

# GP2U05

## Particulate Detectable High Sensitivity Type Dust Sensor

### ■ Features

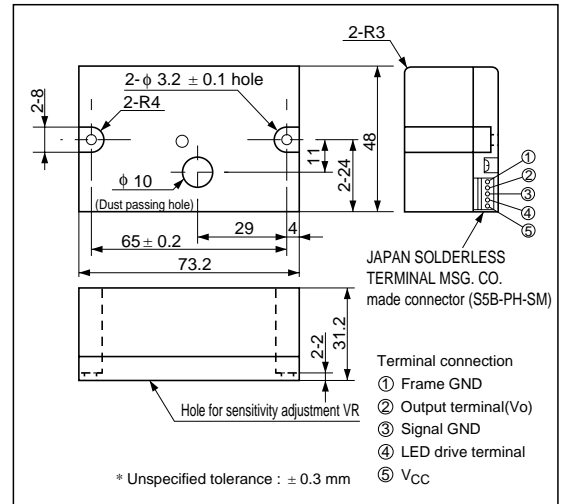
1. High sensitivity (Dust detection sensitivity : 1 V/(0.1 mg/m<sup>3</sup>)
2. Particulates of low concentration can be detected.  
Lowest detectable dust concentration : TYP. 0.05 mg/m<sup>3</sup>
3. Popular type

### ■ Applications

1. Air cleaners
2. Air conditioners

### ■ Outline Dimensions

(Unit : mm)



### ■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit	Remarks
Supply voltage	V <sub>CC</sub>	- 0.3 to +15	V	-
Input terminal voltage	V <sub>LED</sub>	- 0.3 to +15	V	Open drain operation input
Operating temperature	T <sub>opr</sub>	- 10 to +65	°C	-
Storage temperature	T <sub>stg</sub>	- 20 to +80	°C	-

### • Operating Supply Voltage

Symbol	Rating	Unit	Remarks
V <sub>CC</sub>	12 ± 1.8	V	-

### ■ Electro-optical Characteristics

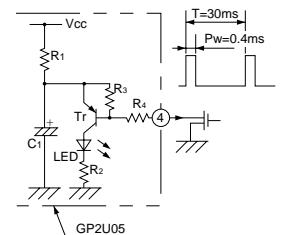
(Ta=25°C, V<sub>CC</sub>=5V)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Detection sensitivity	K	*1 *2	0.7	1.0	1.3	V/(0.1mg/m <sup>3</sup> )
Output voltage at no dust	V <sub>OC</sub>	*2	0.1	1.0	3.0	V
Output voltage range	V <sub>OH</sub>	R <sub>L</sub> =4.7kΩ	V <sub>CC</sub> - 1.8	-	-	V
LED drive current	I <sub>LED</sub>	LED terminal=0V,*2	-	15	20	mA
Dissipation current	I <sub>CC</sub>	R <sub>L</sub> =∞ *2	-	12	20	mA

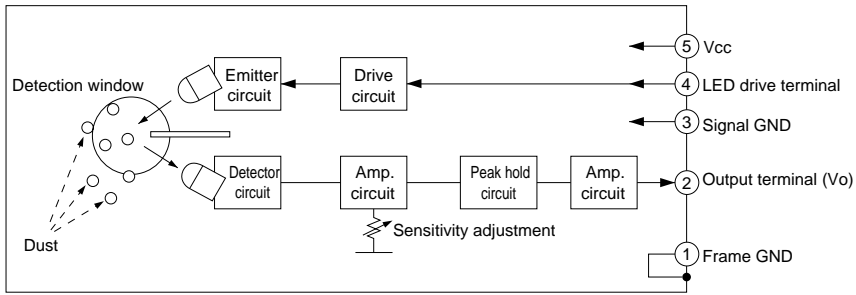
\*1 • Dust concentration shall be a value of the cigarette (MILD SEVEN) smoke concentration measured using the digital dust densitometer (SHIBATA KAGAKU KOGYO CO. LTD. made P-5L2).

• Detection sensitivity K represents the change of output voltage when dust concentration changes by 0.1 mg/m<sup>3</sup>.

\*2 Input conditions (pulse drive conditions) to LED input terminal shall be as shown in the right drawing.



Internal Block Diagram



(Note) Signal GND : GND of circuit system  
 Frame GND : Connect to the case (conductive resin).  
 The signal GND is not connected to the frame GND in the case

Fig. 1 Output Voltage vs. Dust Concentration

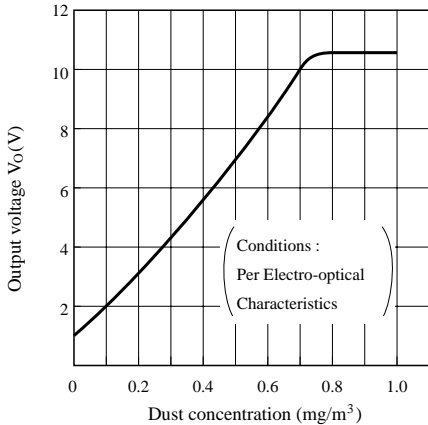


Fig. 2 Output Voltage vs. Supply Voltage

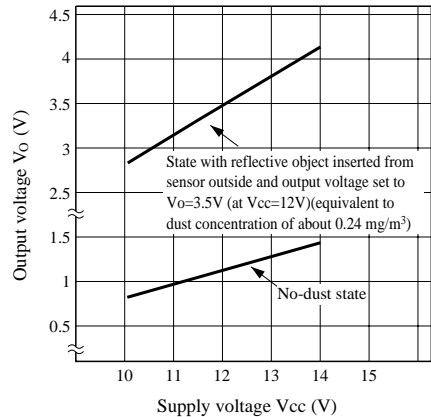


Fig. 3 Output Voltage vs. Ambient Temperature

