PNA4611M Series
(PNA4611M/4612M/4613M/4614M/4620M)
Bipolar Integrated Circuit with Photodetection Function

For infrared remote control systems

■ Features
- High sensitivity (extension distance is 11 m or more)
- External parts not required
- Resin to cutoff visible light is used
- Supports various metal holders with improved electromagnetic noise resistance

■ Absolute Maximum Ratings (Ta = 25˚C)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Ratings</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply voltage</td>
<td>$V_{CC}$</td>
<td>–0.5 to +7 V</td>
<td></td>
</tr>
<tr>
<td>Power dissipation</td>
<td>$P_D$</td>
<td>200 mW</td>
<td></td>
</tr>
<tr>
<td>Operating ambient temperature</td>
<td>$T_{opr}$</td>
<td>–20 to +75˚C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td>–40 to +100˚C</td>
<td></td>
</tr>
</tbody>
</table>

■ Main Characteristics (Ta = 25˚C, $V_{CC} = 5V$)

<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>Operating supply voltage</td>
<td>$V_{CC}$</td>
<td></td>
<td>4.7</td>
<td>5.0</td>
<td>5.3</td>
<td>V</td>
</tr>
<tr>
<td>Current consumption</td>
<td>$I_{CC}$</td>
<td>Note 3</td>
<td>1.8</td>
<td>2.4</td>
<td>3.0</td>
<td>mA</td>
</tr>
<tr>
<td>Maximum reception distance</td>
<td>$L_{max}$</td>
<td>Note 1</td>
<td>11</td>
<td>16</td>
<td></td>
<td>m</td>
</tr>
<tr>
<td>Low-level output voltage</td>
<td>$V_{OL}$</td>
<td>Note 2</td>
<td>0.35</td>
<td>0.5</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>High-level output voltage</td>
<td>$V_{OH}$</td>
<td>Note 3</td>
<td>4.8</td>
<td>5.0</td>
<td>$V_{CC}$</td>
<td>V</td>
</tr>
<tr>
<td>Low-level pulse width</td>
<td>$T_{WL}$</td>
<td>Note 1</td>
<td>200</td>
<td>400</td>
<td>600</td>
<td>$\mu$s</td>
</tr>
<tr>
<td>High-level pulse width</td>
<td>$T_{WH}$</td>
<td>Note 1</td>
<td>200</td>
<td>400</td>
<td>600</td>
<td>$\mu$s</td>
</tr>
</tbody>
</table>

Carrier frequency

- PNA4611M
- PNA4612M
- PNA4613M
- PNA4614M
- PNA4620M

| Frequency (kHz) | 36.7
|-----------------|---
|                 | 38.0
|                 | 40.0
|                 | 56.9
|                 | 33.3

Note 1) Fig.1 burst wave, $L=L_{max}$, 16 pulses
Note 2) Fig.2 continuous wave, $L \leq L_{max}$
Note 3) Light shut off condition

Carrier wave : $f_0$

Fig.1

Fig.2
Type YA

Recommendation hole location of P.C.board

Type YB

Recommendation hole location of P.C.board

Type XB

Recommendation hole location of P.C.board

Type XD

Recommendation hole location of P.C.board

Type HB

Recommendation hole location of P.C.board

Note: Tolerance unless otherwise specified is ±0.5.
The light output of the LED transmission unit is adjusted so that the transmission output (V out) of the standard reception unit will be 55 mV when the transmission waveform (duty = 50%) is output from the LED transmission unit. Here, infrared sensitivity (SIR) of PNZ323B is 0.53 µA when emission illuminance (H) is 12.45 µW/cm².

The maximum reception distance under these specifications is an assurance that TWH and TWL values will be within the tolerance ranges when 16 consecutive pulses of an optical output equivalent to the maximum reception distance are transmitted by the above transmission unit (The maximum reception distance is measured in the dark without external disturbance noise.)
L max — Ta

B.P.F frequency characteristics (PNA4612M)*

Spectral sensitivity characteristics

Directivity characteristics

* The peaks for PNA4611M, PNA4613M, PNA4614M, and PNA4620M are all at f₀.
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