Ambient light detector
Photosensitive sensor
(Replacement of CdS)

Model: HWSP-1

Shenzhen Haiwang Sensor Co., Ltd

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HW5P-1

**Typical applications**

Backlight Adjusting:
TV、Computer Display、LCD backlight、Cell Phone、Digital Camera、
MP4、PDA、GPS;

Energy-Saving control:
Outdoor Ad machines、Induction Lighting Appliances、Toys:

Instruments:
The instruments for testing illuminance and the industrial control.

Environmental-Protection Substitution:
Replacement of CdS、Light Diode、Light Triod

**Features**

Built-in optical filter for spectral response similar to that of the human eye.

Linear output conforming to illuminance.

Temperature Stable.

Low dark current and Low working Lux..

RoHS Compliant / Pb-free / Cd-free;

**MAXIMUM RATINGS (Ta=25°℃)**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>supply voltage</td>
<td>Vdd</td>
<td>3-15</td>
<td>V</td>
</tr>
<tr>
<td>Quiescent current</td>
<td>I</td>
<td>&lt;5μA@&lt;1Lux</td>
<td>uA</td>
</tr>
<tr>
<td>Working temperature</td>
<td>Topr</td>
<td>-25~+90</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td>-40~+120</td>
<td>°C</td>
</tr>
<tr>
<td>Welding temperature</td>
<td>Tsol</td>
<td>260</td>
<td>°C</td>
</tr>
</tbody>
</table>

**ELECTRICAL AND OPTICAL CHARACTERISTICS (Ta=25°℃)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Test conditions</th>
<th>Min</th>
<th>Type</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector photo-current</td>
<td>HWSP-1</td>
<td>IC (Vdd=5V, Rss=1k)</td>
<td>10 Lux,Vdd=5</td>
<td>50</td>
<td>70</td>
<td>uA</td>
</tr>
<tr>
<td>Collector dark current</td>
<td>I_drk</td>
<td>0Lux,Vdd=10V</td>
<td>100</td>
<td></td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>Spectrum sensitivity</td>
<td>λ_p</td>
<td>0Lux,Vdd=10V</td>
<td>480</td>
<td></td>
<td>1050</td>
<td>nM</td>
</tr>
<tr>
<td>The collector - emission level saturation pressure drop</td>
<td>Vdd-Vss</td>
<td>Lss=100mA</td>
<td>0.3</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>The reaction time (rise)</td>
<td>t_r</td>
<td>Vdd=10V, Iss=5mA R_L=100</td>
<td>2</td>
<td></td>
<td></td>
<td>μS</td>
</tr>
<tr>
<td>The reaction time (down)</td>
<td>t_f</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td>μS</td>
</tr>
</tbody>
</table>

※ 2 Ev/Ee With white LED light source test
测试原理图
Testing principle diagram

Examples of application
Optical lamp principle diagram
In the chart, capacitor C1, C2, R3 and diode D1 and stable volt DW, composes the simple electric capacity voltage dropping resistor leveling circuit, after meets the circular telegram to obtain about 12V the DC voltage. Triode BG, photosensitive tube HW5P-1 and bidirectional silicon-controlled rectifier and so on, composition photoelectricity switching circuit.
In the daytime, the photosensitive tube HW3Y-1 resistance, the BG tube base electric potential drops extremely, causes BG to cut off, on resistance R1 non-voltage output, therefore bidirectional silicon-controlled rectifier SCR is at the shutdown condition, light bulb LAMP is not bright. When the curtain of night arrives, HW3Y-1 dark anti-increases, causes the BG base electric potential ascension the breakover, the voltage triggering silicon-controlled rectifier SCR breakover which on R1 outputs, the street light to result in the electricity to lighten extremely. Adjustment potentiometer W, may adjust the BG base extremely electric potential height, namely has adjusted the sensitivity which the light controls.

**Note**
Do not use the sensors under conditions that exceed the range of its specifications. Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set. CMOS IC is contained, so static electricity should be avoided. Be sure to perform soldering at values within the maximum ratings.
Take care so that no external force is applied to the lead during and immediately after soldering.
Do not perform reflow soldering.
The product is compliant with ECC RoHS. The photocurrent will be influenced if the dirty or destroy on the surface. The sensors are small, transparent, plastic packages. They are sensitive to moisture and come in sealed, moisture proof packages. Small packing for 1000PCS, Big packing for 10000PCS.

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