GP2D120

■ Features
1. Less influence on the color of reflective objects, reflectivity
2. Line-up of distance output/distance judgement type
   Distance output type (analog voltage) : GP2D120
   Detecting distance : 4 to 30cm
3. External control circuit is unnecessary

■ Applications
1. TVs
2. Personal computers
3. Amusment equipment
4. Copiers

■ Absolute Maximum Ratings
(Ta=25°C, Vcc=5V)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>Vcc</td>
<td>−0.3 to +7 V</td>
<td></td>
</tr>
<tr>
<td>Output terminal voltage</td>
<td>VO</td>
<td>−0.3 to Vcc+0.3 V</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>T_op</td>
<td>−10 to +60 °C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>T_stg</td>
<td>−40 to +70 °C</td>
<td></td>
</tr>
</tbody>
</table>

Notice  In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

Internet  Internet address for Electronic Components Group http://www.sharp.co.jp/ecg/
## Recommended Operating Conditions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating supply voltage</td>
<td>Vcc</td>
<td>4.5 to +5.5</td>
<td>V</td>
</tr>
</tbody>
</table>

## Electro-optical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Conditions</th>
<th>MIN.</th>
<th>TYP.</th>
<th>MAX.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance measuring range</td>
<td>ΔL</td>
<td>L=30cm⁻¹</td>
<td>4</td>
<td>–</td>
<td>30</td>
<td>cm</td>
</tr>
<tr>
<td>Output terminal voltage</td>
<td>V₀</td>
<td>L=30cm⁻¹</td>
<td>0.25</td>
<td>0.4</td>
<td>0.55</td>
<td>V</td>
</tr>
<tr>
<td>Difference of output voltage</td>
<td>ΔV₀</td>
<td>Output change at L=30cm to 4cm</td>
<td>1.95</td>
<td>2.25</td>
<td>2.55</td>
<td>V</td>
</tr>
<tr>
<td>Average Dissipation current</td>
<td>Icc</td>
<td>L=30cm⁻¹</td>
<td>–</td>
<td>33</td>
<td>50</td>
<td>mA</td>
</tr>
</tbody>
</table>

Note) L : Distance to reflective object.

*1 Using reflective object : White paper (Made by Kodak Co. Ltd. gray cards R-27 : white face, reflective ratio : 90%).

*2 Distance measuring range of the optical sensor system.

---

### Fig.1 Internal Block Diagram

![Internal Block Diagram](image)

- GND
- Vcc 5V
- PSD
- Signal processing circuit
- LED
- LED drive circuit
- Distance measuring IC
- Voltage regulator
- Oscillation circuit
- Output circuit
- Vo Analog output

### Fig.2 Timing Chart

![Timing Chart](image)

- Vcc (Power supply)
- Distance measuring operation
- V0 (Output)
- 38.3ms±9.6ms
- 5.0msMAX
**Fig. 3 Analog Output Voltage vs. Surface Illuminance of Reflective Object**

![Graph of Analog Output Voltage vs. Surface Illuminance of Reflective Object]

**Fig. 4 Analog Output Voltage vs. Distance to Reflective Object**

![Graph of Analog Output Voltage vs. Distance to Reflective Object]

**Fig. 5 Analog Output Voltage vs. Ambient Temperature**

![Graph of Analog Output Voltage vs. Ambient Temperature]

**Fig. 6 Analog Output Voltage vs. Detection Distance**

![Graph of Analog Output Voltage vs. Detection Distance]
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     - Office automation equipment
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