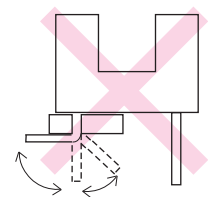
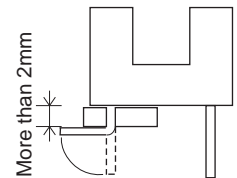


Notes on mounting

■ Regarding lead forming

- ① When lead pins are shaped, avoid shaping methods that use the root of the lead as a point of support.
- ② The lead pins should be bent 2mm away from the root of a lead pin.
- ③ The shaping of lead pins should be performed before soldering.
- ④ When shaping, do not bend the same location of a lead pin many times.

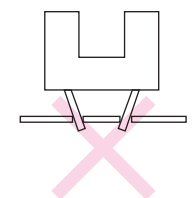
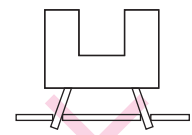


■ Cutting lead pins

Lead pins should be cut at a normal temperature. Cutting lead pins at a higher temperature may result in the breaking of internal wires.

■ Mounting method

- ① When mounting on a substrate, the distance of the mounting holes on the substrate and the pitches of lead pins should be identical. The lead pin pitch should not be shortened or widened.
- ② When a holder is used in determining position, avoid putting stress to the lead pins and take into consideration how much the holder, substrate and product can tolerate.



Caution

Be careful with thermal expansion and contraction of the material used. Expansion and contraction of the holder due to the heat from the pre-heating and soldering processes could put stress on the lead pins, resulting in broken wires.

- The recommended soldering condition is tabulated below.

Item	Conditions	Soldering temperature	Operation time
Solder dipping	Conducted at a distance of 1.0 mm from the resin	Preheating below 100°C (Max 30 SEC) 260°C or lower	5 seconds or shorter
Soldering iron	Conducted at a distance of 1.0 mm from the resin Wattage : 30W or lower Tip diameter : 3mm or shorter	380°C or lower	3 seconds or shorter (2times)
Reflow soldering	Reflow soldering is not permitted.		

* Use rosin-based flux only. Note that strongly acid or alkaline flux may cause corrosion.

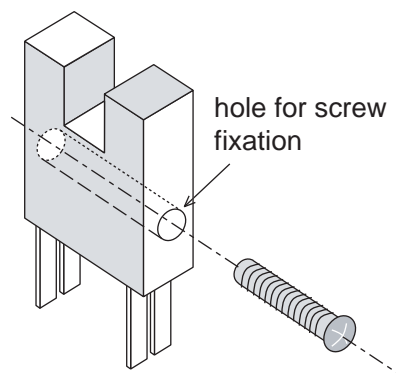
* The surface mount devices require special attention. Please check requested time control after opening sealed bag, land pattern, the thickness of solder paste screen etc.

■Screw fixation

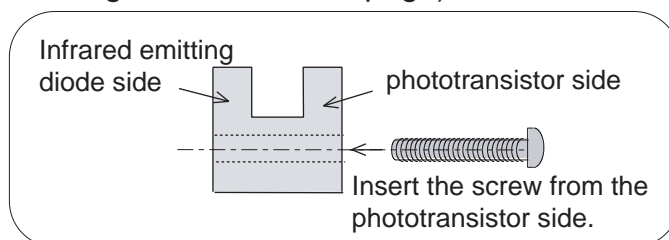
Double-layer mold type photointerrupter (with screw holes)

- R P I-1 3 1
- R P I-2 4 3
- R P I-2 4 6

This type of photointerrupter with screw holes may form a short circuit to a chassis when the tightening torque is too strong. Please observe the following guide lines.



- ① Screws.....M1.4, the size of screw head, 2.5 mm
(plastic screws are recommended)
- ② Tightening torque-- 0.049Nm~ 0.078Nm (Do not over tighten the screws).
- ③ Direction.....Insert the screw from the phototransistor side.
(Please refer to the figures below)
- ④ Chassis..... Insert the screw from the phototransistor side.
(Please refer to the figures on the next page)

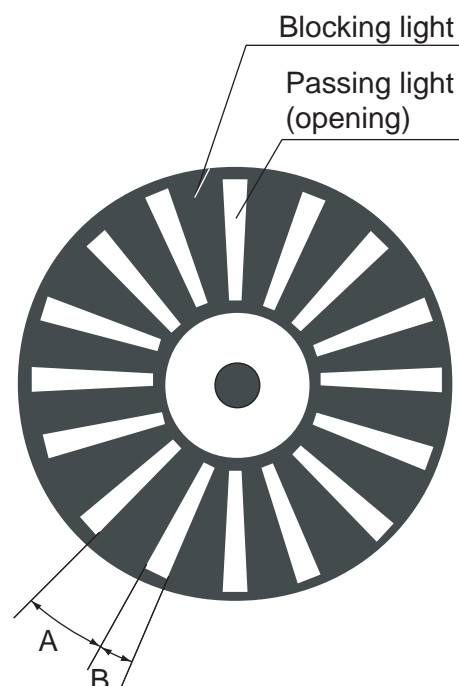


■About high speed operation and response speed

Care must be taken in choosing the response speed of photointerrupters when high speed switching operation is needed.

When a photointerrupter is used in fast switching applications, please observe the actual interrupter's maximum response time vs controlled switching device. The value of the resistor at the phototransistor side must be low when high speed operation is desired. At the same time, there should be enough forward current flow. This can be realized by setting the value of the resistor at the infrared side low.

When slits are used to block and pass the light, the slit width of the blocking parts should be 3% to 10% wider than the slit width of photointerrupter.



- ※ A : B = 103 to 110:100
- ※ A > photointerrupter slit width

Notes for using surface mounting products

RPI-0125 has been developed as a surface mounting photointerrupter with reflow soldering. Please observe the following guidelines for surface mounting. products.

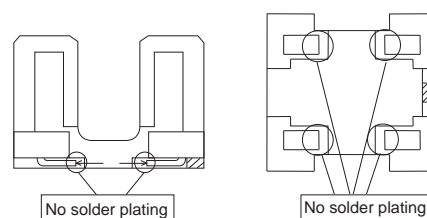
■ Storage

The reliability of reflow soldering can be affected by the moisture absorption of surface mounting products. To prevent moisture absorption, Rohm employs moisture-proof packaging. Please follow the guidelines below.

- ① Storage condition Storage temperature: 5 to 30°C
Storage humidity: Less than 70% RH
- ② After opening the package After opening the package, the product should be used within 48 hours under condition where temperature is between 5°C to 30°C and relative humidity is 70%.
- ③ Baking process (drying process) ... If the guideline specified in ② is failed to be observed, a baking process is required. Baking process should be carried out in a reel at the temperature of 60°C ± 5°C for 12 to 24 hours. Please remember that the reel and the emboss tape will become easy to deform while going through the baking process.

■ Reflow soldering

The reflow operations can be applied twice. To avoid the absorption of moisture, make the soldering operation interval short. The second soldering operation should be carried out after the products are cooled down to a normal temperature. The reflow conditions can be varied depending on the substrate shape and size, parts types and quantities, and mounting density. Due to the product structure, part of terminal may not be completely treated by the soldering process (terminal braking surface), exposing Fe and Ag plating layers. Please check this before the reflow operation.



■ Cleaning

- ① Cleaning Ethyl alcohol
Isopropyl alcohol
- ② Condition Temperature, less than 30°C with in 30 minutes
- ③ Ultrasonic cleaning The effect of ultrasonic cleaning to the products can be varied depending on the cleaning equipment's oscillation output power, capacity and substrate size. Make sure that the use of ultrasonic cleaning equipments causes no adverse effects.
- ④ Drying Temperature, less than 100°C within 3 minutes.

An overview of reflective type photointerrupters

■ The types of reflection

Reflective photointerrupter performance is greatly enhanced by the reflection target. The light reflected by the target is collected by the detector of the interrupter.

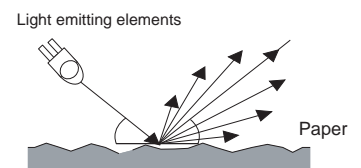
Diffused reflection (Fig.1) and specular reflection (mirror reflection, Fig.2) are the two most commonly used reflector types.

■ Diffused reflection

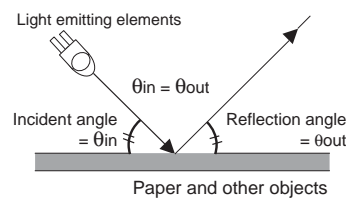
In diffused reflection, light is scattered due to the unevenness of the surface. The reflection from paper is considered to be diffused.

■ Specular reflection

Specular reflection (or mirror reflection) is reflection from mirrors and metal surfaces where the incident angle equals the reflection angle. Reflection-type photointerrupters are designed for diffused reflection applications. The test and measurement of Rohm's photointerrupters are performed under diffused reflection conditions. (The reflection target for test and measurement is the white surface of a gray card manufactured by "Eastman Kodak Company". The target is placed 6mm away from the the photointerrupter.)



■ Fig.1: Diffused reflection



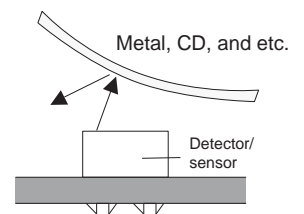
■ Fig.2: Specular reflection (Mirror reflection)

■ Applications with diffused reflection

The reflection of the target can vary greatly depending on the condition of the target surface. Thorough testing and evaluation is necessary because having the same surface condition with different colors will result in different reflectivity. Please use upper and lower limit samples in testing and evaluating your design. The samples can be obtained through our sales department.

■ Applications with specular reflection

Transfer characteristics are effected by the mounting angle and the directionality of the detectors/sensors. Please test and evaluate the devices for these applications before the implementation (Fig.3).



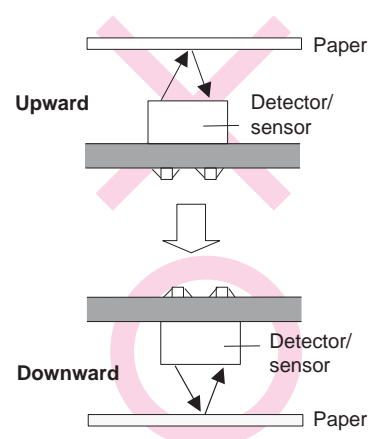
■ Fig.3: Specular reflection

■ Dust

When the device is used for detection of paper, attention has to be given to the dust from the paper (due to paper rub-off). If possible, the light detector/sensor should face downward to avoid the dust adhering to it (as shown in Fig.4).

Electro-static can be generated due to the rubbing of paper. It is important to take measures against electro-static to avoid dust adhering to the sensor. The use of a dust protection cover can modify the optical system. Caution must be taken.

Make sure that the cover will not introduce additional reflections and stray light.



■ Fig.4: The position of light emitting element

Other considerations

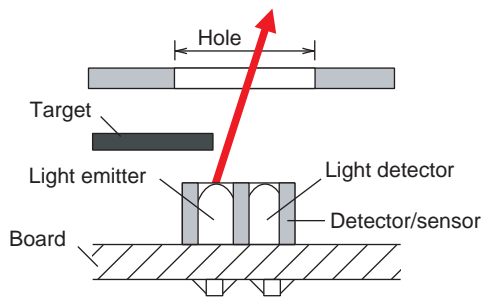
■ Notes for RPR-220

The RPR-220 series does not have the accuracy for detecting barcodes.

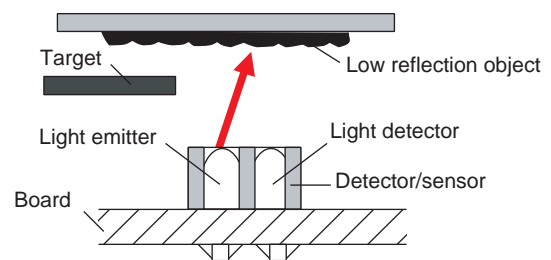
The designed focal length of RPR-220 is 6 mm. The effective focal length for practical use is 5 mm to 12 mm.

Due to the effective focal lengths, it can detect objects behind the target and could produce detection errors. If your design does not require enough space behind the target, please follow the design guideline below.

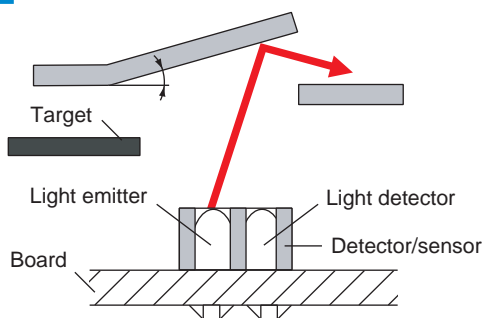
■ PATERN 1 Make holes to prevent reflection



■ PATERN 2 Affix low reflection object to reduce reflection



■ PATERN 3 Make angle to reflect it to other directions



■ Samples for your design

Please use upper and lower limit samples in testing and evaluating your design. The samples can be obtained through our sales department.