GP1S73P/GP1S74P

Compact Photointerrupter with Connector

■ Features

1. Compact type
2. Snap-in mounting type
3. 3 kinds of mounting plate thickness
   (Applicable plate thickness : 1.0, 1.2 and 1.6 mm)

■ Applications

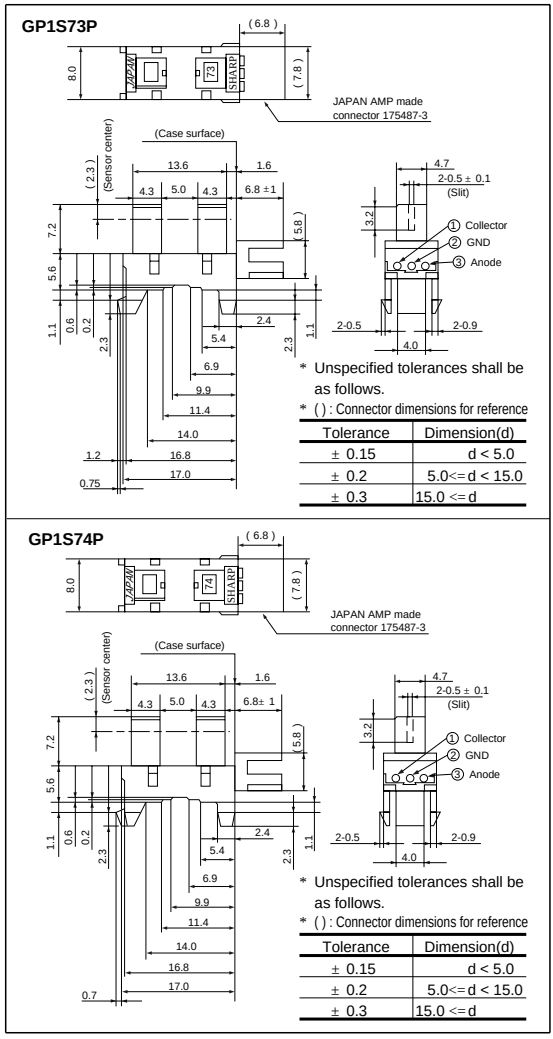
1. Copiers
2. Laser beam printers
3. Facsimiles

■ Absolute Maximum Ratings (Ta=25˚C)

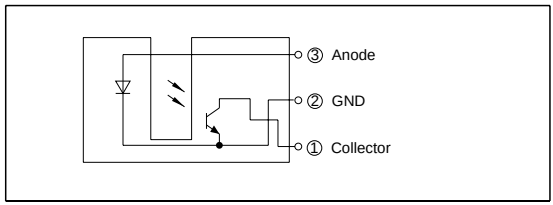
	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	35	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	20	mA
	Collector power dissipation	P_C	75	mW
	Operating temperature	T_{opr}	- 25 to + 85	˚C
	Storage temperature	T_{stg}	- 40 to + 85	˚C

*1 Pulse width 100μ s, Duty ratio=0.01
*2 The connector should be plugged in/out at normal temperature.

■ Outline Dimensions (Unit : mm)



■ Internal Connection Diagram (Both GP1S73P/GP1S74P)



■ Electro-optical Characteristics

(Ta=25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F = 20mA	-	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM} =0.5A	-	3.0	4.0	V
	Reverse current		I_R	V_R = 3V	-	-	10	μA
Output	Dark current		I_{CEO}	V_{CE} = 20V	-	1	100	nA
Transfer characteristics	Collector current		I_C	V_{CE} = 5V, I_F = 20mA	0.5	-	15	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F = 40mA, I_C = 0.5mA	-	-	0.4	V
	Response time	Rise time	t_r	V_{CE} = 2V, I_C = 2mA	-	3	15	μs
		Fall time	t_f	R_L = 100Ω	-	4	20	μs

Fig. 1 Forward Current vs. Ambient Temperature

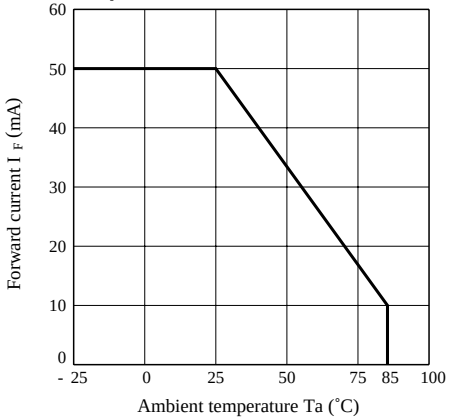


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

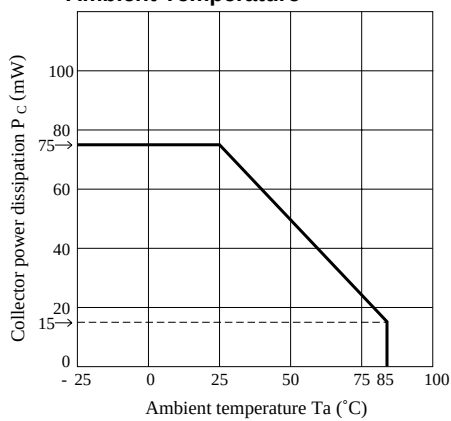


Fig. 3 Peak Forward Current vs. Duty Ratio

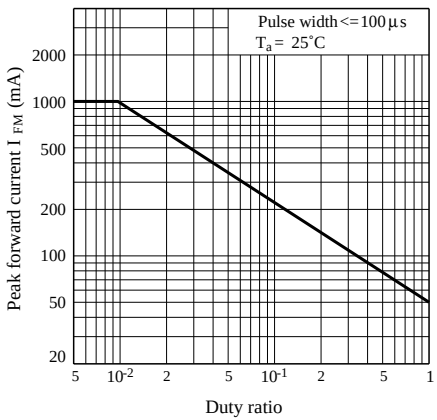


Fig. 4 Forward Current vs. Forward Voltage

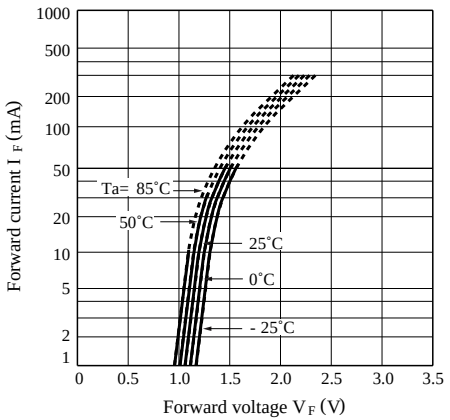


Fig. 5 Collector Current vs. Forward Current

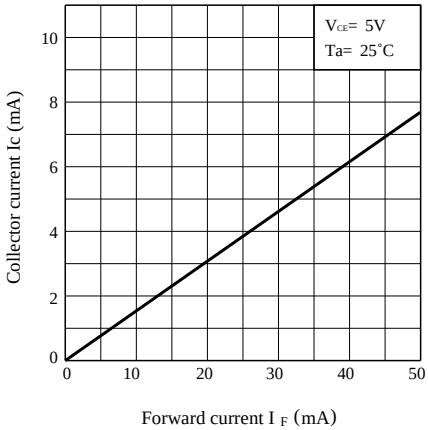


Fig. 6 Collector Current vs. Collector-emitter Voltage

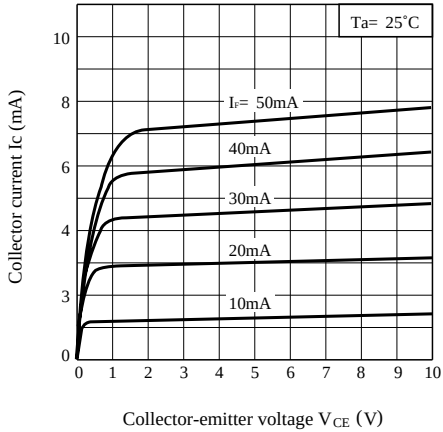


Fig. 7 Collector Current vs. Ambient temperature

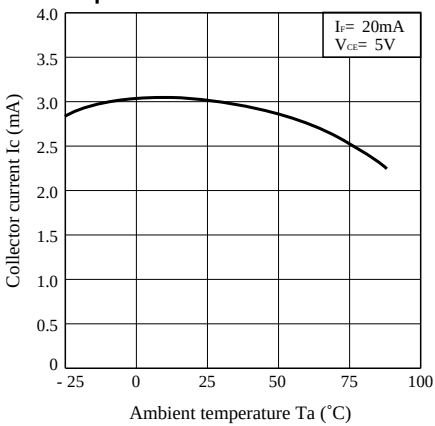


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature

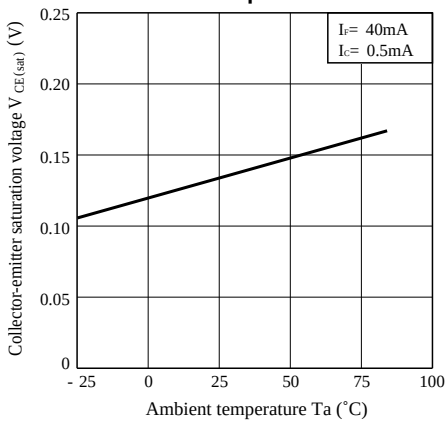
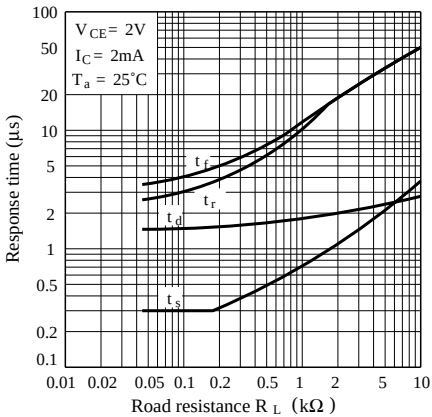


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

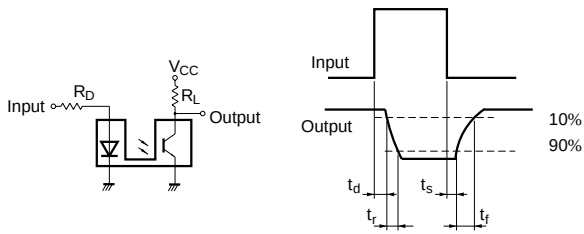


Fig. 10 Frequency Characteristics

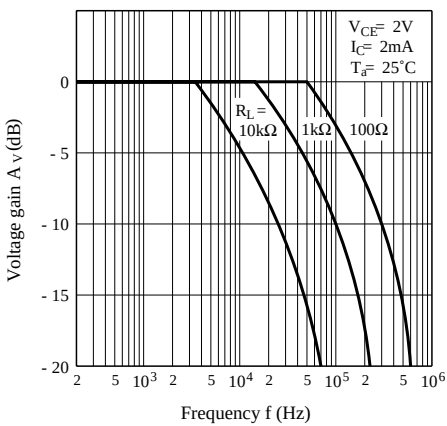


Fig. 11 Dark Current vs. Ambient Temperature

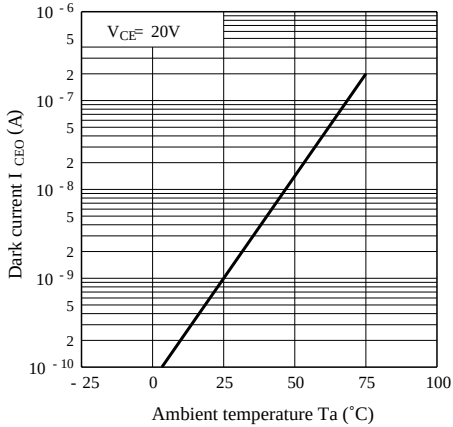


Fig. 12 Detecting Position Characteristics (1)

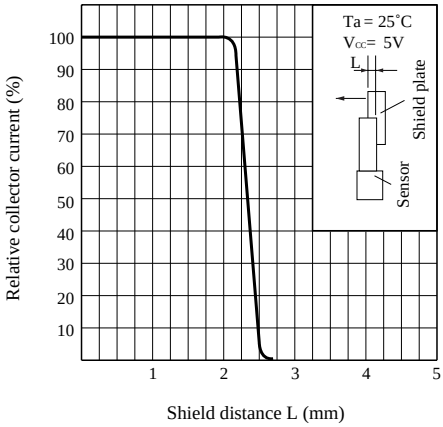
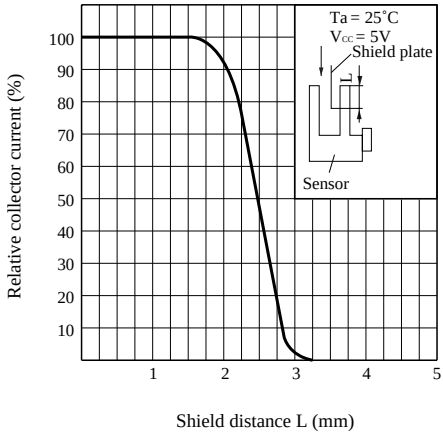


Fig. 13 Detecting Position Characteristics (2)



■ **Recommended Mounting Hole Drawing**(Dimensions shown are recommended values.
Use the photointerrupters after checking the mounting strength and others on an actual machine.)

1. It is recommended to mount the photointerrupters on the shear droop surface (punch side) of the mounting plate (metal plate).
2. Mounting workability, shaking after mounting and mounting strength depend on the corner radius of the mounting plate and state of punching. Determine the mounting hole dimensions after check on an actual machine.
3. General dimensional tolerances shall be ± 0.1 mm.

(Unit : mm)

General mounting type

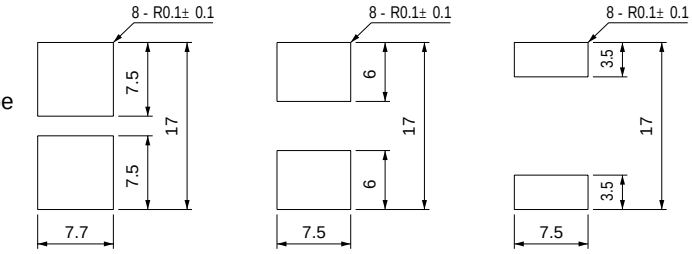


Plate thickness : 1.6 mm　Plate thickness : 1.2 mm　Plate thickness : 1.0 mm

Reverse insertion preventive type

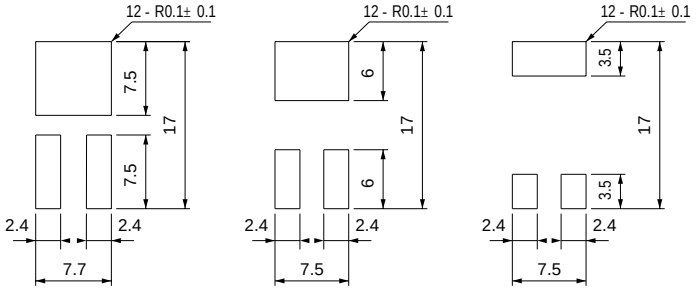


Plate thickness : 1.6 mm　Plate thickness : 1.2 mm　Plate thickness : 1.0 mm

(Precautions for Operation)

1) In this product, the PWB is fixed with a hook, and cleaning solvent may remain inside the case; therefore, dip cleaning or ultrasonic cleaning are prohibited.
2) Remove dust or stains, using an air blower or a soft cloth moistened in cleaning solvent.
However, do not perform the above cleaning using a soft cloth with solvent in the marking portion.
In this case, use only the following type of cleaning solvent for wiping off;
Ethyl alcohol, Methyl alcohol, Isopropyl alcohol
When the cleaning solvents except for specified materials are used, please contact us.

● As for other general precautions, please refer to the chapter "Precautions for Use".

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

(i) The devices in this publication are designed for use in general electronic equipment designs such as:
— Personal computers
— Office automation equipment
— Telecommunication equipment [terminal]
— Test and measurement equipment
— Industrial control
— Audio visual equipment
— Consumer electronics

(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
— Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
— Traffic signals
— Gas leakage sensor breakers
— Alarm equipment
— Various safety devices, etc.

(iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
— Space applications
— Telecommunication equipment [trunk lines]
— Nuclear power control equipment
— Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.