

2/11

PREPARED BY: <i>R. Masaki</i> DATE: <i>Apr. 26, 1995</i>	<h1>SHARP</h1> <p>ELECTRONIC COMPONENTS GROUP SHARP CORPORATION</p> <h2>SPECIFICATION</h2>	SPEC. No. ED-94087A
APPROVED BY: <i>K. Gawa</i> DATE: <i>Apr. 27, 1995</i>		ISSUE <i>REV. 1</i> DATE <i>APR 24, 1995</i>
		PAGE 9 PAGES 9 REPRESENTATIVE DIVISION OPTO-ELECTRONIC DEVICES DIV.

DEVICE SPECIFICATION FOR

**Infrared Detecting unit
for Remote Control**

MODEL No,
GP1 U26X series

1. This **specification** sheets **include** the **contents** under the copyright of Sharp Corporation ("Sharp"). Please keep them **with** reasonable care se **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.
SHARP **takes** no **responsibility** for **damage** caused by **improper** use of the devices,
 - (1) **This** device is designed for **general** electronic equipment,
Main uses of **this** device are **as follows**:
 - .OA equipment .AV equipment
 - [• Home appliance, • **Telecommunication** equipment (**Terminal**), 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 do not use for the uses mentioned below which **require** extremely high **reliability**.
 - .Space **equipment** • Telecommunication equipment (Trunk)
 - [• Nuclear control equipment • Medical equipment etc.]
- Contact** a SHARP **representative** of **sales office** **in** advance when **you** intend to use SHARP devices for any applications other **than** those applications for general electronic equipment recommend **by** SHARP at (1).

CUSTOMER'S APPROVAL

DATE PRESENTED BY

K. E

DATE

BY

K. Ebina,
Chief Manager of
Opto-System Project Team
Opto-Electronic Devices Div.
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SHARP CORPORATION

3 3
11 11**SHARP CORPORATION**MODEL No. GP1U26X series
PAGE 1/9**REFERENCE****1. Application**

This specifications **applies** to the model marked "0" in the following models of **infrared** detecting unit for remote control.

The model **list** of GP1U26X series

Application	Model No.	B. P. F. center frequency (TYP) .
	GP1U26X	40 kHz
	GP1U260X	36 kHz
	GP1U261X	38 kHz
	GP1U262X	36.7 kHz
	GP1U263X	32.75 kHz
	GP1U267X	56.8 kHz

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

2. Outline

Refer to the attached sheet, Page 7.

3. Ratings and characteristics

Refer to the attached sheet, Page 3 to 6.

4. Reliability

Refer to the attached sheet, Page 8.

5. Incoming inspection

Refer to the attached sheet, Page 9.

SHARP CORPORATION

MODEL NO,
GP1U26X series

PAGE

4/11
REFERENCE

6. Supplement

- 1) This infrared detecting unit for remote control satisfies each performance requirements in parameter 3,5, in the standard optical system in Fig.2.
- 2) This product is built-in photodiode.

7. Notes

- 1) If GP 1 U26X 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 malfunction may be caused under so-me 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 malfunction. Marking on this device is defaced by washing.
- 4) The shield case shall be grounded on the PWB pattern.
(There are two cases that shield case and GND pin are connected in the shield case, or are not connected in it.)
- 5) It shall not be applied the terminal and case with unnecessary stress.
- 6) Please don't push the detecting side (photodiode) from external.
- 7) In order to prevent electrostatic discharge of Integrated circuit, human body and soldering iron, etc. shall be grounded.
- 8) The holes and the slits on the infrared detecting unit shall not be used as the other purpose to maintain its performance.

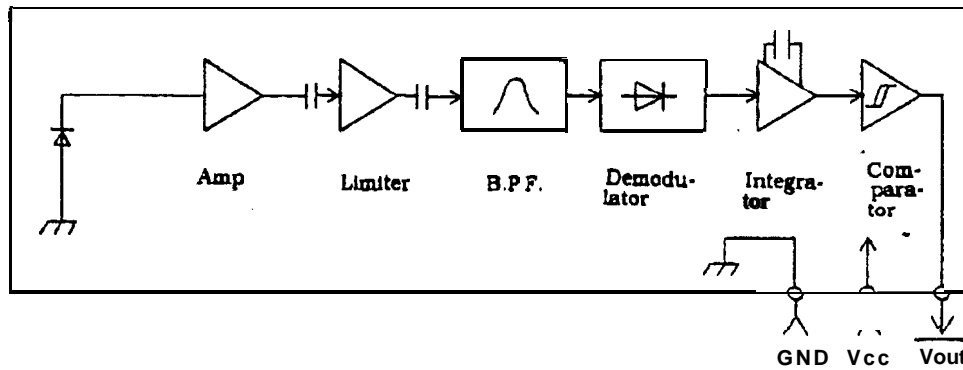
SHARP CORPORATION

MODEL No.
GPIU5K seriesPAGE
3/9

REFERENCE

3. Ratings and characteristics

3.1 Schematic



3.2 Absolute maximum ratings

Parameter	Symbol	Ratings	Unit
Supply voltage	Vcc	0 to 6.3	V
Operating temperature	Topr	-10 to +70 *1	°C
Storage temperature	Tstg	-20 to +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 to 5.3	V

SHARP CORPORATION

MODEL No. GP1U26 series

PAGE 4/9

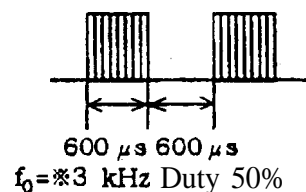
6/11
REFERENCE

3.4 Electrical characteristics

(Unspecified Ta=25°C, Vcc=+5V)

Parameter	Symbol	MIN.	TYP.	MAX.	unit	Remark
Current dissipation	ICC	.		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	f_0	-	*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 frequency of transmitter is same as *3. Measuring shall be 100 pulse or later after starting the transmission,



- *3) B.P.F. center frequency: f_0 of each model is shown in the list below.

Model No.	B.P.F. center frequency [kHz]
GP1U26X	40
GP1U260X	36
GP1U261X	38
GP1U262X	36.7
GP1U263X	32,75
GP1U267X	56.8

7/11

SHARP CORPORATION

MODEL No.

GPIU26X series

PAGE

5/9

REFERENCE

3.5 Performance

The output signal of this Infrared 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 $L=0.2$ to 8m, $(X4) E_e < 104x$, $\phi = 0^\circ$ 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 $L=0.2$ to 6m, $(X4) E_e < 104x$, $\phi \leq 30^\circ$ 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 $L=0.2$ to 4m, $(X5) E_e \leq 300x$, $\phi = 0^\circ$ in Fig.2.

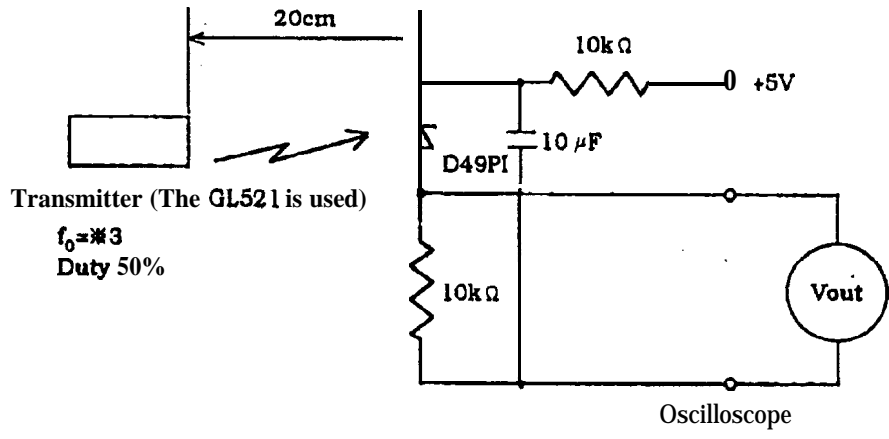
※ 4) It refers to detector face illuminance.

※ 6) 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,

8/11

SHARP CORPORATION

MODEL No. GP1U26X series PAGE 6/9
REFERENCE



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 $I_{sc} = 2.6 \mu A$ measured at $E_v = 1004x$. (E_v is the illuminance by CIE standard light source A (tungsten lamp)).

Fig. 1 Transmitter

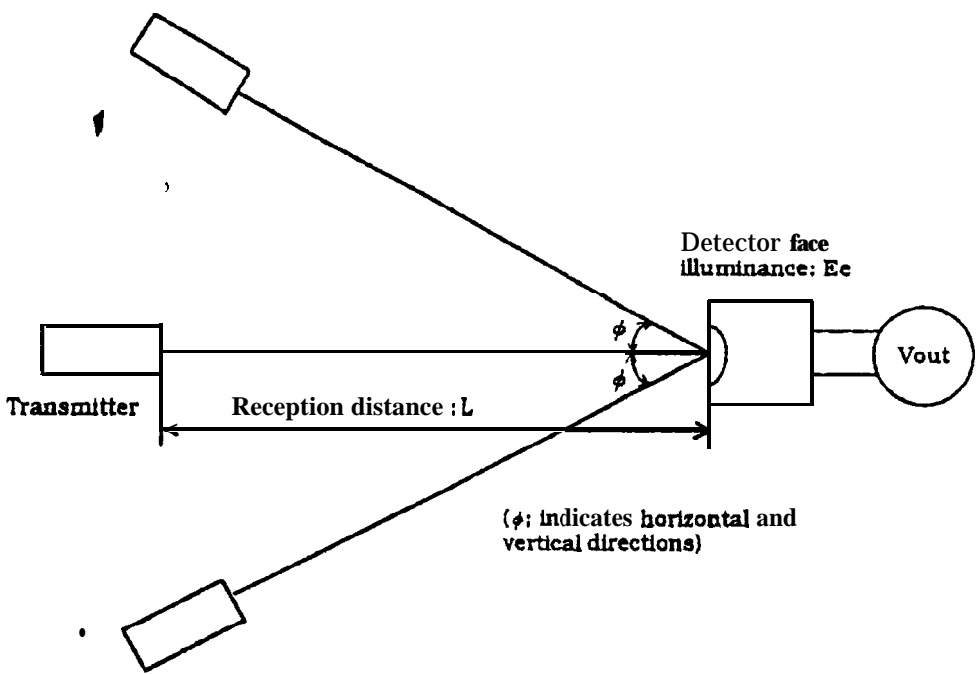


Fig.2 Standard optical system

9/11

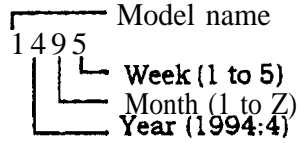
SHARP CORPORATION

MODEL: GP1U26X series PAGE: PAGE 1
REFERENCE

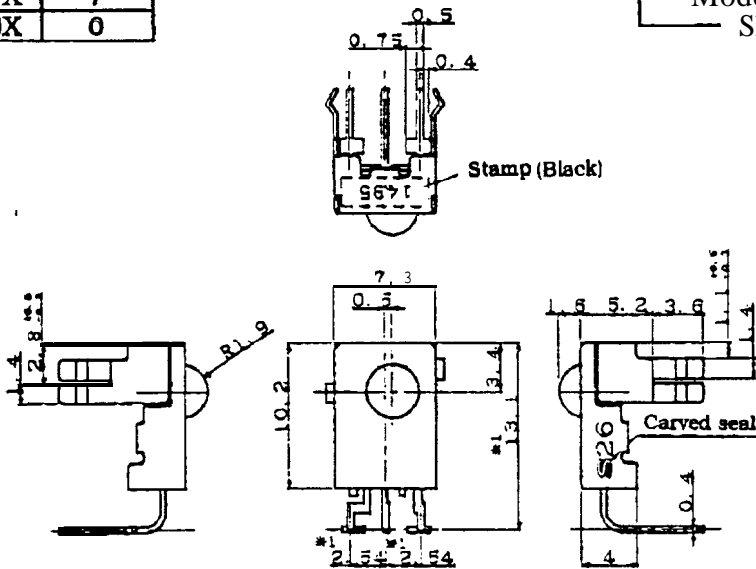
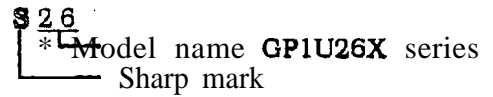
Stamp list

Model No.	Stamp
GP1U26X	Without
GP1U261X	1
GP1U262X	2
GP1U263X	3
GP1U267X	7
GP1U260X	0

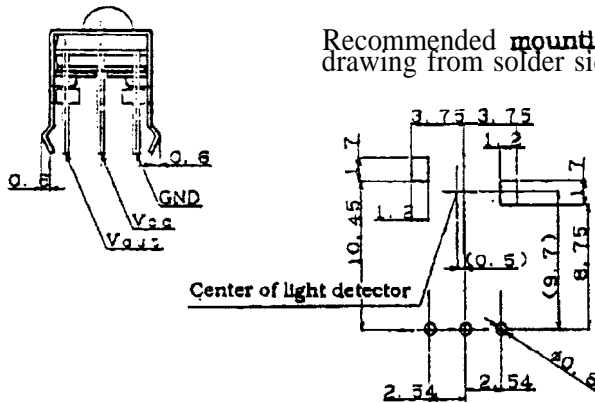
*** Stamp**



• Carved seal



Recommended mounting drawing from solder side



1. •1 indicates root dimensions of connector,
2. Unspecified tolerance : ± 0.3
3. Case thickness : 0.3TYP.
4. Case material : Fe
5. Case finish : Solder plating (Pb10%)
6. Lead material: Fe
7. Lead finish : Solder plating or solder dip
8. Mold resin : Epoxy resin
9. Weight: Approx. 1.0g
10. Dimensions in parenthesis are shown for reference.

Scale	Name	GP1U26X series
2/1		Outline Dimensions
Unit	Drawing No.	SOD02 107
1=1/1mm		

SHARP CORPORATION

MODEL No.

GPIU26X series

PAGE

8/9

10/11
REFERENCE

4. Reliability

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%
LTPD : 10%/20%

Test Items	Test Conditions	Failure Judgement criteria	Samples (n)
			Defective(C)
Terminal strength (Tension)	Weight : 5N 30s/each terminal	Performance test requirements and criteria given in parameter 3.5 should be satisfied.	n=11, C=0
Terminal strength (Bending)	Weight: 2.5N 0" .90" -0" 2 times/each terminal		n=11, C=0
Shock	Acceleration: 1000m/s ² , 6ms 3 directions/3 times		n=11, C=0
Variable frequency vibration	Frequency range: 10 to 55Hz/sweep 1min Overall amplitude: 1.5mm X, Y, Z/2h each		n=11, C=0
• High temp. and high humidity storage	Ta=40°C, 90%RH, t=240h		n=22, C=0
* High temp. storage	Ta=70°C, t=240h		n=22, C=0
* Low temp. storage	Ta=-20°C, t=240h		n=22, C=0
• Temperature cycling	1cycle -20°C to +70°C (30min) (30min) 20 cycles test		n=22, C=0
• Operation life (High temperature)	Ta=70°C, Vcc=5V, t=240h		n=22, C=0
Solder heat	260 ±5°C , 5s		n=11, C=0

In the test *mark above, the sample to be tested shall be left at normal temperature and humidity for 2h after it is taken out of the chamber. (No dew point)

SHARP CORPORATION

MODEL No.

GP 1U26 series

PAGE

9/9

11/11
REFERENCE

5. Incoming inspection

(1) Inspection lot

Inspection shall be carried out per each delivery lot.

(2) Inspection method

A single **sampling plan, normal inspection level II** based on **MIL-STD- 105D** shall be applied,

Classification of Defects		Inspection Items	AQL (%)
Major defect	1	Electrical characteristic defect of V_{OH} , V_{OL} , T_1 and T_2 in para. 3.4.	0.4
	2	Distance between signal terminal and shield case (0.2mm or more) (Except for GND terminal)	
	3	It should have no remarkable stains and cracks that give any influence of electrical characteristic on Ught detecting face.	
Minor defect	1	Transformation of shield case (Satisfying outline dimensions of item 2)	1.6
	2	Stamp, Carved seal (It should be possible to read stamp and carved seal of item 2. Stamp and carved seal should be indicated at fixed position.)	