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			REPRESENTATIVE DIVISION ☐ PHOTOVOLTAICS DIV. ☒ OPTO-ELECTRONIC DEVICES DIV. ☐ ELECTRONIC COMPONENTS DIV. ☐ ☐

SPECIFICATION

DEVICE SPECIFICATION FOR

Infrared Light Detecting Unit
for Remote Control

MODEL No. GP1U58X SERIES

1. This specification sheets include the contents under the copyright of Sharp Corporation ("Sharp"). Please keep them with reasonable care as important information. Please don't reproduce or cause anyone reproduce them without Sharp's consent.

2. Please obey the instructions mentioned below for actual use of this device.

   (1) This device is designed for general electronic equipment.
   Main uses of this device are as follows;

   [·OA equipment ·Telecommunication equipment (Terminal) ·AV equipment
   ·Home appliance, etc.]

   (2) Please take proper steps in order to maintain reliability and safety, in case this device is used for the uses mentioned below which require high reliability.

   [·Unit concerning control and safety of a vehicle (air plane, train, automobile etc.) ·Gas leak detection breaker ·Traffic signal
   ·Fire box and burglar alarm box ·Other safety equipment, etc.]

   (3) Please don't use for the uses mentioned below which require extremely high reliability

   [·Space equipment ·Telecommunication equipment (Trunk)
   ·Nuclear control equipment ·Medical equipment (relating to any fatal element), etc.]

☐CUSTOMER'S APPROVAL

DATE _____

BY _____

PRESENTED BY for K. Ohmura

T. Matsumura
Department General Manager of
Engineering Dept., II
Opto-Electronic Devices Div.
ELECOM Group
SHARP CORPORATION

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1. Application

This specifications applies to the model marked "○" in the followin models of infrared light detecting unit for remote control.

The model list of GP1U58X series

Application	Model No.	B.P.F. center frequency (TYP)
	GP1U58X	40 kHz
	GP1U580X	36 kHz
	GP1U581X	38 kHz
	GP1U582X	36.7 kHz
	GP1U583X	32.75 kHz
	GP1U587X	56.8 kHz

Main application : TV set, VTR, Radio cassette recorder, Stereo

2. Outline Dimensions

Refer to the attached sheet, Page 7.

3. Ratings and characteristics

Refer to the attached sheet, Page 3 ∿ 6.

4. Reliability

Refer to the attached sheet, Page 8.

5. Incoming inspection

Refer to the attached sheet, Page 9.

6. Supplement

1) This infrared light detecting unit for remote control satisfies each performance requirements in para 3.5, in the standard optical system in Fig. 2.

2) This product is built-in photodiode.

7. Notes

1) If GP1U58X series is used in wireless remote controllers, please use in accordance with the transmission scheme and the signal format recommended in "Guidance to prevent home appliances with infrared remote control from malfunctions" issued by Japan Association of Electrical Home Appliances (AEHA) in July 1987.
There is a possibility that mulfunction may be caused under some conditions, if the different transmission scheme and signal format from the AEHA's is used. (Ex. signal format without leader signal, or bit structure of smaller duty ratio ($T_H/(T_H+T_L)$), etc)

2) Please use a light emitting unit (remote control transmitter) taking into consideration such factors as the performances, characteristics and operating condition of the light emitting element and the characteristics of this light detecting unit.

3) If the surface of detector is smeared with dust or dirt, it may cause faulty operation. Caution shall be taken to avoid this. And do not touch the detector surface. If the surface was smeared, wipe it clean with soft cloth. If any solvent is needed, Methyl alcohol, Ethyl alcohol, or Isopropyl alcohol should be used. Please don't carry out washing. Because, after washing the remainder in solvent or flux in this device cause mulfunction. Marking on this device is defuced by washing.

4) The shield case shall be grounded on the PWB pattern.
(There are two cases that shield case and GND pin continue in the shield case, or doesn't continue in it.)

5) It shall not be applied the terminals and case with unnecessary stress.

6) Please don't push the detecting side (photodiode) from external.

7) In order to prevent static destruction of integrated circuit, human body and soldering iron, etc. shall be grounded.

8) The holes and the slits on the light detecting unit shall not be used as the other purpose to maintain its performance.

8. Others

Any doubt as to this specification shall be determined in good faith upon mutual consultatin of the both parties.

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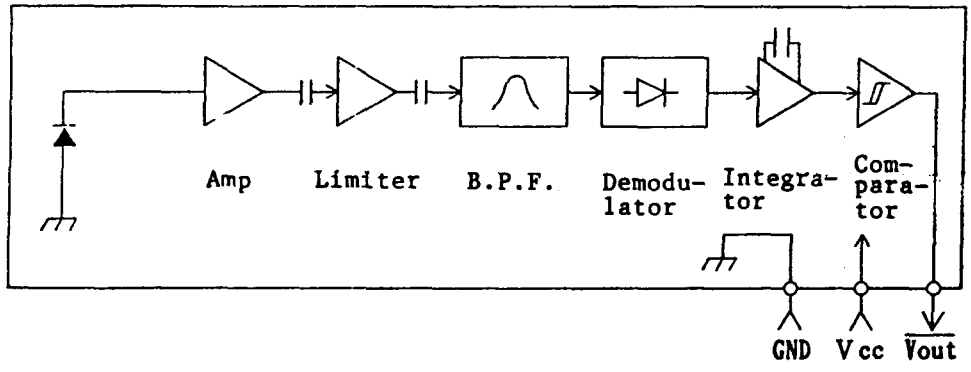
3. Ratings and characteristics

3.1 Schematic



3.2 Absolute maximum ratings

Parameter	Symbol	Rating	Unit
Supply voltage	Vcc	0 ∿ 6.3	V
Operating temperature	Topr	-10 ∿ +70 *1	°C
Storage temperature	Tstg	-20 ∿ +70	°C
Soldering temperature	Tsol	260 (Soldering time: 5s)	°C

*1) No dew formation

3.3 Recommended operating conditions

Parameter	Symbol	Operating condition	Unit
Supply voltage	Vcc	4.7 ∿ 5.3	V

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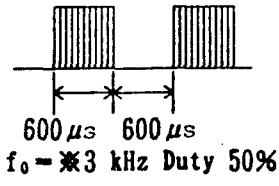
3.4 Electrical characteristics

(Unspecified Ta=25°C, Vcc=+5V)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit	Remark
Current dissipation	I_{CC}	-	-	5.0	mA	No input light
High level output voltage	V_{OH}	Vcc-0.5	-	-	V	*2
Low level output voltage	V_{OL}	-	-	0.45	V	*2
High level pulse width	T_1	400	-	800	μs	*2
Low level pulse width	T_2	400	-	800	μs	*2
B.P.F. center frequency	fo	-	*3	-	kHz	

*2) The burst wave as shown in the figure on the right shall be transmitted by the transmitter shown in Fig. 1. However, the carrier freqency of transmitter is same as *3.



*3 B.P.F. center frequency : fo of each model is shown in the list below.

Model name	B.P.F. center freqiency (kHz)
GP1U58X	40
GP1U580X	36
GP1U581X	38
GP1U582X	36.7
GP1U583X	32.75
GP1U587X	56.8

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3.5 Performance

The output signal of this light detecting unit shall satisfy the following requirements with the transmitter shown in Fig. 1 used in the standard optical system in Fig. 2.

3.5.1 Characteristics of linear reception distance

The output signal shall satisfy the electrical characteristic requirements in para 3.4 at L=0.2 ∿ 8m, (*4) Ee < 10ℓx, ϕ=0° in Fig. 2.

3.5.2 Characteristics of sensitivity angle reception distance

The output signal shall satisfy the electrical characteristic requirements in para. 3.4 at L=0.2 ∿ 6m, (*4) Ee < 10ℓx, $\phi \leq 30°$ in Fig. 2

3.5.3 Characteristics of anti-outer peripheral light reception distance

The output signal shall satisfy the electrical characteristic requirements in para 3.4 at L=0.2 ∿ 4m, (*5) Ee ≦ 300ℓx, ϕ=0° in Fig. 2.

*4) It refers to detector face illuminance.

*5) Outer peripheral light source: CIE standard light source A shall be used and placed at 45° from the perpendicular axis at the detector face center.

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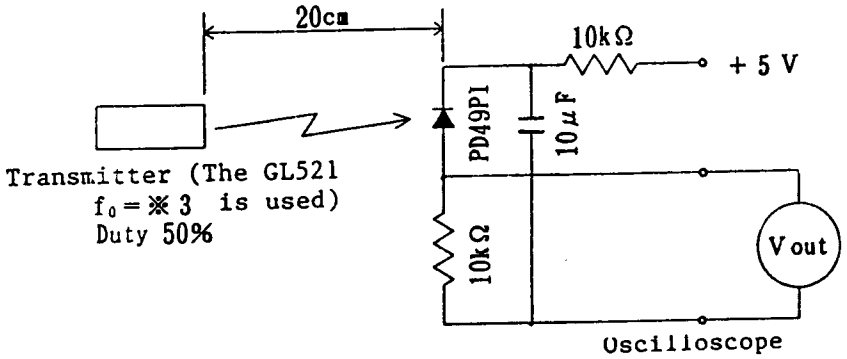

In the figure above, the transmitter shall be set as the output Vout will be 40mVpp. Note that the PD49PI in this application is the one with short-circuit current Isc=2.6μA measured at Ev=100ℓx. (Ev is the illuminance by CIE standard light source A (tungsten lamp)).

fig. 1 Transmitter

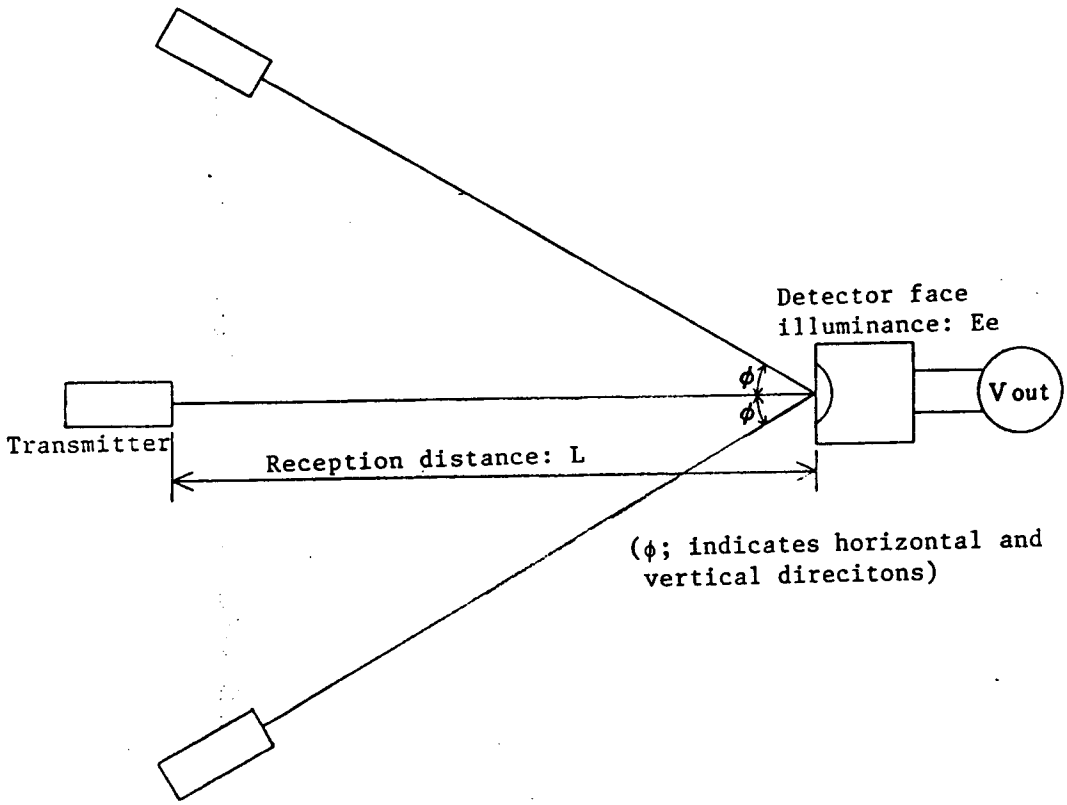

Fig. 2 Standard optical system

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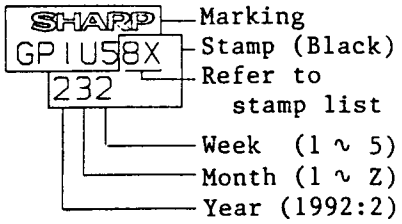
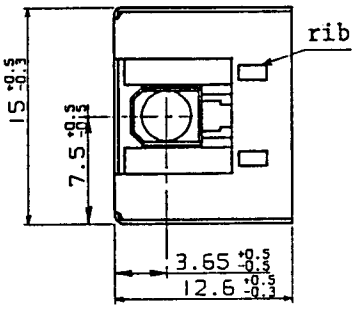
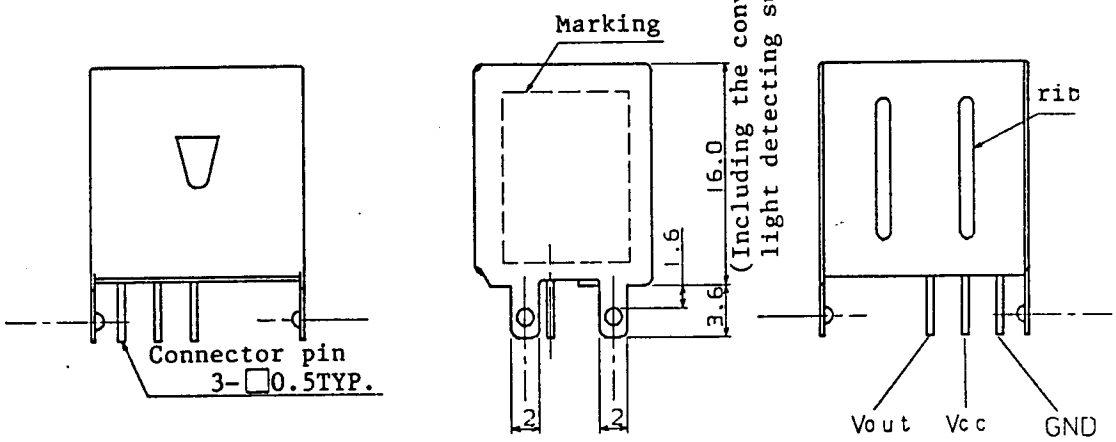
* Marking : The side is marked as follows

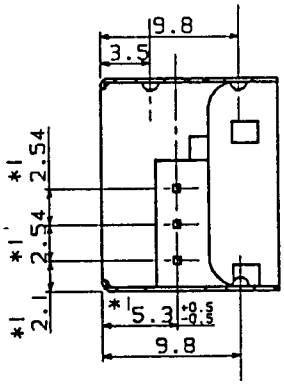


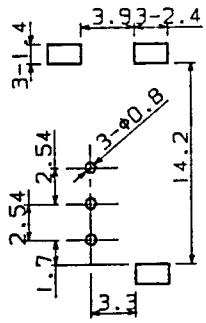
Stamp list

Model No.	Stamp
GP1U58X	8X
GP1U580X	80X
GP1U581X	81X
GP1U582X	82X
GP1U583X	83X
GP1U587X	87X









Recommended mounting drawing from soldering side

1. *1 indicates root dimensions of connector.
2. Unspecified tolerance : ±0.3
3. Weight : Approx. 3.3g
4. Case material : Fe
5. Case finish : Sn plating or solder plating

名称 NAME	GP1U58X series Outline Dimensions	
尺度 SCALE		単位 UNIT
2/1		1=1/1mm
図番 DRAWING No.	SOD98131	

IR Detector Remote Control inexpensive immunity receiver silicon