GP2D02

Compact, High Sensitive Distance Measuring Sensor

■ Features

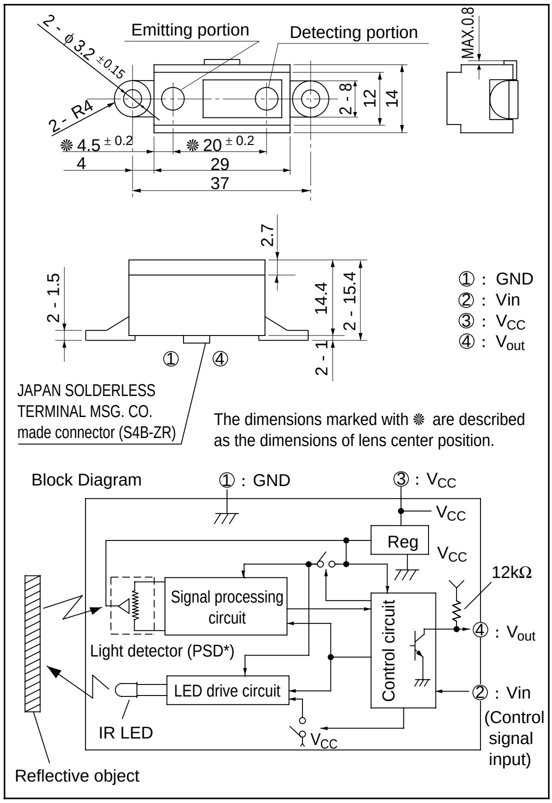
1. Impervious to color and reflectivity of reflective object
2. High precision distance measurement output for direct connection to microcomputer
3. Low dissipation current at OFF-state
   (dissipation current at OFF-state : TYP. 3 μA)
4. Capable of changing of distance measuring range through change 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_{CC}=5V)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	- 0.3 to + 10	V
*1Input terminal voltage	V_{in}	- 0.3 to + 3	V
Output terminal voltage	BV_O	- 0.3 to + 10	V
Operating temperature	T_{opr}	- 10 to + 60	˚C
Storage temperature	T_{stg}	- 40 to + 70	˚C

*1 Open drain operation input

■ Operating Supply Voltage

Symbol	Rating	Unit
V_{CC}	4.4 to 7	V

■ Electro-optical Characteristics

($Ta=25^{\circ}C$, $Vcc=5V$)

Parameter		Symbol	Conditions		MIN.	TYP.	MAX.	Unit
Distance measuring range		ΔL	*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
		ΔD	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	μA
Vin terminal current		I_{vin}	Vin = 0V		-	- 170	- 280	μA

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

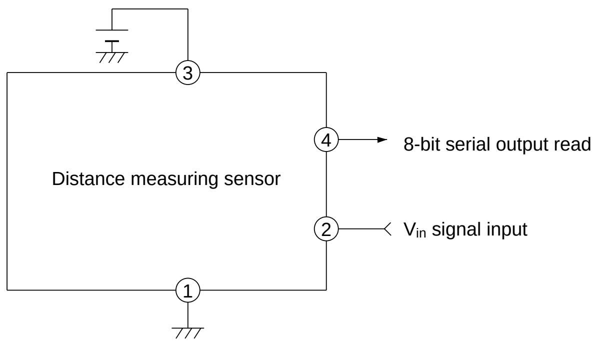
*3 Vin terminal : Open drain drive input.

Conditions : Vin terminal current at Vin OFF-state : -1 μA

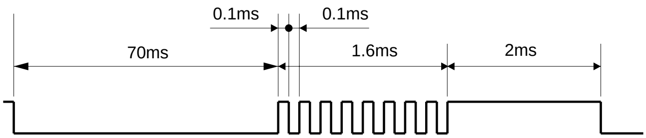
Vin terminal current at Vin ON-state : 0.3V

■ Test Circuit

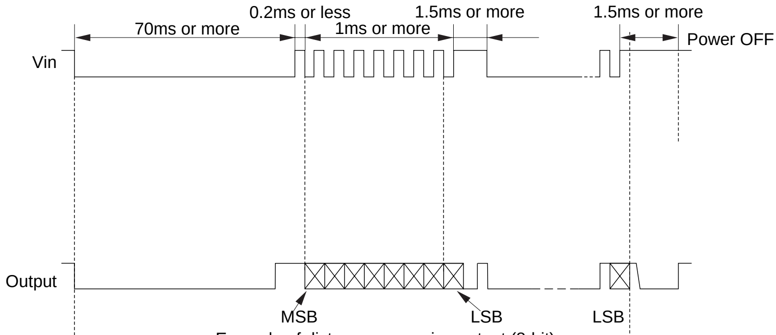
1. Test circuit



2. Vin input signal for measurement



■ Timing Chart



Example of distance measuring output (8-bit)

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

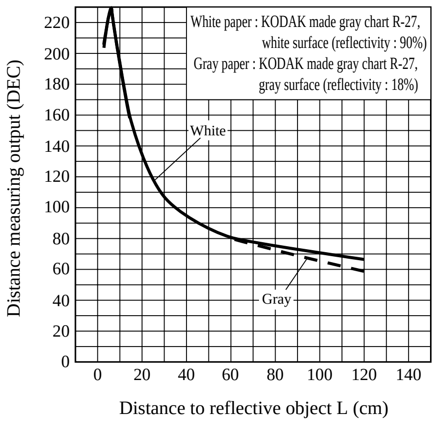
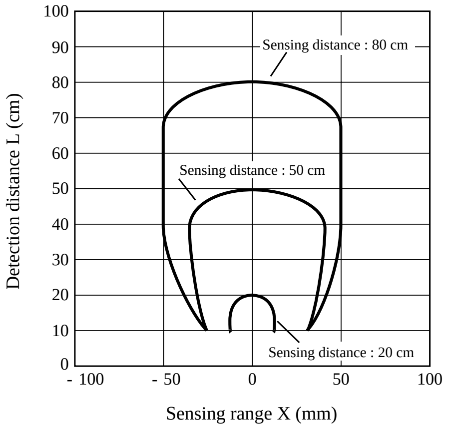


Fig. 2 Detection Distance vs. Sensing Range



Test Method for Sensing Range Characteristics

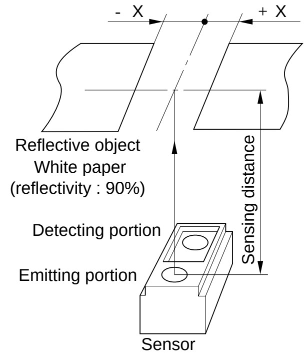
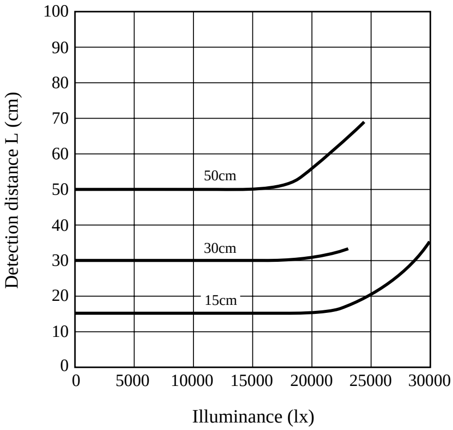


Fig. 3 Detection Distance vs. Illuminance



Test Method for Anti External Disturbing Light Characteristics