a cylindrical side view plastic package. The epoxy package itself is an IR filter, spectrally matched to IR emitter.

Applications
- High speed photo detector
- Camera
- Optoelectronic switch
- VCRs, Video camera

Device Selection Guide

<table>
<thead>
<tr>
<th>LED Part No.</th>
<th>Chip Material</th>
<th>Lens Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD438B/S46</td>
<td>Silicon</td>
<td>Black</td>
</tr>
</tbody>
</table>
### Absolute Maximum Ratings (Ta=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reverse Voltage</td>
<td>(V_R)</td>
<td>32</td>
<td>V</td>
</tr>
<tr>
<td>Power Dissipation</td>
<td>(P_d)</td>
<td>150</td>
<td>mW</td>
</tr>
<tr>
<td>Lead Soldering Temperature</td>
<td>(T_{sol})</td>
<td>260</td>
<td>°C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>(T_{opr})</td>
<td>-40 ~ +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>(T_{stg})</td>
<td>-40 ~ +100</td>
<td>°C</td>
</tr>
</tbody>
</table>

**Notes:** *1:Soldering time \(\leq 5\) seconds.

### Electro-Optical Characteristics (Ta=25°C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Condition</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rang of Spectral Bandwidth</td>
<td>(\lambda_{0.5})</td>
<td>-----</td>
<td>840</td>
<td>---</td>
<td>1100</td>
<td>nm</td>
</tr>
<tr>
<td>Wavelength of Peak Sensitivity</td>
<td>(\lambda_p)</td>
<td>-----</td>
<td>---</td>
<td>940</td>
<td>---</td>
<td>nm</td>
</tr>
<tr>
<td>Open-Circuit Voltage</td>
<td>(V_{OC})</td>
<td>(Ee=5\text{m W/cm}^2) (\lambda_p=940\text{nm})</td>
<td>---</td>
<td>0.35</td>
<td>---</td>
<td>V</td>
</tr>
<tr>
<td>Short- Circuit Current</td>
<td>(I_{SC})</td>
<td>(Ee=1\text{m W/cm}^2) (\lambda_p=940\text{nm})</td>
<td>---</td>
<td>18</td>
<td>---</td>
<td>(\mu) A</td>
</tr>
<tr>
<td>Reverse Light Current</td>
<td>(I_L)</td>
<td>(Ee=1\text{m W/cm}^2) (\lambda_p=940\text{nm}) (V_R=5\text{V})</td>
<td>10.2</td>
<td>18</td>
<td>---</td>
<td>(\mu) A</td>
</tr>
<tr>
<td>Dark Current</td>
<td>(I_d)</td>
<td>(Ee=0\text{m W/cm}^2) (V_R=10\text{V})</td>
<td>---</td>
<td>5</td>
<td>30</td>
<td>nA</td>
</tr>
<tr>
<td>Reverse Breakdown</td>
<td>(B_{VR})</td>
<td>(Ee=0\text{m W/cm}^2) (I_R=100\text{(\mu}) A)</td>
<td>32</td>
<td>170</td>
<td>---</td>
<td>V</td>
</tr>
<tr>
<td>Total Capacitance</td>
<td>(C_t)</td>
<td>(Ee=0\text{m W/cm}^2) (V_R=5\text{V}) (f=1\text{MHZ})</td>
<td>---</td>
<td>18</td>
<td>---</td>
<td>pF</td>
</tr>
<tr>
<td>Rise/Fall Time</td>
<td>(t_r/t_f)</td>
<td>(V_R=10\text{V}) (R_L=1\text{K}\Omega)</td>
<td>---</td>
<td>50/50</td>
<td>---</td>
<td>nS</td>
</tr>
</tbody>
</table>

**Note:**
- Tolerance of Luminous Intensity: ±10%
- Tolerance of Dominant Wavelength: ±1nm
- Tolerance of Forward Voltage: ±0.1V
Typical Electro-Optical Characteristics Curves

Fig. 1 Power Dissipation vs. Ambient Temperature

![Power Dissipation vs. Ambient Temperature](image)

Fig. 2 Spectral Sensitivity

![Spectral Sensitivity](image)

Fig. 3 Dark Current vs. Ambient Temperature

![Dark Current vs. Ambient Temperature](image)

Fig. 4 Reverse Light Current vs. Ee

![Reverse Light Current vs. Ee](image)
Typical Electro-Optical Characteristics Curves

Fig. 5 Terminal Capacitance vs. Reverse Voltage

Fig. 6 Response Time vs. Load Resistance

- Terminal Capacitance C (pF) vs. Reverse Voltage (V)
- Response Time t (us) vs. Load Resistance (Ω)

- f = 1 MHz
- Ee = 0 mW/cm²
- V_R = 10 V
- T_a = 25°C
Package Dimension

Note: Tolerances unless dimensions ±0.25mm
Packing Specification

■ Packing Quantity
1. 200~500 PCS/1 Bag, 6Bags/1 Inner Carton
2. 10 Inner Cartons/1 Outside Carton

Label Form Specification

- CPN: Customer’s Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number
- Reference: Identify Label Number

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2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
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