

# GP2D12/GP2D15

## General Purpose Type Distance Measuring Sensors

### ■ Features

1. Less influence on the color of reflective objects, reflectivity
2. Line-up of distance output/distance judgement type  
 Distance output type (analog voltage) : **GP2D12**  
 Detecting distance : 10 to 80cm  
 Distance judgement type : **GP2D15**  
 Judgement distance : 24cm  
 (Adjustable within the range of 10 to 80cm)
3. External control circuit is unnecessary
4. Low cost

### ■ Applications

1. TVs
2. Personal computers
3. Cars
4. Copiers

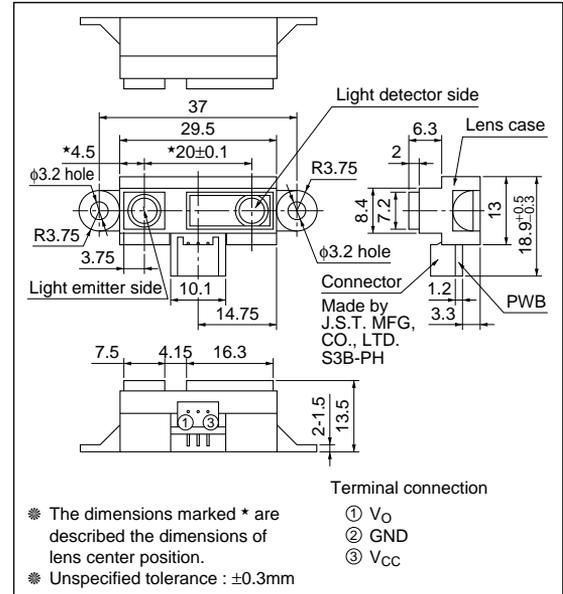
### ■ Absolute Maximum Ratings

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

| Parameter               | Symbol    | Rating                 | Unit               |
|-------------------------|-----------|------------------------|--------------------|
| Supply voltage          | $V_{cc}$  | -0.3 to +7             | V                  |
| Output terminal voltage | $V_o$     | -0.3 to $V_{cc} + 0.3$ | V                  |
| Operating temperature   | $T_{opr}$ | -10 to +60             | $^{\circ}\text{C}$ |
| Storage temperature     | $T_{stg}$ | -40 to +70             | $^{\circ}\text{C}$ |

### ■ Outline Dimensions

(Unit : mm)



■ Recommended Operating Conditions

| Parameter                | Symbol          | Rating      | Unit |
|--------------------------|-----------------|-------------|------|
| Operating supply voltage | V <sub>CC</sub> | 4.5 to +5.5 | V    |

■ Electro-optical Characteristics

(Ta=25°C, V<sub>CC</sub>=5V)

| Parameter                          | Symbol          | Conditions      | MIN.                               | TYP.                 | MAX. | Unit |    |
|------------------------------------|-----------------|-----------------|------------------------------------|----------------------|------|------|----|
| Distance measuring range           | ΔL              | *1 *3           | 10                                 | —                    | 80   | cm   |    |
| Output terminal voltage            | GP2D12          | V <sub>O</sub>  | L=80cm *1                          | 0.25                 | 0.4  | 0.55 | V  |
|                                    | GP2D15          | V <sub>OH</sub> | Output voltage at High *1          | V <sub>CC</sub> -0.3 | —    | —    | V  |
|                                    | GP2D15          | V <sub>OL</sub> | Output voltage at Low *1           | —                    | —    | 0.6  | V  |
| Difference of output voltage       | GP2D12          | ΔV <sub>O</sub> | Output change at L=80cm to 10cm *1 | 1.75                 | 2.0  | 2.25 | V  |
| Distance characteristics of output | GP2D15          | V <sub>O</sub>  | *1 *2 *4                           | 21                   | 24   | 27   | cm |
| Average Dissipation current        | I <sub>CC</sub> | L=80cm *1       | —                                  | 33                   | 50   | mA   |    |

Note) L : Distance to reflective object.

\*1 Using reflective object : White paper (Made by Kodak Co. Ltd. gray cards R-27 · white face, reflective ratio ; 90%).

\*2 We ship the device after the following adjustment : Output switching distance L=24cm±3cm must be measured by the sensor.

\*3 Distance measuring range of the optical sensor system.

\*4 Output switching has a hysteresis width. The distance specified by V<sub>O</sub> should be the one with which the output L switches to the output H.

Fig.1 Internal Block Diagram

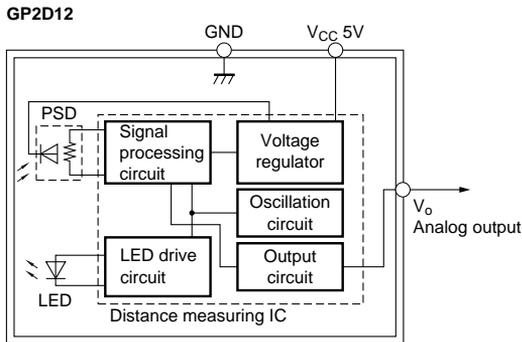


Fig.2 Internal Block Diagram

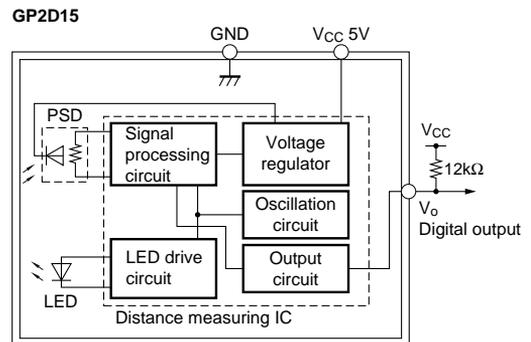


Fig.3 Timing Chart

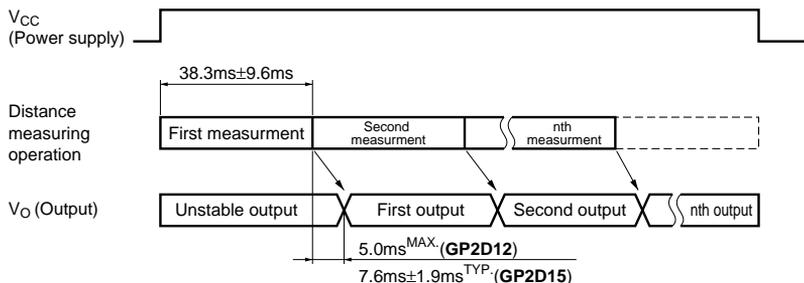


Fig.4 Distance Characteristics

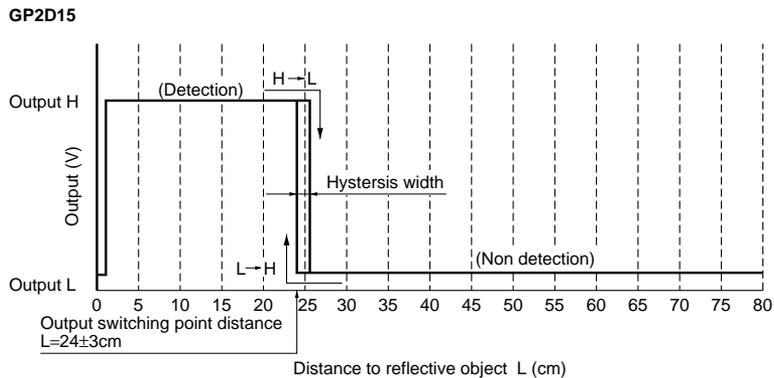


Fig.5 Analog Output Voltage vs. Surface Illuminance of Reflective Object

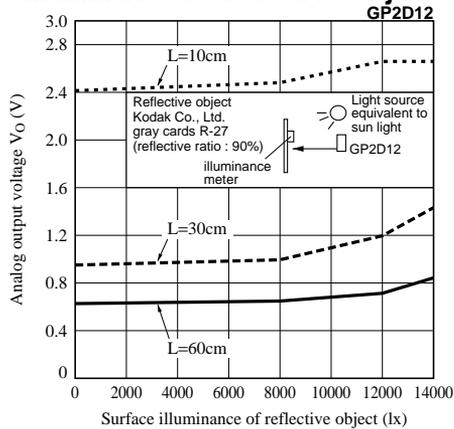


Fig.6 Analog Output Voltage vs. Distance to Reflective Object

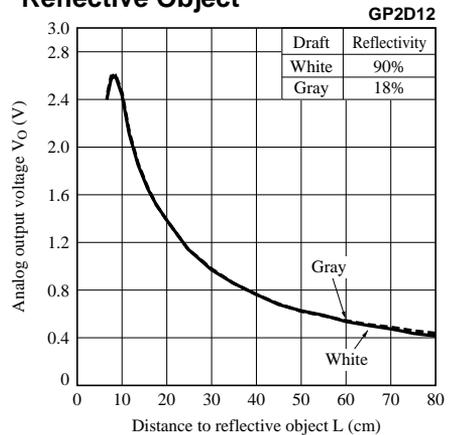


Fig.7 Analog Output Voltage vs. Ambient Temperature

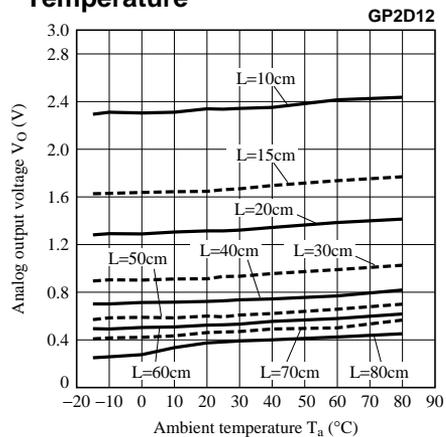
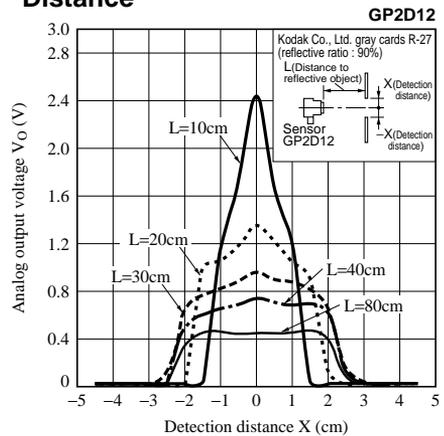


Fig.8 Analog Output Voltage vs. Detection Distance



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