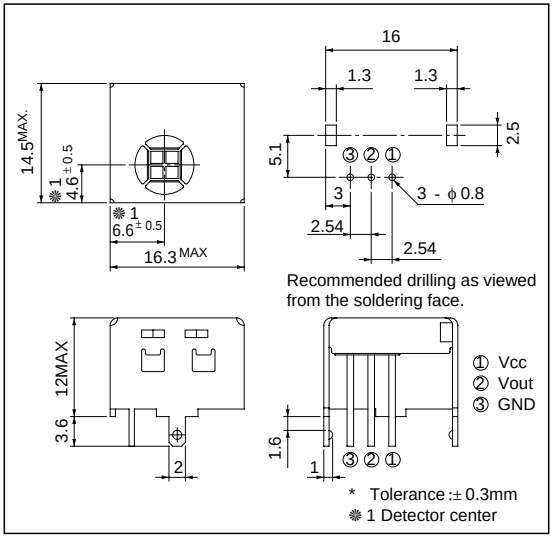
GP1U77R Sreies

IR Detecting Unit For Remote Control

■ Features

1. Less sensitive to fluorescent lamp driven by inverter
2. Improved anti-electromagnetic noise characteristic by mesh type light detecting window.
3. Various B.P.F （Band Pass Filter ）frequency
4. Built-in voltage regulator circuit

■ Outline Dimensions (Unit : mm)



■ Applications

1. TVs
2. VCRs
3. CATV set top boxes
4. BS receivers

■ Absolute Maximum Ratings (Ta = 25˚C)

Parameter	Symbol	Rating	Unit
Operating supply voltage	V_{CC}	0 to 6.3	V
*1 Operating temperature	T_{opr}	- 10 to + 70	˚C
Storage temperature	T_{stg}	- 20 to + 70	˚C
*2 Soldering temperature	T_{sol}	260	˚C

*1 No dew formation
*2 For 5 seconds

■ Recommended Operating Conditions

Parameter	Symbol	Value	Unit
Operating supply voltage	V_{CC}	4.7 to 5.3	V

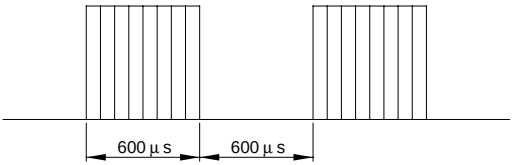
" In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

■ Electrical Characteristics

(Ta = 25°C, V_{CC} = +5V)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Dissipation current	I_{CC}	No input light	-	-	5.0	mA
High level output voltage	V_{OH}	*3	V_{CC} - 0.5	-	-	V
Low level output voltage	V_{OL}		-	-	0.45	V
High level pulse width	T_1		400	-	800	μs
Low level pulse width	T_2		400	-	800	
B.P.F. center frequency	f_O	-	-	*4 40	-	kHz

*3 The burst wave as shown in the following figure shall be transmitted by the transmitter shown in Fig. 1.
*4 Diversified models with a different B.P.F frequency, as shown in a separate table, are also available.

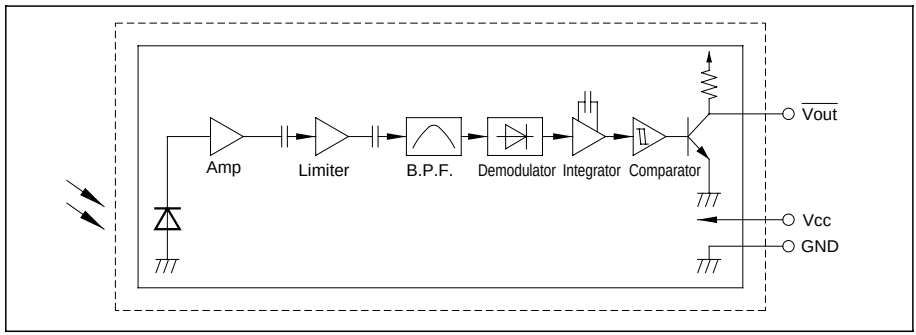


The value of f_O is shown in a separate table.
Duty 50%

■ Model Line-up

Model No.	B.P.F. frequency	Unit
GP1U77R	40	kHz
GP1U770R	36	
GP1U771R	38	
GP1U772R	36.7	
GP1U773R	32.75	
GP1U777R	56.8	

■ Internal Block Diagram



■ Performance

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 to 6.5m, Ee < 10 lx and $\phi = 0^\circ$ in Fig. 2, the output signal shall meet the electrical characteristcs in the attached list.

(2) Sensitivity angle reception distance characteristics

When L = 0.2 to 4.5m, Ee < 10 lx and $\phi <= 30^\circ$ 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 to 3m, Ee <= 300 lx and $\phi = 0^\circ$ in Fig. 2, the output signal shall meet the electrical characteristics in the attached list.

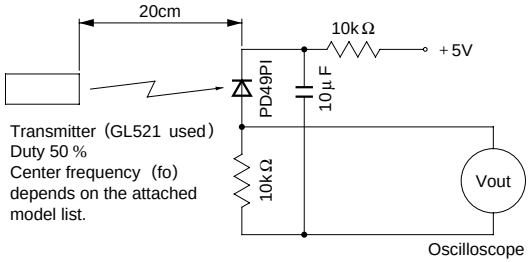


Fig. 1. Transmitter

In the above figure, the transmitter should be set so that the output V out can be $40mV_{PP}$.
However, the **PD49PI** to be used here should be of the short-circuit current I_{SC}= 2.6 μA at E_V= 100 lx.
(E_V is an illuminance by CIE standard light source A (tungsten lamp).)

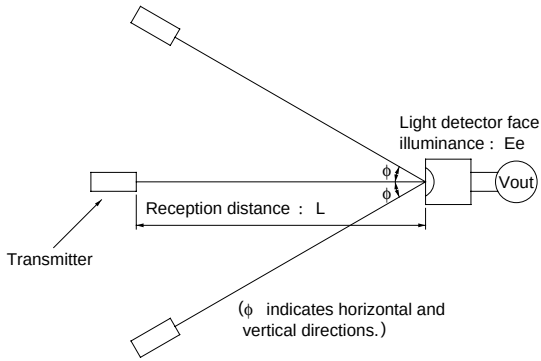


Fig. 2. Standard optical system

■ 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 metyl alcohol, ethyl alcohol or isoprophyl 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 form outside.

(5) Do not push the light detector surface (photodiode) from outside.

(6) To avoid the electorstatic 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 form Japan Association of Electrical Home Appliances (AEHA) in July 1987.

(8) As for other general cautions, refer to the chapter "Precautions for Use" (Page 78 to 93).