

GP2YA002K0F

Wide Angle Sensor

Issue Date: May 31, 2004

1. Application

This technical literature is applied for the outline and characteristics of wide angle sensor, GP2Y3A002K0F.

2. Outline

Refer to the attached drawing No. CY12083J02.

3. Ratings and characteristics

Refer to the attached sheet, page 5, 6, 7.

4. Supplements

4-1 GP2Y3A002K0F Example of Output distance characteristics

Refer to the attached sheet, page 7.

5. Notes

5-1 The lens of this device needs to be kept clean. There are cases that dust, water or oil and so on deteriorate the characteristics of this device. Please consider in actual application.

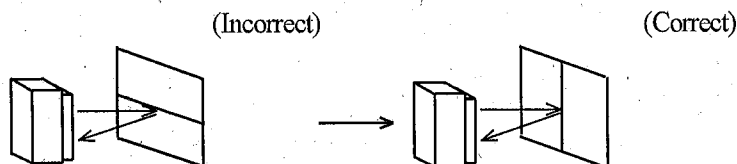
5-2 In case that protection is set in front of the emitter and detector portion, the protection cover which has the most efficient transmittance at the emitting wavelength range of LED for the GP2Y3A002K0F ($\lambda=870\text{nm}\pm 70\text{nm}$), shall be recommended to use. Also, as there are cases that the characteristics may not be satisfied with according to the distance between the protection cover and the GP2Y3A002K0F or the thickness of the protection cover, please use the GP2Y3A002K0F after confirming the operation sufficiently in actual application.

5-3 In case that there is an object near to light exits of the sensor between the sensor and the detected object, please use this device after confirming sufficiently what the characteristics of this sensor do not change by the object.

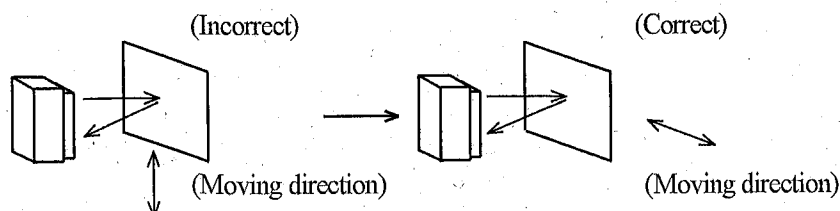
5-4 When the detector surface receive direct light from the sun, tungsten lamp and so on, there are cases that it can not measure the distance exactly. Please consider the design that the detector does not receive direct light from such light source.

5-5 Distance between sensor and mirror reflector can not sometimes measure exactly.
 In case of changing the mounting angle of the GP2Y3A002K0F, it may measure the distance exactly.

5-6 In case that reflective object has boundary line clearly, there is cases that distance can not measure exactly.
 At that time, if direction of boundary line and the line between emitter center and detector center parallels, it is possible to decrease deviation of measuring distance.



5-7 In order to decrease measuring error by moving direction of object, we recommend to mount the sensor like below drawing.



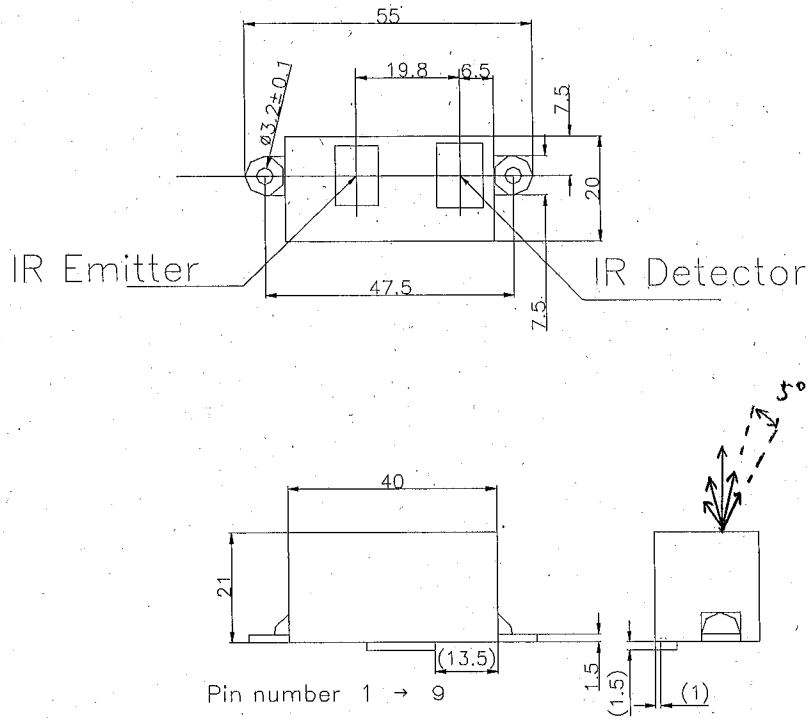
- 5-8 In order to stabilize power supply line, we recommend to connect a by-pass capacitor of 10 μ F or more between Vcc and GND near the GP2Y3A002K0F.
- 5-9 Please don't do washing. Washing may deteriorate the characteristics of optical system and so on.
- 5-10 There are some possibilities that the sensor inside the case package with lens may be exposed to the excessive mechanical stress. Please be careful not to cause any excessive pressure on the case package with lens and also on the PCB at the assembly and inserting of the set.

2. Outline

Drawing No. CY12083J02

Unit: mm

Scale: Free



Note 1. Unspecified tolerances shall be ± 0.3 mm.

Note 2. Pin arrangements

1 to 5 : Signal inputs for selecting LED1 to 5

6 : V_0

7 : GND

8 : V_{cc}

9 : V_{in} (Input for controlling distance measuring operation)

Note 3. The connector is made by Molex and its part number is 53047-0910.

Note 4. The dimensions in parenthesis are shown for reference.

3-1 Absolute maximum ratings

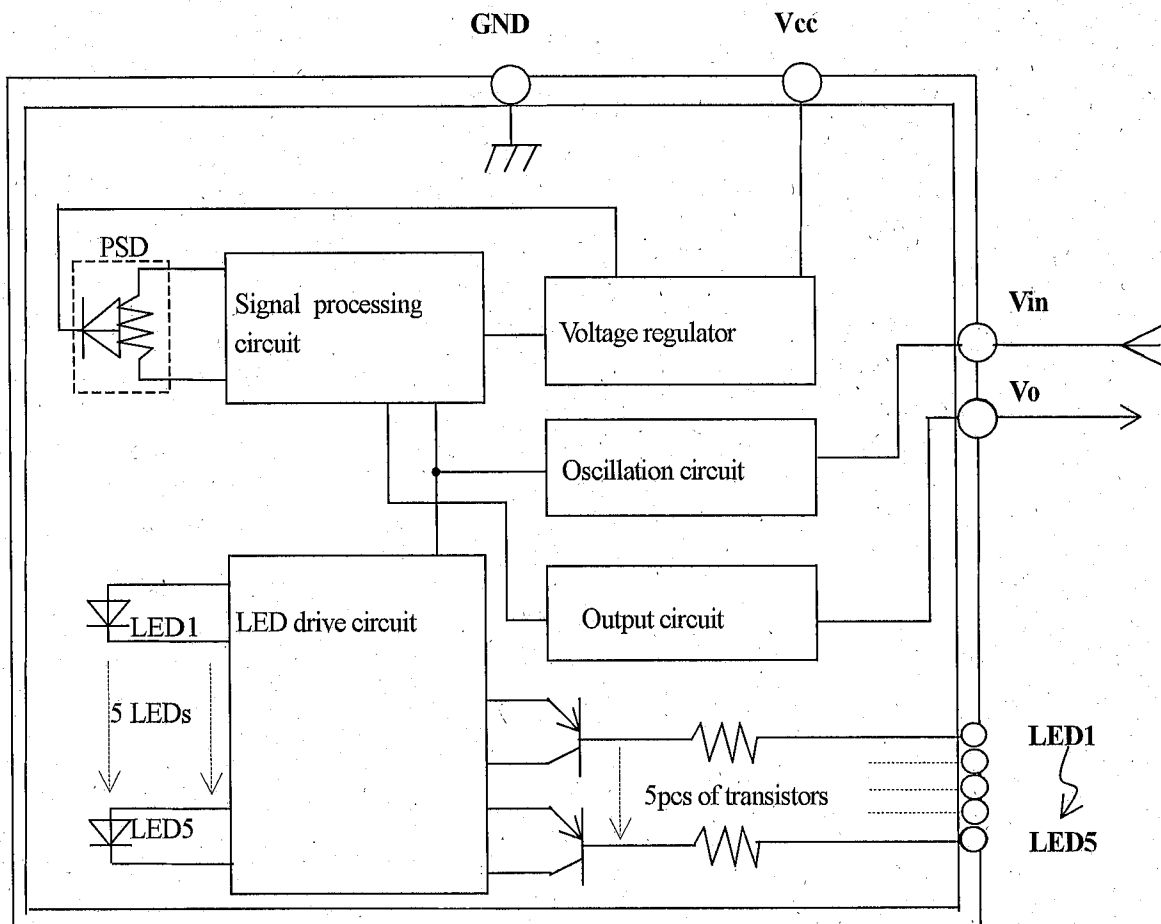
(Ta=25°C, Vcc=5V)

Parameter	Symbol	Ratings	Unit	Remark
Supply voltage	Vcc	-0.3 to +7	V	-
Output terminal voltage	Vo	-0.3 to Vcc+0.3	V	-
Input Voltage	Vin, LED1 to LED5	-0.3 to Vcc+0.3	V	-
Operating temperature	Topr	-10 to +60	°C	-
Storage temperature	Tstg	-40 to +70	°C	-

Operating supply voltage

Symbol	Rating	Unit	Remark
Vcc	4.5 to 5.5	V	-

3-2 Schematic



3-3 Electro-optical Characteristics

<Distance measuring sensor>

(Ta=25°C, Vcc=5V)

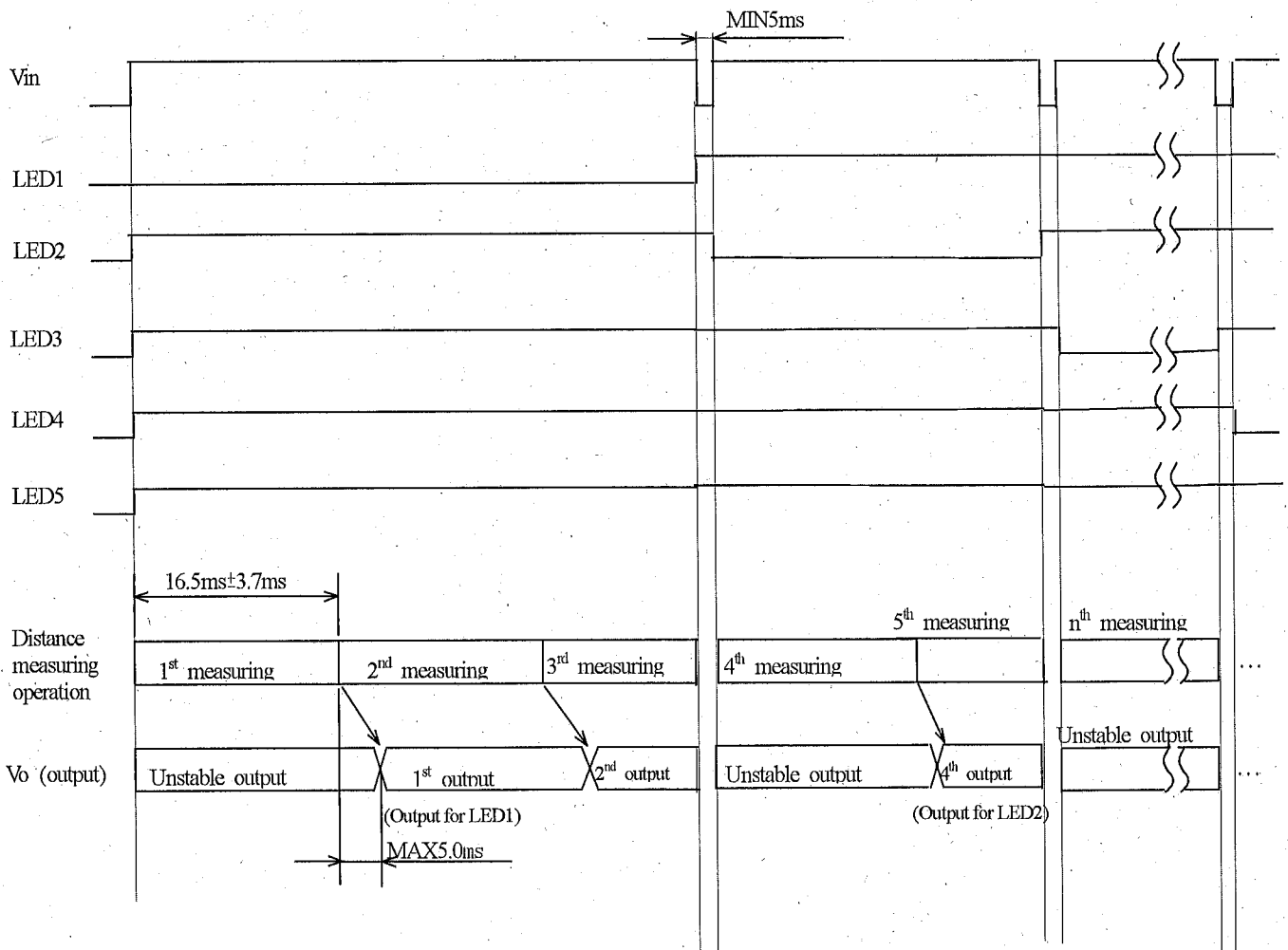
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Measuring distance range	ΔL	(Note 1)	200	-	1500	mm
Output terminal voltage	V_o	L=1500 mm (Note 1)	(A-0.3)	(A)	(A+0.3)	V
Output voltage gap	ΔV_o	Output voltage gap between L=500 mm and L=200 mm (Note 1)	(B-0.3)	(B)	(B+0.3)	V
Input voltage	$V_{in H}$	Input 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

※ L: Distance to reflective object

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

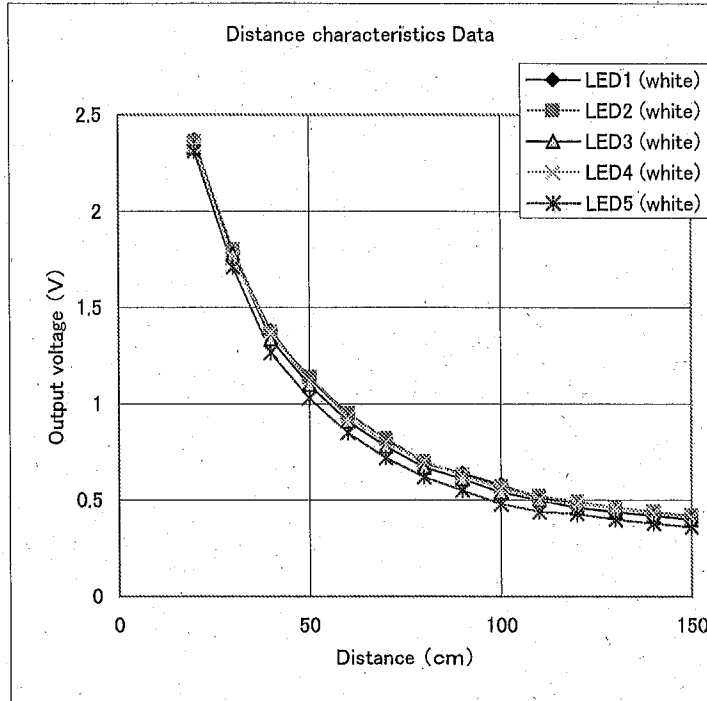
Note 2: The voltage value of A and B will be specified later.

Timing chart



4-1. Example of distance measuring characteristics (output)

White reflective paper (reflective ratio: 90%)



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