UV - Photodiode with integrated amplifier

**characteristics:**
- SiC-Photodiode with integrated current/voltage converter
- very high UV-responsivity
- enlargement of effective chip area by integrated lense
- very low visible and IR responsivity
- extra sensor pin for external adjustment of gain and bandwidth
- single supply voltage
- low current consumption
- sensor assembly isolated to ground
- replacement for SFH 530 (Osram), but with better characteristics
- option „-1“ with higher bandwidth
- components are in conformity with RoHS and WEEE

**applications:**
- selective UV-measurements
- flamedetection and -control
- control of UV-lamps in water and surface disinfection
- control of UV-lasers
- control of irradiancy in varnish and adhesive hardening

**absolute maximum ratings:**

- supply voltage +5,5 V
- operating temperature range -25 °C ... +85 °C
- storage temperature range -40 °C ... +100 °C
- welding temperature (5s) 300 °C

**technical data:**

common test conditions, as not otherwise specified: $T_A = 25$ °C, $V_S = +5$ V

<table>
<thead>
<tr>
<th>parameter</th>
<th>test condition</th>
<th>JIC149L</th>
<th>JIC149L-1</th>
<th>unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>active area</td>
<td>$11$</td>
<td>$11$</td>
<td>$11$</td>
<td>mm²</td>
</tr>
<tr>
<td>feedback resistor</td>
<td>$1,0$</td>
<td>$1,0$</td>
<td>$1,0$</td>
<td>GΩ</td>
</tr>
<tr>
<td>dark offset voltage</td>
<td>$E = 0$ lx</td>
<td>$± 0,5$ (± 2)</td>
<td>$± 0,5$ (± 2)</td>
<td>mV</td>
</tr>
<tr>
<td>noise voltage</td>
<td>$B = 1$ kHz</td>
<td>$0,1$</td>
<td>$0,5$</td>
<td>mV rms</td>
</tr>
<tr>
<td>maximum of spectral</td>
<td>$S = S_{\text{max}}$</td>
<td>$30$</td>
<td>$30$</td>
<td>mV/nW</td>
</tr>
<tr>
<td>responsivity $\lambda = 285$ nm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spectral responsivity</td>
<td>$\lambda = 310$ nm</td>
<td>$270$ (180-400)</td>
<td>$270$ (180-400)</td>
<td>mV/ nW/mm²</td>
</tr>
<tr>
<td>selectivity</td>
<td>$S_{400-1200nm} / S_{310nm}$</td>
<td>$&lt; 10^{-4}$</td>
<td>$&lt; 10^{-4}$</td>
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</tr>
<tr>
<td>rise time</td>
<td>$20$</td>
<td>$0,6$</td>
<td></td>
<td>ms</td>
</tr>
<tr>
<td>bandwidth</td>
<td>$-3$ dB</td>
<td>$15$</td>
<td>$500$</td>
<td>Hz</td>
</tr>
<tr>
<td>opening angle</td>
<td>$S=0,5*S_{\text{max}}$</td>
<td>$± 5$</td>
<td>$± 5$</td>
<td>Grad</td>
</tr>
<tr>
<td>saturation voltage</td>
<td>$R_s = 2$ kΩ</td>
<td>$+4,95$</td>
<td>$+4,95$</td>
<td>V</td>
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<tr>
<td>short current</td>
<td>$\pm 50$</td>
<td>$\pm 50$</td>
<td></td>
<td>mA</td>
</tr>
<tr>
<td>operating voltage</td>
<td>+2,7...+5</td>
<td>+2,7...+5</td>
<td></td>
<td>V</td>
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<tr>
<td>current consumption</td>
<td>$750$ (1100)</td>
<td>$750$ (1100)</td>
<td>$\mu$A</td>
<td></td>
</tr>
</tbody>
</table>

1) effektive active area because of focusing of light by the lense
relative spectral responsivity

![Graph showing relative spectral responsivity with wavelength in nm on the x-axis and sensitivity (S_rel) on the y-axis.]  

response characteristic

![Graph showing response characteristic with angle in degrees on the x-axis and sensitivity (S_rel) on the y-axis.]  

internal circuit

![Circuit diagram with labels for each pin: 1. R_f, 2. Out, 3. V_i, 4. GND, 5. Case.]

package dimension

![Dimensional drawing of the package with measurements and labels for each dimension.]  

applicartion hints:

- If an external resistor for reduction of gain is used, please make sure that length of connectors is as short as possible to reduce noise and capacitative interference.
- If internally adjusted gain is used only, please cut pin “1”.

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