

# GP2D02

## Compact, High Sensitive Distance Measuring Sensor

### ■ Features

1. Impervious to color and reflectivity of reflective object
2. High precision distance measurement output for direct connection to microcomputer
3. Low dissipation current at OFF-state  
(dissipation current at OFF-state : TYP. 3  $\mu$ A)
4. Capable of changing of distance measuring range through change the optical portion (lens)

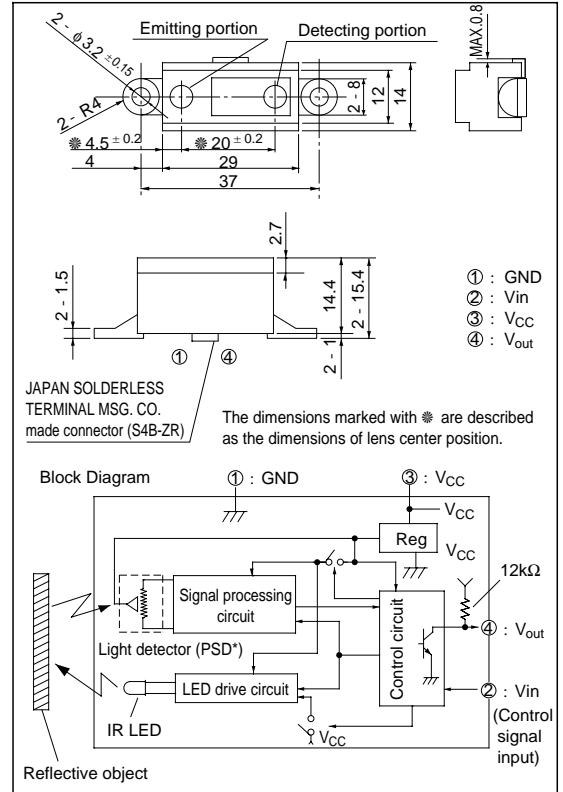
### ■ Applications

1. Sanitary sensors
2. Human body sensors for consumer products such as electric fans and air conditioners
3. Garage sensors

\* PSD : Position Sensitive Detector

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings (Ta=25°C, V<sub>CC</sub>=5V)

Parameter	Symbol	Rating	Unit
Supply voltage	V <sub>CC</sub>	- 0.3 to + 10	V
*1 Input terminal voltage	V <sub>in</sub>	- 0.3 to + 3	V
Output terminal voltage	BV <sub>O</sub>	- 0.3 to + 10	V
Operating temperature	T <sub>opr</sub>	- 10 to + 60	°C
Storage temperature	T <sub>stg</sub>	- 40 to + 70	°C

\*1 Open drain operation input

### ■ Operating Supply Voltage

Symbol	Rating	Unit
V <sub>CC</sub>	4.4 to 7	V

## Electro-optical Characteristics

(Ta=25°C, Vcc=5V)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Distance measuring range	$\Delta L$	*1	10	-	80	cm
Output terminal voltage	$V_{OH}$	Output voltage at High L = 20cm	$V_{CC} - 0.3$	-	-	V
	$V_{OL}$	Output voltage at Low *1	-	-	0.3	V
Distance characteristics of output	D	L = 80cm, *1	-	75	-	DEC
	$\Delta D$	Output change at L=80 cm to 20 cm, *1	48	58	68	DEC
Dissipation current	at operating	$I_{CC}$ L = 20cm, *1, *2	-	22	35	mA
	at OFF-state	$I_{off}$ L = 20cm, *1	-	3	8	$\mu A$
Vin terminal current	$I_{vin}$	Vin = 0V	-	- 170	- 280	$\mu A$

Note) L : Distance to reflective object

DEC : Decimalized value of sensor output (8-bit serial)

\*1 Reflective object : White paper (reflectivity : 90%)

\*2 Average dissipation current value during distance measuring operation when detecting of input signal, Vin as shown in the timing chart

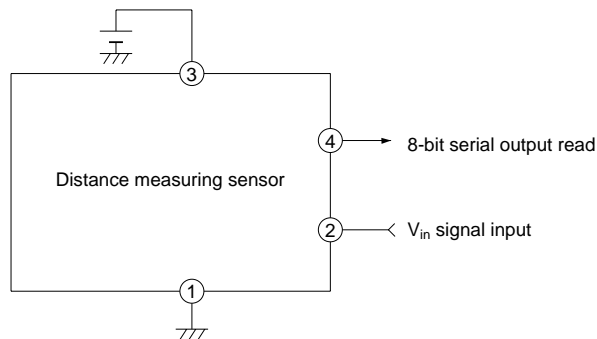
\*3 Vin terminal : Open drain drive input.

Conditions : Vin terminal current at Vin OFF-state : -1  $\mu A$

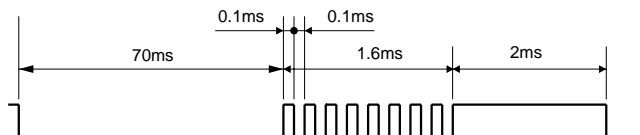
Vin terminal current at Vin ON-state : 0.3V

## Test Circuit

### 1. Test circuit



### 2. Vin input signal for measurement



■ Timing Chart

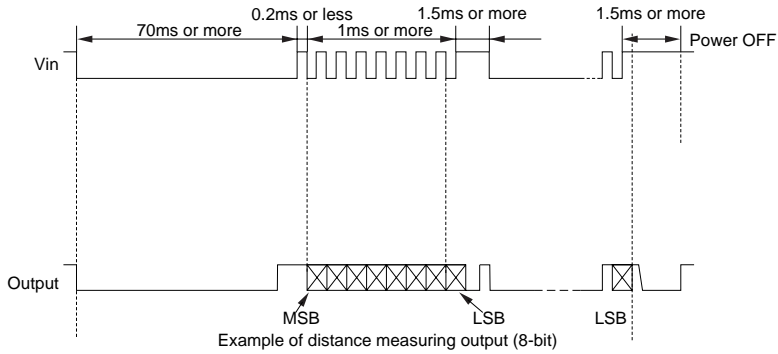
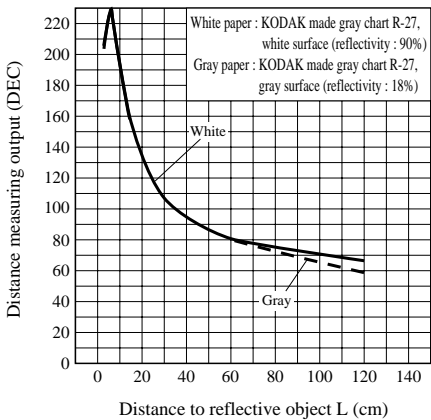
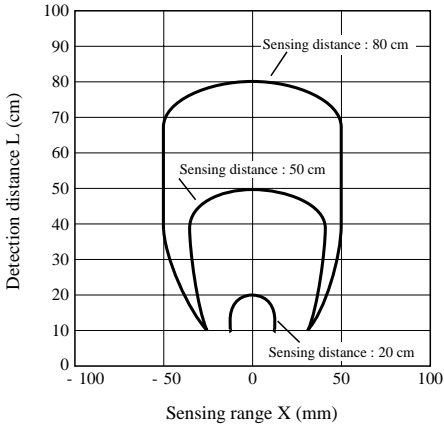


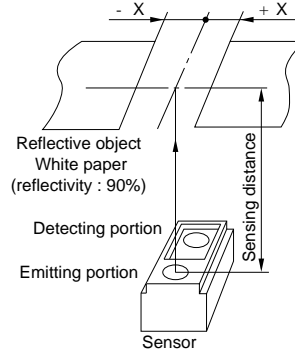
Fig. 1 Distance Measuring Output vs. Distance to Reflective Object



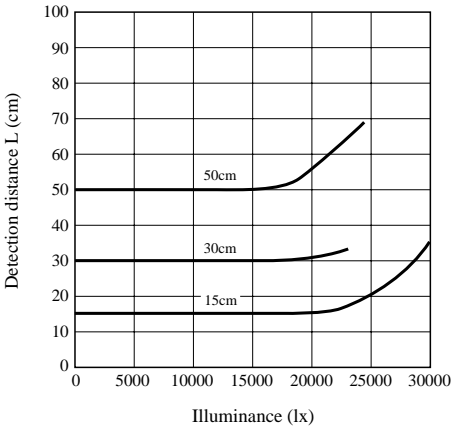
**Fig. 2 Detection Distance vs. Sensing Range**



**Test Method for Sensing Range Characteristics**



**Fig. 3 Detection Distance vs. Illuminance**



**Test Method for Anti External Disturbing Light Characteristics**

