

# GP2Y1010AU

## Compact Dust Sensor for Air Conditioners

### ■ Features

1. Compact, thin type (46×30×17.6mm)
2. Low dissipation current ( $I_{CC}$ :MAX. 20mA)
3. Single-shot detection of house dust

### ■ Applications

1. Air conditioners
2. Air cleaner

### ■ Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Rating	Unit
Supply voltage	$V_{CC}$	-0.3 to +7	V
*1 Input terminal voltage	$V_{LED}$	-0.3 to $V_{CC}$	V
Operating temperature	$T_{opr}$	-10 to +65	°C
Soldering temperature	$T_{sol}$	-20 to +80	°C

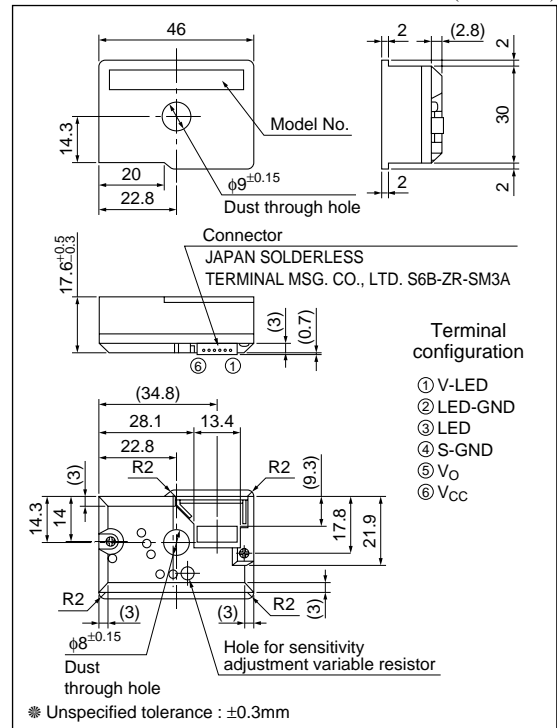
\*1 Open drain drive input

### ■ Recommend Operating Conditions

Parameter	Symbol	Rating	Unit
Operating Supply voltage	$V_{CC}$	$5\pm 0.5$	V

### ■ Outline Dimensions

(Unit : mm)



深圳市新世联科技有限公司

### ■ Electro-optical Characteristics

( $T_a=25^\circ\text{C}$ ,  $V_{CC}=5\text{V}$ )

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Detecting sensitivity	K	*1 *2 *3 *4	0.35	0.5	0.65	V/(0.1mg/m <sup>3</sup> )
Output voltage (no dust)	$V_{OC}$	*2 *3 *4	0	0.9	1.5	V
Output voltage range	$V_{OH}$	*2 *3 *4 $R_L=4.7\text{k}\Omega$	3.4	—	—	V
LED terminal current	$I_{LED}$	*2 *3 *4 LED terminal=0V	—	10	20	mA
Dissipation current	$I_{CC}$	*2 *3 $R_L=\infty$	—	11	20	mA

\*1 Dust density shall be measured the density of Mild seven by using a digital dust indicator. (P-5L2 made by SIBATA SCIENTIFIC TECHNOLOGY LTD.)

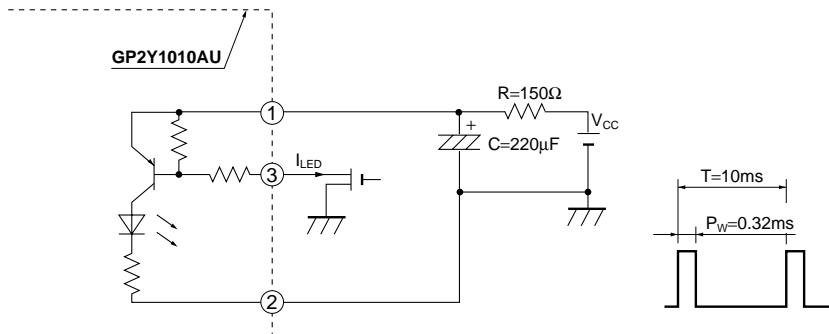
Sensitivity:K shall be specified about output voltage change when dust density is changed 0.1mg/m<sup>3</sup>

\*2 Input condition for LED input terminal (pulse driving condition) is shown in Fig.1

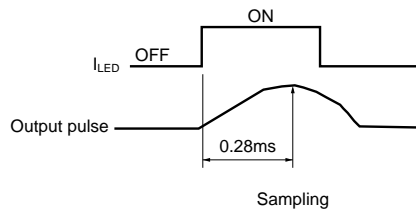
\*3 Refer to Fig.1

\*4 Refer to Fig.2

### Fig.1 Input Condition for LED Input Terminal



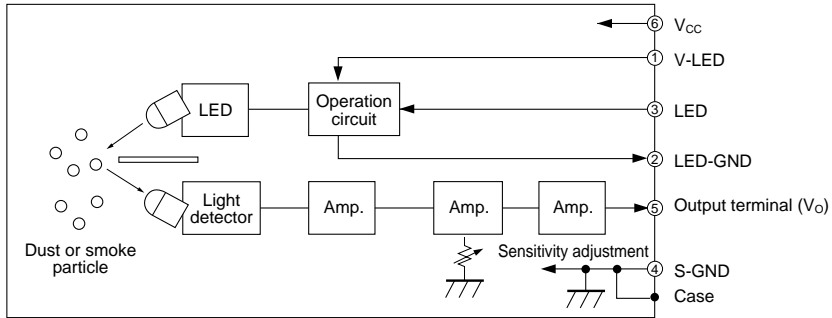
### Fig.2 Sampling Timing of Output Pulse



### ■ Recommended Input Condition for LED Input Terminal

Parameter	Symbol	Recommendation	Unit
Pulse cycle	T	10±1	ms
Pulse width	$P_w$	0.32±0.02	ms

Fig.3 Internal Block Diagram



深圳市新世联科技有限公司

## NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:
  - (i) The devices in this publication are designed for use in general electronic equipment designs such as:
    - Personal computers
    - Office automation equipment
    - Telecommunication equipment [terminal]
    - Test and measurement equipment
    - Industrial control
    - Audio visual equipment
    - Consumer electronics
  - (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
    - Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
    - Traffic signals
    - Gas leakage sensor breakers
    - Alarm equipment
    - Various safety devices, etc.
  - (iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
    - Space applications
    - Telecommunication equipment [trunk lines]
    - Nuclear power control equipment
    - Medical and other life support equipment (e.g., scuba).
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Law of Japan, it is necessary to obtain approval to export such SHARP devices.
- This publication is the proprietary product of SHARP and is copyrighted, with all rights reserved. Under the copyright laws, no part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, in whole or in part, without the express written permission of SHARP. Express written permission is also required before any use of this publication may be made by a third party.
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.