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. Amusement 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</td>
<td>V</td>
</tr>
<tr>
<td>Output terminal voltage</td>
<td>VO</td>
<td>−0.3 to +0.3</td>
<td>V</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>Toper</td>
<td>−10 to +60</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td>−40 to +70</td>
<td>°C</td>
</tr>
</tbody>
</table>

### Notice
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**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 V</td>
<td>V</td>
</tr>
</tbody>
</table>

**Electro-optical Characteristics**

(Ta=25°C, Vcc=5V)

<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>+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−1</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**

**Fig.2 Timing Chart**
Fig. 3 Analog Output Voltage vs. Surface Illuminance of Reflective Object

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

Fig. 5 Analog Output Voltage vs. Ambient Temperature

Fig. 6 Analog Output Voltage vs. Detection Distance

Analog output voltage $V_O$ (V)
Surface illuminance of reflective object (lx)

Light source equivalent to sun light
Kodak Co., Ltd.
gray cards R-27 (reflective ratio: 90%)

Analog output voltage $V_O$ (V)
Distance to reflective object $L$ (cm)

Draft Reflectivity
White 90%
Gray 10%

Analog output voltage $V_O$ (V)
Detection distance $X$ (cm)

Kodak Co., Ltd. gray cards R-27 (reflective ratio: 90%)

Sensor GP2D120

Light source equivalent to sun light
Kodak Co., Ltd.
gray cards R-27 (reflective ratio: 90%)

Ambient temperature $T_a$ (°C)

Detection distance $X$ (cm)

Light source equivalent to sun light
Kodak Co., Ltd.
gray cards R-27 (reflective ratio: 90%)

Sensor GP2D120
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