

# GP2A20/GP2A22

## Light Modulation, Long Focal Distance Type OPIC Photointerrupter

### ■ Features

1. Light modulation type, free from external disturbing light
2. Long focal distance type  
Detecting range  
(GP2A20: 3 to 7mm)  
(GP2A22: 9 to 15mm)
3. Capable of TTL direct connection
4. With 3-pin connector provided for easier interface with peripheral control circuit

### ■ Applications

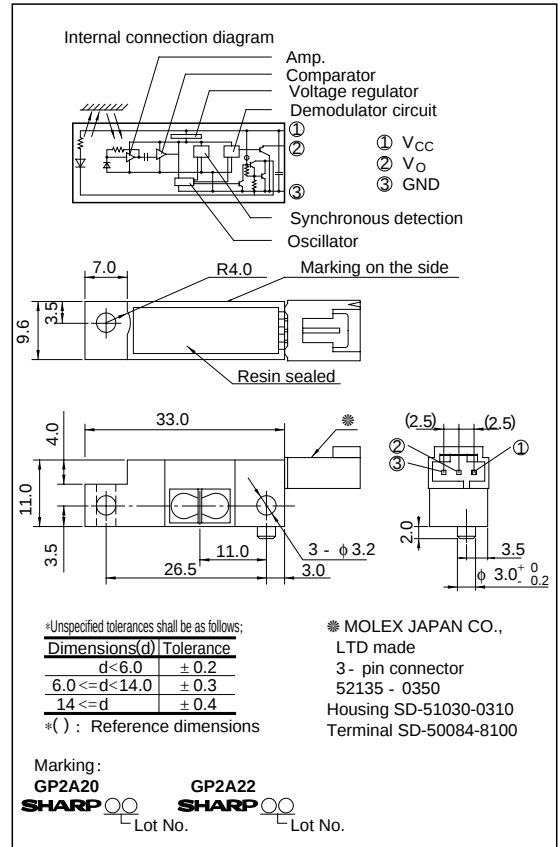
1. Copiers
2. Laser beam printers
3. Facsimiles

### ■ Line-ups

|           | Detecting range |           |
|-----------|-----------------|-----------|
|           | 3 to 7mm        | 9 to 15mm |
| Model No. | GP2A20          | GP2A22    |

### ■ 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.

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

| Parameter                   | Symbol           | Rating       | Unit |
|-----------------------------|------------------|--------------|------|
| Supply voltage              | V <sub>CC</sub>  | - 0.5 to 7   | V    |
| *1 Output voltage           | V <sub>O</sub>   | 30           | V    |
| *2 Low level output current | I <sub>OL</sub>  | 50           | mA   |
| *3 Operating temperature    | T <sub>opr</sub> | - 10 to + 60 | °C   |
| *3 Storage temperature      | T <sub>stg</sub> | - 20 to + 80 | °C   |

\*1 Collector-emitter voltage of output transistor

\*2 Collector current of output transistor

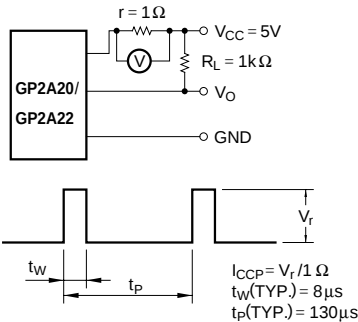
\*3 The connector should be plugged in/out at normal temperature.

## ■ Electro - optical Characteristics

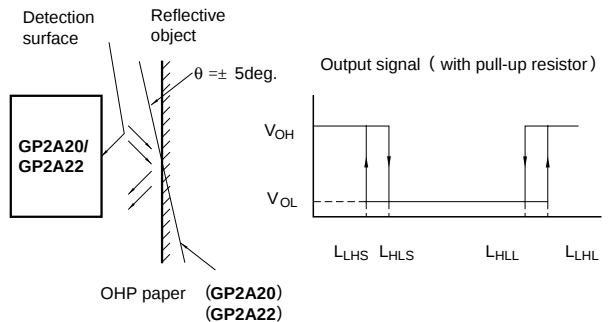
(V<sub>CC</sub> = 5V, T<sub>a</sub> = 25°C)

| Parameter                  | Symbol                            | Conditions                                                           | MIN. | TYP. | MAX. | Unit |
|----------------------------|-----------------------------------|----------------------------------------------------------------------|------|------|------|------|
| Operating supply voltage   | V <sub>CC</sub>                   |                                                                      | 4.75 | -    | 5.25 | V    |
| Dissipation current        | Peak pulse value                  | I <sub>CCP</sub> *4 r = 1Ω                                           | -    | -    | 150  | mA   |
|                            | Smoothing value                   | I <sub>CC</sub> R <sub>L</sub> = ∞                                   | -    | -    | 30   | mA   |
| Low level output voltage   | V <sub>OL</sub>                   | I <sub>OL</sub> = 16mA at detecting time                             | -    | -    | 0.4  | V    |
| High level output voltage  | V <sub>OH</sub>                   | R <sub>L</sub> = 1kΩ at non-detecting time                           | 4.5  | -    | -    | V    |
| Non-detecting distance     | L <sub>LHL</sub>                  | GP2A20<br>*5 Reflective object: Kodak 90% reflective paper           | -    | -    | 20   | mm   |
|                            |                                   | GP2A22<br>*5 Reflective object: Chloroprene rubber                   | -    | -    | 50   |      |
|                            |                                   |                                                                      | -    | -    | 25   |      |
| Minimum detecting distance | L <sub>HLS</sub>                  | GP2A20<br>*5 Reflective object: Artwork tape                         | -    | -    | 3.0  | mm   |
|                            |                                   | GP2A20<br>*5 Reflective object: Kodak 90% reflective paper           | -    | -    | 1.0  |      |
|                            |                                   | GP2A22<br>*5 Reflective object: Black paper                          | -    | -    | 7.0  |      |
|                            |                                   | GP2A20<br>*5 Reflective object: Black paper                          | -    | -    | 9.0  |      |
|                            |                                   | GP2A22<br>*5 Reflective object: OHP paper, θ = 5deg. (X,Y direction) | -    | -    | 3.0  |      |
| Maximum detecting distance | L <sub>HLL</sub>                  | GP2A20<br>*5 Reflective object: OHP paper, θ = 5deg. (X,Y direction) | -    | -    | 9.0  | mm   |
|                            |                                   | GP2A20<br>*5 Reflective object: Artwork tape                         | 7.0  | -    | -    |      |
|                            |                                   | GP2A20<br>*5 Reflective object: Kodak 90% reflective paper           | 9.0  | -    | -    |      |
|                            |                                   | GP2A22<br>*5 Reflective object: Kodak 90% reflective paper           | 17.0 | -    | -    |      |
|                            |                                   | GP2A22<br>*5 Reflective object: Black paper                          | 15.0 | -    | -    |      |
| Response time              | "High→Low" propagation delay time | t <sub>PHL</sub>                                                     | -    | -    | 1    | ms   |
|                            | "Low→High" propagation delay time | t <sub>PLH</sub>                                                     | -    | -    | 1    | ms   |

\*4 Test Condition for Dissipation Current (Peak Pulse Value)

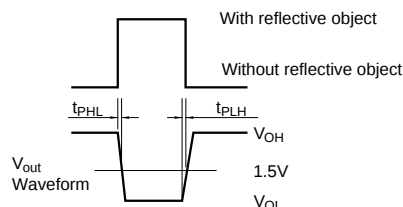
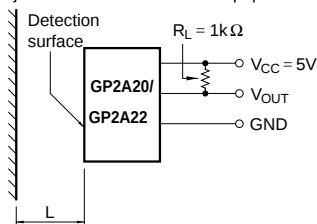


\*5 Test Condition for Detecting Distance Characteristics

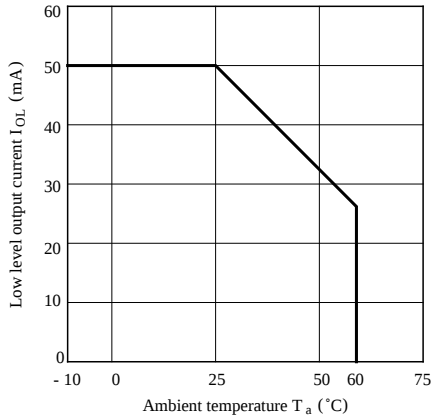


\*6 Test Condition for Response Time

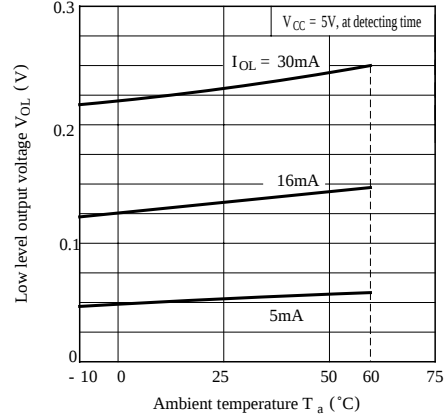
Reflective object: Kodak 90 % reflective paper



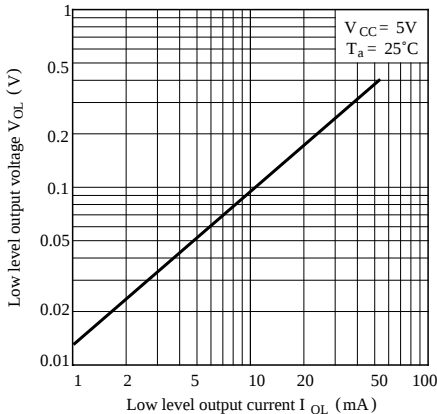
**Fig. 1 Low Level Output Current vs. Ambient Temperature**



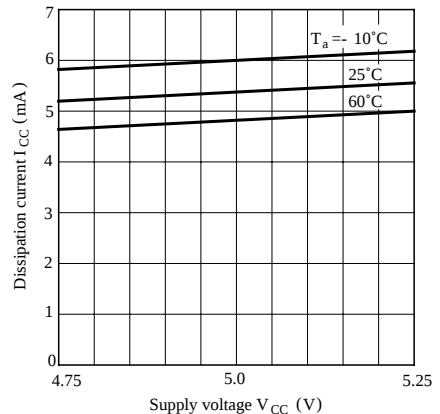
**Fig. 2 Low Level Output Voltage vs. Ambient Temperature**



**Fig. 3 Low Level Output Voltage vs. Low Level Output Current**



**Fig. 4 Dissipation Current (Smoothing Value) vs. Supply Voltage**



## ■ Precautions for Use

- (1) In order to stabilize power supply line, connect a by-pass capacitor of more than  $0.33\mu F$  between  $V_{CC}$  and GND near the product.
- (2) Please do not perform dip cleaning or ultrasonic cleaning because lens part of this product is an optical device of acrylic resin.
- (3) 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  
When the cleaning solvents except for specified materials are used, please consult us.
- (4) As for other general cautions, refer to the chapter "Precautions for Use".

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    - Alarm equipment
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