### Features
1. Less influence on the colors of reflected objects and their reflectivity, due to optical triangle measuring method
2. Distance output type
   (Detection range: 20 to 150 cm)
3. An external control circuit is not necessary
   Output can be connected directly to a microcomputer

### Applications
1. For detection of human body and various types of objects in home appliances, OA equipment, etc

### Absolute Maximum Ratings

<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>&quot;&quot;&quot;Output terminal voltage</td>
<td>Vio</td>
<td>−0.3 to VCC +0.3 V</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>Topr</td>
<td>−10 to +60 °C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>Tstg</td>
<td>−40 to +70 °C</td>
<td></td>
</tr>
</tbody>
</table>

*Open collector output

### 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></td>
</tr>
</tbody>
</table>

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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 address for Electronic Components Group:
http://sharp-world.com/ecg/
**GP2Y0A02YK**

### 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>$\Delta L$</td>
<td>$^{*2}$ $^{*3}$</td>
<td>20</td>
<td>–</td>
<td>150</td>
<td>cm</td>
</tr>
<tr>
<td>Output terminal voltage</td>
<td>$V_O$</td>
<td>$^{*2}$ $L=150\text{cm}$</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>$\Delta V_O$</td>
<td>$^{*2}$ Output change at $L=150\text{cm}$ to $20\text{cm}$</td>
<td>1.8</td>
<td>2.05</td>
<td>2.3</td>
<td>V</td>
</tr>
<tr>
<td>Average dissipation current</td>
<td>$I_{CC}$</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>33</td>
<td>50</td>
</tr>
</tbody>
</table>

Note:  
1. Distance to reflective object  
2. Using reflective object/White paper (Made by Kodak Co. Ltd. gray cards R-27, white face, reflective ratio: 90%)  
3. Distance measuring range of the optical sensor system

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**Fig.1 Internal Block Diagram**

![Internal Block Diagram](image)

**Fig.2 Timing Chart**

![Timing Chart](image)

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Fig. 3 Analog Output Voltage vs. Distance to Reflective Object

Analog output voltage (V)

Distance to reflective object L (cm)

White Reflectivity: 90%
Gray Reflectivity: 18%
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      --- Office automation equipment
      --- Telecommunication equipment [terminal]
      --- Test and measurement equipment
      --- Industrial control
      --- Audio visual equipment
      --- Consumer electronics

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      --- Traffic signals
      --- Gas leakage sensor breakers
      --- Alarm equipment
      --- Various safety devices, etc.

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