

Distance Measuring Sensor Lineup

Sensor type	Output	Detected distance	Features	Model No.	Page			
PSD	1-bit digital output according to distance measuring	13 cm	1-bit digital output	GP2Y0D413K0F	33			
		24 cm	1-bit digital output	GP2Y0D21YK0F	33			
		80 cm	1-bit digital output	GP2Y0D02YK0F	33			
	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			
		CMOS	Analog voltage output according to distance measuring (Including I ² C output)	4 to 50 cm	Compact size, high-precision 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 120 cm	Compact size, high-precision measurement	IR laser
		10 to 200 cm	Compact size, high-precision measurement	IR laser	☆GP2AP02VT00F			35
				1 to 30 cm	Compact size, high-precision measurement			IR laser

The model marked with ▲ 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	36
	Pulse analog output, single-shot detection of house dust, high sensitivity	GP2Y1012AU0F	36
	Pulse analog output, single-shot detection of house dust, high precision	GP2Y1014AU0F	36
Digital output	Digital (PWM) output, built-in microprocessor controller, single-shot detection of house dust, high sensitivity	GP2Y1023AU0F	36
	Digital (UART) output, built-in microprocessor controller, single-shot detection of house dust, high concentration	GP2Y1026AU0F	36
	Digital (UART) output, built-in microprocessor controller, sensing can discriminate between PM2.5 and PM10, internal cleaning possible	GP2Y1030AU0F	36

PM Sensor Unit Lineup

Output	Features	Model No.	Page
Digital output	Digital (UART/I ² C) Output Detectable PM1.0/PM2.5/PM10 separately Equipped with auto cleaning mode function	GP2Y1040AU0F	36



Distance Measuring Sensors (1) PSD Type

◆Digital Output

(Ta = 25°C)

Model No.	Detected distance (cm)	Features	Absolute maximum ratings		Electro-optical characteristics ^{*1}			
			Vcc (V)	Topr (°C)	VOH (V) MIN.	VoL (V) MAX.	Dissipation current	
							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

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◆Analog Output

(Ta = 25°C)

Model No.	Distance measuring range (cm)	Features	Absolute maximum ratings		Electro-optical characteristics ^{*1}		
			Vcc (V)	Topr (°C)	VOH (V) MIN.	VoL (V) MAX.	Dissipation current
							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), ΔVo (TYP.) = 2.3 V (at L = 15 cm → 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.) = 0.4 V (at L = 15 cm), ΔVo (TYP.) = 2.25 V (at L = 15 cm → 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), ΔVo (TYP.) = 2.3 V (at L = 30 cm → 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), ΔVo (TYP.) = 2.25 V (at L = 30 cm → 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.) = 0.4 V (at L = 80 cm), ΔVo (TYP.) = 1.9 V (at L: 80 cm → 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.) = 0.4 V (at L = 150 cm), ΔVo (TYP.) = 2.05 V (at L = 150 cm → 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), ΔVo (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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Distance Measuring Sensors (2) CMOS Type

◆Analog Output (including I²C output)

(Ta = 25°C)

Model No.	Distance measuring range (cm)	Features	Absolute maximum ratings		Electro-optical characteristics*1		
			Vcc (V)	Topr (°C)	VoH (V) MIN.	VoL (V) MAX.	Dissipation current Operating (mA)
GP2Y0E02A	4 to 50	Infrared LED and CMOS image sensor with built-in signal processing circuit, compact size (18.9 × 8 × 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 × 8 × 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 × 11 × 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 = 5 V



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

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Operating supply voltage VDD (V)	Electro-optical characteristics				
		VDD (V)	Tstg (°C)		Average Dissipation current (VDD+VCSEL) ICC (mA) TYP.	VCSEL Peak emission wavelength λ_p (nm)	Possible measuring distance (white paper) Rwhite (cm)	Measurement accuracy (white paper) Racc	Detection time Trange (msec)
GP2AP01VT10F	Ultra miniature integrated light detector: 4.4 × 2.4 × 1.0 mm High-speed distance measuring in dark places through employment of IR laser I ² C interface	3.6	-40 to +85	2.6 to 3.5	30	940	10 to 120	±4 % (@120 cm)	33
☆GP2AP02VT00F	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 I ² C 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 × 2.2 × 1.5 mm Equipped TDC circuit achieves higher precision and highly precise measurement at close range I 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

(Ta = 25°C)

Model No.	Features	Topr (°C)	Operating supply voltage (V)	Electro-optical characteristics			
				Dissipation current (mA)	Reference Detection concentration $\mu\text{g}/\text{m}^3$ (TYP.)(*)	Sensitivity	Output
GP2Y1010AU0F	<ul style="list-style-type: none"> Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Analog voltage 	-10 to +65	4.5 to 5.5	TYP. 11	0 to 1 500	0.5±0.15 V / (0.1 mg/m ³) Precision ±30%	Analog voltage
GP2Y1012AU0F	<ul style="list-style-type: none"> High sensitivity Built-in infrared emitting diode, photodiode and signal processing circuit Compact, single-shot detection of house dust Output: Analog voltage 				0 to 750	1.0±0.15 V / (0.1 mg/m ³) Precision ±15%	Analog voltage
GP2Y1014AU0F	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	TYP. 15	0 to 750	1.4±0.21 ms / (0.1 mg/m ³) Precision ±15%	Digital signal (PWM) Temperature correction Averaging
GP2Y1026AU0F	<ul style="list-style-type: none"> 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) 		0 to 2 100	0.35±0.06 V / (0.1 mg/m ³) Precision ±15%	Digital signal (UART) Temperature correction Averaging		
GP2Y1030AU0F	<ul style="list-style-type: none"> 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

(Ta = 25°C)

Model No.	Features	Topr (°C)	Operating supply voltage (V)	Electro-optical characteristics			
				Dissipation current (mA)	Reference Detection concentration $\mu\text{g}/\text{m}^3$ (TYP.)(*)	Sensitivity	Output
GP2Y1040AU0F	<ul style="list-style-type: none"> 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	Precision ±10 μg (0 -100 $\mu\text{g}/\text{m}^3$) Precision ±10% (100-500 $\mu\text{g}/\text{m}^3$)	Digital signal (UART and I ² C)



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