OPTICAL-ELECTRIC SENSOR LINEUP

☆New product

RoHS

Sensor type	Output	Detected distance		Features	Model No.	Page
	1-bit digital output according					-
PSD	to distance measuring	13 cm	1-bit digital output		GP2Y0D413K0F	34
		24 cm	1-bit digital output		GP2Y0D21YK0F	34
		80 cm	1-bit digital output		GP2Y0D02YK0F	34
	Analog voltage output according to distance					
	measuring	1.5 to 15 cm		Analog output	GP2Y0AF15 series	34
		2 to 15 cm		Analog output	GP2Y0A51SK0F	34
		4 to 30 cm		Analog output	GP2Y0A41SK0F / GP2Y0AF30 series	34
		10 to 80 cm		Analog output	GP2Y0A21YK0F	34
		20 to 150 cm		Analog output	GP2Y0A02YK0F	34
		100 to 550 cm		Analog output	GP2Y0A710K0F	34
	Analog voltage output according to distance measuring		Compact size, high-precision			
CMOS	(Including I ² C output)	4 to 50 cm	measurement	Analog output	GP2Y0E02A	35
				I ² C output	GP2Y0E02B	35
				Analog, I ² C output	GP2Y0E03	35
ToF	I ² C output	10 to 200 cm	Compact size, high-precision measurement	IR laser	☆GP2AP02VT20F	36
		1 to 30 cm	Compact size, high-precision measurement	IR laser	GP2AP03VT00F	36

■Distance Measuring Sensor Lineup

The model marked with **A** may not be available in the near future. Contact with SHARP for details before use.

■Dust Sensor Unit Lineup

Output	Features	Model No.	Page
Analog output	Pulse analog output, single-shot detection of house dust, general purpose	GP2Y1010AU0F	37
	Pulse analog output, single-shot detection of house dust, high sensitivity	GP2Y1012AU0F	37
	Pulse analog output, single-shot detection of house dust, high precision	GP2Y1014AU0F	37
Digital output	Digital (PWM) output, built-in microprocessor controller, single-shot detection of house dust, high sensitivity	GP2Y1023AU0F	37
	Digital (UART) output, built-in microprocessor controller, single-shot detection of house dust, high concentration	GP2Y1026AU0F	37
	Digital (UART) output, built-in microprocessor controller, sensing can discriminate between PM2.5 and PM10, internal cleaning possible	GP2Y1030AU0F	37

■PM Sensor Unit Lineup

Output	Features	Model No.	Page
	Digital (UART/I ² C) Output Detectable PM1.0/PM2.5/PM10 separately		
Digital output	Equipped with auto cleaning mode function	GP2Y1040AU0F	37

DISTANCE MEASURING SENSORS

■Distance Measuring Sensors (1) PSD Type

♦Digital Output

◆Digital Output (Ta = 25°C)									
			Absolute max	kimum ratings	Electro-optical characteristics*1				
Model No.	distance	Features	Vec	Topr	Voн	Vol	Dissipation current		
model He.	(cm)		(V)	(°C)	(V) MIN.	(V) MAX.	Operating (mA)	Standby (µA)	
GP2Y0D413K0F	13	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, digital voltage output according to the measured distance	-0.3 to +7	-10 to +60	Vcc -0.3	0.6	MAX. 27	-	
GP2Y0D21YK0F	24	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, digital voltage output according to the measured distance	-0.3 to +7	-10 to +60	Vcc -0.3	0.6	MAX. 40	-	
GP2Y0D02YK0F	80	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, long distance measuring type digital voltage output according to the measured distance	-0.3 to +7	-10 to +60	Vcc -0.3	0.6	MAX. 50	-	

*1 Vcc = 5 V

*2 PSD: Position Sensitive Detector

The model marked with ▲ may not be available in the near future. Contact with SHARP for details before use.

Analog Output

							· ,	
Distance			Absolute max	kimum ratings	Electro-optical characteristics*1			
Model No.	measuring range	Features	Vcc	Topr	Voн (V)	Vol	Dissipation current	
	(cm)		(V)	(°C)	MIN.	MAX.	Operating (mA)	
GP2Y0AF15 series	1.5 to 15	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, short measuring cycle (16.5 ms), compact, lineup of various connector shapes	-0.3 to +7	-10 to +60	Vo (TYP.) = 0.4 V (at L = 15 cm), Δ Vo (TYP.) = 2.3 V (at L = 15 cm \rightarrow 1.5 cm)		TYP. 17	
GP2Y0A51SK0F	2 to 15	Distance measuring sensor united with PSD*2, infrared LED and signal processing circuit, short measuring cycle (16.5 ms)	-0.3 to +7	-10 to +60	Vo (TYP. (at L = 1 ΔVo (TYP.) (at L = 15 ci	0 = 0.4 V 5 cm), 0 = 2.25 V m \rightarrow 2 cm)	TYP. 12	
GP2Y0AF30 series	4 to 30	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, short measuring cycle (16.5 ms), compact, lineup of various connector shapes	-0.3 to +7	-10 to +60	Vo (TYP.) = 0.4 V (at L = 30 cm), Δ Vo (TYP.) = 2.3 V (at L = 30 cm \rightarrow 4 cm)		TYP. 17	
GP2Y0A41SK0F	4 to 30	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, short measuring cycle (16.5 ms)	-0.3 to +7	-10 to +60	Vo (TYP.) = 0.4 V (at L = 30 cm), Δ Vo (TYP.) = 2.25 V (at L = 30 cm \rightarrow 4 cm)		MAX. 22	
GP2Y0A21YK0F	10 to 80	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit	-0.3 to +7	-10 to +60	Vo (TYP: (at L = 8) ۵۷o (TYP (at L: 80 cm) = 0.4 V 30 cm), .) = 1.9 V → 10 cm)	MAX. 40	
GP2Y0A02YK0F	20 to 150	Distance measuring sensor united with PSD ^{*2} , infrared LED and signal processing circuit, long distance measuring type	-0.3 to +7	-10 to +60	Vo (TYP. (at L = 1 ΔVo (TYP. (at L = 150 c) = 0.4 V 50 cm),) = 2.05 V m → 20 cm)	MAX. 50	
GP2Y0A710K0F	100 to 550	Distance measuring sensor united with PSD*2, infrared LED and signal processing circuit, long distance measuring type	-0.3 to +7	-10 to +60	Vo (TYP.) = 2.5 V (at L = 100 cm), Δ Vo (TYP.) = 0.7 V (at L = 100 cm → 200 cm)		TYP. 30	

*1 Vcc = 5 V

*2 PSD: Position Sensitive Detector

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(Ta = 25°C)

■Distance Measuring Sensors (2) CMOS Type

◆Analog Output (including I²C output)

OPTO

	Distance		Absolute max	kimum ratings	Electro-optical characteristics*1			
Model No.	measuring	Features	Vcc	Topr	Vон	Vol	Dissipation current	
	(cm)		(V)	(°C)	MIN.	MAX.	Operating (mA)	
GP2Y0E02A	4 to 50	Infrared LED and CMOS image sensor with built-in signal processing circuit, compact size (18.9 \times 8 \times 5.2 mm), high-precision measurement, analog output	-0.3 to +3.6	-10 to +60	Vout (A) 1 = 0.3 to 0.8 V (at L = 50 cm), Vout (A) 3 = 2.1 to 2.3 V (at L = 4 cm)		MAX. 36	
GP2Y0E02B	4 to 50	Infrared LED and CMOS image sensor with built-in signal processing circuit, compact size (18.9 \times 8 \times 5.2 mm), high-precision measurement, I ² C output	-0.3 to +3.6	-10 to +60	D1 = 45 to 55 cm (at L = 50 cm), D3 = 3 to 5 cm (at L = 4 cm)		MAX. 36	
GP2Y0E03	4 to 50	Infrared LED and CMOS image sensor with built-in signal processing circuit, compact size (16.7 \times 11 \times 5.2 mm), high-precision measurement, analog / I ² C output both compatible	-0.3 to +5.5	-10 to +60	Vout (A) $1 = 0.3$ to 0.8 V, D1 = 45 to 55 cm (at L = 50 cm), Vout (A) $3 = 2.1$ to 2.3 V, D3 = 3 to 5 cm (at L = 4 cm)		MAX. 36	

*1 Vcc = 3.3 V



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(Ta = 25°C)

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DISTANCE MEASURING SENSORS

☆New product

RoHS

■ToF Type Distance Measuring Sensor (ToF = Time of Flight)

(Ta = 25°C)

		Absolute maximum ratings			Electro-optical characteristics					
Model No.	Features	VDD (V)	Tstg (°C)	Operating supply voltage VDD (V)	Average Dissipation current (VDD+VCSEL) ICC (mA) TYP.	VCSEL Peak emission wavelength λp (nm)	Possible measuring distance (white paper) Rwhite (cm)	Measurement accuracy (white paper) Racc	Detection time Trange (msec)	
☆GP2AP02VT20F	Ultra miniature integrated light detector: 4.0 × 2.2 × 1.5 mm Equipped TDC circuit achieves higher precision and allows operation in 50,000-lux sunlight I2C interface	3.6	-40 to +85	2.6 to 3.5	10	940	10 to 200	±4 % (@120 cm)	33	
GP2AP03VT00F	Ultra miniature integrated light detector: $4.0 \times 2.2 \times 1.5$ mm Equipped TDC circuit achieves higher precision and highly precise measurement at close range l ² C interface	3.6	-40 to +85	3.0 to 3.5	10	940	1 to 30	±6 mm (@10 cm)	33	



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DUST SENSOR UNIT / PM SENSOR UNIT

RoHS

■Dust Sensor Unit

Dust Ser	isor Unit						(Ta = 25°C)		
		Topr (°C)		Electro-optical characteristics					
Model No.	Features		Operating supply voltage (V)	Dissipation current (mA)	Reference Detection concentration µg/m ³ (TYP.)(*)	Sensitivity	Output		
GP2Y1010AU0F	 Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Analog voltage 	-10 to +65			0 to 1 500	0.5±0.15 V/ (0.1 mg/m ³) Precision ±30%	Analog voltage		
GP2Y1012AU0F	 High sensitivity Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Analog voltage 		4.5 to 5.5	TYP. 11	0 to 750	1.0±0.15 V/ (0.1 mg/m ³) Precision ±15%	Analog voltage		
GP2Y1014AU0F	 High precision Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Analog voltage 				0 to 1 500	0.5±0.075 V/ (0.1 mg/m ³) Precision ±15%	Analog voltage		
GP2Y1023AU0F	 High sensitivity Built-in microcomputer Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Digital signal output (PWM) 		4 75 to 5 25	TVD 15	0 to 750	1.4±0.21 ms/ (0.1 mg/m ³) Precision ±15%	Digital signal (PWM) Temperature correction Averaging		
GP2Y1026AU0F	 High concentration Built-in microcomputer Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Digital signal output (UART) 		4.73 10 3.23		0 to 2 100	0.35±0.06 V/ (0.1 mg/m ³) Precision ±15%	Digital signal (UART) Temperature correction Averaging		
GP2Y1030AU0F	 Built-in microcomputer Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Discriminated detection, PM2.5 or larger, is possible Internal cleaning possible 		4.5 to 5.5	TYP. 27	0 to 500	Precision ±15%	Digital signal (UART)		

(*) Based on the TSI 8530 standard





■PM Sensor Unit

	~			Electro-optical characteristics					
Model No.	Features	Topr (°C)	Operating supply voltage (V)	Dissipation current (mA)	Reference Detection concentration µg/m ³ (TYP.)(*)	Sensitivity	Output		
GP2Y1040AU0F	 Built-in VCSEL for high sensitivity and high accuracy Detectable PM1.0/PM2.5/PM10 separately Built-in high reliability fan Equipped with auto cleaning mode function 	-10 to +60	4.5 to 5.5	TYP. 50	0 to 1 000	$\begin{array}{l} Precision \pm 10 \mu g \\ (0 \ -100 \mu g/m^3) \\ Precision \pm 10\% \\ (100 \ -500 \mu g/m^3) \end{array}$	Diginal siganal (UART and I ² C)		



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