Proximity Sensor/Proximity Sensor with Integrated Ambient Light Sensor

<GP2AP002S00F/GP2AP002A00F>

The proximity sensor with integrated the ambient light sensor boosts user convenience thanks to the screen shut-off when human presence is detected (provided by the proximity sensor), and backlight brightness control (provided by the ambient sensor).

Outline

GP2AP002A00F is the industry's smallest proximity sensor.*1 *2
Through integration of the ambient light sensor (used for detecting ambient brightness) and the proximity sensor, the GP2AP002A00F takes up 8% less mounting area than the area required for separate mounting.

*1 As of November 25, 2008. Survey by SHARP.
*2 A sensor that can sense physical proximity without making physical contact with the detection target. SHARP's sensor uses reflected light (infrared light) for detection.

Appearance

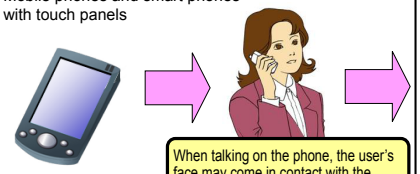
(Upper left) Proximity sensor <GP2AP002S00F> (4.0 × 2.0 × 1.2 mm)
(Down right) Proximity sensor with integrated ambient light sensor <GP2AP002A00F> (5.6 × 2.1 × 1.2 mm)

Application Examples

Proximity sensor

Proximity sensor contributes to touch panel false-operation countermeasures, touch panel energy-saving features, function automation features, etc.

Mobile phones and smart phones with touch panels



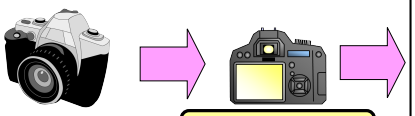
When talking on the phone, the user's face may come in contact with the touch panel and cause false operations (unintended operations) to be executed

Use of the proximity sensor to detect face proximity

- Stops touch panel operation
- Automatically turns off the LCD backlight
- Automatically switches to speakerphone

Convenient Simple Energy-saving

Digital single-lens reflex camera

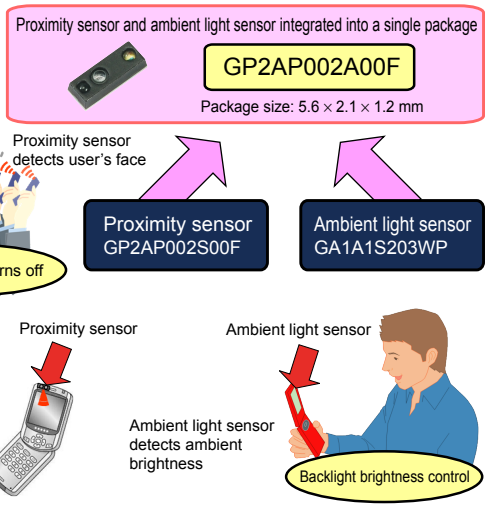


The LCD monitor is sometimes too bright, making it hard to use the camera's viewfinder

- Automatically turns off the LCD backlight
- Turns on auto focus

Proximity sensor with integrated ambient light sensor

The proximity sensor with microcomputer that can shut off the screen when human presence is detected, and the backlight brightness control function provided by the ambient light sensor, contribute to energy saving.



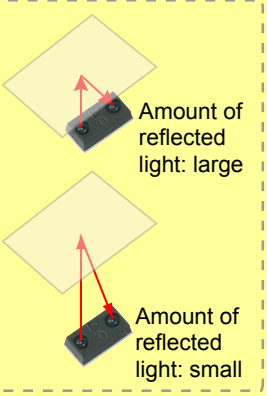
Fundamental Technology

■ What is an optical proximity sensor?

Proximity sensor:
A sensor that can sense physical proximity without making physical contact with the detection target.
This sensor uses reflected light (infrared light) for detection.

Optical sensors detect the amount of reflected (infrared) light

⇒The detected object's color (reflectivity) has some influence on detectability, but if the object's surface material is uniform (for example, human skin), the amount of reflected infrared light does not change much.

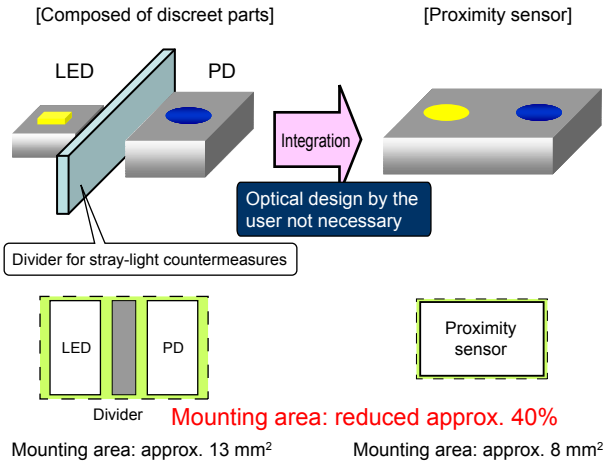


- Specialized detection of specific objects
- Compact and thin design
- Competitive price
- Simple structure

Features

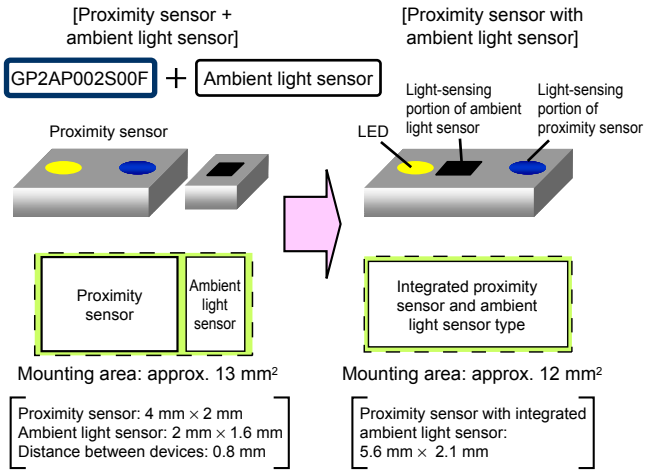
Proximity sensor

- Compact and thin package:
  4.0 × 2.0 × 1.2 mm (W × D × H)
- Can even detect objects under external disturbing light from inverter fluorescent lights or other sources
- I²C interface compatible



Proximity sensor with integrated ambient light sensor

- Compact and thin package:
  5.6 × 2.1 × 1.2 mm (W × D × H)
- Integrated ambient light sensor (peak sensitivity wavelength close to that of human visual sensitivity: 555 nm)
- Can even detect objects under external disturbing light from inverter fluorescent lights or other sources
- I²C interface compatible



Main Specifications

Item		Specifications	
		GP2AP002S00F (Proximity sensor)	GP2AP002A00F (Proximity sensor with integrated ambient light sensor)
Outline dimensions		4.0 × 2.0 × 1.2 [H] mm	5.6 × 2.1 × 1.2 [H] mm
Detecting area	Maximum detecting distance	MIN. 25 mm	MIN. 25 mm
	Minimum non-detecting distance	MIN. 150 mm	
Power supply voltage		2.4 V to 3.6 V	2.4 V to 3.2 V
Emission wavelength (infrared emitting diode)		TYP. 940 nm	
Peak sensitivity wavelength (ambient light sensor)		—	555 nm
Operating temperature		–25 to +85 °C	

In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc. The models listed on this page are lead-free solder compatible. For details, please inquire with SHARP.
Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

SHARP CORPORTION
System Device Division I, Electronic Components and Devices Group
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