

# PNA4611M Series (PNA4611M/4612M/4613M/4614M/4620M)

Bipolar Integrated Circuit with Photodetection Function

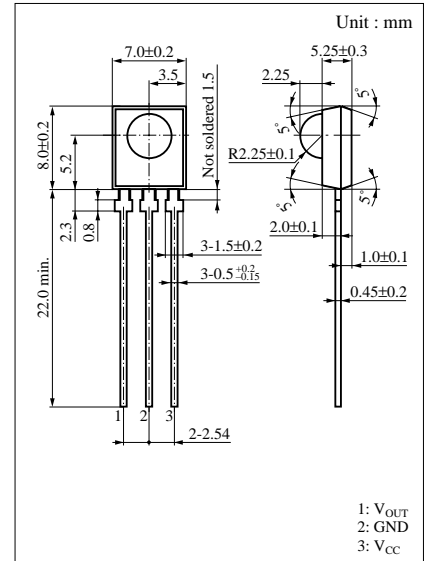
For infrared remote control systems

**■ 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)**

| Parameter                     | Symbol           | Ratings     | Unit |
|-------------------------------|------------------|-------------|------|
| Power supply voltage          | V <sub>CC</sub>  | -0.5 to +7  | V    |
| Power dissipation             | P <sub>D</sub>   | 200         | mW   |
| Operating ambient temperature | T <sub>opr</sub> | -20 to +75  | °C   |
| Storage temperature           | T <sub>stg</sub> | -40 to +100 | °C   |



**■ Main Characteristics (Ta = 25°C V<sub>CC</sub> = 5V)**

| Parameter                  | Symbol           | Conditions     | min | typ  | max             | Unit |
|----------------------------|------------------|----------------|-----|------|-----------------|------|
| Operating supply voltage   | V <sub>CC</sub>  |                | 4.7 | 5.0  | 5.3             | V    |
| Current consumption        | I <sub>CC</sub>  | Note 3         | 1.8 | 2.4  | 3.0             | mA   |
| Maximum reception distance | L <sub>max</sub> | Note 1         | 11  | 16   |                 | m    |
| Low-level output voltage   | V <sub>OL</sub>  | Note 2         |     | 0.35 | 0.5             | V    |
| High-level output voltage  | V <sub>OH</sub>  | Note 3         | 4.8 | 5.0  | V <sub>CC</sub> | V    |
| Low-level pulse width      | T <sub>WL</sub>  | Note 1         | 200 | 400  | 600             | μs   |
| High-level pulse width     | T <sub>WH</sub>  | Note 1         | 200 | 400  | 600             | μs   |
| Carrier frequency          | PNA4611M         | f <sub>0</sub> |     | 36.7 |                 | kHz  |
|                            | PNA4612M         |                |     | 38.0 |                 |      |
|                            | PNA4613M         |                |     | 40.0 |                 |      |
|                            | PNA4614M         |                |     | 56.9 |                 |      |
|                            | PNA4620M         |                |     | 33.3 |                 |      |

Note 1) Fig.1 burst wave, L=L<sub>max</sub>, 16 pulses

Note 2) Fig.2 continuous wave, L ≤ L<sub>max</sub>

Note 3) Light shut off condition

Carrier wave : f<sub>0</sub>

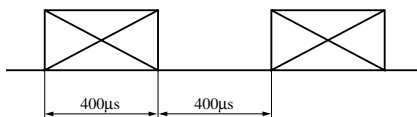


Fig.1

Carrier wave : f<sub>0</sub>

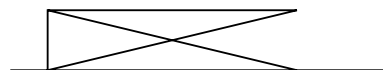
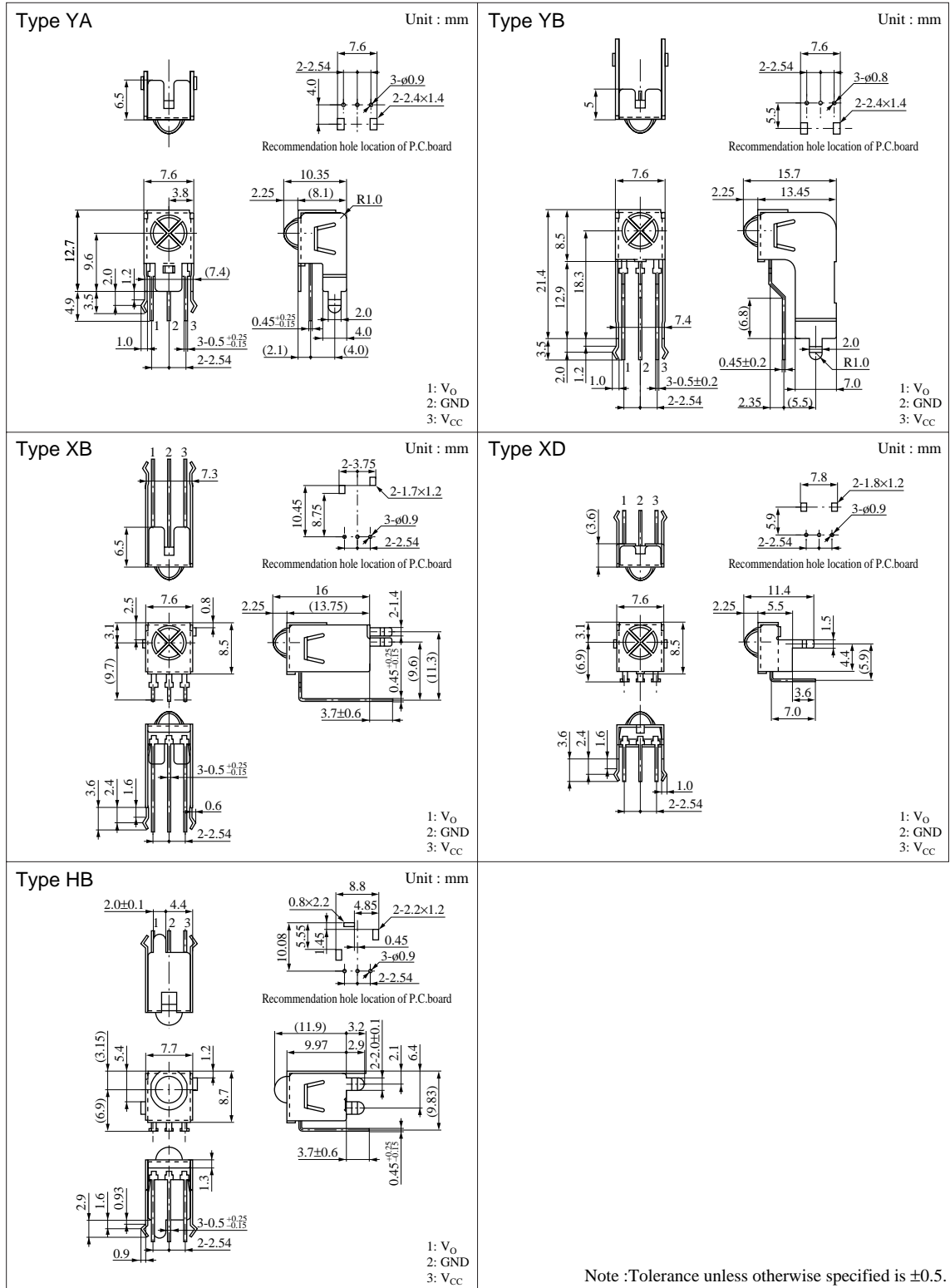
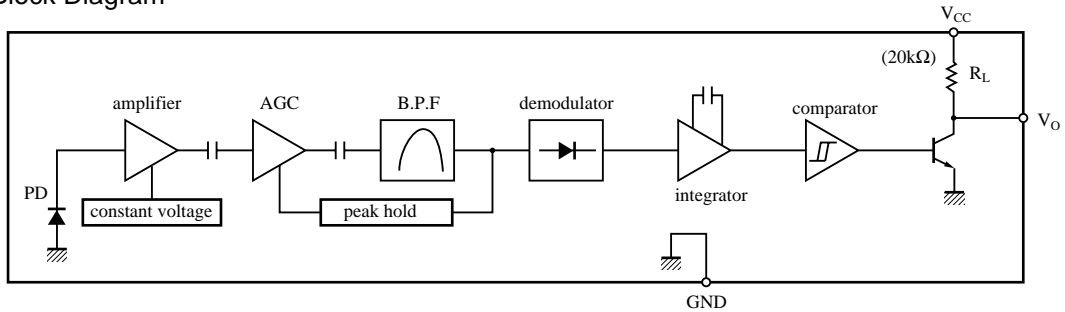


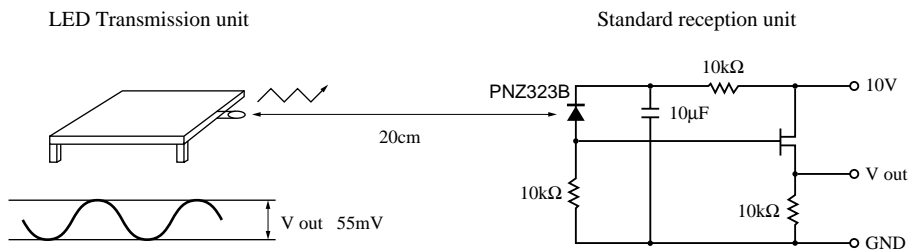
Fig.2



■ Block Diagram

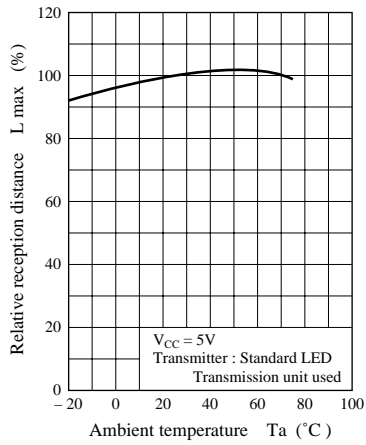


■ Panasonic Transmitter Specifications

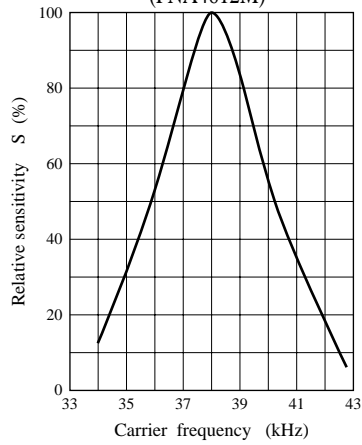


- The light output of the LED transmission unit is adjusted so that the transmission output ( $V_{out}$ ) of the standard reception unit will be 55 mV when the transmission waveform (duty = 50%) is output from the LED transmission unit. Here, infrared sensitivity (SIR) of PNZ323B is 0.53  $\mu\text{A}$  when emission illuminance (H) is 12.45  $\mu\text{W}/\text{cm}^2$ .
- The maximum reception distance under these specifications is an assurance that  $T_{WH}$  and  $T_{WL}$  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.)

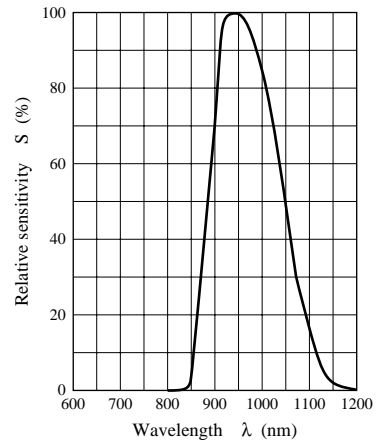
L max — Ta



B.P.F frequency characteristics (PNA4612M)\*



Spectral sensitivity characteristics



\* The peaks for PNA4611M, PNA4613M, PNA4614M, and PNA4620M are all at  $f_0$ .

Directivity characteristics

