# GP2A11 Light Modulation, Reflective Type OPIC Photointerrupter

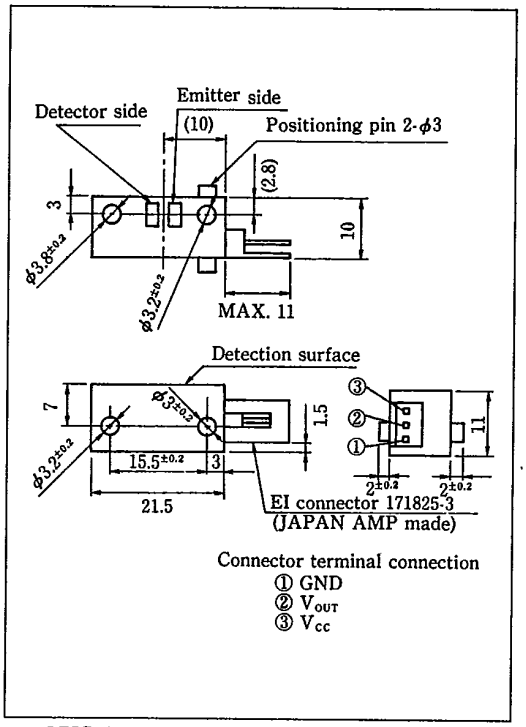
## ■ Features

1. Light modulation type free from external disturbing light
   (External disturbing light illuminance: 2,000 ℓx)
2. OPIC provides compactness and high performance.
3. With connector provided for easier interface with peripheral control circuit

## ■ Applications

1. Copiers
2. Printers
3. Automatic vending machines

## ■ Outline Dimensions (Unit : mm)




※ OPIC is a registered trademark of Sharp and stands for Optical IC. It has a light detecting element and signal processing circuitry integrated onto a single chip.

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## ■ Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Supply voltage | $V_{CC}$ | −0.5~+16 | V |
| Output voltage | $V_{OUT}$ | 16 | V |
| Output current | $I_{OL}$ | 50 | mA |
| Operating temperature | $T_{opr}$ | −10~+65 | °C |
| Storage temperature | $T_{stg}$ | −40~+80 | °C |

The connector should be plugged in / out at normal temperature.

## ■ Electro-optical Characteristics

(Ta=25°C)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|
| Supply voltage | $V_{CC}$ | | 4.5 | 5.0 | 5.5 | V |
| Current dissipation | $I_{CCP}$ | Peak pulse value, $R_L=\infty$ | — | — | 100 | mA |
| Current dissipation | $I_{CC}$ | Smoothing value, $R_L=\infty$ | — | — | 20 | mA |
| Low level output voltage | $V_{OL}$ | $I_{OL}$=16mA at detecting time (Note 1) | — | 0.2 | 0.4 | V |
| High level output voltage | $V_{OH}$ | $R_L=\infty$ at non-detecting time (Note 2) | 4.7 | — | — | V |
| Response time | $t_{PHL}$ | (Note 3) | — | — | 1 | msec. |
| | $t_{PLH}$ | | — | — | 1 | msec. |
| External disturbing light illuminance | $E_{V1}$ | (Note 4) | 2000 | — | — | ℓx |
| | $E_{V2}$ | (Note 5) | 2000 | — | — | ℓx |

(Note 1) Detecting condition
In Fig. (A) d=2~5mm with OMS test card (white) as the reflective object (Specified by Sharp)

(Note 2) Non-detecting condition
In Fig. (A) d=11mm or more with suade as the reflective object (Specified by Sharp)

(Note 3) Response time
Fig. (B) shows test circuit for response time.

(Note 4) $E_{V1}$: Reflective object surface illuminance
Illuminance that enables the OMS test card (white) to be detected with d=2~5mm when the external disturbing light from direction as indicated by the arrow, ➡ irradiates light source A in Fig. (A)

(Note 5) $E_{V2}$: Detection surface illuminance
Illuminance that does not allow for detection when the external disturbing light from the direction as indicated by the arrow, ⇦ irradiates light source A in Fig. (A)

Fig. (A) Test Condition and Arrangemet

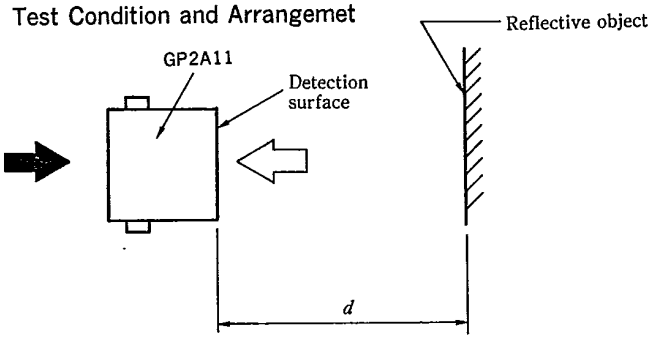
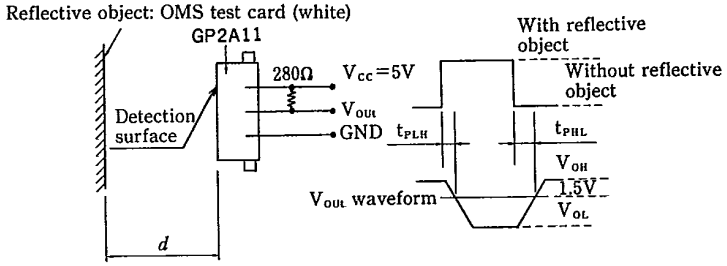



Fig. (B) Test Circuit for Response Time



## ■ Circuit Block Diagram

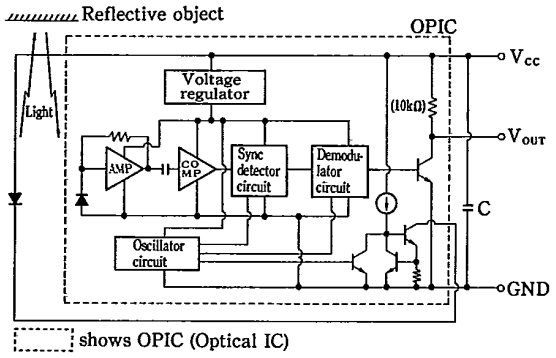



**Fig. 1 Dissipation Current (Peak Pulse Value) vs. Ambient Temperature**

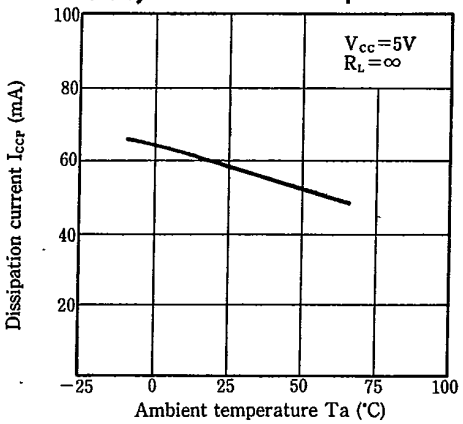



**Fig. 2 Dissipation Current (Smoothing Value) vs. Ambient Temperature**

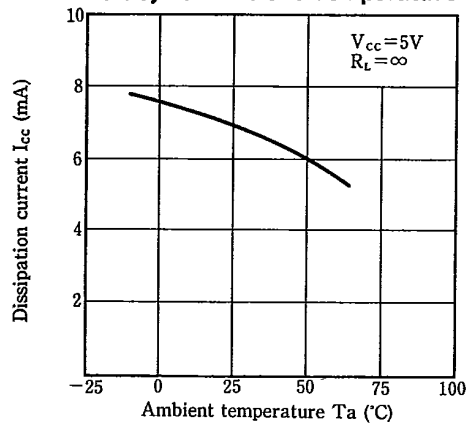



**Fig. 3 Low Level Output Current vs. Ambient Temperature**

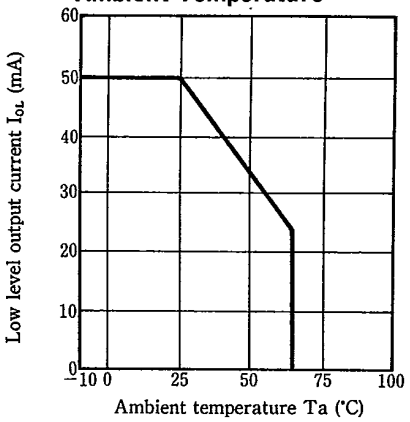



**Fig. 4 Low Level Output Voltage vs. Ambient Temperature**

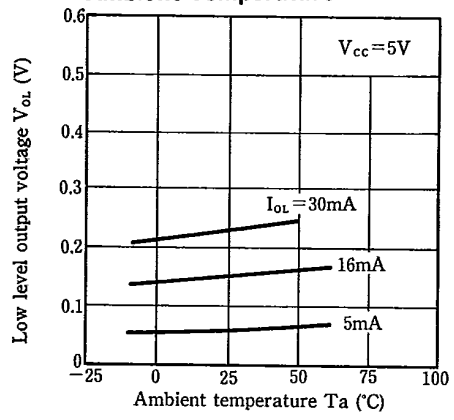
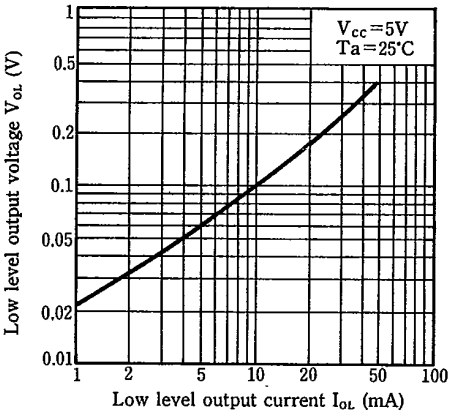



**Fig. 5 Low Level Output Voltage vs. Low Level Output Current**




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## ■ Precautions for Use

This reflective type photointerrupter pulse-drives an infrared light emitting diode, and power supply fluctuations are induced with the pulse current, thereby causing malfunctions of the equipment.
Therefore, supply a stable supply voltage.
In addition, operation check using the actual equipment is recommended.

1) In this product, the PWB is fixed with a rear cover, and cleaning solvent may remain inside the case; therefore, dip cleaning or ultrasonic cleaning is 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 cleaning solvent in the marking portion.
   In this case, use only the following type of cleaning solvent used for wiping off:
   Ethyl alcohol, Methyl alcohol, Isopropyl alcohol,
   Freon TE, Freon TF, Diflon solvent S3-E