

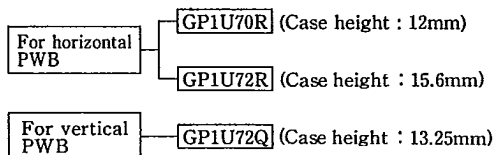
**GP1U70R Series/GP1U72R Series  
GP1U72Q Series**

Light Detecting Unit  
for Remote Control  
T-41-4)

## ■ Features

1. Anti-electromagnetic noise characteristic is improved due to mesh structured light detecting window.  
(Electric field strength : 5 times or more compared with conventional model)
2. Various B. P. F. (Band Pass Filter) frequency

## ■ Model Line-up

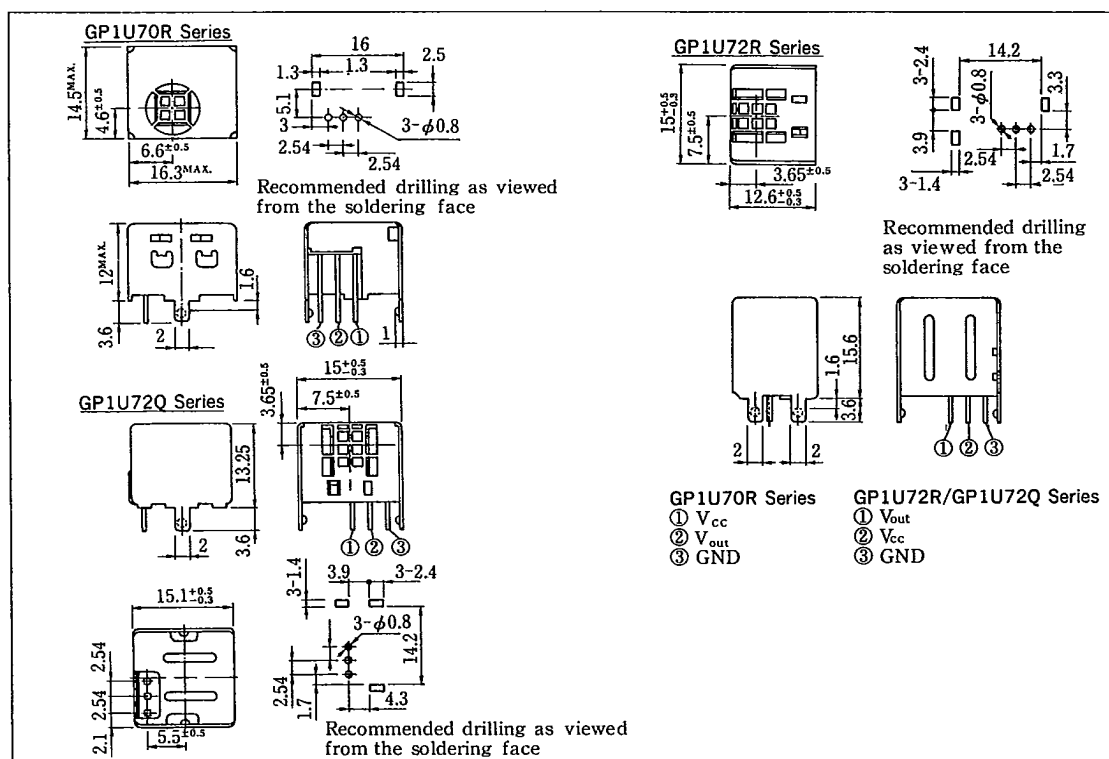


## ■ Applications

- Light detecting portion of remote control
  1. TVs
  2. VCRs
  3. Air conditioners

### ■ Outline Dimensions

(Unit : mm)



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## ■ Absolute Maximum Ratings

(Ta=25°C)

| Parameter                | Symbol           | Ratings | Unit |
|--------------------------|------------------|---------|------|
| Supply voltage           | V <sub>cc</sub>  | 0~6.3   | V    |
| *1 Operating temperature | T <sub>opr</sub> | -10~+60 | °C   |
| Storage temperature      | T <sub>stg</sub> | -20~+70 | °C   |
| *2 Soldering temperature | T <sub>sot</sub> | 260     | °C   |

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## ■ Recommended Operating Conditions

| Parameter      | Symbol          | Value   | Unit |
|----------------|-----------------|---------|------|
| Supply voltage | V <sub>cc</sub> | 4.7~5.3 | V    |

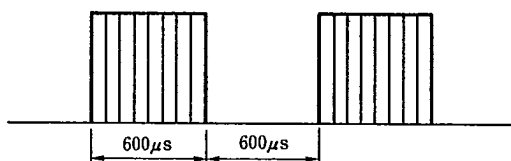
## ■ Electrical Characteristics

(Ta=25°C, V<sub>cc</sub>=+5V)

| Parameter                 |                        | Symbol          | Conditions     | MIN.                 | TYP. | MAX. | Unit |
|---------------------------|------------------------|-----------------|----------------|----------------------|------|------|------|
| Dissipation current       |                        | I <sub>cc</sub> | No input light | —                    | —    | 5.0  | mA   |
| High level output voltage |                        | V <sub>OH</sub> | * 3            | V <sub>cc</sub> —0.5 | —    | —    | V    |
| Low level output voltage  |                        | V <sub>OL</sub> |                | —                    | —    | 0.45 | V    |
| High level pulse width    | GPIU70R series         | T <sub>1</sub>  |                | 440                  | —    | 770  | μs   |
|                           | GPIU72R/GPIU72Q series |                 |                | 400                  | —    | 800  |      |
| Low level pulse width     | GPIU70R series         | T <sub>2</sub>  |                | 440                  | —    | 770  | μs   |
|                           | GPIU72R/GPIU72Q series |                 |                | 400                  | —    | 800  |      |
| B. P. F. center frequency |                        | f <sub>o</sub>  |                | —                    | ※※40 | —    | kHz  |

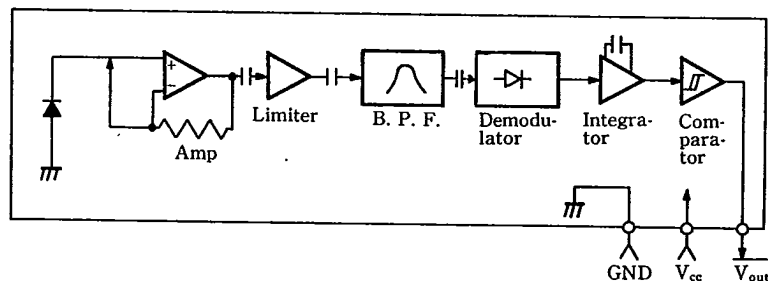
\*3 The burst wave as shown in the following figure shall be transmitted by the transmitter shown in Fig. 1.

※※ Diversified models with a different B. P. F. frequency, as shown in a separate table, are also available.

The value of f<sub>o</sub> is shown in a separate table.  
Duty 50%

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## ■ Internal Block Diagram



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## ■ Performance

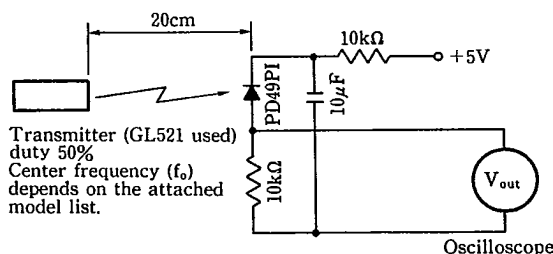
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Using the transmitter shown in Fig. 1, the output signal of the light detecting unit is good enough to meet the following items in the standard optical system in Fig. 2.

- (1) Linear reception distance characteristics  
When  $L=0.2\sim 6.5\text{m}$ ,  $E_e^{*4} < 10\text{ lx}$  and  $\phi=0^\circ$  in Fig. 2, the output signal shall meet the electrical characteristics in the attached list.
- (2) Sensitivity angle reception distance characteristics  
When  $L=0.2\sim 4.5\text{m}$ ,  $E_e^{*4} < 10\text{ lx}$  and  $\phi \leq 30^\circ$  in Fig. 2, the output signal shall meet the electrical characteristics in the attached list.
- (3) Anti outer peripheral light reception distance characteristics  
When  $L=0.2\sim 3\text{m}$ ,  $E_e^{*5} \leq 300\text{ lx}$  and  $\phi=0^\circ$  in Fig. 2, the output signal shall meet the electrical characteristics in the attached list.

\*4 Detector face illuminance

\*5 Outer peripheral light source : The light source A shall be used and placed at  $45^\circ$  from the perpendicular axis at the detector face center.



In this figure, the transmitter should be set so that the output  $V_{out}$  can be  $40\text{mV}_{pp}$ . However, the PD49PI to be used here should be of the short-circuit current  $I_{sc}=2.6\mu\text{A}$  at  $E_v=100\text{ lx}$ . ( $E_v$  is an illuminance by CIE standard light source A (tungsten lamp).)

Fig. 1 Transmitter

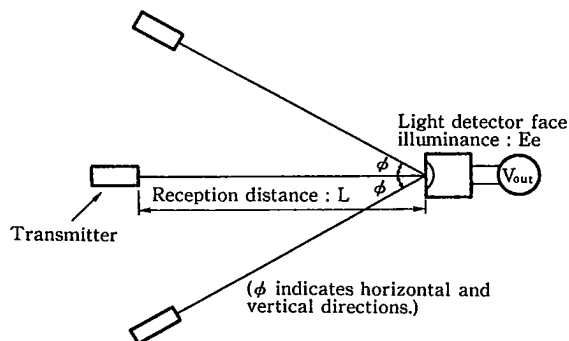


Fig. 2 Standard optical system

## ■ Model Line-up

| Model No.                  | B. P. F. frequency | Unit  |
|----------------------------|--------------------|-------|
| GP1U70R/GP1U72R/GP1U72Q    | 40                 | . kHz |
| GP1U700R/GP1U720R/GP1U720Q | 36                 |       |
| GP1U701R/GP1U721R/GP1U721Q | 38                 |       |
| GP1U702R/GP1U722R/GP1U722Q | 36.7               |       |
| GP1U703R/GP1U723R/GP1U723Q | 32.75              |       |
| GP1U705R/GP1U725R/GP1U725Q | 41.7               |       |
| GP1U706R/GP1U726R/GP1U726Q | 48                 |       |
| GP1U707R/GP1U727R/GP1U727Q | 56.8               |       |
| GP1U708R/GP1U728R/GP1U728Q | 39                 |       |
| GP1U709R/GP1U729R/GP1U729Q | 35                 |       |

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## ■ Precautions for Use

- (1) Use the light emitting unit (remote control transmitter), in consideration of performance, characteristics and operating condition of light emitting device and the characteristics of the light detecting unit.
- (2) Pay attention to a malfunction of the light detecting unit when the surface is stained with dust and refuse. Care must be taken not to touch the light detector surface.  
If it should be dirty, wipe off with soft cloth so as to prevent scratch. In case some solvents are required, use methyl alcohol, ethyl alcohol or isopropyl alcohol. Also, protect the light detecting unit against flux and others.
- (3) The shield case shall be grounded on PWB pattern.
- (4) Do not apply unnecessary force to the terminals and case from outside.
- (5) Do not push the light detector surface (photodiode) from outside.
- (6) To avoid the electrostatic breakdown of IC, handle the unit under the condition of grounding with human body, soldering iron, etc.
- (7) In case of adopting the infrared light detecting unit for the wireless remote control, use it in accordance with the transmission scheme and the signal format recommended in "Countermeasures for malfunction prevention of home appliances with infrared remote control" issued from Japan Association of Electrical Home Appliances (AEHA) in July 1987.

