

# GP2A231LRSA

## Light Modulation, Reflection Type OPIC Photointerrupter

### ■ Features

1. Light modulation system impervious to external disturbing light
2. Compact and 3-pin connector output type
3. Long focal distance type  
(Optimum detecting distance : 3 to 7 mm)
4. Capable of TTL direct connection

### ■ Applications

1. Copiers
2. Facsimiles
3. LBPs

### ■ Absolute Maximum Ratings

(T<sub>a</sub>=25°C)

| Parameter                | Symbol           | Rating     | Unit |
|--------------------------|------------------|------------|------|
| Supply voltage           | V <sub>CC</sub>  | -0.5 to +7 | V    |
| Output voltage           | V <sub>O</sub>   | 7          | V    |
| *1 Output current        | I <sub>OL</sub>  | 50         | mA   |
| *2 Operating temperature | T <sub>opr</sub> | -10 to +70 | °C   |
| Storage temperature      | T <sub>stg</sub> | -20 to +80 | °C   |

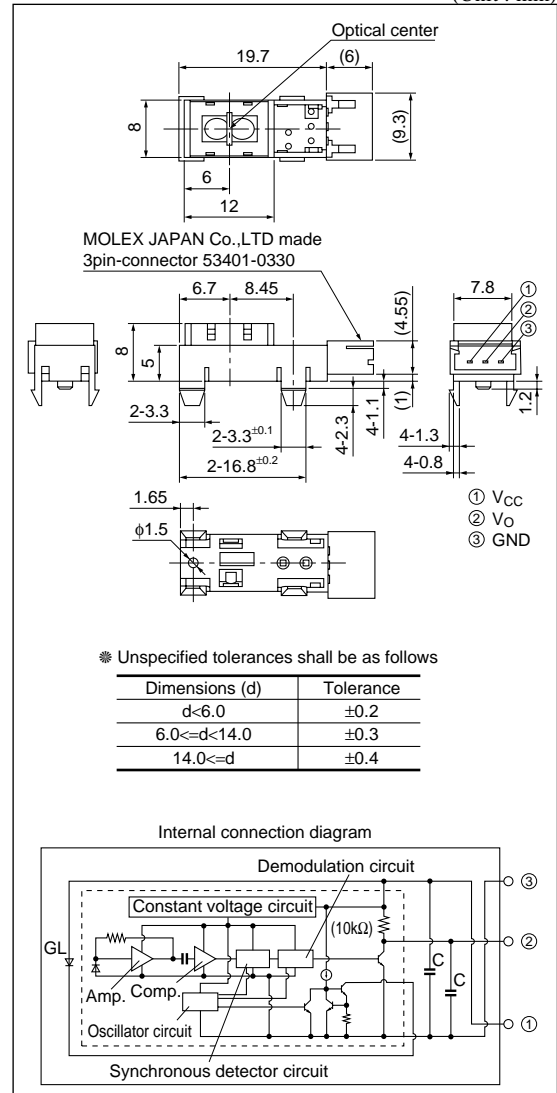
\*1 Output current vs. ambient temperature: Refer to Fig.5

Sink current

\*2 The connector should be plugged in/out at normal temperature

### ■ Outline Dimensions

(Unit : mm)



\* "OPIC" (Optical IC) is a trademark of the SHARP Corporation.

An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Electro-optical Characteristics

( $V_{CC}=5V, T_a=25^{\circ}C$ )

| Parameter                             | Symbol    | Conditions  | MIN.  | TYP. | MAX. | Unit |
|---------------------------------------|-----------|---|-------|------|------|------|
| Supply voltage                        | $V_{CC}$  | —   | 4.75  | —    | 5.25 | V    |
| Dissipation current (I)               | $I_{CC}$  | $V_{CC}=5V, R_L=\infty$ , smoothing value             | —     | —    | 20   | mA   |
| Dissipation current (II)              | $I_{CCP}$ | <sup>*3</sup> $V_{CC}=5V$ , peak pulse value          | —     | —    | 100  | mA   |
| Low level output voltage              | $V_{OL}$  | $V_{CC}=5V, I_{OL}=16mA$ , at detecting time          | —     | —    | 0.4  | V    |
| High level output voltage             | $V_{OH}$  | $V_{CC}=5V, R_L=\infty$ , at non-detecting time       | 4.5   | —    | —    | V    |
| Non-detecting distance                | $L_{LHL}$ | <sup>*4</sup> Kodak 90% reflective paper, $V_{CC}=5V$ | —     | —    | 27.0 | mm   |
| Detecting distance                    | $L_{HLS}$ | <sup>*4</sup> Kodak 90% reflective paper, $V_{CC}=5V$ | —     | —    | 1.0  | mm   |
|                                       | $L_{HLS}$ | <sup>*4</sup> Black paper, $V_{CC}=5V$                | —     | —    | 3.0  | mm   |
|                                       | $L_{HLL}$ | <sup>*4</sup> Kodak 90% reflective paper, $V_{CC}=5V$ | 9.0   | —    | —    | mm   |
|                                       | $L_{HLL}$ | <sup>*4</sup> Black paper, $V_{CC}=5V$                | 7.0   | —    | —    | mm   |
| Response time                         | $t_{PHL}$ | <sup>*5</sup> $V_{CC}=5V$                             | —     | —    | 1.0  | ms   |
|                                       | $t_{PLH}$ | <sup>*5</sup> $V_{CC}=5V$                             | —     | —    | 1.0  | ms   |
| External disturbing light illuminance | $E_{V1}$  | <sup>*6</sup>   | 3 000 | —    | —    | lx   |
|                                       | $E_{V2}$  | <sup>*6</sup>   | 1 500 | —    | —    | lx   |

\*3 Refer to Fig.1

\*4 Refer to Fig.2

\*5 Refer to Fig.3

\*6 Refer to Fig.4

Fig.1 Test Condition for Peak Pulse Value  $I_{CCP}$

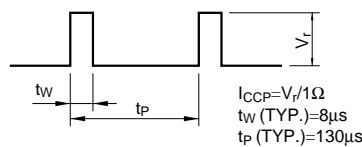
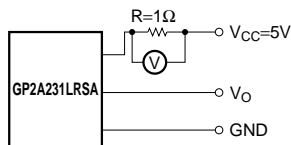


Fig.2 Test Condition for Detecting Distance Characteristics

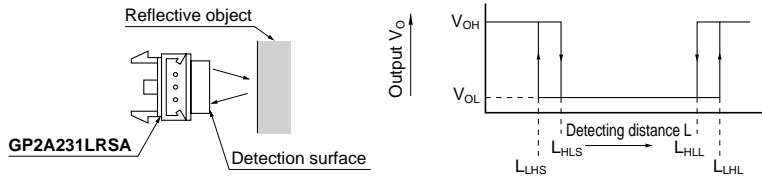


Fig.3 Test Circuit For Response Time

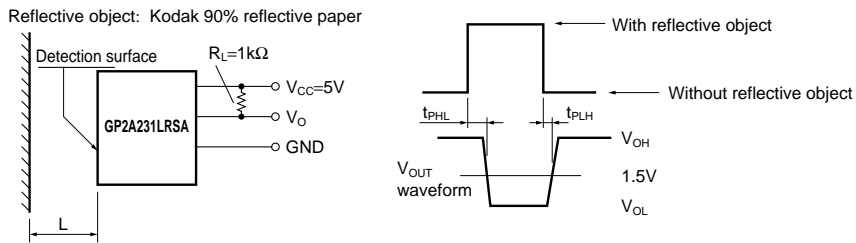
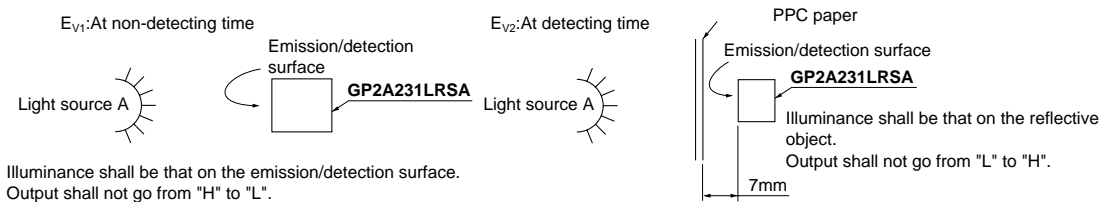
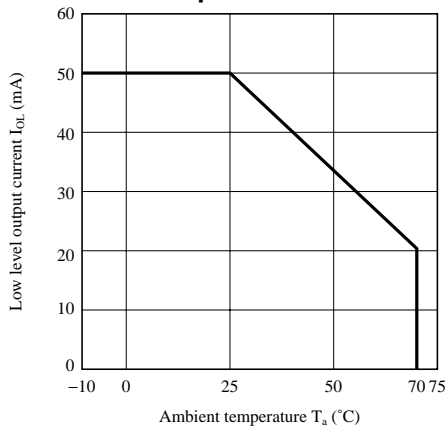


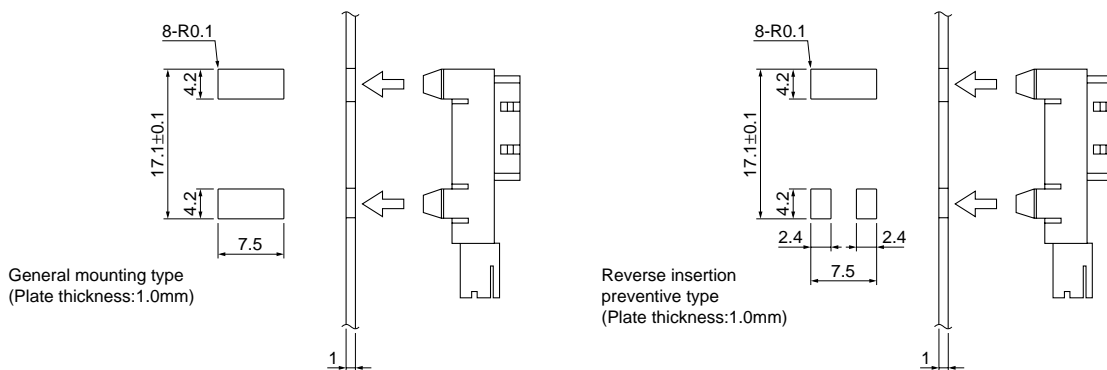
Fig.4 Test Condition for External Disturbing Light Illuminance



**Fig.5 Low Level Output Current vs. Ambient Temperature**



### ■ Recommended Mounting Hole Shape



1. It is recommended to mount the shear droop surface (punch side) of the mounting plate (metal plate) with "GP2A231LRSA".
2. Mounting workability, shaking after mounting and mounting strength depend on the corner radius of the mounting plate and the state of punching.  
Determine the mounting dimensions after check on an actual machine.
3. General dimensional tolerances shall be  $\pm 0.1$  mm.

### ■ Precautions for Use

1. In order to stabilize power supply line, connect a by-pass capacitor of more than  $0.33\mu\text{F}$  between  $V_{CC}$  and GND near the device.
2. For cleaning  
Acryle resin is used as the material of the lens surface. As to cleaning, this refractive type photointerrupter shall not clean by cleaning materials absolutely. Dust and stain shall clean by air blow, or shall clean by soft cloth soaked in washing materials.
3. The connector should be plugged in / out at normal temperature.

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