Optoschmitt Detector

SDP86XX

DESCRIPTION

The SDP86XX series is a family of single chip Optoschmitt IC detectors molded in a side-looking black plastic package to minimize the effect of visible ambient light. The photodetector consists of a photodiode, amplifier, voltage regulator, Schmitt trigger and an NPN output transistor with a 10 kΩ (nominal) pull-up resistor. Output rise and fall times are independent of the rate of change of incident light. Detector sensitivity has been internally temperature compensated. Flexibility of use is enhanced by a choice of three different lead configurations; in-line (SDP8600/8610), 0.05 in. (1.27 mm) offset pin circle (SDP8601/8611) and 0.10 in. (2.54 mm) offset center lead (SDP8602/8612).

Device Polarity:
- Buffer - Output is HI when incident light intensity is above the turn-on threshold level.
- Inverter - Output is LO when incident light intensity is above the turn-on threshold level.

FEATURES

- Side-looking plastic package
- 55° (nominal) acceptance angle
- Wide sensitivity ranges
- TTL/LSTTL/CMOS compatible
- Buffer (SDP8600/8601/8602) or inverting (SDP8610/8611/8612) logic available
- Three different lead spacing arrangements
- Mechanically and spectrally matched to SEP8506 and SEP8706 infrared emitting diodes

OUTLINE DIMENSIONS in inches (mm)

Tolerance
3 plc decimals ±0.005(0.12)
2 plc decimals ±0.020(0.51)

Honeywell reserves the right to make changes in order to improve design and supply the best products possible.
### ELECTRICAL CHARACTERISTICS

#### ABSOLUTE MAXIMUM RATINGS

(25°C Free-Air Temperature unless otherwise noted)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Voltage</td>
<td>VCC</td>
<td>4.5</td>
<td>12.0</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Duration of Output</td>
<td>tO</td>
<td>1.0</td>
<td></td>
<td></td>
<td>sec</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>TAMB</td>
<td>-40</td>
<td></td>
<td>85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage Temperature Range</td>
<td>TSTG</td>
<td>-40</td>
<td></td>
<td>85</td>
<td>°C</td>
</tr>
<tr>
<td>Soldering Temperature (5 sec)</td>
<td>TS</td>
<td>240</td>
<td></td>
<td></td>
<td>°C</td>
</tr>
</tbody>
</table>

#### Notes
1. Derate linearly from 25°C to 5.5 V at 85°C.
2. The radiation source is an IRLED with a peak wavelength of 935 nm.
3. Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operating threshold intensity.

#### TEST CONDITIONS

<table>
<thead>
<tr>
<th>Condition</th>
<th>Symbol</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCC=5 V</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VCC=12 V</td>
<td></td>
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</tbody>
</table>

#### SCHEMATIC

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Fig. 1  Responsivity vs Angular Displacement

Fig. 2  Threshold Irradiance vs Temperature

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Fig. 3  Output Rise Time (tR) and Output Fall Time (tF) vs Temperature

Fig. 4  Delay Time vs Temperature

Fig. 5  Spectral Responsivity

All Performance Curves Show Typical Values