GP2Y3A001K0F

Optoelectronic Device

SHARP

FEATURES

- Wide Angle Sensors
- Trigger point set at factory to 25°
- Analog output
- Range: 4 to 30 cm
- Response Time: 20.2 Max.
- Response time: 16.5 Typ.
- Typical response time: 16.5 ms
- Typical start up delay: 21.2 ms

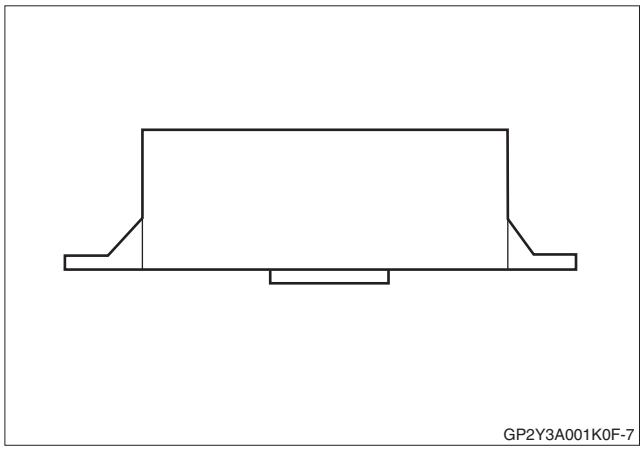


Figure 1. Pinout

DESCRIPTION

The GP2Y3A001K0F is a distance measuring sensor with integrated signal processing and analog voltage output.

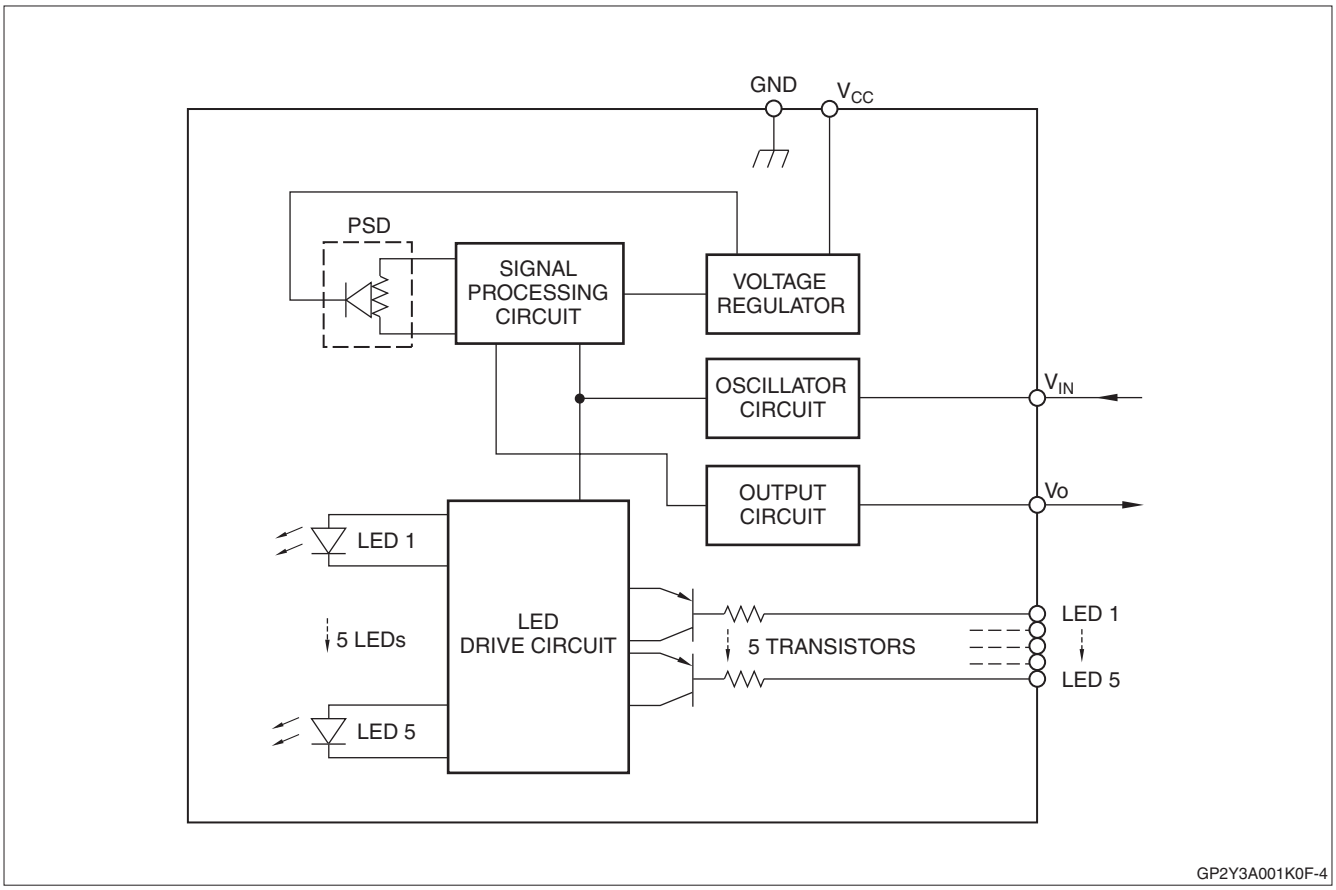


Figure 2. Block Diagram

ELECTRICAL SPECIFICATIONS

Absolute Maximum Ratings

Ta = 25°C, V_{CC} = 5 VDC

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	-0.3 to +7.0	V
Output Terminal Voltage	V_O	-0.3 to (V_{CC} + 0.3)	V
Input Voltage	V_{IN}, LED 1 to LED 5	-0.3 to (V_{CC} + 0.3)	V
Operating Temperature	Topr	-10 to +60	°C
Storage Temperature	Tstg	-40 to +70	°C

Operating Supply Voltage

PARAMETER	SYMBOL	RATING	UNIT
Operating Supply Voltage	V_{CC}	4.5 to 5.5	V

Electro-optical Characteristics

DISTANCE MEASURING SENSOR

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Measuring Distance Range	ΔL	(Note 1)	40	—	300	mm
Output Terminal Voltage	V_O	L = 300 mm (Note 1)	(A-0.3)	(A)	(A+0.3)	V
Output Voltage Gap	ΔV_O	Output voltage gap between L= 85 mm and L = 40 mm (Note 1)	(B-0.3)	(B)	(B+0.3)	V
Input Voltage	V_{IN} H	Input voltage for operating distance measuring sensor	4.5	—	—	V
	V_{IN} L	Input voltage for turning off distance measuring sensor	—	—	0.3	V
	LED H	Input voltage for turning LED OFF	4.5	—	—	V
	LED L	Input voltage for turning LED ON	—	—	0.5	V

NOTES:

1. Measurements made with Kodak R-27 Gray Card, using the white side, (90% reflectivity).
2. L = Distance to reflective object
3. The voltage value of A and B is TBD.

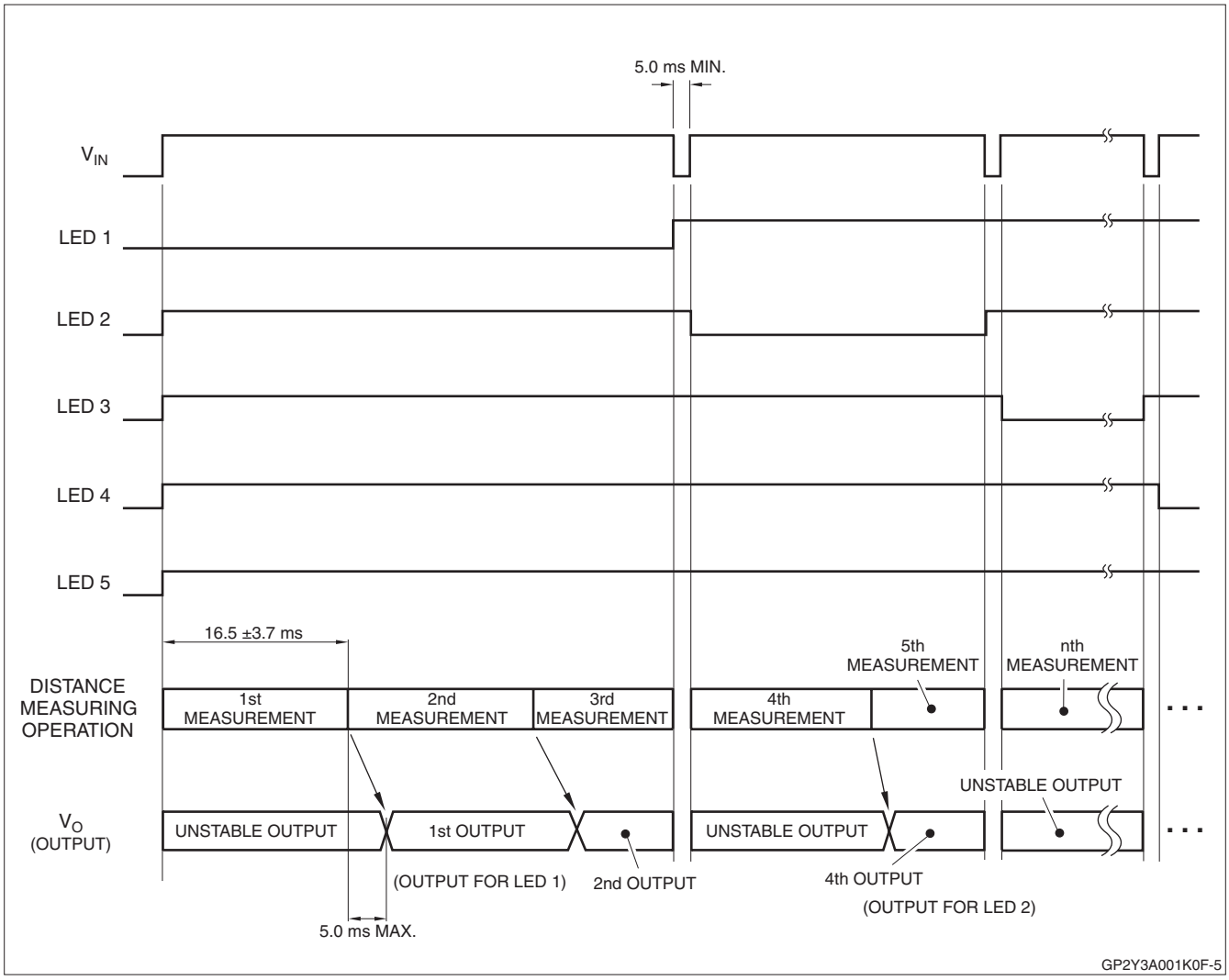


Figure 3. Timing Diagram

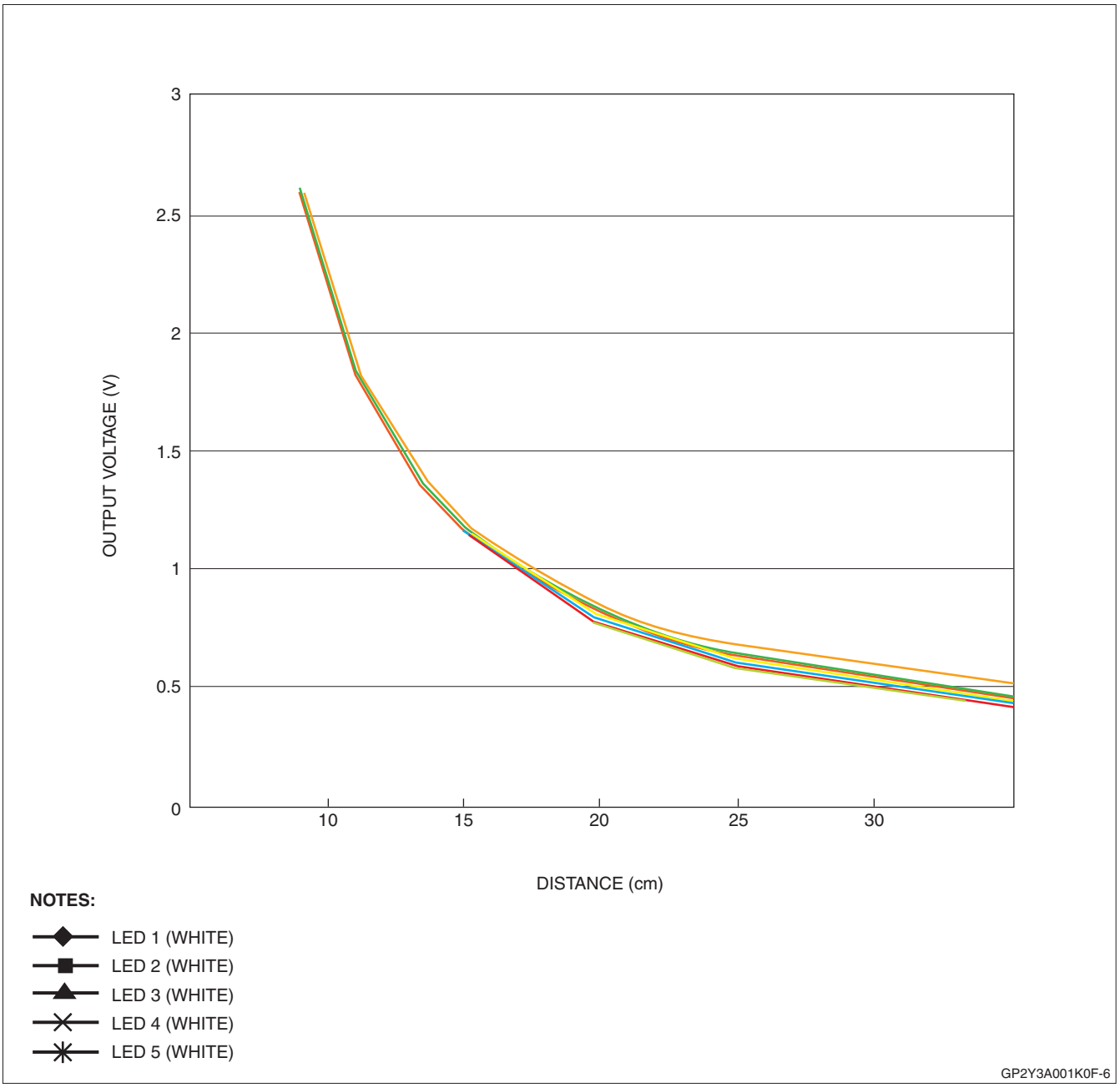
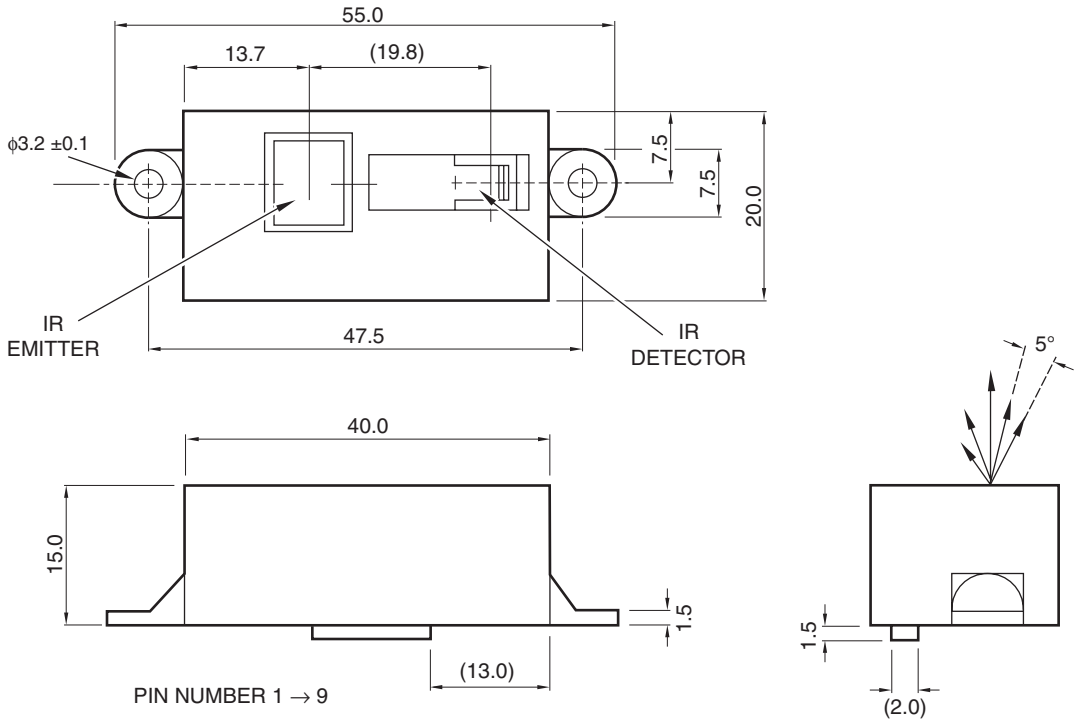


Figure 4. Example of Distance Measuring Characteristics (Output)

PACKAGE SPECIFICATIONS



NOTES:.
1. ( ): Reference value.
2. Scale: None, dimensions are in mm.

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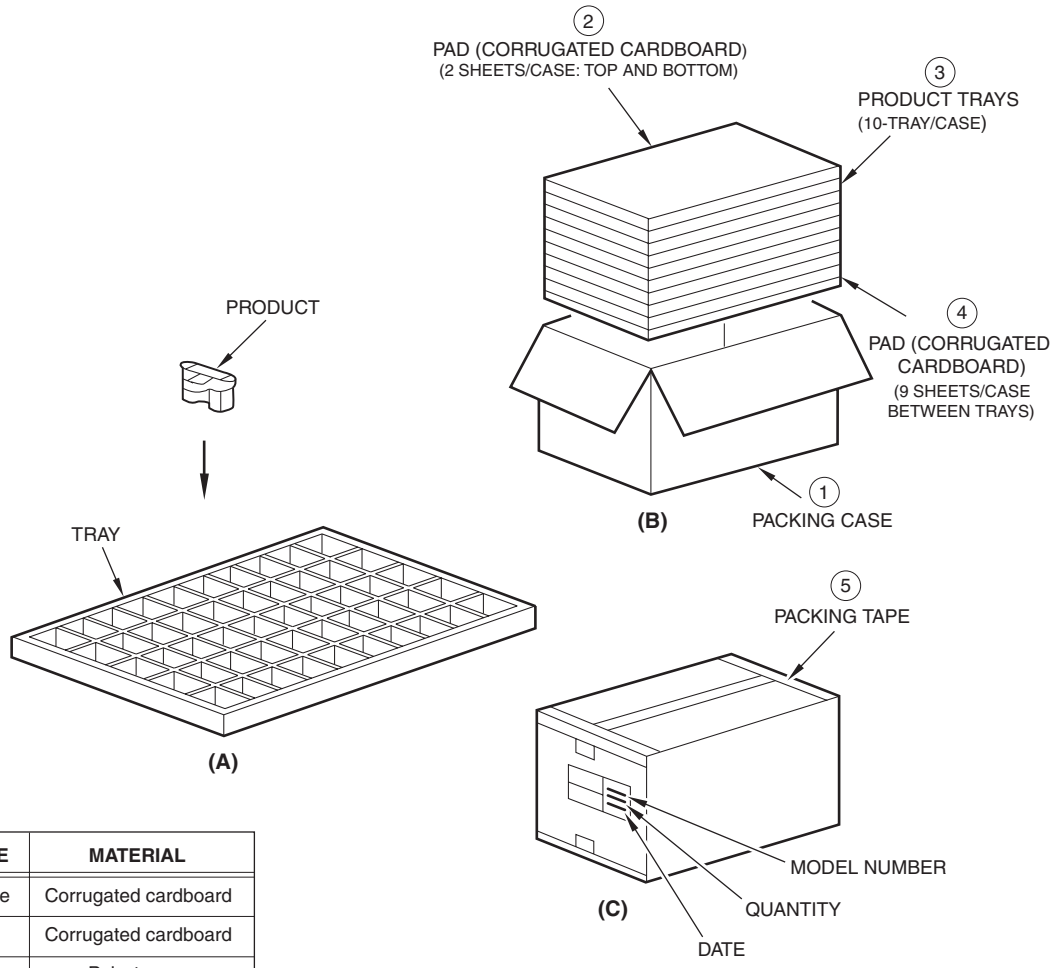
PACKING SPECIFICATION



PART NAME	MATERIAL
Packing case	Corrugated cardboard
Pad	Corrugated cardboard
Tray	Polystyrene

PACKING METHOD

1. Each tray holds 50 pieces. Packing methods are shown in (A).
2. Each box holds 10 trays. Pads are added to top and bottom, and between layers, as in (B).
   top and bottom. Put pads between each tray (9 pads total) see above drawing (B).
3. The box is sealed with packing tape. (C) shows the location of the Model number, Quantity, and Inspection date.
4. Package weight: Approximately 4 kg.

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NOTES

- Keep the sensor lens clean. Dust, water, oil, and other contaminants can deteriorate the characteristics of this device. Applications should be designed to eliminate sources of lens contamination.
- When using a protective cover over the emitter and detector, ensure the cover efficiently transmits light throughout the wavelength range of the LED (λ = 850 nm ± 70 nm). Both sides of the protective cover should be highly polished. Use of a protective cover may decrease the effective distance over which the sensor operates. Ensure that any cover does not negatively affect the operation over the intended application range.
- Objects in proximity to the sensor may cause reflections that can affect the operation of the sensor.
- Sources of high ambient light (the sun or strong artificial light) may affect measurement. For best results, the application should be designed to prevent interference from direct sunlight or artificial light.
- Using the sensor with a mirror can induce measurement errors. Often, changing the incident angle on the mirror can correct this problem.
- If a prominent boundary line exists in the surface being measured, it should be aligned vertically to avoid measurement error. See Figure 5 for further details.
- When measuring the distance to objects in motion, align the sensor so that the motion is in the horizontal direction instead of vertical. Figure 6 illustrates the preferred alignment.
- A 10 µF (or larger) bypass capacitor between V_{CC} and GND near the sensor is recommended.
- To clean the sensor, use a dry cloth. Use of any liquid to clean the device may result in decreased sensitivity or complete failure.
- Excessive mechanical stress can damage the internal sensor or lens.

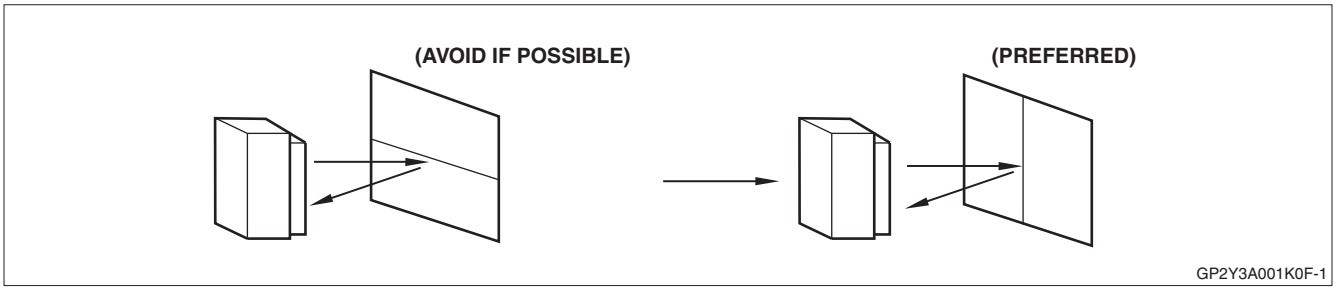

Figure 5. Proper Alignment to Surface Being Measured

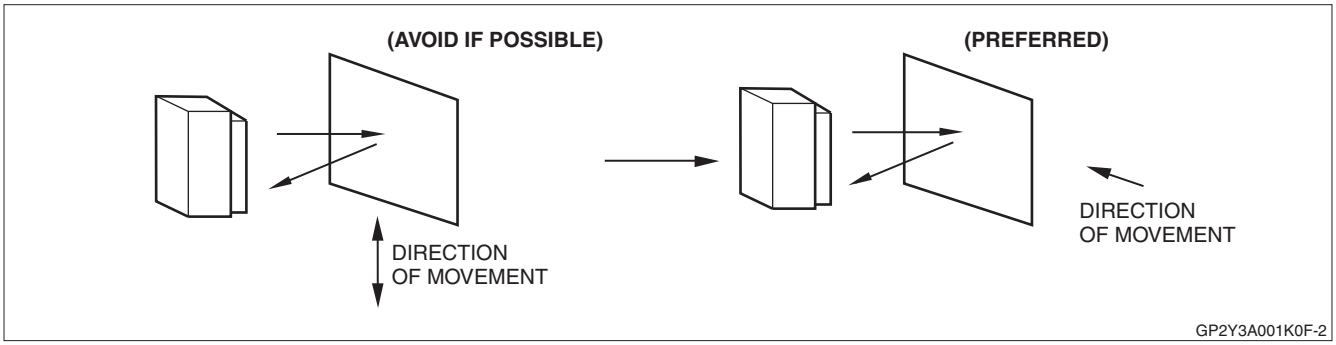

Figure 6. Proper Alignment to Moving Surfaces

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Reference Code SMA06013