This product complies with the RoHS Directive (EU 2002/95/EC).

Phototransistors

PNA1801L (PN168)

Silicon planar type

For optical control systems

■ Features

• High sensitivity
• Wide spectral sensitivity characteristics, suited for detecting GaAs LEDs
• Small size, high output power, low cost
• φ3 shell type plastic package

■ Absolute Maximum Ratings  $T_a = 25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Rating</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collector-emitter voltage (Base open)</td>
<td>$V_{CEO}$</td>
<td>30</td>
<td>V</td>
</tr>
<tr>
<td>Emitter-collector voltage (Base open)</td>
<td>$V_{EBO}$</td>
<td>5</td>
<td>V</td>
</tr>
<tr>
<td>Collector current</td>
<td>$I_C$</td>
<td>20</td>
<td>mA</td>
</tr>
<tr>
<td>Collector power dissipation</td>
<td>$P_C$</td>
<td>100</td>
<td>mW</td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>$T_{op}$</td>
<td>-25 to +85</td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{st}$</td>
<td>-30 to +100</td>
<td>°C</td>
</tr>
</tbody>
</table>

■ Electrical-Optical Characteristics  $T_a = 25^\circ C \pm 3^\circ C$

<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>Photocurrent *1</td>
<td>$I_L$</td>
<td>$V_{CE} = 10$ V, $L = 500$ lx</td>
<td>0.8</td>
<td>3.0</td>
<td>9.6</td>
<td>mA</td>
</tr>
<tr>
<td>Collector-emitter cutoff current (Base open)</td>
<td>$I_{CEO}$</td>
<td>$V_{CE} = 10$ V</td>
<td>5</td>
<td>500</td>
<td>nA</td>
<td></td>
</tr>
<tr>
<td>Collector-emitter saturation voltage *1</td>
<td>$V_{CE(sat)}$</td>
<td>$I_L = 1$ mA, $L = 1000$ lx</td>
<td>0.2</td>
<td>0.5</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Peak emission wavelength</td>
<td>$\lambda_P$</td>
<td>$V_{CE} = 10$ V</td>
<td>800</td>
<td></td>
<td>nm</td>
<td></td>
</tr>
<tr>
<td>Half-power angle</td>
<td>0</td>
<td>The angle when the photocurrent is halved</td>
<td>30</td>
<td></td>
<td>°</td>
<td></td>
</tr>
<tr>
<td>Rise time *2</td>
<td>$t_r$</td>
<td>$V_{CC} = 10$ V, $I_L = 1$ mA, $R_E = 100$ Ω</td>
<td>4</td>
<td></td>
<td>μs</td>
<td></td>
</tr>
<tr>
<td>Fall time *2</td>
<td>$t_f$</td>
<td>$V_{CC} = 10$ V, $L = 500$ lx</td>
<td>4</td>
<td></td>
<td>μs</td>
<td></td>
</tr>
</tbody>
</table>

Note)
1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. Spectral sensitivity characteristics: Sensitivity for wave length over 400 nm maximum sensitivity ratio is 100%.
3. This device is designed by disregarding radiation.
4. *1: Source: Tungsten lamp (color temperature 2856K)
   *2: Switching time measurement circuit

Maintenance/Discontinued

Maintenance/Discontinued includes following four Product lifecycle stage.

- Planned maintenance type
- Planned discontinued type
- Discontinued type

Please visit following URL about latest information.

http://www.semicon.panasonic.co.jp/en/
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**Package (Unit: mm)**

**LPXLTN2S0002**

(1.7) 0.38±0.2 0.30±0.2

**Pin name**

1: Emitter
2: Collector

(Note1) Indicates root dimensions of lead.
(Note2) Accordingly mis-alignment of the left and right position of read wire may expose the lead part. Although this will not present any problem in its reliability consideration toward lead Exposure should be given in the designing. The dimension between the lead shows the resin root dimension.
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