



# Sharp Optoelectronic Components Product Introduction



虹晶股份有限公司 Socle Technology Corp.

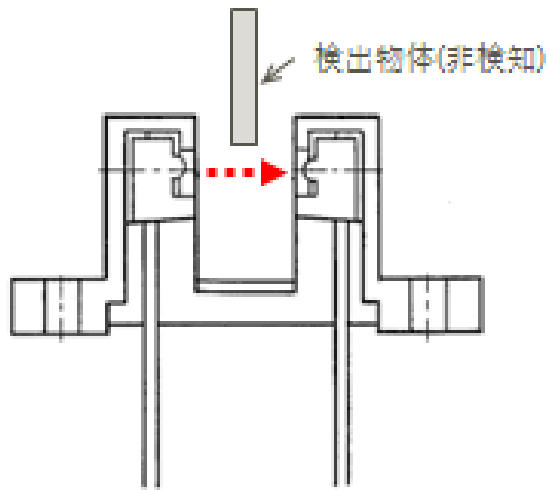
July 2018



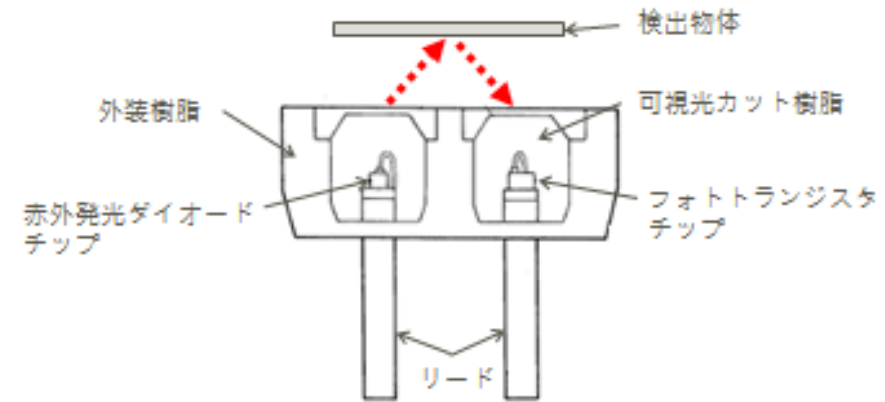
# Photointerrupters

# Photointerrupter Principles

- A **photointerrupter** is a non-contact optical switch which has many kinds of applications.
- There are two main types: Transmissive and Reflective



Transmissive photointerrupter



Reflective photointerrupter

# Photointerrupter Applications

- Printer operation:
  - Paper pass, paper presence, cover open, paper exit detection
- Motor control:
  - Operate a stepping motor for a sewing machine
- Lens control:
  - Detect position of zoom lens in a digital camera or projector
- Position sensing:
  - For optical pickup mechanism in blu-ray players
- Consumer/toy robotics
  - Origin detection for joint parts
- VR/gaming systems
  - Detect position of gear wheel for head mounted displays
- Available Models:

[http://www.socle-tech.com/SHARP\\_optoelectronicComponents\\_Photointerrupter.php](http://www.socle-tech.com/SHARP_optoelectronicComponents_Photointerrupter.php)



**GP1S092HCPIF**  
(transmissive)



**GP2S700HCP**  
(reflective)



**GP1S396HCPSF**  
(transmissive)



**GP2S60**  
(reflective)

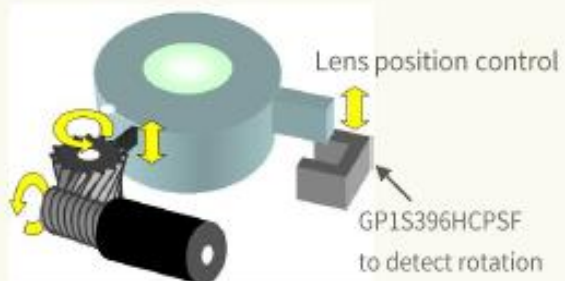
# Photointerrupter Applications

Photo interrupters are used for detecting the presence or the movement of various objects.

デジタルカメラ Digital still camera  
メカ位置検出 Mechanical position detection  
回転検出 Rotation detection



*Example: the lens unit for camera*



複合機 Digital multi-function printer  
用紙搬送検出 Paper transport detection  
用紙有無検出 Paper presence detection



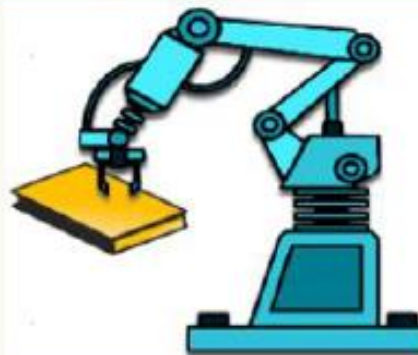
インクジェットプリンタ Ink-jet printer  
ヘッド位置検出 Head position detection  
紙送り検出 Paper feed detection



AV機器 AV equipment  
DLPプロジェクター DLP projector  
カラーホイール回転検出  
Color wheel rotation detection



産業用機器 Industrial equipment  
内部回転検出 rotation detection  
位置検出 position detection



家電製品 Home appliances

Air conditioner



Air cleaner



Full automatic washer / dryer





# Photointerrupter Applications by Type and Size

## 透過型 Transmissive Type

Sales volume: approximately 60 million pieces / year



## 超小型透過型 Subminiature Transmissive Type

Sales volume: approximately 140 million pieces / year



- Industry smallest (GP1S396 series)
- ⇒ Easy design for Lens position detection  
or origin detection for joint parts.



## 反射型 Reflective Type

Sales volume: approximately 20 million pieces / year

- Well-defined, narrow detection area characteristics  
⇒ flexible design for paper-to-paper gap
- Very high immunity for both ambient light and electrical noise, from DC to high frequency, and ESD spikes, by internal signal processing.  
⇒ Can be used at highly noisy environment



## 超小型反射型 Subminiature Reflective Type

Sales volume: approximately 28 million pieces / year



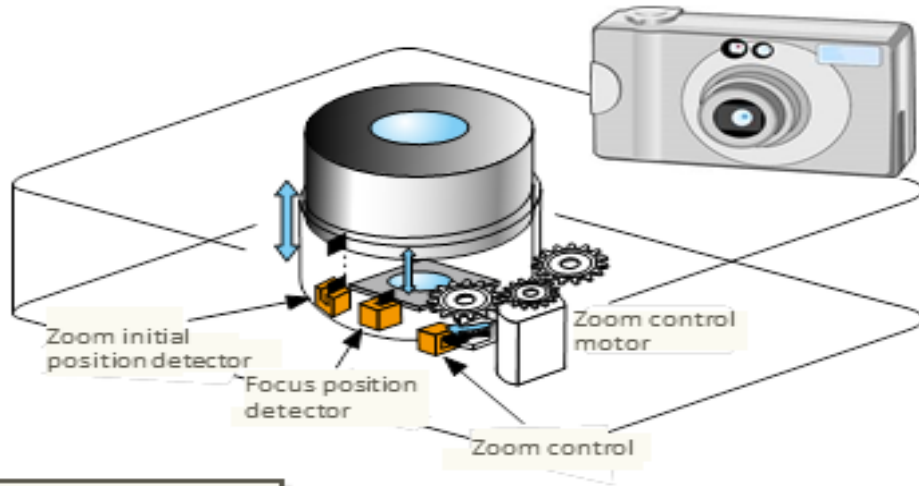
Head-mounted displays



# Examples of Subminiature Photointerrupter Applications

## DSC

### Digital camera Lens Unit



### Focus

1pc : Detection the origin point of focus lens

### Zoom

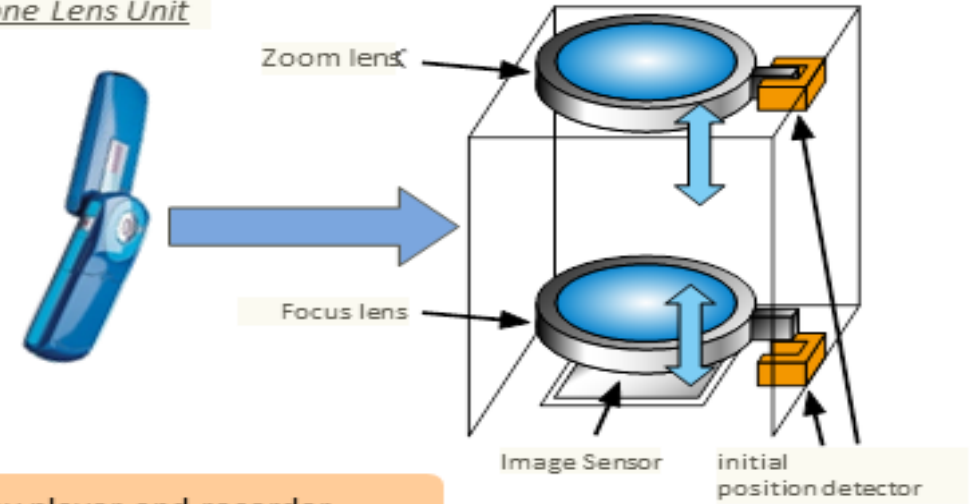
1 to 2pcs : Detection the position of zoom lens

### Lens cover, shutter etc

0 to 2pcs : Sensing lens cover, home-position, etc.

## Mobile phone

### Camera phone Lens Unit

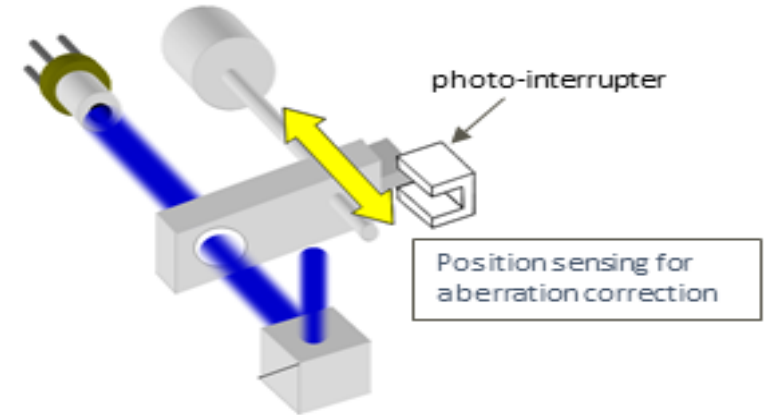


## Blu-ray player and recorder

### Blu-ray Pick-Up Unit

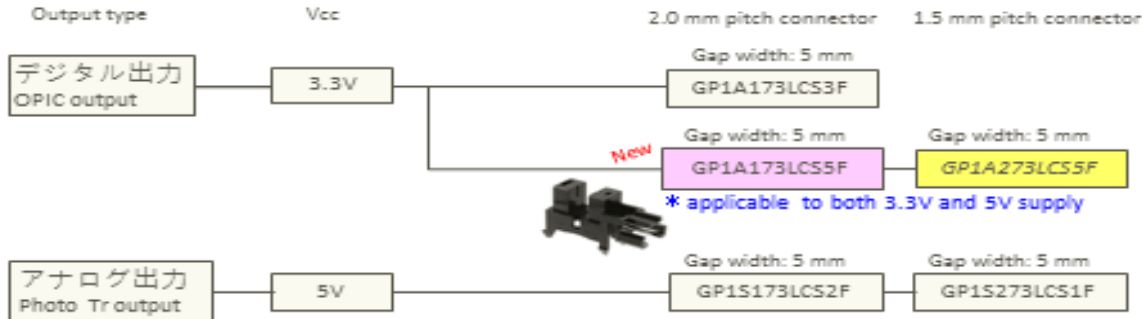


### Example optical pickup mechanism

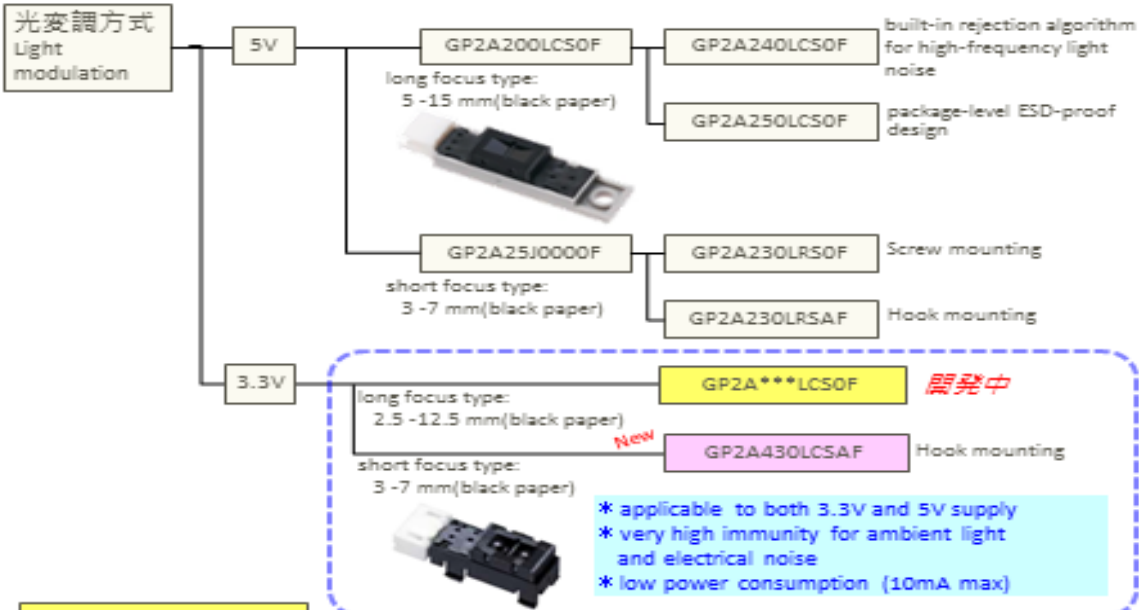


# Sharp Photointerrupter Lineup

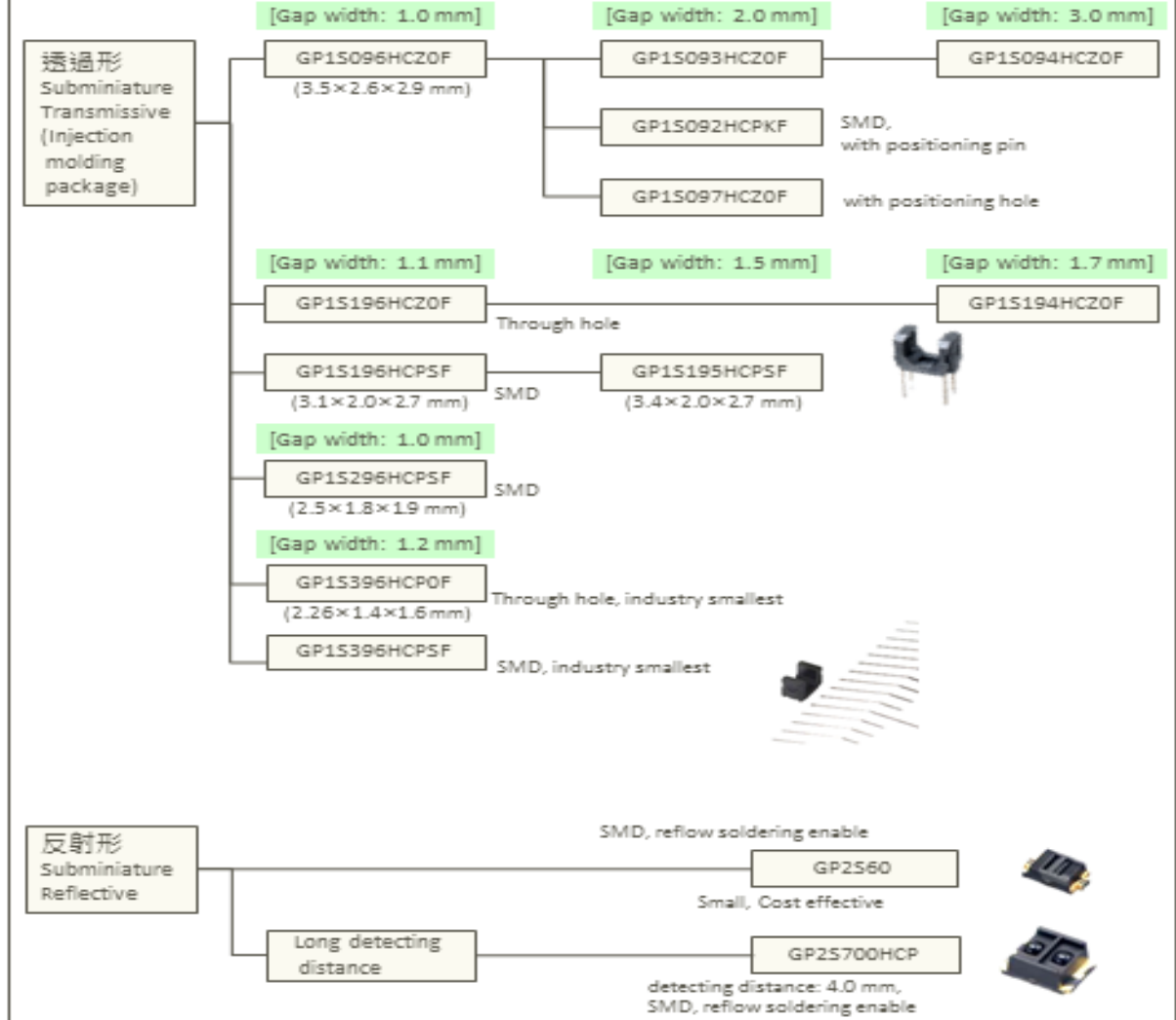
## ■透過形コネクタタイプ Transmissive type, connector-terminal



## ■反射形光変調方式 Reflective type, synchronized detection



## ■超小型 Subminiature package





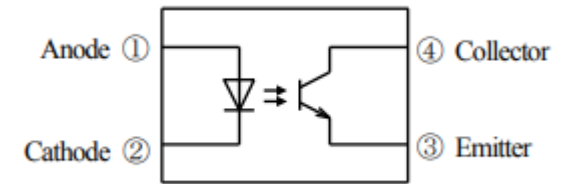
## Photointerrupter - Popular models

PART NUMBER	TYPE	NOTE
<a href="#">GP1A52HRJ00F</a>	Transmissive, Standard	OPIC output, through-hole design
<a href="#">GP1A57HRJ00F</a>	Transmissive, Standard	OPIC output, through-hole design, wide gap, positioning pin
<a href="#">GP1S092HCPIF</a>	Transmissive, Compact	Phototransistor output, tape and reel packaging, surface mount
<a href="#">GP1S094HCZ0F</a>	Transmissive, Compact	Phototransistor output, compact size, positioning pin
<a href="#">GP1S396HCPSF</a>	Transmissive, Compact	Phototransistor output, compact size, low profile, narrow gap
<a href="#">GP1S51VJ000F</a>	Transmissive, Standard	Compact, long distance type, no external control signal required
<a href="#">GP2A25J0000F</a>	Reflective, Standard	OPIC output, screw fixing holes, positioning pin, 3-pin connector
<a href="#">GP2S60</a>	Reflective, Compact	Phototransistor output, tape and reel packaging, surface mount
<a href="#">GP2S700HCP</a>	Reflective, Compact	Phototransistor output, tape and reel packaging, surface mount

Note: "OPIC" (Optical IC) is a trademark of SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

# Photocouplers

- A **photocoupler** is a component which transfers electrical signals between isolated circuits using an LED and a phototransistor. Also known as an optocoupler or optoisolator.
- To prevent high voltages from affecting the system receiving the signal.
- Applications:
  - Power switch for heaters, fans, motors
  - Temperature control
  - Power supplies
- Available models:
  - PC354 / PC355 / **PC357** series
  - PC364 / **PC365** / **PC367** series
  - PC3H / PC3L series
  - PC400 / PC451 / PC452 / PC457 series
  - PC817 / PC851 / PC852 series
  - Models in **RED** have 24 week lead-time due to factory over-capacity



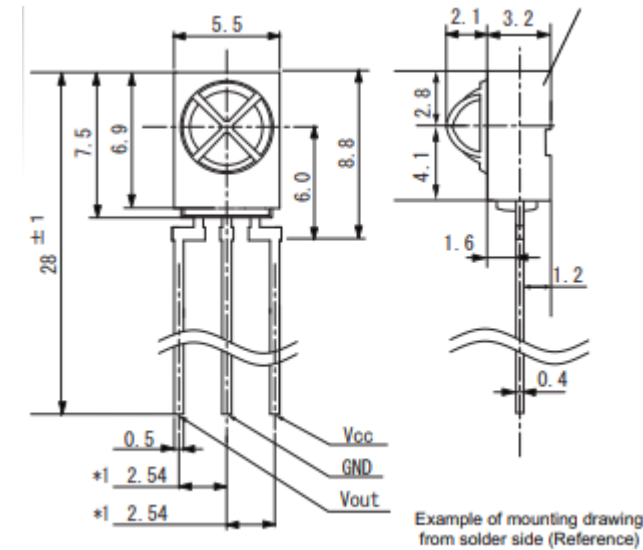
**PC817XNNIP1B**



**PC357NJ0000F**

# IR Detecting Unit

- IR Detecting Unit / Receiver for remote control applications.
- Applications:
  - Audio/visual equipment
  - Home appliances
  - Consumer robotics and toys using IR sensor
  - Remote control door/garage openers
- Available models:
  - [GP1UX511QS](#)
  - [GP1UX511RK](#)
  - [GP1UM272RKVF](#)



GP1UX511QS series

## Other Sharp Components

- [Infrared Emitting Diodes](#)

- [GL100MN1MP1](#)



GL100MN1MPx series

- [Phototransistors](#)

- [PT100MFOMP1](#)



PT100MFOMPx series

- [Phototriac Coupler](#)

- Provides triggering for triacs which are used to switch on and off devices which require AC loads (heaters, fans, motors, valves).
- [PC3SD21YXPDH](#)
- S2S3 / S2S4 / S2S5 series



PC3SD21NTZ series

- [Solid State Relays](#)

- Electronic switching device that switches on or off when a small external voltage is applied across its control terminals.
- PR39MF22NSZH
- [PR39MF51NSLH](#)

## About Socle Technology Corp.

- Founded in 2001, Socle Technology Corp is a leading semiconductor design firm headquartered in Taiwan
- Socle provides SoC (System-on-Chip) design services for IoT, server, automotive, multimedia, and peripheral market segments
- 100% owned by Foxconn Technology Group (Hon Hai Precision Industry Co., Ltd.)
- Sales and marketing for Sharp Optoelectronics components and sensors in North America and China since 2017
- Parts are still designed and manufactured by Sharp, no change in production or packaging or branding
- Authorized distributors: WPG Americas, Future Electronics, Mouser, Digi-Key, WPI Group

For more information, contact: [Socle\\_Sales\\_NA@socle-tech.com](mailto:Socle_Sales_NA@socle-tech.com)

<http://www.socle-tech.com/>