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ELECTRONIC COMPONENTS

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☆New product

■LCD Modules

<For industrial appliances>

Display size (cm) [″]	Model No.	Dot format H × V (dot)	Pixel pitch H × V (mm)	Active area H × V (mm)	Display colors	Luminance (cd/m²) (TYP.)	Interface	Power consumption (W) (TYP.)	Outline dimensions*1 W × H × D (mm) (TYP.)	Weight (g) (MAX.)	Remarks
21 [8.4]	LQ084S3LG03	800 × RGB × 600	0.213 × 0.213	170.4 × 127.8	16.19 M	330	LVDS	4.1	199.5 × 154.0 × 11.6	320	Long-life LED backlight, Built-in LED backlight driver circuit
	☆LQ084S3LG11	800 × RGB × 600	0.213 × 0.213	170.4 × 127.8	16.77 M	500	LVDS	4.6	200.0 × 152.0 × 9.8	330	Long-life LED backlight, Built-in LED backlight driver circuit
26 [10.4]	LQ104V1DG74	640 × RGB × 480	0.33 × 0.33	211.2 × 158.4	260 k	370	CMOS	4.5	227.3 × 177.5 × 10.0	460	Long-life LED backlight, Built-in LED backlight driver circuit
	LQ104V1DG81/LG81					450	CMOS/ LVDS	5.6	246.5 × 179.3 × 12.5	TYP. 500	Long-life LED backlight, Built-in LED backlight driver circuit
	LQ104S1LG81	800 × RGB × 600	0.264 × 0.264		260 k	420	LVDS	6.1	246.5 × 179.3 × 12.5	500	Long-life LED backlight, Built-in LED backlight driver circuit
31 [12.1]	LQ121K1LG52	1 280 × RGB × 800	0.204 × 0.204	261.1 × 163.2	16.19 M	430	LVDS	6.0	278.0 × 184.0 × 8.6	550	Long-life LED backlight, Built-in LED backlight driver circuit
	LQ121K1LG58				16.19 M	700		5.8	278.0 × 184.0 × 8.6		Long-life LED backlight, Built-in LED backlight driver circuit
	☆LS121K1LX02				16.77 M	400		8.3	278.0 × 184.0 × 9.5	500	Wide Viewing Angle Long-life LED backlight Built-in LED backlight driver circuit
38 [15.0]	LQ150X1LX92	1 024 × RGB × 768	0.297 × 0.297	304.1 × 228.1	16.19 M	270	LVDS	10.0	326.5 × 253.5 × 9.6	950	Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit, Haze value 3%
	LQ150X1LX95					400					Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit, Haze value 3%
	LQ150X1LX96					500					Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit, Haze value 3%
	LQ150X1LW95				16.19 M	400		10.0	326.5 × 253.5 × 9.6		Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit
	LQ150X1LW96					500					Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit

All products listed on this page are LED backlight models.
*1 Protrusions such as positioning bosses are not included.
Note: Please note that the specifications are subject to change without prior notice for product improvement.

☆New product
★Under development

■LCD Modules

<For industrial appliances> (cont'd)

Display size (cm) [″]	Model No.	Dot format H × V (dot)	Pixel pitch H × V (mm)	Active area H × V (mm)	Display colors	Luminance (cd/m²) (TYP.)	Interface	Power consumption (W) (TYP.)	Outline dimensions*1 W × H × D (mm) (TYP.)	Weight (g) (MAX.)	Remarks
40 [15.6]	LQ156T3LW05	1 366 × RGB × 768	0.252 × 0.252	344.232 × 193.536	16.77 M	400	LVDS	16.9	363.8 × 215.9 × 10.8	950	Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit
48 [19.0]	LQ190E1LW72	1 280 × RGB × 1 024	0.294 × 0.294	376.32 × 301.056	16.77 M	350	2ch LVDS	19.6	396.0 × 323.6 × 11.5	1 300	Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit
	LQ190E1LX75T					350		19.6			Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit, Haze value 3%
	LQ190E1LX76					470		21.1			Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit
	LQ190E1LX78					1 200		41.2	398.1× 329.5×17.8	2 300	Advanced Super V, Long-life LED backlight, Built-in LED backlight driver circuit, Haze value 3%
80 [31.5]	☆LS315C1VX01	7 680 × RGB × 4 320	0.09085 × 0.09085	697.728 × 392.472	1.07 B	800	V by One	143.3	729.8 × 424.8 × 40.0	(6 300)	Wide Viewing Angle Local Dimming backlight

All products listed on this page are LED backlight models.
*1 Protrusions such as positioning bosses are not included.
Note: Please note that the specifications are subject to change without prior notice for product improvement.

<Reflective LCD>

Display size (cm) [″]	Model No.	Dot format H × V (dot)	Pixel pitch H × V (mm)	Active area H × V (mm)	Display colors	Luminance (cd/m²) (TYP.)	Interface	Power consumption (W) (TYP.)	Outline dimensions*1 W × H × D (mm) (TYP.)	Weight (g) (MAX.)	Remarks
13 [5.0]	★LS050K7SX01	720 × RGB × 1 280	0.08625 × 0.08625	62.1 × 110.4	16.77 M	–	MIPI 3lane	(0.12)	67.2 × 120.77 × 1.852	(31.2)	Advanced Super V. Reflective LCD without Light Source
80 [31.5]	☆LS315M7JX01	1 920 × RGB × 1 080	0.363 × 0.363	696.96 × 392.04	16.77 M	with BL (27)	eDP	without BL (1.8)	734.0 × 420.0 × 17.7	(5 500)	Advanced Super V. Reflective LCD with backlight
	★LS315M7LX01	1 920 × RGB × 1 080	0.363 × 0.363	696.96 × 392.04	16.77 M	with BL (27)	2ch LVDS	without BL (1.8)	734.0 × 420.0 × 17.7	(5 500)	Advanced Super V. Reflective LCD with backlight

*1 Protrusions such as positioning bosses are not included.
Note: Please note that the specifications are subject to change without prior notice for product improvement.

★Under development

<For wearable & mobile terminal device (low power consumption LCD)>

Display size (cm) [″]	Model No.	Dot format H × V (dot)	Pixel pitch H × V (mm)	Active area H × V (mm)	Display colors	Lumi-nance (cd/m²) (TYP.)	Interface	Power consump-tion*1 (μW) (TYP.)	Outline dimensions*2 W × H × D (mm) (TYP.)	Weight (g) (MAX.)	Remarks
2.6 [1.03]	LS010B7DH04	128 × 128	0.145 × 0.145	18.56 × 18.56	B/W	No B/L	Serial	45	22.12 × 25.82 × 0.745	1.0	
2.7 [1.08]	LS011B7DH03	160 × 68	0.158 × 0.158	25.28 × 10.744	B/W	No B/L	Serial	25	32.00 × 14.00 × 0.745	0.73	
3 [1.17]	LS012B7DD01	184 × 38	0.158 × 0.158	29.072 × 6.004	B/W	No B/L	Serial	189	35.10 × 11.00 × 0.741	0.6	
3 [1.19]	LS012B7DD06A	240 × RGB × 240	0.126 × 0.126	ø30.24	64-color	No B/L	6-bit parallel	33*3	33.04 × 33.94 × 0.890	1.6	
3.3 [1.29]	★LS013B7DD02	260 × RGB × 260	0.126 × 0.126	ø32.76	64-color	No B/L	6-bit parallel	15*3	35.56 × 36.26 × (0.91)	(2.0)	
3.2 [1.26]	LS013B7DH05	144 × 168	0.145 × 0.145	20.88 × 24.36	B/W	No B/L	Serial	35	24.68 × 30.00 × 0.745	1.1	
3.3 [1.28]	LS013B7DH03	128 × 128	0.180 × 0.180	23.04 × 23.04	B/W	No B/L	Serial	50	26.60 × 30.30 × 0.745	1.3	
3.5 [1.39]	LS014B7DD01	280 × RGB × 280	0.126 × 0.126	ø35.28	64-color	No B/L	6-bit parallel	17.5*3	38.08 × 38.78 × (0.91)	(2.3)	
4.6 [1.8]	LS018B7DH02	230 × 303	0.12 × 0.12	27.6 × 36.36	B/W	No B/L	Serial	100	31.00 × 41.46 × 0.745	2.03	
5.4 [2.13]	LS021B7DD02	240 × RGB × 320	0.135 × 0.135	32.4 × 43.2	64-color	No B/L	6-bit parallel	45*3	35.4 × 48.6 × (0.91)	(2.95)	
6.9 [2.7]	LS027B7DH01	400 × 240	0.147 × 0.147	58.8 × 35.28	B/W	No B/L	Serial	175	62.8 × 42.82 × 1.65	11.0	
8.0 [3.16]	LS032B7DD02	336 × 536	0.127 × 0.127	42.672 × 68.072	B/W	No B/L	Serial	250	47.02 × 76.00 × 0.705	5.5	
11.2 [4.4]	LS044Q7DH01	320 × 240	0.280 × 0.280	89.6 × 67.2	B/W	No B/L	Serial	600	94.8 × 75.2 × 1.64	29.0	

<For VR (Virtual Reality)>

Display size (cm) [″]	Model No.	Dot format H × V (dot)	Pixel pitch H × V (mm)	Active area H × V (mm)	Luminabce (cd/m²) (TYP.)	Contrast	Interface	Reflesh rate	Response time	Outline dimensions*2 W × H × D (mm) (TYP.)	Remarks
7.3 [2.89]	LS029B3SX06A	2160 × RGB × 2 160	0.024 × 0.024	51.84 × 51.84	150cd (63 mA, 10%Duty)	700	MIPI D-phy 8 lane	90 Hz	4 msec (Black to White) 5 msec (Gray to Gray)	54.24 × 59.32 × 1.365	

*1 Data update mode (Display pattern: Vertical stripe display)
*2 Protrusion such as positioning bosses are not included.
*3 Data update mode (Display pattern: White display)
Note: Please note that the specifications are subject to change without prior notice for product improvement.

RoHS

■CMOS Image Sensors for Digital Cameras/Digital Camcorders

Optical format	Number of record pixels	Color filter	Model No.	Shutter system	Video performance	Resolution	Pixel size H × V (μm)	Sensitivity (mV/Lux-sec) TYP.	Package
						Image pixels (H × V)			
1 type	12 820 k	R, G, B primary color mosaic filters	RJ5DY1BA0LT	Rolling	10bit 4K2K 60 fps 12bit 4K2K 36 fps	4 144 × 3 096	3.10 × 3.10	1 420	N-LCC120
		B/W	RJ5DY2BA0LT					2 340	
2/3 type	2 210 k	R, G, B primary color mosaic filters	RJ52N1BA0LT	Rolling	1 080P 120 fps	1 984 × 1 116	5.00 × 5.00	3 520	
		B/W	RJ52N2BA0LT					5 200	
	8 850 k	R, G, B primary color mosaic filters	RJ52V1BA0LT	Rolling	4K2K 60 fps	3 968 × 2 232	2.50 × 2.50	1 780	
		B/W	RJ52V2BA1LT					2 600	
		B/W	RJ52V2BB0LT					3 090	
4/3 type	33 270 k	R, G, B primary color mosaic filters	RJ5EG1BA1LT	Rolling	8K4K 30 fps	7 688 × 4 328	2.45 × 2.45	1 840	N-LGA380
1 type	8 940 k	R, G, B primary color mosaic filters	RJ5D91DA0LT	Global	4K2K 60 fps	4 112 × 2 176	3.45 × 3.45	3 000	N-LGA226A
		B/W	RJ5D92DA0LT					4 380	
2/3 type	5 060 k	R, G, B primary color mosaic filters	RJ52S1DA0LT	Global	1 080P 120 fps	2 464 × 2 056	3.45 × 3.45	3 000	N-LGA226
		B/W	RJ52S2DA0LT					4 380	
1/1.8 type	3 180 k	R, G, B primary color mosaic filters	RJ51P1DA0LT	Global	1 080P 120 fps	2 064 × 1 544	3.45 × 3.45	3 000	
		B/W	RJ51P2DA0LT					4 380	

RoHS

High-sensitivity Image Sensors for Security Usage

■Progressive CCDs

Optical format	Total pixels	Model No.	Video performance	Color filter	Resolution Image pixels (H × V)	Pixel size H × V (μm)	Sensitivity*1 (mV) TYP.	Smear ratio (dB) TYP.	Package
1/3 type	350 k	RJ33B3AA0DT	VGA 120 fps (1 ch output)	Primary color	660 × 494	7.4 × 7.4	3 000	–125	P-DIP024-0400
		RJ33B4AA0DT		B/W			4 500		
		RJ33B3AD0DT	VGA 200 fps (2 ch output)	Primary color			3 000		
		RJ33B4AD0DT		B/W			4 500		
	520 k	RJ3331AA0PB	NTSC 650 TV lines	Complementary color	976 × 494	5.0 × 7.4	1 500	–120	P-DIP016-0450
	610 k	RJ3341AA0PB	PAL 650 TV lines	Complementary color	976 × 582	5.0 × 6.3			
	1 350 k	RJ33J3CA0DT	1.3M 30 fps 720p 30 fps (1 ch output)	Primary color	1 320 × 976	3.75 × 3.75	950	–120	P-DIP024-0400
		RJ33J4CA0DT		B/W			1 430		
1/1.8 type	2 100 k	RJ31N3AA0DT	2M 25 fps (1 ch output)	Primary color	1 644 × 1 236	4.4 × 4.4	1 100	–120	P-DIP028-0566
		RJ31N4AA0DT		B/W			1 650		
	2 130 k	RJ31N3AD0DT	2M 50 fps (2 ch output)	Primary color			1 100		
		RJ31N4AD0DT		B/W			1 650		
	2 960 k	RJ31P3AD0DT	2.8M 30 fps (2 ch output)	Primary color	1 940 × 1 460	3.69 × 3.69	750	–115	
		RJ31P4AD0DT		B/W			1 150		

*1 The average G signal output voltage (the average output voltage in the case of the complementary color filter) when a 1,000-lux light source with a 90% reflector is imaged by a lens of F4 at 1/30 sec (1/25 sec in the case of RJ3341AA0PB) frame accumulation.

RoHS

■Progressive CCDs (cont'd)

Optical format	Total pixels	Model No.	Video performance	Color filter	Resolution Image pixels (H × V)	Pixel size H × V (µm)	Sensitivity*1 (mV) TYP.	Smear ratio (dB) TYP.	Package
2/3 type	5 240 k	RJ32S3AA0DT	5M 9 fps (1 ch output)	Primary color	2 456 × 2 058	3.45 × 3.45	530	–110	P-DIP028-0566
		RJ32S4AA0DT		B/W			800		
		RJ32S3AD0DT	5M 15 fps (2 ch output)	Primary color			530		
		RJ32S4AD0DT		B/W			800		
1/1 type	6 090 k	RJ3DT3AF0DT	6M 30 fps (4 ch output)	Primary color	2 758 × 2 208	4.54 × 4.54	1 150	–125	P-DIP064-1000
		RJ3DT4AF0DT		B/W			1 750		
	8 290 k	RJ3DV3AF0DT	8M 25 fps (4 ch output)	Primary color	3 320 × 2 496	3.88 × 3.88	750	–120	
		RJ3DV4AF0DT		B/W			1 100		
4/3 type	8 340 k	RJ3EV3EF0DT	8M 25 fps (4 ch output)	Primary color	3 848 × 2 168	5.14 × 5.14	1 500	–125	P-DIP064-1000B
		RJ3EV4EF0DT		B/W			2 250		

*1 The average G signal output voltage when a 1,000-lux light source with a 90% reflector is imaged by a lens of F4 at 1/30 sec frame accumulation.

■1/3-type CCDs

Total pixels	Standard		Model No.	Resolution		Pixel size H × V (μm)	Sensitivity*1 (mV) TYP.	Smear ratio (dB) TYP.	Package
				Horizontal TV lines	Image pixels (H × V)				
410 k	Color	NTSC	RJ2355DA0PB	480	768 × 494	6.4 × 7.5	2 700	–135	P-DIP016-0450
470 k		PAL	RJ2365DA0PB		752 × 582	6.53 × 6.39			
520 k		NTSC	RJ2331BA0PB	650	976 × 494	5.0 × 7.4	2 400	–125	
610 k		PAL	RJ2341BA0PB		976 × 582	5.0 × 6.3			

*1 The average output voltage measured when imaging a 90% reflector illuminated by a 1,000-lux light source through an optical system set at an f number of F4.0.

■1/4-type CCDs

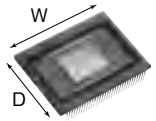
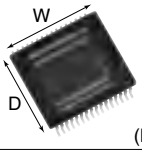
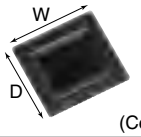
Total pixels	Standard		Model No.	Resolution		Pixel size H × V (μm)	Sensitivity*1 TYP. (mV)	Smear ratio TYP. (dB)	Package
				Horizontal TV lines	Image pixels (H × V)				
410 k	Color	NTSC	RJ2455DA0PB	480	768 × 494	4.9 × 5.6	1 350	–120	P-DIP014-0400A
470 k		PAL	RJ2465DA0PB		752 × 582	5.0 × 4.77			
520 k		NTSC	RJ2431AA0PB	650	976 × 494	3.75 × 5.56	1 400		
610 k		PAL	RJ2441AA0PB		976 × 582	3.75 × 4.74			

*1 The average output voltage measured when imaging a 90% reflector illuminated by a 1,000-lux light source through an optical system set at an f number of F4.0.

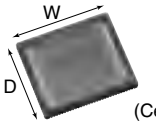
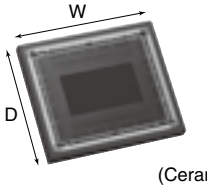
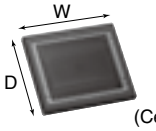
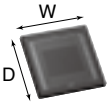
PACKAGE LINEUP

RoHS

◆For CCDs

Package type	Appearance (Package material)	Package code	No. of terminals	Terminal pitch mm	Package depth & width (D × W) × (seated height [TYP.]) mm
DIP	 (Plastic)	P-DIP014-0400A	14	1.27	10.0 × 10.0
		P-DIP016-0450	16	1.27	11.4 × 12.2
		P-DIP020-0500	20	1.27	12.0 × 13.8
		P-DIP024-0400	24	0.80	10.0 × 10.0
		P-DIP028-0566	28	1.11	14.2 × 16.0
		P-DIP064-1000	64	1.00	36.1 × 25.4
		P-DIP064-1000B			
SOP	 (Plastic)	P-SOP014-0400A	14	1.27	10.0 × 10.0 × (4.1)
		P-SOP028-0400	28	0.69	10.0 × 10.0 × (3.5)
		P-SOP032-0525	32	0.78	12.0 × 13.8 × (3.92)
LCC	 (Ceramic)	N-LCC040-R350 (B)	40	0.65	8.3 × 8.9 × (1.52)
		N-LCC040-S433A		0.80	11.0 × 11.0 × (1.62)

◆For CMOSs

Package type	Appearance (Package material)	Package code	No. of terminals	Terminal pitch mm	Package depth & width (D × W) × (seated height [TYP.]) mm
LCC	 (Ceramic)	N-LCC120	120	0.65	20.0 × 22.8 × (2.67)
LGA	 (Ceramic)	N-LGA380	380	1.27	30.7 × 35.6 × (3.82)
	 (Ceramic)	N-LGA226A	226	1.00	20.0 × 23.0 × (2.04)
	 (Ceramic)	N-LGA226	226	1.00	17.6 × 18.5 × (2.04)

DIP : dual inline package
SOP : small outline package
LCC : leadless chip carrier
LGA : land grid array

Notice
In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that may occur in equipment using any SHARP devices shown in catalogs, data books, etc.
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*EU RoHS Directive: EU legislation restricting the use of lead, cadmium, hexavalent chromium, mercury, specific brominated flame retardants (PBB and PBDE), and phthalates (DEHP, BBP, DBP, DIBP).
Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

★Under development

■Photocoupler Lineup

<Phototransistor output type>

Package type	Output type	Features		Model No. (series)	Page
Mini-flat 4-pin Compact, SOP type	Single phototransistor	General purpose, High collector-emitter voltage		PC357NJ0000F / PC451J00000F	11
			Low input current	PC367NJ0000F	11
		AC input response		PC354NJ0000F	11
	Darlington phototransistor	High sensitivity, High collector-emitter voltage	Low input current	PC364NJ0000F	11
				PC355NJ0000F / PC452J00000F	11
			Low input current	PC365NJ0000F	11
Compact, Half pitch (lead space), SOP type	Single phototransistor	General purpose		PC3H7J00001H	12
			Reinforced insulation	PC3HU7xYIP1B	12
			Low input current	PC3H71xNIP1H	12
		AC input response		PC3H3J00001H / PC3H4J00001H	12
DIP type (4-pin)	Single phototransistor	Reinforced insulation		PC123XxYSZ1B	13
(4-pin, DIP type)			Low input current	PC1231xNSZ1B	13
		General purpose, High collector-emitter voltage, etc.		PC817XxNSZ1B / PC851XNNSZ1H	13
			Low input current	PC8171xNSZ1B	13
	Darlington phototransistor	High sensitivity, High collector-emitter voltage		PC852XNNSZ1H	13

<OPIC output type>

Package type	Output type	Features		Model No. (series)	Page
Compact, SOP type	Digital output	General purpose, High response speed		PC400J00000F / PC410LENIP0F	14
	Analog/Digital output	High CMR		PC457L0NIP0F	14
DIP type, Gate drive type	Built-in base amplifier	For inverter control	1.5A output	PC923LRNSZ0F	14
			2.5A output	PC925LENSZ0F	14
LSOP type,Gate drive type	Built-in base amplifier	For inverter control	1.5A output	★PC4L23xxIP0F	15
			2.5A output	★PC4L25xxIP0F	15

RoHS

■Photocouplers

◆Phototransistor Output Type <Compact, SOP type>

○: Approved

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards*2	Package	Absolute maximum ratings			Electro-optical characteristics						
									Current transfer ratio			Response time			
				UL		Forward current I_F (mA)	Isolation voltage (AC) Viso (rms) (kV)	Collector-emitter voltage V_{CEO} (V)	CTR (%) MIN.	I_F (mA)	V_{CE} (V)	tr (μs) TYP.	I_C (mA)	R_L (Ω)	V_{CE} (V)
Single phototransistor output	PC357NJ0000F		General purpose	○	Mini-flat 4-pin	50	3.75	80	50	5	5	4	2	100	2
	PC451J00000F		High collector-emitter voltage	○		50	3.75	350	40	5	5	4	2	100	2
	PC367NJ0000F		Low input current, high resistance to noise*1	○		10	3.75	80	100	0.5	5	4	2	100	2
	PC354NJ0000F		AC input response	○		±50	3.75	80	20	±1	5	4	2	100	2
	PC364NJ0000F		Low input current, AC input response, high resistance to noise*1	○		±10	3.75	80	50	±0.5	5	4	2	100	2
Darlington photo-transistor output	PC355NJ0000F		High sensitivity	○		50	3.75	35	600	1	2	60	2	100	2
	PC365NJ0000F		High sensitivity, low input current	○		10	3.75	35	600	0.5	2	60	10	100	2
	PC452J00000F		High collector-emitter voltage	○		50	3.75	350	1 000	1	2	100	20	100	2

*1 CMR: MIN. 10 kV/μs
*2 Please refer to Specification Sheets for model numbers approved by safety standards.

PC357NJ0000F
(Mini-flat 4-pin)

◆Phototransistor Output Type
<Compact, half pitch (lead space) SOP type>

○: Approved

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards*2			Package	Absolute maximum ratings			Electro-optical characteristics						
											Current transfer ratio			Response time			
				UL	VDE	Others		Forward current IF (mA)	Isolation voltage (AC) Viso (rms) (kV)	Collector-emitter voltage VCEO (V)	CTR (%) MIN.	IF (mA)	VCE (V)	tr (μs) TYP.	IC (mA)	RL (Ω)	VCE (V)
Single phototransistor output	PC3HU7xYIP1B		Reinforced insulation (internal insulation distance: MIN. 0.4 mm)	○	○	○	Compact half pitch	50	3.75	80	50	5	5	4	2	100	2
	PC3H7J00001H		General-purpose	○	–	○		50	2.5	80	20	1	5	4	2	100	2
	PC3H71xNIP1H		High resistance to noise*1, low input current	○	–	○		10	2.5	80	100	0.5	5	4	2	100	2
	PC3H3J00001H		AC input response, high resistance to noise*1	○	–	–		±50	2.5	80	20	±1	5	4	2	100	2
	PC3H4J00001H		AC input response	○	–	○		±50	2.5	80	20	±1	5	4	2	100	2

*1 CMR: MIN.10 kV/μs

*2 Please refer to Specification Sheets for model numbers approved by safety standards.

PC3HU7xYIP1B

PC3H7J00001H
(Compact half pitch)

◆Phototransistor Output Type
<DIP type (4-pin)>

○: Approved

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards*5			Package	Absolute maximum ratings			Electro-optical characteristics			
											Current transfer ratio		Response time	
				UL	VDE	Others		Forward current I_F (mA)	Isolation voltage (AC) Viso (rms) (kV)	Collector-emitter voltage V_{CEO} (V)	CTR (%) MIN.	I_F (mA)	tr (μs) TYP.	R_L (Ω)
Single phototransistor output	PC123XxYSZ1B*1, 3, 4		High isolation voltage, reinforced insulation	○	○	○	4-pin DIP	50	5.0	80	50	5	4	100
	PC1231xNSZ1B*1		High isolation voltage, reinforced insulation, low input current, high resistance to noise*2	○	○*6	○		10	5.0	80	50	0.5	4	100
	PC817XxNSZ1B*3		High isolation voltage	○	–	○		50	5.0	80	50	5	4	100
	PC8171xNSZ1B*3		High isolation voltage, low input current, high resistance to noise*2	○	–	–		10	5.0	80	100	0.5	4	100
	PC851XNNSZ1H*3		High isolation voltage, high collector-emitter voltage	○	–	–		50	5.0	350	40	5	4	100
Darlington phototransistor output	PC852XNNSZ1H*3		High isolation voltage, high collector-emitter voltage	○	–	–		50	5.0	350	1 000	1	100	100

*1 Wide lead spacing type is also available. Creepage distance: 6.4 mm or more, wide lead spacing type: 8 mm or more.
*2 CMR: 10 kV/μs MIN.
*3 Lead forming type is also available for surface mounting.
*4 Wide lead spacing type is also available. Compatible with wide lead spacing type lead-forming models for surface-mount use.
*5 Please refer to Specification Sheets for model numbers approved by safety standards.
*6 Optionally available.

PC817XxNSZ1B
(4-pin DIP)

◆OPIC Output

("OPIC" (Optical IC) is a trademark of SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.)

<Compact, SOP type> (1-1)

○: Approved

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*2		Package	Absolute maximum ratings		Electro-optical characteristics*1						
								Low level output voltage				Threshold input current		
			UL	VDE		Forward current IF (mA)	Isolation voltage (AC) Viso (rms) (kV)	VOL (V) MAX.	Ta (°C)	IOL (mA)	IF (mA)	IFHL (mA) MAX.	IFLH (mA) MAX.	RL (Ω)
PC400J00000F		Digital output, normal-off operation	○	–	Mini-flat 5-pin	50	3.75	0.4	0 to +70	16	4	2.0	–	280
PC410LENIP0F		High speed (10 Mb/s), high CMR (10 kV/μs), for flow soldering	○	○		20		0.6	-40 to +85	13	5	5.0	–	350

A: Rated voltage circuit
*1 Each item is measured at Vcc=5V.
*2 Please refer to Specification Sheets for model numbers approved by safety standards.

<Compact, SOP type> (1-2)

○: Approved

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*1		Package	Absolute maximum ratings		Electro-optical characteristics							
								Current transfer ratio				Propagation delay time			
			UL	VDE*2		Forward current IF (mA)	Isolation voltage (AC) Viso (rms) (kV)	CTR (%) MIN.	IF (mA)	VO (V)	VCC (V)	tPHL (μs) TYP.	tPLH (μs) TYP.	RL (Ω)	IF (mA)
PC457L0NIP0F		High speed (1 Mb/s), high CMR (15 kV/μs), for flow soldering	○	○	Mini-flat 5-pin	25	3.75	19	16	0.4	4.5	0.2	0.4	1 900	16

*1 Please refer to Specification Sheets for model numbers approved by safety standards.
*2 Optionally available.

PC400J00000F
(Mini-flat 5-pin)

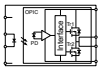
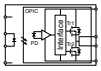
◆OPIC Output

("OPIC" (Optical IC) is a trademark of SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.)

<DIP type, Gate drive type>

○: Approved

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*3		Package	Absolute maximum ratings		Electro-optical characteristics					
								Propagation delay time					
			UL	VDE *2		Forward current IF (mA)	Isolation voltage (AC) Viso (rms) (kV)	tPHL (μs) TYP.	tPLH (μs) TYP.	VCC (V)	IF (mA)	RG (Ω)	CG (nF)
PC923LRNSZ0F*1		• Built-in drive circuit directly connectable to MOS-FET and IGBT • Peak output current: 1.5 A • Low dissipation current (Icc = TYP. 2.5 mA) • High resistance to noise (CMR: MIN. 15 kV/μs)	○	○	8-pin DIP	25	5.0	MAX. 0.5	MAX. 0.5	15 to 30	7 to 16	47	3
PC925LENSZ0F*1		• Built-in drive circuit directly connectable to MOS-FET and IGBT • Peak output current: 2.5 A • Low dissipation current (Icc = TYP. 2.5 mA) • High resistance to noise (CMR: MIN. 15 kV/μs)	○	○	8-pin DIP	25	5.0	MAX. 0.5	MAX. 0.5	15 to 30	7 to 16	10	10

*1 Lead forming type is also available for surface mounting. Taped package of lead forming type for surface mounting is also available.
*2 A VDE approved type is optionally available.
*3 Please refer to Specification Sheets for model numbers approved by safety standards.

PC923LRNSZ0F/PC925LENSZ0F
(8-pin DIP)

Notice
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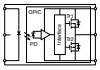
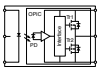
Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device.

★Under development

<LSOP type, Gate drive type>

△: Under preparation

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*3		Package	Absolute maximum ratings		Electro-optical characteristics					
								Propagation delay time					
			UL	VDE *2		Forward current IF (mA)	Isolation voltage (AC) Viso (rms) (kV)	tPHL (µs) TYP.	tPLH (µs) TYP.	VCC (V)	IF (mA)	RG (Ω)	CG (nF)
★PC4L23xxIP0F*1		• Built-in drive circuit directly connectable to MOS-FET and IGBT • Peak output current: 1.5 A • Low dissipation current (Icc = TYP. 2.5 mA) • High resistance to noise (CMR: MIN. 35 kV/µs)	△	△	6-pin LSOP	25	5.0	MAX. 0.3	MAX. 0.3	15 to 30	7 to 16	47	3
★PC4L25xxIP0F*1		• Built-in drive circuit directly connectable to MOS-FET and IGBT • Peak output current: 2.5 A • Low dissipation current (Icc = TYP. 2.5 mA) • High resistance to noise (CMR: MIN. 35 kV/µs)	△	△	6-pin LSOP	25	5.0	MAX. 0.4	MAX. 0.4	15 to 30	7 to 16	10	10

*1 Wide lead forming type is also available for surface mounting.
*2 A VDE approved type is optionally available.
*3 Please refer to Specification Sheets for model numbers approved by safety standards.

RoHS

■Phototriac Coupler Lineup

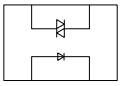
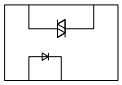
Package	Applied voltage	ON-state current (rms)	Features		Model No.	Page
Mini-flat (SOP)	AC 200 V lines (V_{DRM} = 600V)	0.05 A	General purpose		S2S3A00F*3 / S2S5A00F*3 / S2S5FA0F*3	17
				Built-in zero-cross circuit	S2S4A00F*3	18
DIP type	AC 200 V lines (V_{DRM} = 600V)	0.1 A				
(4-pin)			Reinforced isolation		PC3SH11YFZAH*3 / PC3SH13YFZAH*3	17
				Built-in zero-cross circuit	PC3SH21YFZBH*2	18
DIP type	AC 200 V lines (V_{DRM} = 600V)	0.1 A	General purpose		PC3SD12NTZAH*3 / PC3SD11NTZBH*2 / PC3SD11NTZCH*1	17
(6-pin package, 5th-pin cut)				Built-in zero-cross circuit	PC3SD21NTZAH*3 / PC3SD21NTZBH*2 / PC3SD21NTZDH*4	18
			Reinforced isolation		PC3SF11YVZAH*3 / PC3SF11YVZBH*2	17
				Built-in zero-cross circuit	PC3SF21YVZAH*3 / PC3SF21YVZBH*2	18
	AC 200 V lines (V_{DRM} = 800V)	0.1 A	General purpose		PC4SD11NTZCH*1	17
				Built-in zero-cross circuit	PC4SD21NTZCH*1 / PC4SD21NTZDH*4	18
			Reinforced isolation		PC4SF11YTZBH*2	17
				Built-in zero-cross circuit	PC4SF21YVZBH*2 / PC4SF21YWPSH*2	18

Minimum trigger current: *1 I_{FT} ≦ 5 mA, *2 I_{FT} ≦ 7 mA, *3 I_{FT} ≦ 10 mA, *4 I_{FT} ≦ 3 mA

■Phototriac Couplers

○: Approved

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*3			Package	Absolute maximum ratings			Electro-optical characteristics
			UL, CSA	VDE	BSI, SEMKO, DEMKO, FIMKO		ON-state current IT (rms) (A)	Repetitive peak OFF-state voltage VDRM (V)	Isolation voltage (AC) Viso (rms) (kV)	Min. trigger current IFT (mA) MAX. VD = 6 V, RL = 100Ω
S2S3A00F		200 V lines, compact	○	–	–	Mini-flat 4-pin	0.05	600	3.75	10
S2S5A00F		200 V lines, compact	○	–	–					10
S2S5FA0F		High impulse noise product	○	–	–					10
PC3SH11YFZAH		200 V lines, compact, reinforced isolation	○	○	○	4-pin DIP	0.1		5.0	10
PC3SH13YFZAH		200 V lines, compact, reinforced isolation, high noise resistance	○	○	○					10
PC3SD12NTZAH		200 V lines	○	○*4	–	6-pin DIP*2	0.1	600	5.0	10
PC3SD11NTZBH			○	–	–					7
PC3SD11NTZCH			○	○*4	–	6-pin DIP*1, *2				5
PC4SD11NTZCH		200 V lines, repetitive peak-OFF-state voltage	○	–	–			800		5
PC3SF11YVZAH		200 V lines, reinforced isolation	○	○	○	6-pin DIP*2		600		10
PC3SF11YVZBH		200 V lines, reinforced isolation	○	○	○	6-pin DIP*1, *2				7
PC4SF11YTZBH		200 V lines, reinforced isolation, repetitive peak-OFF-state voltage	○	○	○	6-pin DIP*2		800		7

*1 Lead forming type is also available for surface mounting.
*2 These are 5th-pin cut type.
*3 Please refer to Specification Sheets for model numbers approved by safety standards.
*4 Optionally available.

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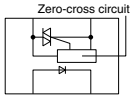
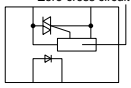
■Phototriac Couplers

<Built-in zero-cross circuit type>

○: Approved

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*3			Package	Absolute maximum ratings			Electro-optical characteristics
			UL, CSA	VDE	BSI, SEMKO, DEMKO, FIMKO		ON-state current IT (rms) (A)	Repetitive peak OFF-state VDRM (V)	Isolation voltage (AC) Viso (rms) (kV)	Min. trigger current IFT (mA) MAX. VD = 4 V, RL = 100Ω
S2S4A00F		200 V lines, compact	○	○*4	–	Mini-flat 4-pin	0.05	600	3.75	10*1
PC3SH21YFZBH		200 V lines, compact, reinforced isolation	○	○	○	4-pin DIP	0.1	600	5.0	7
PC3SD21NTZAH		200 V lines, low zero-cross voltage: MAX. 20 V	○	–	–	6-pin DIP*2	0.1	600	5.0	10
PC3SD21NTZBH		200 V lines, low zero-cross voltage: MAX. 20 V	○	○*4	–					7
PC3SD21NTZDH		200 V lines, low zero-cross voltage: MAX. 20 V	○	–	–					3
PC4SD21NTZCH		200 V lines, repetitive peak-OFF-state voltage	○	–	–			800		5
PC4SD21NTZDH		200 V lines, repetitive peak-OFF-state voltage	○	–	–					3
PC3SF21YVZAH		200 V lines, reinforced isolation	○	○	○			600		10
PC3SF21YVZBH		200 V lines, reinforced isolation	○	○	○					7
PC4SF21YVZBH		200 V lines, reinforced isolation, repetitive peak-OFF-state voltage	○	○	○			800		7
PC4SF21YWPSH		High impulse noise product	○	○	○					7

*1 VD = 6 V, RL = 100Ω
*2 These are 5th-pin cut type.
*3 Please refer to Specification Sheets for model numbers approved by safety standards.
*4 Optionally available.

S2S3A00F
(Mini-flat 4-pin)

PC3SH series
(4-pin DIP)

PC3SD series,
PC4SD series
(6-pin DIP)

PC3SF series,
PC4SF series
(6-pin DIP)

RoHS

■Solid State Relay Lineup

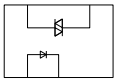
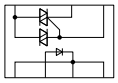
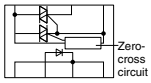
Package	Applied voltage	ON-state current (rms)	Features	Model No.	Page
DIP 6-pin	AC 200 V lines	0.06 A	General purpose	PR31MA11NTZH	20
		0.15 A	General purpose	PR32MA11NTZH	20
DIP 8-pin	AC 200 V lines	0.3/0.6/0.9/1.2 A	General purpose	PR33MF5 series / PR36MF5 series / PR39MF5 series / PR3BMF5 series	20
		0.6/0.9 A	Built-in zero-cross circuit	PR36MF2 series / PR39MF2 series	20

RoHS

■Solid State Relays

<DIP type>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*1			Package	Absolute maximum ratings			Electrical characteristics
			UL	CSA	VDE		ON-state current IT (rms) (A)	Repetitive peak OFF-state voltage VDRM (V)	Isolation voltage (AC) Viso (rms) (kV)	Min. trigger current IFT (mA) MAX. VD = 6 V, RL = 100Ω
PR31MA11NTZH		200 V lines, compact	○	○	–	6-pin*3 DIP	0.06	600	5.0	10
PR32MA11NTZH		200 V lines, 150 mA model in a small package	○	○	–	6-pin*3 *5 DIP	0.15			10
PR33MF51NSLH		200 V lines, compact	○	○	○*2	8-pin*3 *5 DIP	0.3	600	4.0	10
PR33MF52NSLH		200 V lines, compact	○	○	–	8-pin*3 DIP				5
PR36MF51NSLH		200 V lines, compact	○	○	–	8-pin*3 *5 DIP	0.6			10
PR39MF51NSLH		200 V lines, compact	○	○	○*2		0.9			10
PR3BMF51NSLH		200 V lines, compact	○	○	–		1.2			10
PR36MF21NSZH		200 V lines, compact (built-in zero-cross circuit)	○	○	–	8-pin*3 DIP	0.6	600		10
PR36MF22NSZH		200 V lines, compact (built-in zero-cross circuit), low input current	○	○	–					5
PR39MF22NSZH		200 V lines, compact (built-in zero-cross circuit), low input current	○	○	–		0.9			5

Note: Please confirm with our sales representatives concerning inquiries related to acquisition of international safety standard compliance certification.
*1 Please refer to Specification Sheets for model numbers approved by safety standards.
*2 Optionally available.
*3 These are 5th-pin cut type.
*4 These are 7th-pin cut type.
*5 Lead forming type is also available for surface mounting.

PR31MA11NTZH
(6-pin DIP)

PR36MF21NSZH
(8-pin DIP)

☆New product
★Under development

■Photointerrupter Lineup

<Transmissive type>

Output type	Package type	Outline	Mounting method	Model No. (series)	Page
Single phototransistor	Compact		PWB mounting type	GP1S396HCP0F / GP1S09xHCZ0F / GP1S19xHCZ0F	22
			Surface-mount type	GP1S396HCPSF / GP1S296HCPSF / GP1S092HCPIF / GP1S19xHCPSF	22
	Case type		PWB mounting type	GP1S5x series▲	23
	With connector	General purpose	Snap-in	GP1S173LCS2F / GP1S273LCS1F	23
Digital output					
(OPIC output)	Case type		PWB mounting type	GP1A51HRJ00F	24
		Wide gap	PWB mounting type	GP1A57HRJ00F	24
	With connector	General purpose	Snap-in	GP1A173LCS5F	25

<Reflective type>

Output type	Package type	Outline	Mounting method	Model No. (series)	Page
Single phototransistor	Leadless	Long focal distance	Surface-mount type	GP2S700HCP	25
High response speed	Compact, thin (leadless)	General purpose	Surface-mount type	GP2S60	25
OPIC output	With connector	Light modulation type, Sensitivity adjusted	Screw mounting type/ Compact snap-in/ Inverter light countermeasures	GP2A25 series / GP2A28 series / GP2A200LCS0F / GP2A230LRS0F / GP2A230LRSAF / GP2A430LCS0F / GP2A430LCSAF / ☆GP2A431LCSAF / GP2A240LCS0F / GP2A250LCS0F / ☆GP2A451LCS0F	26

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

RoHS

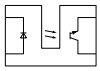
■Photointerrupters

<Transmissive type>

◆Single Phototransistor Output

<Compact type>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Detecting and emitting gap (mm)	Slit width (mm)	Electro-optical characteristics						
					Current transfer ratio			Response time			
					CTR (%) MIN.	I_F (mA)	V_{CE} (V)	tr (μs) TYP.	I_C (mA)	R_L (kΩ)	V_{CE} (V)
GP1S092HCPIF		Wide gap, for soldering reflow, surface mount compatible, with positioning boss (4.5 × 2.6 × 2.9 [height] mm)	2.0	0.3	2.0	5	5	50	0.1	1	5
GP1S093HCZ0F		Wide gap (4.5 × 2.6 × 2.9 [height] mm)	2.0	0.3	2.0	5	5	50	0.1	1	5
GP1S094HCZ0F		Wide gap, with positioning pin, (5.5 × 2.6 × 4.8 [height] mm)	3.0	0.3	0.8	5	5	50	0.1	1	5
GP1S097HCZ0F		Wide gap, with mounting hole (4.5 × 2.6 × 4.5 [height] mm)	2.0	0.3	2.0	5	5	50	0.1	1	5
GP1S194HCZ0F		Compact, wide gap, size: 3.6 × 2.0 × 2.7 (height) mm	1.7	0.3	3.0	5	5	50	0.1	1	5
GP1S195HCPSF		Compact, wide gap, surface mount compatible, size: 3.4 × 2.0 × 2.7 (height) mm	1.5	0.3	3.0	5	5	50	0.1	1	5
GP1S196HCZ0F		Compact, low profile (3.1 × 2.0 × 2.7 [height] mm)	1.1	0.3	2.0	5	5	50	0.1	1	5
GP1S196HCPSF		Surface mount, for soldering reflow, compact, low profile (3.1 × 2.0 × 2.7 [height] mm)	1.1	0.3	2.0	5	5	50	0.1	1	5
GP1S296HCPSF		Surface mount, for soldering reflow, compact, low profile (2.5 × 1.8 × 1.9 [height] mm)	1.0	0.2	3.0	5	5	50	0.1	1	5
GP1S396HCP0F		Straight lead type, compact, low profile (2.26 × 1.4 × 1.6 [height] mm)	1.2	0.12	2.0	5	5	30	0.1	1	5
GP1S396HCPSF		Surface mount, for soldering reflow, compact, low profile (2.26 × 1.4 × 1.6 [height] mm)	1.2	0.12	2.0	5	5	30	0.1	1	5

Note: Topr: –25 to +85°C
GP1SxxxHCZxF: Sleeve package, GP1SxxxHCPxF: Taped package


GP1S092HCPIF

GP1S093HCZ0F


GP1S094HCZ0F


GP1S097HCZ0F


GP1S194HCZ0F


GP1S195HCPSF


GP1S196HCZ0F


GP1S196HCPSF


GP1S296HCPSF


GP1S396HCP0F


GP1S396HCPSF

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RoHS

<Case type>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Detecting and emitting gap (mm)	Slit width (mm)	Electro-optical characteristics						
					Current transfer ratio			Response time			
					CTR (%) MIN.	I_F (mA)	V_{CE} (V)	tr (μs) TYP.	I_C (mA)	R_L (Ω)	V_{CE} (V)
GP1S50J0000F▲		High resolution, both-side mounting type	3.0	0.5	2.5	20	5	3	2	100	2
GP1S51VJ000F▲		High resolution, side mounting type	3.0	0.5	2.5	20	5	3	2	100	2
GP1S52VJ000F▲		High resolution, PWB mounting type	3.0	0.5	2.5	20	5	3	2	100	2
GP1S53VJ000F▲		High resolution, PWB mounting type	5.0	0.5	2.5	20	5	3	2	100	2
GP1S58VJ000F▲		High resolution, with positioning pin, PWB mounting type	5.0	0.5	2.5	20	5	3	2	100	2

Note: Topr: –25 to +85°C
The model marked with ▲ may not be available in the near future. Contact with SHARP for details before use.


GP1S50J0000F▲


GP1S51VJ000F▲

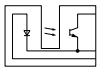

GP1S52VJ000F▲


GP1S53VJ000F▲


GP1S58VJ000F▲

<With connector>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Detecting and emitting gap (mm)	Slit width (mm)	Electro-optical characteristics						
					Current transfer ratio			Response time			
					CTR (%) MIN.	I_F (mA)	V_{CE} (V)	tr (μs) TYP.	I_C (mA)	R_L (Ω)	V_{CE} (V)
GP1S173LCS2F		Snap-in mounting integrated connector type Applicable to 3 kinds of thickness of mounting boards	5.0	0.5	2.5	20	5	3	2	100	2
GP1S273LCS1F		Snap-in mounting integrated connector type Applicable to 3 kinds of thickness of mounting boards Compact (Compatible with 1.5 mm pitch connector)	5.0	0.7	2.5	20	5	3	2	100	2

Note: Topr: –30 to +95°C


GP1S173LCS2F


GP1S273LCS1F

Optoelectronics

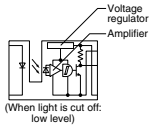
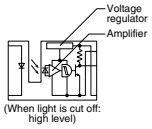
RoHS

◆OPIC Type

("OPIC" (Optical IC) is a trademark of SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.)

<Case type>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Detecting and emitting gap (mm)	Slit width (mm)	Electro-optical characteristics							
					Threshold input current			Propagation delay time				
					I_{FLH} (mA) MAX.	I_{FHL} (mA) MAX.	V_{CC} (V)	t_{PLH} (µs) TYP.	t_{PHL} (µs) TYP.	I_F (mA)	R_L (Ω)	V_{CC} (V)
GP1A50HRJ00F▲		Both-side mounting, with screw hole	3.0	0.5	5	–	5	3	5	5	280	5
GP1A51HRJ00F		Side mounting, with screw hole	3.0	0.5	5	–	5	3	5	5	280	5
GP1A52HRJ00F▲		PWB mounting type	3.0	0.5	5	–	5	3	5	5	280	5
GP1A53HRJ00F▲		PWB mounting type	5.0	0.5	8	–	5	3	5	8	280	5
GP1A57HRJ00F		PWB mounting type, with positioning pin	10.0	1.8	7	–	5	3	5	7	280	5
GP1A58HRJ00F▲		PWB mounting type, with positioning pin	5.0	0.5	8	–	5	3	5	8	280	5
GP1A52LRJ00F▲		PWB mounting type	3.0	0.5	–	5	5	5	3	5	280	5

Note: Topr = –25 to +85°C
The model marked with ▲ may not be available in the near future. Contact with SHARP for details before use.

GP1A50HRJ00F▲

GP1A51HRJ00F

GP1A52LRJ00F▲
(GP1A52HRJ00F▲)

GP1A53HRJ00F▲
(GP1A58HRJ00F with positioning pin)

GP1A57HRJ00F

RoHS

◆OPIC Type

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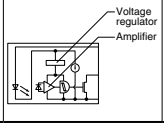
<With 3-pin connector terminal>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Detecting and emitting gap (mm)	Slit width (mm)	Electro-optical characteristics					
					Supply voltage V_{CC} (V)		Low level output voltage			
					MIN.	MAX.	V_{OL} (V) MAX.	Light cut-off	I_{OL} (mA)	V_{CC} (V)
GP1A173LCS5F		Snap-in mounting integrated connector type*1 3.3 V / 5 V operation enforced electrostatic discharge (ESD) increased power line noise tolerance	5.0	0.5	3.0	5.5	0.35	No	4	3.3 5.0

Note: Topr: –30 to +95°C

*1 Applicable to 3 kinds of thickness of mounting boards.

GP1A173LCS5F

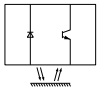
■Photointerrupters

<Reflective type>

◆Single Phototransistor Output

<Compact>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Optimum detecting distance (mm)	Electro-optical characteristics						
				Current transfer ratio			Response time			
				CTR (%) MIN.	I_F (mA)	V_{CE} (V)	tr (μs) TYP.	I_C (mA)	R_L (kΩ)	V_{CE} (V)
GP2S700HCP		Compact (4 × 3 × 2 [height] mm), long focal distance, surface mounting leadless type	4	1.5	4	2	20	0.1	1	2
GP2S60		Thin (3.2 × 1.7 × 1.1 [height] mm), surface mounting leadless type	1	1.0	4	2	20	0.1	1	2

Note: Topr: –25 to +85°C

GP2S700HCP

GP2S60

☆New product

RoHS

◆OPIC Output

("OPIC" (Optical IC) is a trademark of SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.)

<With 3-pin connector terminal>

(Ta = 25°C)

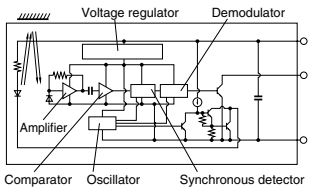
Model No.	Internal connection diagram	Features	Optimum detecting distance (mm)	Electro-optical characteristics					
				Supply voltage Vcc (V)		Dissipation current		Low level output voltage	
				MIN.	MAX.	Icc (mA) MAX.	Vcc (V)	VOL (V) MAX.	Vcc (V)
GP2A200LCS0F	(Following diagram [A])	Multiple types of paper detectable, light modulation type, with connector, sensitivity adjusted	5 to 15	4.75	5.25	30*1	5	0.4	5
GP2A240LCS0F		Applicable to inverter fluorescent lamp, light modulation type, with connector, sensitivity adjusted	5 to 15	4.75	5.25	30*1	5	0.4	5
GP2A250LCS0F		Static electricity resistant, applicable to inverter fluorescent lamp, light modulation type, with connector, sensitivity adjusted	2.5 to 12.5	4.75	5.25	30*1	5	0.4	5
☆GP2A451LCS0F	(Following diagram [D])	Compact,screw-clamp type, Applicable to inverter fluorescent lamp, Light modulation type,with connector,3.3 to 5.0V Operation	2.5 to 12.5	3.0	5.50	10*1	3.3 to 5	0.4	3.3 to 5
GP2A25J0000F	(Following diagram [A])	Multiple types of paper detectable, light modulation type, with connector, sensitivity adjusted	3 to 7	4.75	5.25	30*1	5	0.4	5
GP2A230LRS0F	(Following diagram [B])	Compact, screw-clamp type, multiple types of paper detectable, light modulation type, with connector	3 to 7	4.75	5.25	20*1	5	0.4	5
GP2A230LRSAF		Compact, hook type, multiple types of paper detectable, light modulation type, with connector							
GP2A430LCS0F	(Following diagram [C])	Compact, screw-clamp type, multiple types of paper detectable, light modulation type, with connector, 3.3 to 5V Operation, Low power comsumption		3.0	5.5	10*1	3.3 to 5	0.4	3.3 to 5
GP2A430LCSAF		Compact, hook type, multiple types of paper detectable, light modulation type, with connector, 3.3 to 5V Operation, Low power comsumption							
☆GP2A431LCSAF									
GP2A25NJJ00F	(Following diagram [A])	Multiple types of paper detectable, light modulation type, sensitivity adjusted, improved light-resistance characteristic for inverter lighting, built-in visible light cut filter	3 to 7	4.75	5.25	30*1	5	0.4	5
GP2A25DJ000F		Multiple types of paper detectable, light modulation type, with connector, sensitivity adjusted	3 to 7	4.75	5.25	30*1	5	0.4	5
GP2A28AJ000F		Multiple types of paper detectable, light modulation type, with connector, sensitivity adjusted, hook type	3 to 7	4.75	5.25	30*1	5	0.4	5

Note: Topr: –10 to +60°C (GP2A25J0000F, etc.)
–10 to +70°C (GP2A200LCS0F, GP2A240LCS0F, GP2A250LCS0F, GP2A230LRS0F, GP2A230LRSAF, GP2A430LCS0F, GP2A430LCSAF, GP2A431LCSAF)
–10 to +85°C (GP2A451LCS0F)

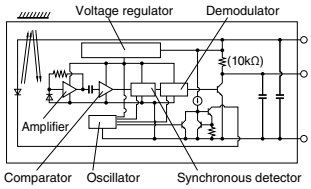
*1 Smoothing value $R_L = \infty$

[Internal connection diagram]

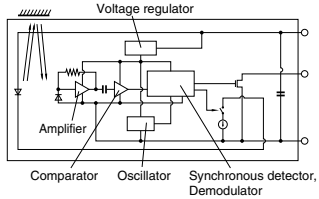
[A]



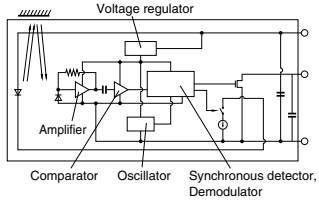
[B]



[C]



[D]



GP2A25J0000F
(GP2A25NJJ00F, GP2A200LCS0F, GP2A240LCS0F)

GP2A250LCS0F

GP2A25DJ000F

GP2A230LRS0F
(GP2A430LCS0F, GP2A451LCS0F)

GP2A230LRSAF
(GP2A430LCSAF, GP2A431LCSAF)

GP2A28AJ000F

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RoHS

■Proximity Sensor

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics				
		V_{CC} (V)	Topr (°C)	Dissipation current I_{CC} (μA) TYP.	Detecting distance Lon (mm) MIN.	Non-Detecting distance Loff (mm) MAX.	Output resolution (bit)	Peak emission wavelength λp (nm)
GP2AP002S30F	Compact size (4.0 × 2.0 × 1.25 t mm) Drastically reduced LED current consumption by employing a light modulation system Built-in LEDs for simple optical design and I²C output (LED emission duty: MAX. 0.3%)	3.8	–25 to +85	240	25	150	–	940
GP2AP070S00F	Compact size (4.0 × 2.0 × 1.1 t mm) High accuracy Precision±10% (Distance 100mm)	3.8	–25 to +85	170	100 (TYP.)		14	940
GP2AP110S00F	Compact size (4.0 × 2.0 × 1.1 t mm) Built-in VCSEL for Narrow IR-window (window size 4.0 × 1.0mm)	3.8	–25 to +85	130	100 (TYP.)		14	940


GP2AP002S30F


GP2AP070S00F


GP2AP110S00F

■Proximity Sensor with Integrated Ambient Light Sensor

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics					
					Proximity sensor portion		Ambient light sensor portion		
		V_{CC} (V)	Topr (°C)	Dissipation current Icc (μA) TYP.	Detecting distance Lon (mm) TYP.	Peak emission wavelength λp (nm)	Recommended illuminance range Ev (lx)	Output resolution (bit)	ADC conversion time Tint (ms) TYP.
GP2AP030A00F	LED and ambient light sensor combined in a single package (4.0 × 2.1 × 1.25 t mm) Built-in LEDs for simple optical design Illuminance output: digital 16-bit output (Minimum detectable illuminance: 0.02 lx) I²C output compatible (proximity sensor, ambient light sensor)	5.5	–35 to +85	65	100	940	0.02 to 10 000	16	100
GP2AP007A00F	LED and ambient light sensor combined in a single package (2.5 × 2.0 × 1.0 t mm) Compact with reduced mounting area Illuminance output: digital 16-bit output (Minimum detectable illuminance: 0.1 lx) Small aperture compatible I²C output compatible (proximity sensor, ambient light sensor)	2.2 to 5.5	–30 to +85	100	100	940	0.1 to 100 000	16	30
GP2AP008T00F	LED and ambient light sensor combined in a single package (3.94 × 2.36 × 1.35 t mm) Illuminance output: digital 16-bit output (Minimum detectable illuminance: 0.1 lx) Small aperture compatible I²C output compatible (proximity sensor, ambient light sensor)	2.2 to 5.5	–30 to +85	100	100	940	0.1 to 100 000	16	30


GP2AP030A00F


GP2AP007A00F


GP2AP008T00F

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RoHS

■Proximity/Gesture Sensor with Integrated Ambient Light Sensor

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics						
						Proximity/gesture sensor portion		Ambient light sensor portion		
		V_{CC} (V)	Topr (°C)	Dissipation current Icc (μA) TYP.	Dissipation current Icc (Gesture) (μA) TYP.	Detecting distance Lon (mm) TYP.	Peak emission wavelength λp (nm)	Recommended illuminance range Ev (lx)	Output resolution (bit)	ADC conversion time Tint (ms) TYP.
GP2AP054A00F	LED and ambient light sensor combined in a single package (4.0 × 2.1 × 1.25 t mm) Simultaneous operation of the gesture recognition and illuminance functions is possible Low power consumption mode is available for the proximity sensor Capable of holding a total of 4 gesture detection results	5.5	−35 to +85	100	320	100	940	0.02 to 10 000	16	30

GP2AP054A00F

■UV Light Sensors

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings			Electro-optical characteristics				
		V_{CC} (V)	I^2C voltage VI^2C (V)	Topr (°C)	Dissipation current Icc (μA) TYP.	Built-in clock frequency fosc (MHz) TYP.	Output resolution (bit)	ADC conversion time (ms) TYP.	Recommended illuminance range Ev (lx) Sunlight (AM1.5 equivalent)
GA1AUV100WP▲	Detects only UV rays contained within sunlight (no sensitivity to visible light) Built-in ambient light sensor Compact size: 2.0 × 1.6 × 0.6 t mm I^2C output compatible	2.2 to 5.5	1.7 to Vcc	−35 to +85	65	2.62	16	25	UV: 0 to 200 000 Illuminance: 0 to 120 000

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GA1AUV100WP▲

■OPIC Light Detectors

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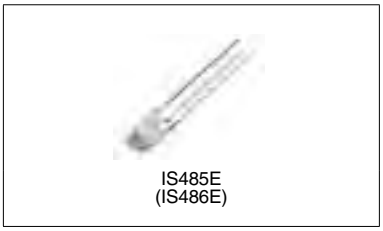
(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics							
			V_{CC} (V)	P (mW)	I_O (mA)	Topr (°C)	E_{VLH} (lx) MAX.	E_{VHL} (lx) MAX.	V_{CC} (V)	t_{PLH} (µs) TYP.	t_{PHL} (µs) TYP.	V_{CC} (V)	E_V (lx)	R_L (Ω)
IS485E	Built-in schmidt trigger circuit, amplifier and voltage regulator	Transparent epoxy resin with condenser (lens)	−0.5 to +17	175	50	−25 to +85	–	35	5	5	3	5	50	280
IS486E			−0.5 to +17	175	50	−25 to +85	35	–	5	3	5	5	50	280



IS485E
(IS486E)

<Model employing a light modulation system>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics*2						External disturbing light illuminance E_{VDX}(lx) TYP.
			V_{CC} (V)	P (mW)	I_O (mA)	Topr (°C)	V_{OL} (V) MAX.	V_{OH} (V) MIN.	t_{PLH} (µs) TYP.	t_{PHL} (µs) TYP.	V_{CC} (V)	R_L (Ω)	
IS471FE*1, *3	Built-in pulse driver circuit at the emitter side, synchronous detector circuit, amplifier circuit and demodulator circuit	Visible light cut-off epoxy resin	−0.5 to +16	250	50	−25 to +60	0.35	4.97	400	400	5	280	7 000

*1 IS471FE is less susceptible to disturbing effects thanks to the light modulation system
*2 V_{CC} = 5 V
*3 Straight lead type (IS471FSE) is also available.

IS471FE

RoHS

■Phototransistor Lineup

Package	Output type	Features	Half sensitivity angle	Model No.	
				Standard	Visible light cut-off
Epoxy resin with lens	Single phototransistor	General purpose/Narrow acceptance	±13°	PT480E00000F	PT480FE0000F
Surface mounting leadless type	Darlington phototransistor	Compact, thin	±35°	PT4800E0000F	PT4800FE000F
		High sensitivity/Intermediate acceptance	±40°	—	PT491FE0000F
	Single phototransistor	Compact (side view/top view mounting possible)	±15°	PT100MC0MP	PT100MF0MP
	Darlington phototransistor	Compact (side view/top view mounting possible)	±15°	—	PT100MF1MP

■Phototransistors

Type	Model No.	Package	Absolute maximum ratings			Ic (mA)				I_{CEO}(A)		Δθ (°)	λp (nm)
			V_{CEO} (V)	P_C (mW)	Topr (°C)	MIN.	MAX.	V_{CE} (V)	Ee (mW/cm²)	MAX.	V_{CE} (V)	TYP.	TYP.
Single	PT100MC0MP	Surface mounting leadless type with lens	35	75	−30 to +85	1.7	5.1	5	1	1×10^{-7}	20	±15	900
	PT100MF0MP*1		35	75	−30 to +85	1.15	3.45	5	1	1×10^{-7}	20	±15	910
	PT480E00000F	Epoxy resin with lens	35	75	−25 to +85	0.4	TYP. 1.7	5	1	1×10^{-7}	20	±13	800
	PT480FE0000F*1		35	75	−25 to +85	0.25	TYP. 0.8	5	1	1×10^{-7}	20	±13	860
	PT4800E0000F		35	75	−25 to +85	0.12	TYP. 0.4	5	1	1×10^{-7}	20	±35	800
	PT4800FE000F*1		35	75	−25 to +85	0.08	TYP. 0.25	5	1	1×10^{-7}	20	±35	860
Darlington	PT100MF1MP*1	Surface mounting leadless type with lens	35	75	−30 to +85	0.2	1.2	5	0.01	1×10^{-6}	10	±15	860

*1 Visible light cut-off type

PT100MF0MP
(PT100MF1MP, PT100MC0MP: Transparent resin)

PT480E00000F

PT480FE0000F

PT4800E0000F
(PT4800FE000F)

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RoHS

■PIN Photodiodes

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm^2)	Topr (°C)	Isc (μA) MIN.	Ev (lx)	Id (A) MAX.	V_R (V)	tr, tf (μs) TYP.	V_R (V)	R_L (kΩ)	λp (nm) TYP.
PD410PI2E00F	PIN type	Visible light cut-off epoxy resin with condenser (lens)	3.31	–25 to +85	2.5	100	1×10^{-8}	10	0.2	10	1	1 000
PD413PI2E00F	PIN type IrDA1.0	Visible light cut-off epoxy resin with condenser (lens)	3.31	–25 to +85	MIN. 4.5 (TYP. 5.4)	100	1×10^{-8}	10	0.2	10	1	960
PD100MC0MP	Surface mounting leadless type	Transparent epoxy resin board with lens	–	–30 to +85	0.6	100	1×10^{-8}	10	0.01	15	0.18	820
PD100MF0MP	Surface mounting leadless type	Visible light cut-off epoxy resin board with lens	–	–30 to +85	0.4	100	1×10^{-8}	10	0.01	15	0.18	850

PD410PI2E00F
(PD413PI2E00F)

PD100MC0MP
(PD100MF0MP: black)

Optoelectronics

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RoHS

■Infrared Emitting Diode Lineup

Type	Package	Features	Half intensity angle	Model No.
Single-end lead (Side view type)	Epoxy resin with lens	General purpose/Narrow beam angle	±13°	GL480E00000F
		Compact and thin	±30°	GL4800E0000F
Surface mount type	Epoxy resin with lens/ leadless (Mountable for Top view/ Side view type)	Compact/Narrow beam angle	±10°	GL100MN0MP
		High output type	±10°	GL100MN1MP

■Infrared Emitting Diodes

(Ta = 25°C)

Model No.	Package, features	Absolute maximum ratings				Radiant flux Φe (mW)			VF (V)			Δθ (°)	λp (nm)
		IF (mA)	VR (V)	P (mW)	Topr (°C)	MIN.	TYP.	IF (mA)	TYP.	MAX.	IF (mA)	TYP.	TYP.
GL480E00000F	Epoxy resin with lens	50	6	75	–25 to +85	0.7	–	20	1.2	1.4	20	±13	950
GL4800E0000F		50	6	75	–25 to +85	0.7	1.6	20	1.2	1.4	20	±30	950
GL100MN0MP	Surface mounting leadless type, epoxy resin board with lens	50	6	75	–30 to +85	1.0	3.0 (MAX.)	20	1.2	1.4	20	±10	940
GL100MN1MP	Surface mounting leadless type, epoxy resin board with lens, high output type	50	6	75	–30 to +85	2.0	6.0 (MAX.)	20	1.2	1.5	20	±10	940

GL480E00000F

GL4800E0000F

GL100MN0MP
(GL100MN1MP)

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☆New product

■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	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
CMOS	Analog voltage output according to distance measuring (Including I²C output)	4 to 50 cm	Compact size, high-precision measurement	Analog output	GP2Y0E02A	35
				I²C output	GP2Y0E02B	35
				Analog, I²C output	GP2Y0E03	35
ToF	I²C 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

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	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 output	Digital (UART/I²C) Output Detectable PM1.0/PM2.5/PM10 separately Equipped with auto cleaning mode function	GP2Y1040AU0F	37

RoHS

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

◆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

RoHS

■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, I²C 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 / I²C 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

GP2Y0E02A
(GP2Y0E02B)

GP2Y0E03

GP2Y0AF15 series

GP2Y0AF30 series

GP2Y0A21YK0F
(GP2Y0D21YK0F,
GP2Y0A41SK0F
GP2Y0D413K0F:
without mounting
hole)

GP2Y0A51SK0F

GP2Y0D02YK0F
(GP2Y0A02YK0F)

GP2Y0A710K0F

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

Optoelectronics

☆New product

■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 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 × 2.2 × 1.5 mm Equipped TDC circuit achieves higher precision and highly precise measurement at close range I²C interface	3.6	−40 to +85	3.0 to 3.5	10	940	1 to 30	±6 mm (@10 cm)	33

☆GP2AP02VT20F
(GP2AP03VT00F)

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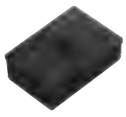
■Dust Sensor Unit

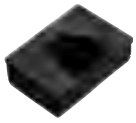
(Ta = 25°C)

Model No.	Features	Topr (°C)	Operating supply voltage (V)	Electro-optical characteristics			
				Dissipation current (mA)	Reference Detection concentration μg/m³ (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	4.5 to 5.5	TYP. 11	0 to 1 500	0.5±0.15 V/ (0.1 mg/m³) 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				0 to 750	1.0±0.15 V/ (0.1 mg/m³) 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/m³) 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	TYP. 15	0 to 750	1.4±0.21 ms/ (0.1 mg/m³) 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)				0 to 2 100	0.35±0.06 V/ (0.1 mg/m³) 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



GP2Y1010AU0F
(GP2Y1012AU0F, GP2Y1014AU0F, GP2Y1023AU0F, GP2Y1026AU0F)

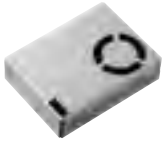


GP2Y1030AU0F

■PM Sensor Unit

(Ta = 25°C)

Model No.	Features	Topr (°C)	Operating supply voltage (V)	Electro-optical characteristics			
				Dissipation current (mA)	Reference Detection concentration μg/m³ (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	Precision ±10μg (0 -100μg/m³) Precision ±10% (100-500μg/m³)	Diginal siganal (UART and I²C)



GP2Y1040AU0F

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☆New product
★Under development

■Laser Diodes

◆Package Lineup

· Can

① ø9 mm Can	② ø5.6 mm Can	③ ø3.8 mm Can	④ ø3.3 mm Can




· Frame

⑤ t1.8 mm Frame

◆Specifications

<High Output Laser Diodes>

(Tc = 25°C)

Package	Model No.	Wavelength (band) λp (nm)	Absolute maximum ratings*1		Characteristics								Emitter Quantity	Terminal connections	Applications
			Iop (mA)	Top (°C)	Po (mW)	Ith (mA)	Iop (mA)	Vop (V)	ηd (mW/mA)	λp (nm)	θ// (°)	θ⊥ (°)			
① ø9 mm Can	★GH04C05W9G	435	3 500 2 800	0 to +45 45 to +60	5 000	330	3 300	4.4	1.7	435	9*3	48*3	1	13	Display, etc.
	☆GH04C05Y9G	440	3 500 2 800	0 to +35 35 to +60	5 000	370	2 900	4.6	2	440	10*3	43*3	1	13	
	☆GH04C03Z9G	450	2 800	0 to +60	3 500	260	2 100	4.9	1.85	450	9*3	41*3	1	13	
	★GH04C06X9G	450	4 300	0 to +60	6 000	350	4 000	4.8	1.6	450	7*3	44*3	2	13	
	GH05C01A9G	520	1 400	0 to +60	600	180	1 050	5.7	0.7	520	9*3	44*3	1	9	
	★GH05C01C9G	520	2 000 1 700	0 to +25 25 to +60	1 000	250	1 800	5.5	0.65	520	8*3	41*3	2	9	
	★GH06C01A9G	638	(tbd)	−10 to +45	1 200	380	1 400	2.25	(tbd)	640	5*2	36*2	1	9	
	★GH06C02B9G		(tbd)	0～＋55	2 500	600	2 800	2.4	1.1	639	15*3	70*3	2	9	

*1 The absolute maximum ratings are the limits that are not to be exceeded under any condition whatsoever, whether in testing or in actual use.
*2 Full angle of 50% peak intensity.
*3 Full angle of $1/e^2$ peak intensity.

☆New product
★Under development

RoHS

<Laser Diodes>

(Tc = 25°C)

Package	Model No.	Wavelength (band) λp (nm)	Absolute maximum ratings*1		Characteristics								Built-in monitor PD	Terminal connections	Applications
			Po (mW)	Top (°C)	Po (mW)	Ith (mA)	Iop (mA)	Vop (V)	ηd (mW/mA)	λp (nm)	θ//*2 (°)	θ⊥*2 (°)			
② φ5.6mm Can	★GH0393AA2G	395	350	0 to +50	300	150	310	4.5	1.9	395	12*3	44*3	–	9	Sensor, etc.
	GH0401FA2G	405	155	–10 to +75	150	40	130	5	1.7	405	9	19	–	8	
	GH0401FA2K												○	4	
	GH04W10A2GC		350	0 to +50	300	140	325	4.5	1.8	406	14*3	41*3	–	9	
	☆GH0406AA2G		700	0 to +30	600	120	420	4.4	2	405	16*3	38*3			
	GH04580A2G	450	85	–10 to +70	80	22	84	5.1	1.3	450	10	24	–	8	Display, etc.
	GH04C01A2G		1 650	–10 to +50	1 600	200	1 200	5	1.5		6.5	23		9	
	GH04C01ABG		2 000	–10 to +50	1 800	110	1 100	4.1	1.8		7	26		9	
	GH04850B2G	487	55	–10 to +60	50	40	105	6	0.8	487	8	23	–	8	
	GH05030D2L	505	35	–10 to +60	30	30	75	6	0.65	505	8	23	–	12	
	GH05030H2K												○	4	
	GH05230H2K	520	35	–10 to +60	30	25	70	6.5	0.65	520	7	22		4	
	GH05250F2K		55		50	40	100	5.9	0.7						
	GH05280E2K		85		80	65	180	6.5	0.7			23			
	GH0521DE2G		135		130	70	270	6.7	0.65		8	22	–	8	
	GH06330A2G	638	30	–10 to +60	30	30	50	2.3	1.4	638	7	16	–	8	
	GH0631IA2GC		185		180	70	215	2.55	1.15		8	13	–	9	
	GH0631IA2KC												○	4	
	★GH0632BA2GC		210		200	55	230	2.65		639		15	–	9	
	GH0637AA2G		700	–10 to +40	700	110	810	2.46	1	638	16	35	–		
	★GH0652CA2GC	650	220	–10 to +70	200	55	220	2.6	1.2	650	8	12.5	–	9	
	☆GH06610A2KC	660	12	–40 to +90	10	15	24	2.2	1.1	660	12	33	○	4	
	GH06P25A2CC		100	–10 to +70	95	40	122	2.4		660	10	15.5	–	3	
	GH0832BA1K	830	210	–10 to +70	200	35	215	2.1	1.1	830	9	18	○	4	Sensor, etc.
	☆GH0832FA2G		260		250	45	255	2.2	1.15		8	15	–	8	
	☆GH0852WA2G	850	700	–10 to +70	700	275	975	1.8	1	850	17	45	–	8	
	☆GH0942FA2G	940	260	–10 to +70	250	(tbd)	(tbd)	(tbd)	(tbd)	940	(tbd)	(tbd)	–	8	
	☆GH0942WA2G		700		700	315	800	1.8	1		10	35			
③ φ3.8mm Can	GH04590A5G	450	95	–10 to +50	90	28	100	5.2	1.3	450	9	24	–	8	Display, etc.
	GH05280E5K	520	85	–10 to +60	80	65	180	6.5	0.7	520	7	23	○	4	
	GH05290A5G	520	95	–10 to +50	90	60	185	6.75	0.7		7	23	–	8	
	GH0521DE5G		135		130	70	270	6.7	0.65		8	22			
	GH0631CA5GC	638	120	–10 to +60	120	50	150	2.5	1.2	638	8	15	–	8	
	GH0631IA5G		185		150	60	190		1.15		7.5				
④ φ3.3mm Can	GH06510F4A	660	10	–10 to +70	7	17	26	2.2	0.85	660	13	28	○	1	Sensor, etc.
	GH07P28F4C	785	150	–10 to +70	100	35	135	2.4	1	784	8	16	–	3	
⑤ t1.8mm Frame	GH15130C8C	515	35	–10 to +60	30	25	75	6.2	0.6	515	7.5	22	–	6	Leveler, etc.
	GH15130D8C												–		Illumination, etc.
	GH1631AA8C	638	100	–10 to +60	100	50	130	2.45	1.2	638	8	15	–		Display, etc.
	GH16P32B8C	660	100	–10 to +70	90	42	120	2.3	1.16	661	9.3	15	–		

*1 The absolute maximum ratings are the limits that are not to be exceeded under any condition whatsoever, whether in testing or in actual use.
*2 Full angle of 50% peak intensity.
*3 Full angle of $1/e^2$ peak intensity.

Note: Please inquire about combinations of packages and characteristics other than the above.

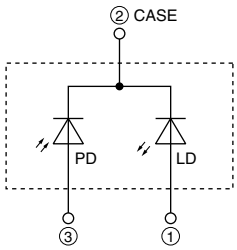
LASER DIODES

★Under development

RoHS

◆Terminal Connections

1



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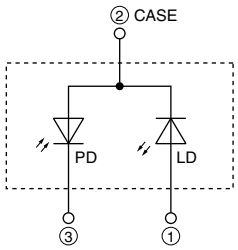

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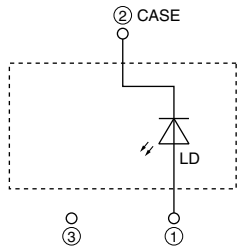

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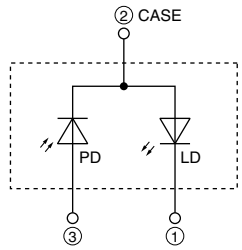

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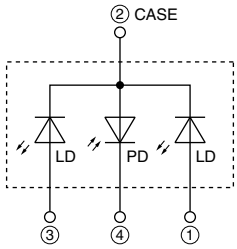

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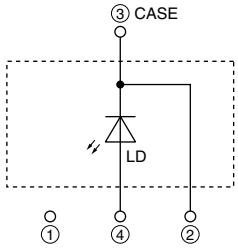

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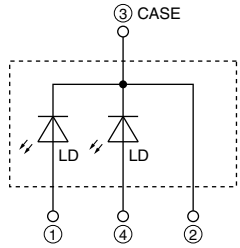

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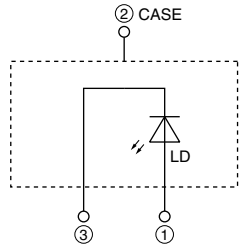

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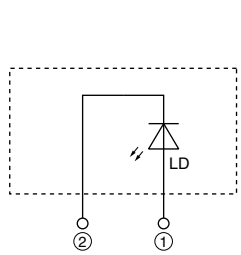

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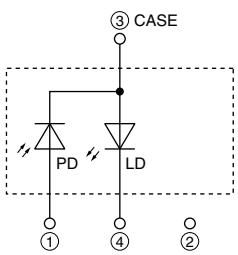

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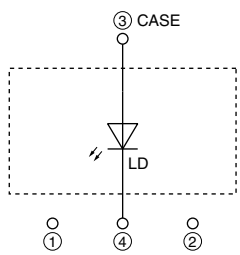

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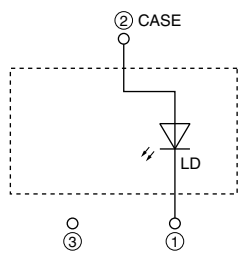

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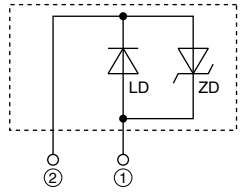


RoHS

■Digital DBS Front-end Units

◆Features

(1) Equipped with a high-performance direct conversion IC. Reliability is improved by reducing power consumption and component counts.

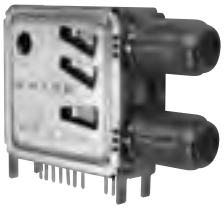
(2) Wide-band reception design also covering CS broadcast band. [Input frequency: 950 to 2 150 MHz]

(3) User support tools can be provided. [Sample/evaluation boards and software are available.]

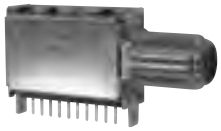
◆Standard Specifications <IQ output type>

Destination	Global (ISDB-S/DVB-S2/ABS-S)	
Input type	1-input/1-loop through output	1-input
Model No.	BS2S7VZ7A03	BS2S7VZ6D02
Input frequency (MHz)	950 to 2 150	
Input signal level (dBm)	–65 to –25	
Base band frequency bandwidth (MHz)	5 to 40, 2 MHz step (BB LPF)	
RF input local leak (dBm)	–68 and below	
Output type	I/Q	
Noise figure (dB)	6 (TYP.)	
Phase noise (dBc/Hz)	–88 (TYP.) at 10 kHz offset	
Supply voltage (V DC)	3.3	
LNB power supply	DC 25 V, 400 mA (MAX.)	
Input impedance (Ω)	75	
Outline dimensions (mm)	30.4 (W) × 29.4 (D) × 12.9 (H)	25.2 (W) × 17.4 (D) × 8.7 (H)

Note: Low-profile type is also available.



BS2S7VZ7A03



BS2S7VZ6D02

RoHS

■Front-end Units for ISDB-T/S/S3

◆Features

(1) Compatible with 4K・8K satellite broadcasting

(2) Adopt Sharp's original technology to prevent lowering the weak electric field sensitivity by wireless LAN (2.4 GHz)

◆Standard Specifications

Destination	Japan (ISDB-T/S/S3)		Japan (ISDB-S/S3)
Model No.	VA4C7JCxxxx		BS2S7HZ0F01
	Digital terrestrial	Digital satellite	Digital satellite
Number of tuners	3	3	2
Input frequency (MHz)	93 to 767	1 032 to 3 226	1 032 to 3 226
Output type	DIF	I , Q	I , Q
Noise figure (dB)	4 (TYP.)	4 (TYP.)	4 (TYP.)
Phase noise (dBc/Hz)	−90 (TYP.) at 10 kHz offset	−85 (TYP.) at 10 kHz offset	−85 (TYP.) at 10 kHz offset
Supply voltage (V DC)	1.2, 3.3, 5.0	1.2, 3.3, 5.0	1.2, 3.3, 5.0
Power consumption (W)	2.66	1.64	0.76
Outline dimensions (mm)	34.0 (W) × 41.0 (D) × 8.75 (H)		34.0 (W) × 41.0 (D) × 8.75 (H)

VA4C7JCxxxx
(BS2S7HZ0F01)

■Front-end Units for ISDB-T/S

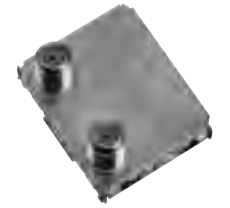
◆Features

(1) Low phase noise characteristics, high elimination of adjacent channel interference.

(2) Compact, low power consumption.

◆Standard Specifications

Destination	Japan (ISDB-T/S)					
Model No.	VA4S5JD2358		VA4S6JD2359		VA4S7JD2371	
	Digital terrestrial	Digital satellite	Digital terrestrial	Digital satellite	Digital terrestrial	Digital satellite
Number of tuners	1	1	2	2	3	3
Input frequency (MHz)	93 to 767	950 to 2 150	93 to 767	950 to 2 150	93 to 767	950 to 2 150
Output type	DIF	I , Q	DIF	I , Q	DIF	I , Q
Noise figure (dB)	4 (TYP.)	5 (TYP.)	4 (TYP.)	5 (TYP.)	4 (TYP.)	5 (TYP.)
Phase noise (dBc/Hz)	−87 (TYP.) at 10 kHz offset	−85 (TYP.) at 10 kHz offset	−87 (TYP.) at 10 kHz offset	−85 (TYP.) at 10 kHz offset	−87 (TYP.) at 10 kHz offset	−85 (TYP.) at 10 kHz offset
Supply voltage (V DC)	1.8, 3.3, 5	3.3	1.8, 3.3, 5	3.3	1.8, 3.3, 5	3.3
Power consumption (W)	0.9	0.7	1.4	1.2	1.9	1.8
Outline dimensions (mm)	41 (W) × 34 (D) × 8.75 (H)					



VA4S7JD2371
(VA4S5JD2358, VA4S6JD2359)

RoHS

■Front-end Units for DVB-T2/DTMB

◆Features

(1) Low phase noise characteristics, high elimination of adjacent channel interference.

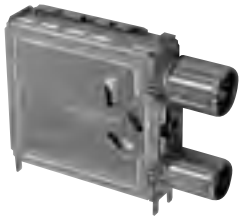
(2) Compact, low power consumption.

(3) Other types are available with various chassis forms (vertical or horizontal type) and input connectors (F or DIN type), etc.

◆Standard Specifications

Destination	Europe/Asia (DVB-T2), China (DTMB)		
Model No.	VA4M1DX2331	VA4M1DX2323	VA4M2DX2194
Input frequency (MHz)	51 to 868		47 to 868
Output type	DIF	DIF (Off through)	DIF (Dual output)
Noise figure (dB)	5 (TYP.)		
Phase noise (dBc/Hz)	–90		
Supply voltage (V DC)	3.3, 1.8		5, 3.3, 1.8
Power consumption (W)	0.49		1.13
Outline dimensions (mm)	24.2 (W) × 25.8 (D) × 8 (H)		41.3 (W) × 37.5 (D) × 12.3 (H)

VA4M1DX2331



VA4M2DX2194

RoHS

■Front-end Units for Digital Terrestrial and Analog Terrestrial Broadcasting

◆Features

Contributing to the development of thinner LCD TVs and similar products by combining compatibility with digital and analog terrestrial broadcasts into a single unit.

◆Standard Specifications

Destination	China*1
Model No.	VA4M1CA1309
Input frequency (MHz)	47 to 866
Output type	IF
Digital IF bandwidth (MHz)	8
Phase noise (dBc/Hz)	–90 (TYP.) at 10 kHz offset
Supply voltage (V DC)	3.3
Noise figure (dB)	4 (TYP.)
Channel selection system	PLL (I²C-bus)*2
Outline dimensions (mm)	26.2 (W) × 20 (D) × 10.6 (H)

VA4M1CA1309

*1 Built-in isolator type
*2 I²C-bus is a trademark of Philips Corporation.

◆Features

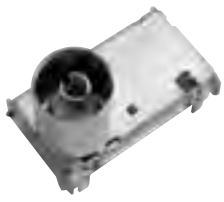
Universal specifications compatible with various broadcasting systems all over the world.

Digital: DVB-T/T2, DVB-C, ATSC, ISDB-T, DTMB

Analog: NTSC-M/N, PAL-B/G/I/DK, SECAM-L, L'

◆Standard Specifications

Destination	Global
Model No.	VA4M1DB1370
Input frequency (MHz)	47 to 868
Output type	IF
Noise figure (dB)	4 (TYP.)
Phase noise (dBc/Hz)	–90 (TYP.)
Supply voltage (V)	3.3
Outline dimensions (mm)	27 (W) × 14 (D) × 7.5 (H)



VA4M1DB1370

Note: Contact SHARP for custom design product.
(For connector shape or facing side, analog output format, etc.)

RoHS

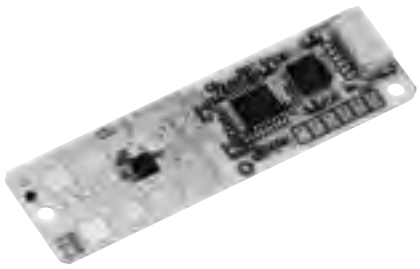
■Micro-wave Body Motion Sensor module

◆Features

(1) Radio wave (microwave) enables body motion sensing even at a distance from human.

(2) Microwave penetrates through plastics and ceramic, etc., so the sensor module is able to conceal. (Window is unnecessary, so appearance of product is not damaged)

(3) Sensing without influence of the surface temperature of the target and ambient light.



DC6S4ZN3101/DC6S4ZN3102

◆Standard Specifications

Model No.	DC6S4ZN3101	DC6S4ZN3102
Place of destination	For North America	For EU and Asia
Sensing frequency	24.075 to 24.175 GHz	24.15 to 24.25 GHz
Antenna elements	Send: 4 elements / receive: 4 elements	Send: 2 elements / receive: 4 elements
Measurable angle (Typ.)	140° (azimuth) / 70° (elevation)	140° (azimuth) / 100° (elevation)
Measurable distance (Ref.)	0 to 10 m	0 to 15 m
Applications	Body motion	
Output interface	UART and digital out (Lo/Hi)	
Supply voltage	3.3±0.1 V	
Current consumption (Typ.)	56 mA	49 mA
Operation ambient temperature	–20 to 60°C	
Outline dimensions (Typ.)	50 × 15 × 3.5 mm	

SENSOR

RoHS

■Temperature and Humidity Sensor

◆Features

(1) Package: 3.0 x 3.0 x 0.8 mm, reflowable, QFN

(2) Interface: I²C

◆Standard Specifications

Model No.	QM1H0P00xx	
Sensor	Humidity sensor	Temperature sensor
Type	Macromolecule capacity	Semiconductor
Measuring range	0 to 100% RH	–20 to +85°C
Accuracy	±2% RH (25°C)	±0.3°C
Resolution	0.1% RH	0.015°C
Interface	I²C	

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