

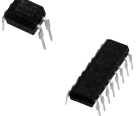






## ■ Photocoupler Lineup

### <Phototransistor output type>

Package type	Output type	Features	Model No. (series)	Page	
4-pin SOP Compact, SMT type 	Single phototransistor	General purpose, High collector-emitter voltage, etc.	PC35x series/PC451J0000F	56	
		AC input response	Low input current PC367NJ0000F	56	
		High sensitivity, High collector-emitter voltage	PC354NJ0000F	56	
	Darlington phototransistor	Low input current	PC364NJ0000F	56	
		Low input current	PC355NJ0000F	56	
		Low input current	PC365NJ0000F	56	
Compact, Half pitch (lead space), SMT type 	Single phototransistor	General purpose, High collector-emitter voltage, etc.	PC3Hx series	57	
		Reinforced insulation	PC3HU7NYIP0F	57	
		Low input current	PC3H71xNIP0F	57	
		High collector-emitter voltage	PC4H510NIP0F	57	
		AC input response	PC3H3J0000F/PC3H4J0000F	57	
	Darlington phototransistor	General purpose	Low input current	PC3H41xNIP0F	57
		Low input current	PC3H5J0000F	57	
		Low input current	PC3H510NIP0F	57	
		Low input current	PC123XNNSZ0F	58	
		Low input current	PC1231xNSZ0X	58	
DIP type (4/16-pin) (4/16-pin, DIP type) 	Single phototransistor	Reinforced insulation	PC817XNNSZ0F/PC847XJ0000F▲/ PC851XNNSZ0F	58	
		General purpose, High collector-emitter voltage, etc.	Low input current	PC817xxNSZ0X	58
		AC input response	PC814XJ0000F▲/PC844XJ0000F▲	58	
		Low input current	PC8141xNSZ0F▲	58	
		Built-in SBD/High response speed	PC81100NSZ0X	58	
	Darlington phototransistor	General purpose, High collector-emitter voltage	PC815XNNSZ0F/PC845XJ0000F▲/ PC852XNNSZ0F/PC853XNNSZ0F	58	
		Low input current	PC81510NSZ0X	58	
		General purpose, High collector-emitter voltage, etc.	PC7xxV0NSZXF	59	
		Darlington phototransistor	General purpose, High collector-emitter voltage, etc.	PC7x5V0NSZXF	59

### <OPIC output type>

Package type	Output type	Features	Model No. (series)	Page
Compact, SMT type 	Digital output	General purpose, High response speed, 2ch, etc.	PC40xJ0000F/PC456L0NIP0F/ PC41xS0NIP0F/PC4D10SNIP0F	60
	Analog/Digital output	High CMR	PC457S0NIP0F/PC457L0NIP0F▲	60
DIP type, SMT type 	Digital output	General purpose, High response speed, etc.	PC90xV0NSZXF/PC956L0NSZ0F▲	61
	Built-in base amplifier	For inverter control/For inverter control, Built-in short-circuit protection circuit	PC942J0000F▲/PC923L0NSZ0F▲/ PC924L0NSZ0F▲/PC925L0NSZ0F	61
	Analog/Digital output	High speed, High CMR, etc.	PC957L0NSZ0F▲	62

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



## ■ Photocouplers

### ◆ Phototransistor Output Type

#### <Compact, SMT type>

○: Approved, △: Under application

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards <sup>*2</sup>	Package	Absolute maximum ratings			Electro-optical characteristics						
				UL		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Collector-emitter voltage V <sub>CEO</sub> (V)	Current transfer ratio			Response time			
									CTR (%) MIN.	I <sub>F</sub> (mA)	V <sub>CE</sub> (V)	t <sub>r</sub> (μs) TYP.	I <sub>C</sub> (mA)	R <sub>L</sub> (Ω)	V <sub>CE</sub> (V)
Single phototransistor output	PC357NJ0000F		General purpose	○*	Mini-flat 4-pin	50	3.75	80	50	5	5	4	2	100	2
	PC352NJ0000F		General purpose, high resistance to noise <sup>*1</sup>	○		50	3.75	80	90	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 <sup>*1</sup>	○		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 <sup>*1</sup>	○		±10	3.75	70	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	2	100	2	

\*1 CMR: MIN.10 kV/μs

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

\* A VDE approved type is optionally available.



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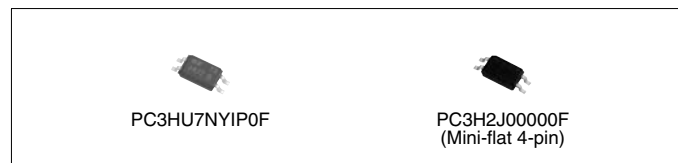
## ◆ Phototransistor Output Type <Compact, half pitch (lead space) SMT type>

○: Approved, △: Under application

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards*3	Package	Absolute maximum ratings			Electro-optical characteristics						
				UL		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Collector-emitter voltage V <sub>CEO</sub> (V)	Current transfer ratio			Response time			
									CTR (%) MIN.	I <sub>F</sub> (mA)	V <sub>CE</sub> (V)	t <sub>r</sub> (μs) TYP.	I <sub>C</sub> (mA)	R <sub>L</sub> (Ω)	V <sub>CE</sub> (V)
Single phototransistor output	PC3HU7NYIP0F		Reinforced insulation (internal insulation distance: MIN. 0.4 mm), low-profile package	○*4, 5	Low-profile mini-flat 4-pin	50	3.75	80	50	5	5	4	2	100	2
	PC3H2J00000F		High resistance to noise*1	○		50	2.5	80	20	1	5	4	2	100	2
	PC3H7J00000F		Standard	○*2		50	2.5	80	20	1	5	4	2	100	2
	PC3H71xNIP0F		High resistance to noise*1, low input current	○		10	2.5	80	100	0.5	5	4	2	100	2
	PC3H3J00000F		AC input response, high resistance to noise*1	○	Mini-flat 4-pin	±50	2.5	80	20	±1	5	4	2	100	2
	PC3H4J00000F		AC input response	○*2		±50	2.5	80	20	±1	5	4	2	100	2
	PC3H41xNIP0F		AC input response, high resistance to noise*1, low input current	○		±10	2.5	80	50	±0.5	5	4	2	100	2
	PC4H510NIP0F		High collector-emitter voltage	○		50	2.5	350	40	5	5	4	2	100	2
Darlington photo-transistor output	PC3H5J00000F		High sensitivity	○*2	Mini-flat 4-pin	50	2.5	35	600	1	2	60	2	100	2
	PC3H510NIP0F		High sensitivity, low input current	○		10	2.5	35	600	0.5	2	60	2	100	2

\*1 CMR: MIN.10 kV/μs  
 \*2 A VDE approved type is optionally available.  
 \*3 Please refer to Specification Sheets for model numbers approved by safety standards.  
 \*4 VDE, CSA approved  
 \*5 In conformance with BSI, SEMKO, DEMKO, NEMKO, and FIMKO



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## ◆ Phototransistor Output Type <DIP type (4/16-pin)>

○: Approved, △: Under application

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards*8			Package	Absolute maximum ratings			Electro-optical characteristics			
				UL	VDE *2	Others *3		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Collector-emitter voltage V <sub>CEO</sub> (V)	Current transfer ratio CTR (%) MIN.	I <sub>F</sub> (mA)	tr (μs) TYP.	R <sub>L</sub> (Ω)
Single phototransistor output	PC123XNNSZ0F*1		High isolation voltage, reinforced insulation	○	○	○	4-pin DIP	50	5.0	70	50	5	4	100
	PC1231xNSZ0X		High isolation voltage, reinforced insulation, low input current, high resistance to noise*4	○	○	○		10	5.0	70	50	0.5	4	100
	PC817XNNSZ0F*5, *6, *7		High isolation voltage	○	○	—		50	5.0	80	50	5	4	100
	PC847XJ0000F▲*5, *9		High isolation voltage (4-ch)	○	○	—	16-pin DIP	50	5.0	80	50	5	4	100
	PC8171xNSZ0X		High isolation voltage, low input current, high resistance to noise*4	○	—	—	4-pin DIP	10	5.0	70	100	0.5	4	100
	PC851XNNSZ0F		High isolation voltage, high collector-emitter voltage	○	—	—		50	5.0	350	40	5	4	100
	PC814XJ0000F▲*5, *6		High isolation voltage, AC input response	○	○	—	16-pin DIP	±50	5.0	80	20	±1	4	100
	PC844XJ0000F▲	High isolation voltage, AC input response (4-ch)	○	○	—	±50		5.0	80	20	±1	4	100	
	PC8141xNSZ0F▲	High isolation voltage, AC input response, low input current, high resistance to noise*4	○	—	—	±10		5.0	80	50	±0.5	4	100	
	PC81100NSZ0X		Built-in schottky barrier diode, toff: 35μs TYP. (In saturation, R <sub>L</sub> = 100kΩ)	○	—	—	4-pin DIP	50	5.0	70	50	5	ton: TYP. 9	100
Darlington phototransistor output	PC815XNNSZ0F		High isolation voltage, high sensitivity	○	—	—	4-pin DIP	50	5.0	35	600	1	60	100
	PC845XJ0000F▲		High isolation voltage, high sensitivity (4-ch)	○	—	—	16-pin DIP	50	5.0	35	600	1	60	100
	PC81510NSZ0X		High isolation voltage, high sensitivity, low input current	○	—	—	4-pin DIP	10	5.0	35	600	0.5	60	100
	PC852XNNSZ0F*5, *6	High isolation voltage, high collector-emitter voltage	○	○	—	50		5.0	350	1 000	1	100	100	
	PC853XNNSZ0F*5, *6	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 Optionally available.

\*3 BSI, SEMKO, DEMKO, NEMKO, FIMKO, CSA

\*4 CMR: 10 kV/μs MIN.

\*5 Lead forming type is also available for surface mounting.

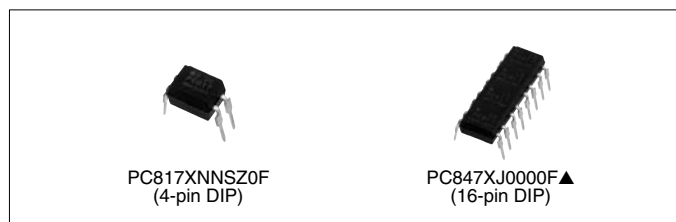
\*6 Taped package of lead forming type for surface mounting is also available.

\*7 Wide lead spacing type is also available. Compatible with wide lead spacing type lead-forming models for surface-mount use. Also compatible with taped packages for wide lead spacing type lead-forming models for surface-mount use.

\*8 Please refer to Specification Sheets for model numbers approved by safety standards.

\*9 Approved by UL as multi-channel type of PC817.

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



PC817XNNSZ0F  
(4-pin DIP)

PC847XJ0000F▲  
(16-pin DIP)

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## ◆ Phototransistor Output Type <DIP type (6-pin)>

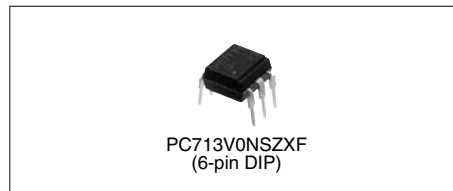
○: Approved, △: Under application

(Ta = 25°C)

Output type	Model No.	Internal connection diagram	Features	Approved by safety standards*2		Package	Absolute maximum ratings			Electro-optical characteristics			
				UL	VDE*1		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Collector-emitter voltage V <sub>CEO</sub> (V)	Current transfer ratio		Response time	
									CTR (%) MIN.	I <sub>F</sub> (mA)	t <sub>r</sub> (μs) TYP.	R <sub>L</sub> (Ω)	
Single phototransistor output	PC714V0NSZXF		High isolation voltage	○	○	6-pin DIP	50	5.0	80	50	5	4	100
	PC724V0NSZXF		High isolation voltage, large input current	○	—		150	5.0	35	20	100	4	100
	PC713V0NSZXF		High isolation voltage, with base terminal	○	○		50	5.0	80	50	5	4	100
Darlington phototransistor output	PC715V0NSZXF		High isolation voltage, high sensitivity	○	○		50	5.0	35	600	1	60	100
	PC725V0NSZXF		High isolation voltage, high sensitivity, high collector-emitter voltage, high power	○	○		50	5.0	300	1 000	1	100	100

\*1 Optionally available.

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



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◆ **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, SMT type> (1-1)**

○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*2		Package	Absolute maximum ratings		Electro-optical characteristics*1						
			UL	VDE*3		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Low level output voltage			Threshold input current			
								V <sub>OL</sub> (V) MAX.	T <sub>a</sub> (°C)	I <sub>OL</sub> (mA)	I <sub>F</sub> (mA)	I <sub>FHL</sub> (mA) MAX.	I <sub>FLH</sub> (mA) MAX.	R <sub>L</sub> (Ω)
PC400J00000F		Digital output, normal-off operation	○	—	Mini-flat 5-pin	50	3.75	0.4	0 to +70	16	4	2.0	—	280
PC401J00000F		Digital output, normal-on operation	○	—		50	3.75	0.4	0 to +70	16	0	—	2.0	280
PC456L0NIP0F		Built-in preamplifier, high speed transmission (2 Mb/s), For flow soldering	○	○		25	3.75	0.6	−40 to +85	4.4	10	5.0	—	20 k
PC410S0NIP0F		High speed (10 Mb/s), high CMR (10 kV/μs), For flow soldering, Solder heat resistance: 270°C	○	○	SOP 8-pin	20	3.75	0.6	−40 to +85	13	5	5.0	—	350
PC4D10SNIP0F		High speed (10 Mb/s), For flow soldering, Solder heat resistance: 270°C 2ch output	○	—	SOP 8-pin	20	3.75	0.6	−40 to +85	13	5	5.0	—	—

A: Rated voltage circuit

\*1 Each item is measured at V<sub>cc</sub>=5V. (PC400, PC401)

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

\*3 Optionally available.

\*4 No forward current rating for voltage input (rated input voltage: −0.5 to 6.0 V).

**<Compact, SMT type> (1-2)**

○: Approved, △: Under application

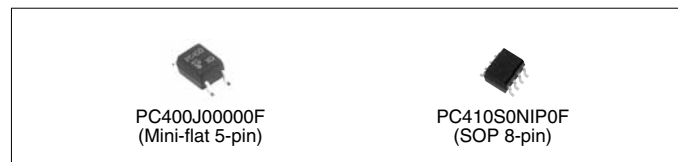
(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*1		Package	Absolute maximum ratings		Electro-optical characteristics							
			UL	VDE*2		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Current transfer ratio				Propagation delay time			
								CTR (%) MIN.	I <sub>F</sub> (mA)	V <sub>O</sub> (V)	V <sub>CC</sub> (V)	t <sub>PHL</sub> (μs) TYP.	t <sub>PLH</sub> (μs) TYP.	R <sub>L</sub> (Ω)	I <sub>F</sub> (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	0.6	1 900	16
PC457S0NIP0F		High speed (1 Mb/s), high CMR (15 kV/μs), For flow soldering, Solder heat resistance: 270°C	○	○	SOP 8-pin	25	3.75	19	16	0.4	4.5	0.2	0.6	1 900	16

\*1 Please refer to Specification Sheets for model numbers approved by safety standards.

\*2 Optionally available.

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



PC400J00000F  
(Mini-flat 5-pin)

PC410S0NIP0F  
(SOP 8-pin)

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### ◆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, digital output>

○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*5		Package	Absolute maximum ratings		Electro-optical characteristics*1						
			UL	VDE *4		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Low level output voltage			Threshold input current			
								V <sub>OL</sub> (V) MAX.	T <sub>a</sub> (°C)	I <sub>OL</sub> (mA)	I <sub>F</sub> (mA)	I <sub>FHL</sub> (mA) MAX.	I <sub>FLH</sub> (mA) MAX.	R <sub>L</sub> (Ω)
PC900V0NSZXF*2, *3		Digital output, normal-off operation	○	○	6-pin DIP	50	5.0	0.4	0 to +70	16	4	2.0	-	280
PC901V0NSZXF*2, *3		Digital output, normal-on operation	○	○		50	5.0	0.4	0 to +70	16	0	-	2.0	280
PC956L0NSZ0F▲*2, *3		Built-in preamplifier, high speed transmission (2 Mb/s) For soldering flow	○	○	8-pin DIP	25	5.0	0.6	-40 to +85	2.4	10	5.0	-	20 k

A: Rated voltage circuit

\*1 Each item is measured at V<sub>cc</sub>=5V.

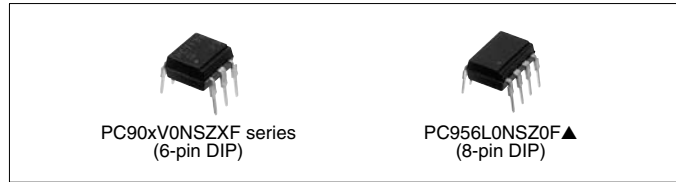
\*3 Taped package of lead forming type for surface mounting is also available.

\*5 Please refer to Specification Sheets for model numbers approved by safety standards.

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

\*2 Lead forming type is also available for surface mounting.

\*4 Optionally available.



### ◆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, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*3		Package	Absolute maximum ratings			Electro-optical characteristics					
			UL	VDE *2		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Output current I <sub>o1</sub> (A)	Propagation delay time					
									t <sub>PHL</sub> (μs) TYP.	t <sub>PLH</sub> (μs) TYP.	V <sub>CC</sub> (V)	I <sub>F</sub> (mA)	R <sub>L1</sub> (Ω)	R <sub>L2</sub> (Ω)
PC942J00000F▲		For controlling inverter-controlled air-conditioner	○	○	8-pin DIP	25	5.0	0.5	2.0	2.0	6	5	5	10
PC923L0NSZ0F▲*1		<ul style="list-style-type: none"> <li>Built-in drive circuit directly connectable to MOS-FET and IGBT</li> <li>Low dissipation current (I<sub>cc</sub> = TYP. 1.3 mA)</li> <li>High resistance to noise (CMR: MIN. 15 kV/μs)</li> </ul>	○	○		20	5.0	0.1	0.3	0.3	24	5	R <sub>G</sub> = 47	-
PC924L0NSZ0F▲*1		<ul style="list-style-type: none"> <li>Built-in drive circuit directly connectable to MOS-FET and IGBT</li> <li>Low dissipation current (I<sub>cc</sub> = TYP. 1.3 mA)</li> <li>High resistance to noise (CMR: MIN. 15 kV/μs)</li> </ul>	○	○		25	5.0	0.1	1.0	1.0	24	10	R <sub>G</sub> = 47	-
PC925L0NSZ0F*1		<ul style="list-style-type: none"> <li>Built-in drive circuit directly connectable to MOS-FET and IGBT</li> <li>Peak output current: 2.5 A</li> <li>Low dissipation current (I<sub>cc</sub> = TYP. 5 mA)</li> <li>High resistance to noise (CMR: MIN. 15 kV/μs)</li> </ul>	○	○		25	5.0	2.5	MAX. 0.5	MAX. 0.5	24	10	R <sub>G</sub> = 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.

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

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## ◆OPIC Output <DIP type, analog/digital output>

○: Approved, △: Under application

(Ta = 25°C)

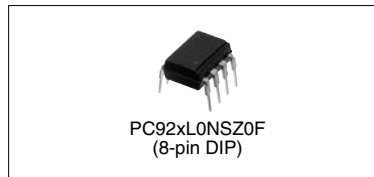
Model No.	Internal connection diagram	Features	Approved by safety standards*3		Package	Absolute maximum ratings		Electro-optical characteristics							
			UL	VDE*2		Forward current I <sub>F</sub> (mA)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Current transfer ratio			Propagation delay time*1				
								CTR (%) MIN	I <sub>F</sub> (mA)	V <sub>O</sub> (V)	V <sub>CC</sub> (V)	t <sub>PHL</sub> (μs) TYP.	t <sub>PLH</sub> (μs) TYP.	R <sub>L</sub> (Ω)	I <sub>F</sub> (mA)
PC957LONsz0F▲		High speed (1 Mb/s), high CMR (15 kV/μs), for flow soldering	○	○	8-pin DIP	25	5.0	19	16	0.4	4.5	0.2	0.6	1 900	16

\*1 V<sub>CC</sub> = 5V

\*2 Optionally available.

\*3 Please refer to Specification Sheets for title(s) of safety standards.

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## ■ Phototriac Coupler Lineup

Package	Applied voltage	ON-state current (rms)	Features	Model No.	Page
Mini-flat (SMD) 	AC 200 V lines (V <sub>DRM</sub> = 600V)	0.05 A	General purpose	S2S3000F*4 / S2S5A00F*4	64
			Built-in zero-cross circuit	S2S4000F*4	65
DIP type (4-pin) 	AC 200 V lines (V <sub>DRM</sub> = 600V)	0.1 A	General purpose	PC3ST11NSZAF*4	64
			Built-in zero-cross circuit	PC3ST21NSZBF*3	65
			Reinforced isolation	PC3SH11YFZAF*4 / PC3SH13YFZAF*4	64
			Built-in zero-cross circuit	PC3SH21YFZBF*3	65
DIP type (6-pin package, 5th-pin cut) 	AC 100 V lines (V <sub>DRM</sub> = 400V)	0.1 A	General purpose	PC2SD11NTZAF*4	64
			AC 200 V lines (V <sub>DRM</sub> = 600V)	0.1 A	General purpose
	Built-in zero-cross circuit	PC3SD21NTZAF*4 / PC3SD21NTZBF*3 / PC3SD21NTZCF*2 / PC3SD21NTZDF*1 / PC3SD23YTZCF*2			65
	AC 200 V lines (V <sub>DRM</sub> = 600V)	0.1 A	Reinforced isolation	PC3SF11YVZAF*4 / PC3SF11YVZBF*3 / PC3SF13YVZBF*3	64
			Built-in zero-cross circuit	PC3SF21YVZAF*4 / PC3SF21YVZBF*3 / PC3SF23YVZSF*3	65
	AC 200 V lines (V <sub>DRM</sub> = 800V)	0.1 A	General purpose	PC4SD11NTZBF*3 / PC4SD11NTZCF*2	64
			Built-in zero-cross circuit	PC4SD21NTZCF*2 / PC4SD21NTZDF*1	65
			Reinforced isolation	PC4SF11YVZAF*4 / PC4SF11YVZBF*3	64
			Built-in zero-cross circuit	PC4SF21YVZBF*3 / PC4SF21YVZCF*2	65

Minimum trigger current: \*1 I<sub>FT</sub> ≦ 3 mA, \*2 I<sub>FT</sub> ≦ 5 mA, \*3 I<sub>FT</sub> ≦ 7 mA, \*4 I<sub>FT</sub> ≦ 10 mA, \*5 I<sub>FT</sub> ≦ 2 mA



## ■ Phototriac Couplers

○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*4			Package	Absolute maximum ratings			Electro-optical characteristics
			UL, CSA	VDE	Others		ON-state current I <sub>T</sub> (rms) (A)	Repetitive peak OFF-state voltage V <sub>DRM</sub> (V)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	
S2S3000F		200 V lines, compact	○	○*6	—	Mini-flat 4-pin	0.05	600	3.75	10
S2S5A00F		200 V lines, compact	○	○*6	—					10
PC3ST11NSZAF		200 V lines, compact	○	○*6	—	4-pin DIP*1	0.1	600	5.0	10
PC3SH11YFZAF		200 V lines, compact, reinforced isolation	○	○	○*2					10
PC3SH13YFZAF		200 V lines, compact, reinforced isolation, high noise resistance	○	○	○*2					10
PC2SD11NTZAF*7		100 V lines	○	—	—	6-pin DIP*1,3	0.1	5.0	10	
PC3SD12NTZAF*8		200 V lines	○	○*6	—				600	10
PC3SD11NTZBF		200 V lines	○	○*6	—				800	7
PC4SD11NTZBF		200 V lines, repetitive peak-OFF-state voltage	○	○*6	—				600	7
PC3SD11NTZCF		200 V lines	○	○*6	—				800	5
PC3SD11YTZDF		200 V lines, low input drive	○	○	—				600	3
PC4SD11NTZCF		200 V lines, repetitive peak-OFF-state voltage	○	○*6	—				800	5
PC3SF11YVZAF		200 V lines, reinforced isolation	○	○	○*2				600	10
PC3SF11YVZBF		200 V lines, reinforced isolation	○	○	○*2					7
PC3SF13YVZBF		200 V lines, reinforced isolation, high noise resistance	○	○	○*2				800	7
PC4SF11YVZAF		200 V lines, reinforced isolation, repetitive peak-OFF-state voltage	○	○	○*2					10
PC4SF11YVZBF		200 V lines, reinforced isolation, repetitive peak-OFF-state voltage	○	○	○*2					7

For the notes \*1 to \*9, see next page.

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## Phototriac Couplers (Built-in zero-cross circuit type)

○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*4			Package	Absolute maximum ratings			Electro-optical characteristics		
			UL, CSA	VDE	Others		ON-state current I <sub>T</sub> (rms) (A)	Repetitive peak OFF-state V <sub>DRM</sub> (V)	Isolation voltage (AC) Viso (rms) (kV)		Min. trigger current I <sub>FT</sub> (mA) MAX. V <sub>D</sub> = 4 V, R <sub>L</sub> = 100Ω	
S2S4000F		200 V lines, compact	○	○*6	—	Mini-flat 4-pin	0.05	600	3.75	10*5		
PC3ST21NSZBF		200 V lines, compact	○	○*6	—	4-pin DIP*1	0.1	600	5.0	7		
PC3SH21YFZBF		200 V lines, compact, reinforced isolation	○	○	○*2					7		
PC3SD21NTZAF		200 V lines, low zero-cross voltage: MAX. 20 V	○	○*6	—	6-pin DIP*1,3	0.1	600	5.0	10		
PC3SD21NTZBF		200 V lines, low zero-cross voltage: MAX. 20 V	○	○*6	—					7		
PC3SD21NTZCF*9		200 V lines, low zero-cross voltage: MAX. 20 V	○	○*6	—					5		
PC3SD23YTZCF		200 V lines, high pulse/noise resistance (TYP. 2 kV)	○	○	—					5		
PC3SD21NTZDF		200 V lines, low zero-cross voltage: MAX. 20 V	○	○*6	—					3		
PC3SD21YTZEF		200 V lines, Low input drive	○	○	—					2		
PC4SD21NTZCF		200 V lines, repetitive peak-OFF-state voltage	○	○*6	—					800	5	
PC4SD21NTZDF		200 V lines, repetitive peak-OFF-state voltage	○	○*6	—							3
PC3SF21YVZAF		200 V lines, reinforced isolation	○	○	○*2					600	10	
PC3SF21YVZBF		200 V lines, reinforced isolation	○	○	○*2							7
PC3SF23YVZSF		200 V lines, reinforced isolation, high pulse/noise resistance (TYP. 2 kV)	○	○	○*2					800	7	
PC4SF21YVZBF		200 V lines, reinforced isolation, repetitive peak-OFF-state voltage	○	○	○*2							7
PC4SF21YVZCF		200 V lines, reinforced isolation, repetitive peak-OFF-state voltage	○	○	○*2							5

\*1 Lead forming type for surface mounting is also available.

\*2 In conformance with BSI, SEMKO, DEMKO, and FIMKO

\*3 These are molded pin No. 5.

\*4 Please refer to Specification Sheets for model numbers approved by safety standards.

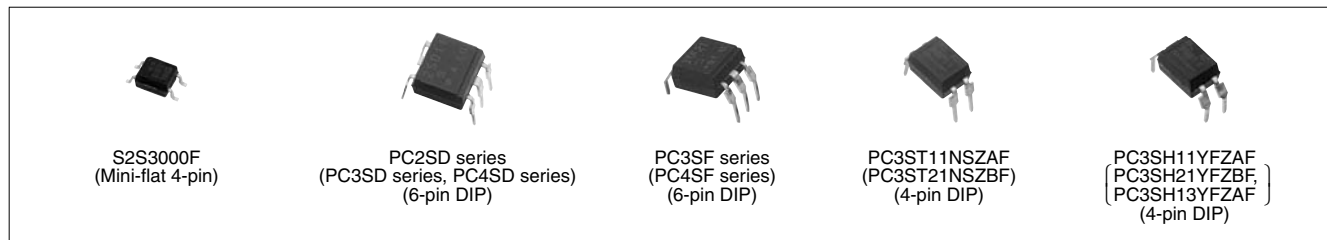
\*5 V<sub>D</sub> = 6 V, R<sub>L</sub> = 100Ω

\*6 Optionally available

\*7 An equivalent model (I<sub>FT</sub> MAX.: 15 mA) with overseas brand compatibility is also available. (PC1S3021NTZF)

\*8 An equivalent model with overseas brand compatibility is also available. (PC1S3052NTZF)

\*9 An equivalent model with overseas brand compatibility is also available. (PC1S3063NTZF)



### Notice





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## ■ Solid State Relay Lineup

Package	Applied voltage	Features	Model No.	Page
 DIP 6-pin	AC 100 V lines	General purpose	PR22MA11NTZF	67
	AC 200 V lines	General purpose	PR31MA11NTZF / PR32MA11NTZF	67
 DIP 8-pin	AC 100 V lines	General purpose	PR23MF11NSZF / PR26MF series / PR29MF series	67
		Built-in zero-cross circuit	PR26MF21NSZF / PR29MF21NSZF	67
	AC 200 V lines	General purpose	PR33MF51NSZF / PR36MF series / PR39MF series / PR3BMF51NSKF	67
		Built-in zero-cross circuit	PR36MF series / PR39MF series / PR3BMF21NSZF	67
  SIP 4-pin Low profile	AC 100 V lines	General purpose	S102T01F / S108T01F / S101S05F / S102S01F / S112S01F / S116S01F	68
		Built-in zero-cross circuit	S102T02F / S108T02F / S101S06F / S102S02F / S116S02F	68
		Built-in snubber circuit	S102S11F	68
		Built-in zero-cross circuit	S101S16F / S102S12F	68
	AC 200 V lines	General purpose	S202T01F / S208T01F / S202S01F / S212S01F / S216S01F	68
		Built-in zero-cross circuit	S202T02F / S208T02F / S201S06F / S202S02F / S216S02F	68/69
		Built-in snubber circuit	S202S15F / S202S11F	69
		Built-in zero-cross circuit	S202S12F	69



## Solid State Relays

<DIP type>

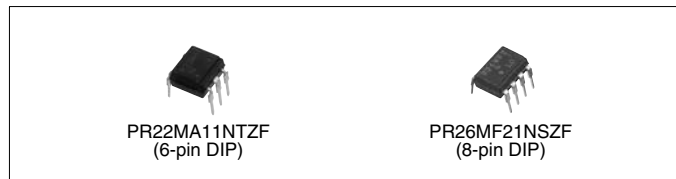
○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*1			Package	Absolute maximum ratings			Electrical characteristics	
			UL	CSA	VDE*2		ON-state current I <sub>T</sub> (rms) (A)	Repetitive peak OFF-state voltage V <sub>DRM</sub> (V)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)		Min. trigger current I <sub>FT</sub> (mA) MAX. V <sub>D</sub> = 6 V, R <sub>L</sub> = 100Ω
PR31MA11NTZF		200 V lines, compact	○	○	○	6-pin DIP	0.06	600	5.0	10	
PR22MA11NTZF		100 V lines, 150 mA output in a small package	○	○	○		0.15	400		10	
PR32MA11NTZF		200 V lines, 150 mA output in a small package	○	○	○		0.15	600		10	
PR23MF11NSZF		100 V lines, compact	○	○	—	8-pin DIP	0.3	400	4.0	10	
PR33MF51NSZF		200 V lines, compact	○	○	○			600		10	
PR26MF11NSZF		100 V lines, compact	○	○	—		0.6	400		10	
PR26MF12NSZF		100 V lines, compact, low input current	○	○	—					5	
PR29MF11NSZF		100 V lines, compact	○	○	—		0.9			10	10
PR29MF12NSZF		100 V lines, compact, low input current	○	○	—						5
PR36MF51NSZF		200 V lines, compact	○	○	○		0.6	600		10	
PR36MF12NSZF		200 V lines, compact, low input current	○	○	○					5	
PR39MF12NSZF		200 V lines, compact, low input current	○	○	○		0.9	10		5	
PR39MF51NSZF		200 V lines, compact	○	○	○					10	
PR3BMF51NSKF		200 V lines, compact	○	○	○		1.2	10			
PR26MF21NSZF			100 V lines, compact (built-in zero-cross circuit)	○	○		—	0.6		400	10
PR29MF21NSZF			100 V lines, compact (built-in zero-cross circuit)	○	○		—				0.9
PR36MF22NSZF			200 V lines, compact (built-in zero-cross circuit), low input current	○	○		○	0.6		600	5
PR39MF22NSZF	200 V lines, compact (built-in zero-cross circuit), low input current		○	○	○	0.9	5				
PR36MF21NSZF	200 V lines, compact (built-in zero-cross circuit)		○	○	○	0.6	10	10			
PR39MF21NSZF	200 V lines, compact (built-in zero-cross circuit)		○	○	○			0.9	10		
PR3BMF21NSZF	200 V lines, compact (built-in zero-cross circuit)		○	○	○	1.2	10				

\*1 Please refer to Specification Sheets for model numbers approved by safety standards.

\*2 Optionally available.



PR22MA11NTZF  
(6-pin DIP)

PR26MF21NSZF  
(8-pin DIP)

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### <SIP type> (1)

○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*6		Package	Absolute maximum ratings			Electrical characteristics			
			UL	CSA		ON-state current I <sub>T</sub> (rms) (A)	Repetitive peak OFF-state voltage V <sub>DRM</sub> (V)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Min. trigger current I <sub>FT</sub> (mA) MAX.	V <sub>D</sub> (V)	R <sub>L</sub> (Ω)	
S102T01F		100 V lines, low profile	○	○	Low profile 4-pin SIP	2	3.0	3.0	8	12	30	
S108T01F		100 V lines, low profile	-	-		8*2			8	12	30	
S102T02F		100 V lines, low profile (built-in zero-cross circuit)	○	○	4-pin SIP	2	400	4.0	8	12	30	
S108T02F		100 V lines, low profile (built-in zero-cross circuit)	-	-		8*2			8	12	30	
S101S05F		100 V lines	○	○	4-pin SIP	3*3	400	4.0	15	12	30	
S102S01F		100 V lines	○	○		8*2			8	12	30	
S112S01F		100 V lines	○	○		12*4			8	12	30	
S116S01F		100 V lines	○	○		16*5			8	12	30	
S101S06F		100 V lines (built-in zero-cross circuit)	○	○	4-pin SIP	3*3	400	3.0	15	6	30	
S102S02F		100 V lines (built-in zero-cross circuit)	○	○		8*2			8	6	30	
S116S02F		100 V lines (built-in zero-cross circuit)	○	○		16*5			8	6	30	
S102S11F		100 V lines (built-in snubber circuit)	○	○	4-pin SIP	8*1	400	4.0	8	12	30	
S101S16F		100 V lines (built-in snubber circuit, built-in zero-cross circuit)	○	○		3*3			3.0	15	6	30
S102S12F		100 V lines (built-in snubber circuit, built-in zero-cross circuit)	○	○		8*1			4.0	8	6	30
S202T01F		200 V lines, low profile	○	○		Low profile 4-pin SIP			2	600	3.0	8
S208T01F		200 V lines, low profile	-	-	8*2		8	12	30			
S202T02F		200 V lines, low profile (built-in zero-cross circuit)	○	○	4-pin SIP	2	600	4.0	8	12	30	
S208T02F		200 V lines, low profile (built-in zero-cross circuit)	-	-		8*2			8	12	30	
S202S01F		200 V lines	○	○	4-pin SIP	8*2	600	4.0	8	12	30	
S212S01F		200 V lines	-	-		12*4			8	12	30	
S216S01F		200 V lines	-	-		16*5			8	12	30	

\*1 to \*6: Please refer to the next page.

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### <SIP type> (2)

○: Approved, △: Under application

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Approved by safety standards*6		Package	Absolute maximum ratings			Electrical characteristics		
			UL	CSA		ON-state current I <sub>T</sub> (rms) (A)	Repetitive peak OFF-state voltage V <sub>DRM</sub> (V)	Isolation voltage (AC) V <sub>iso</sub> (rms) (kV)	Min. trigger current I <sub>FT</sub> (mA) MAX.	V <sub>D</sub> (V)	R <sub>L</sub> (Ω)
S201S06F		200 V lines (built-in zero-cross circuit)	○	○	4-pin SIP	3*3	600	3.0	15	6	30
S202S02F		200 V lines (built-in zero-cross circuit)	○	○		8*2			4.0	8	6
S216S02F		200 V lines (built-in zero-cross circuit)	—	—		16*5		8		6	30
S202S15F		200 V lines (built-in snubber circuit)	—	—		8*2		3.0	15	12	30
S202S11F		200 V lines (built-in snubber circuit)	○	○		8*1			8	12	30
S202S12F		200 V lines (built-in snubber circuit, built-in zero-cross circuit)	○	○		8*1		4.0	8	6	30

\*1 T<sub>c</sub> ≤ 88°C

\*2 T<sub>c</sub> ≤ 80°C

\*3 T<sub>c</sub> ≤ 100°C

\*4 T<sub>c</sub> ≤ 70°C

\*5 T<sub>c</sub> ≤ 60°C

\*6 Please refer to Specification Sheets for model numbers approved by safety standards.



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## ■ Photointerrupter Lineup

### <Transmissive type>

Output type	Package type	Outline	Mounting method	Model No. (series)	Page
Single phototransistor	Compact	High resolution	PWB mounting type/ Soldering reflow	GP1S296HCPSF/GP1S092HCPIF/ GP1S09xHCZ0F/GP1S19xHCZ0F/ GP1S19xHCxSF	71
High response speed	Case type	High resolution	PWB mounting type, etc.	GP1S5x series	72
		Horizontal slit, High resolution	PWB mounting type	GP1S59J0000F/GP1S525VJ00F	72
	With connector	General purpose	Snap-in	GP1S173LCS2F/GP1S74PJ000F/ GP1S273LCS1F	72
Darlington phototransistor	Case type	General purpose	PWB mounting type, etc.	GP1L5x series	73
High sensitivity		Wide gap	PWB mounting type	GP1L57J0000F	73
Digital output	Compact	High voltage	PWB mounting type	GP1A98HCZ0F	73
(OPIC output)	Case type	High resolution	With screw hole/ PWB mounting type	GP1A5x series	74
		Wide gap	PWB mounting type	GP1A57HRJ00F	74
	With connector	General purpose	Screw mounting type/Snap-in	GP1A173LCS2F/GP1A273LCS1F/ GP1A7x series/GP1A07x series	75

### <Reflective type>

Output type	Package type	Outline	Mounting method	Model No. (series)	Page
Single phototransistor	Leadless	Long focal distance	Surface-mount type	GP2S700HCP	75
High response speed	Compact, thin (leadless)	General purpose	Surface-mount type	GP2S60	75
OPIC output	With connector	Light modulation type, Sensitivity adjusted	Screw mounting type/ Compact snap-in/ Inverter light countermeasures	GP2A2x series/GP2A200LCS0F/ GP2A231LRSFAF/GP2A240LCS0F/ GP2A250LCS0F	76

### <Application-specific photointerrupter lineup>

Detection type	Outline (Output type etc.)	Mounting method	Model No. (series)	Page		
Transmissive type	Case type With encoder function Digital output (phase A/B)	Resolution: 45 LPI Linear scale slit pitch: 0.56 mm	PWB mounting type	GP1A057SGKLF	77	
		Resolution: 150 LPI Linear scale slit pitch: 0.17 mm	PWB mounting type/	GP1A057RBKLF	77	
		Resolution: 180 LPI Linear scale slit pitch: 0.14 mm	Screw mounting type	GP1A058SCK0F	77	
		Resolution: 300 LPI Linear scale slit pitch: 0.0847 mm	PWB mounting type	GP1A054RDKLF	77	
		Case type With encoder function Digital output (Capable of multiplying output)	Resolution: 150 LPI Linear scale slit pitch: 0.17 mm	PWB mounting type	GP1A101B2KSF	77
			Resolution: 180 LPI Linear scale slit pitch: 0.14 mm	PWB mounting type	GP1A101C2KSF	77
	For amusement use		Screw mounting	GP1A204HCS0	77	
Reflective type	Injection For prism system (Single phototransistor)		Screw mounting	GP2S29SVJ00F	77	





### ■ Photointerrupters

<Transmissive type>

◆ Single phototransistor output

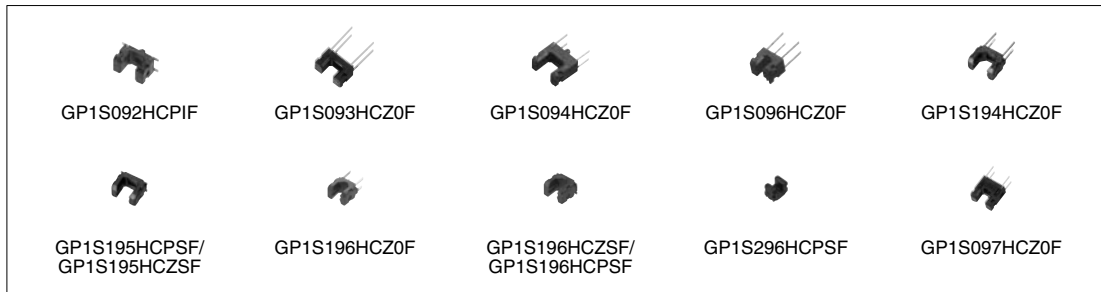
<Compact type>

(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.	IF (mA)	VCE (V)	tr (μs) TYP.	IC (mA)	RL (kΩ)	VCE (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
GP1S096HCZ0F		Narrow gap (3.5 × 2.6 × 2.9 [height] mm)	1.0	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
GP1S195HCZSF 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
GP1S196HCZSF 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
GP1S097HCZ0F		High resolution, 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

\* Topr: -25 to +85 °C

\*\* GP1SxxxHCZxF: Sleeve package, GP1SxxxHCPxF: Taped package



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☆New product



### <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.	IF (mA)	VCE (V)	tr (μs) TYP.	IC (mA)	RL (Ω)	VCE (V)
GP1S50J000F		High resolution, both-side mounting type	3.0	0.5	2.5	20	5	3	2	100	2
GP1S51VJ000F*1		High resolution, side mounting type	3.0	0.5	2.5	20	5	3	2	100	2
GP1S52VJ000F*1		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
GP1S54J0000F		High resolution, with positioning pin, PWB mounting type	3.0	0.5	2.5	20	5	3	2	100	2
GP1S56TJ000F		High resolution, with positioning pin, PWB mounting type	2.0	0.15	2.0	20	5	38	0.5	1 000	2
GP1S58VJ000F		High resolution, with positioning pin, PWB mounting type	5.0	0.5	2.5	20	5	3	2	100	2
GP1S59J0000F		High resolution, horizontal slit, with positioning pin, PWB mounting type	4.2	0.5	2.5	20	5	3	2	100	2

\* Topr: -25 to +85 °C

\*1 Highly reliable types: GP1SQ51VJ00F, GP1SQ52J000F, and GP1SQ53VJ00F are also available.



### <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.	IF (mA)	VCE (V)	tr (μs) TYP.	IC (mA)	RL (Ω)	VCE (V)
GP1S74PJ000F		Snap-in mounting type with connector Applicable to 3 kinds of thickness of mounting boards	5.0	0.5	2.5	20	5	3	2	100	2
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

\* Topr: -25 to +85 °C, -30 to +95 °C (GP1S173LCS2F, GP1S273LCS1F)



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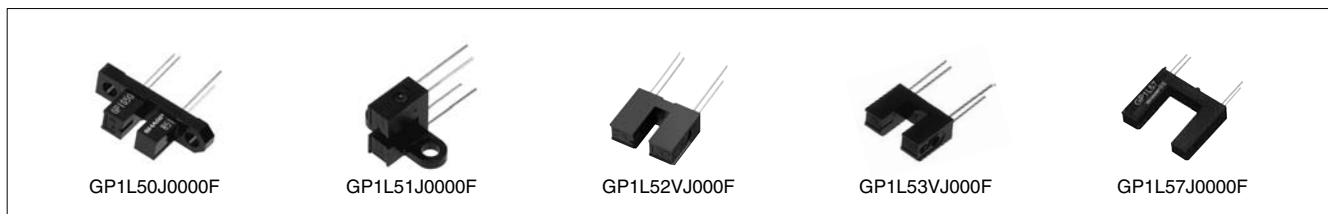


### ◆Darlington phototransistor output <Case type>

(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.	IF (mA)	VCE (V)	tr (μs) TYP.	IC (mA)	RL (Ω)	VCE (V)
GP1L50J000F		High sensitivity, both-side mounting type	3.0	0.5	50	1	2	80	2	100	2
GP1L51J000F		High sensitivity, side mounting type	3.0	0.5	50	1	2	80	2	100	2
GP1L52VJ000F		High sensitivity, PWB mounting type	3.0	0.5	50	1	2	80	2	100	2
GP1L53VJ000F		High sensitivity, PWB mounting type	5.0	0.5	30	1	2	80	2	100	2
GP1L57J0000F		High sensitivity, wide gap, PWB mounting type	10.0	1.8	70	1	2	130	2	100	2

\* Topr: -25 to +85 °C



### ◆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. ) <Compact 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				
					IFLH (mA) MAX.	IFHL (mA) MAX.	VCC (V)	tPLH (μs) TYP.	tPHL (μs) TYP.	IF (mA)	RL (kΩ)	VCC (V)
GP1A98HCZ0F		Compact, PWB mounting	3.2	0.5	8	-	3.3 to 24	2.0	10.0	10	3.9 to 20	3.3 to 24

\* Topr = -25 to +85°C



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<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				
					IFLH (mA) MAX.	IFHL (mA) MAX.	VCC (V)	tPLH (μs) TYP.	tPHL (μs) TYP.	IF (mA)	RL (Ω)	VCC (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

\* Topr = –25 to +85°C



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◆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. )

<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 <sub>CC</sub> (V)		Low level output voltage			
					MIN.	MAX.	V <sub>OL</sub> (V) MAX.	Light cut-off	I <sub>OL</sub> (mA)	V <sub>CC</sub> (V)
GP1A173LCS2F		Snap-in mounting integrated connector type	5.0	0.5	4.5	5.5	0.35	No	4	5
☆GP1A273LCS1F		Integrated connector, compatible with 1.5 mm pitch connector, snap-in mounting type	5.0	0.7	4.5	5.5	0.35	No	4	5
GP1A73AJ000F		Compact, snap-in mounting type	5.0	0.5	4.5	5.5	0.35	No	4	5
GP1A073LCS		Compact, snap-in mounting type, low voltage operation	5.0	0.5	2.7	5.5	0.35	No	4	5
GP1A75EJ000F		Either-side mounting type Screw mounting type	5.0	0.5	4.5	5.5	0.35	Yes	16	5

\* Topr: -20 to +75°C, -30 to +95 °C (GP1A173LCS2F)



## Photointerrupters

<Reflective type>

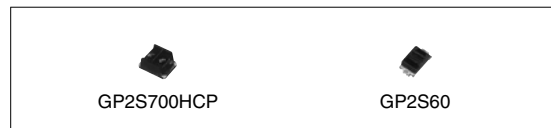
◆Single phototransistor output

<Compact>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Standard detecting distance (mm)	Electro-optical characteristics						
				Current transfer ratio			Response time			
				CTR (%) MIN.	I <sub>F</sub> (mA)	V <sub>CE</sub> (V)	t <sub>r</sub> (μs) TYP.	I <sub>C</sub> (mA)	R <sub>L</sub> (kΩ)	V <sub>CE</sub> (V)
GP2S700HCP		Compact (4 × 3 × 2 [height] mm), long focal distance, surface mounting leadless type	3	1.5	4	2	20	0.1	1	2
GP2S60		Thin (3.2 × 1.7 × 1.1 [height] mm), surface mounting leadless type	0.5	1.0	4	2	20	0.1	1	2

\* Topr: -25 to +85°C



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◆ **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)

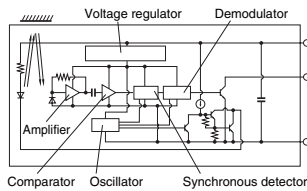
Model No.	Internal connection diagram	Features	Optimum detecting distance (mm)	Electro-optical characteristics					
				Supply voltage V <sub>CC</sub> (V)		Dissipation current I <sub>CC</sub> (mA) MAX.	Low level output voltage		
				MIN.	MAX.		V <sub>CC</sub> (V)	V <sub>OL</sub> (V) MAX.	V <sub>CC</sub> (V)
GP2A200LCS0F	(Following diagram [A])	Multi 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		Improved light-resistance characteristic for inverter lighting, light modulation type, with connector, sensitivity adjusted	5 to 15	4.75	5.25	30*1	5	0.4	5
GP2A250LCS0F		Static electricity resistant, improved light-resistance characteristic for inverter lighting, light modulation type, with connector, sensitivity adjusted	5 to 15	4.75	5.25	30*1	5	0.4	5
GP2A25J0000F	(Following diagram [B])	Multi types of paper detectable, light modulation type, with connector, sensitivity adjusted	3 to 7	4.75	5.25	30*1	5	0.4	5
GP2A231LRSAF		Compact, hook type, multi types of paper detectable, light modulation type, with connector, sensitivity adjusted	3 to 7	4.75	5.25	20*1	5	0.4	5
GP2A25NJJ00F		Multi types of paper detectable, light modulation type, sensitivity adjusted, applicable to inverter fluorescent lamp, built-in visible light cut filter	3 to 7	4.75	5.25	30*1	5	0.4	5
GP2A25DJ000F	(Following diagram [A])	Multi 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		Multi 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

\* Topr: -10 to +60°C (GP2A25J0000F, etc.)  
-10 to +70°C (GP2A200LCS0F, GP2A240LCS0F, GP2A250LCS0F)

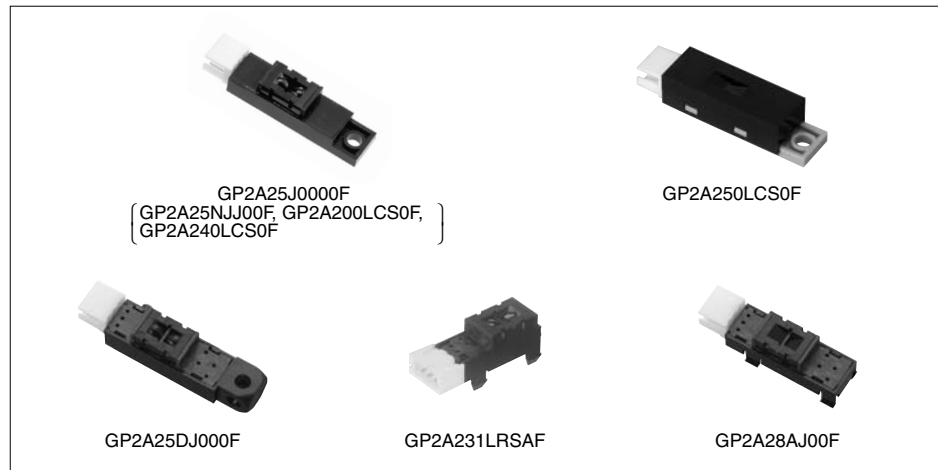
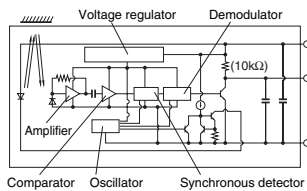
\*1 Smoothing value R<sub>L</sub> = ∞

[Internal connection diagram]

[A]



[B]



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## Photointerrupters for Specific Applications

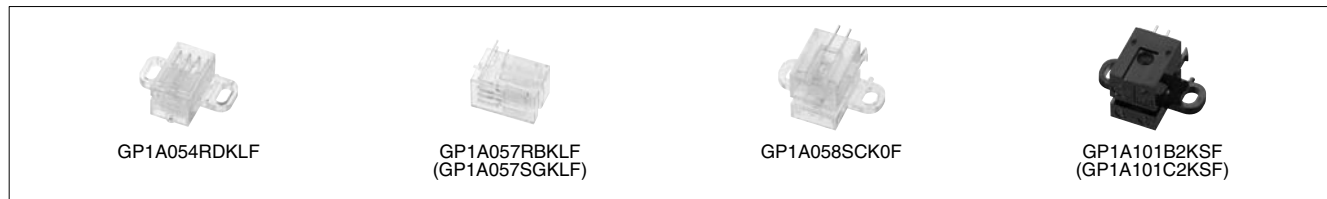
### ◆ Transmissive type

#### <Case type, with encoder function>

(Ta = 25°C)

Model No.	Absolute maximum ratings			Electro-optical characteristics				
	Vcc (V)	Topr (°C)	Operating voltage Vcc (V) TYP.	Output signal	Resolution	Response frequency (kHz) MAX.	If (mA)	Dissipation current (output side) Icc (mA) MAX.
GP1A057RBKLF	6	-10 to +70	3.3	Digital output (Phase A/B)	Linear scale slit pitch 0.17 (mm) (150LPI)	60	20	7
GP1A054RDKLF	6	-10 to +70	3.3		Linear scale slit pitch 0.0847 (mm) (300LPI)	60	20	5.5
GP1A057SGKLF	6	-10 to +70	3.3		Linear scale slit pitch 0.56 (mm) (45LPI)	25	20	5.5
GP1A058SCK0F	6	-10 to +70	3.3		Linear scale slit pitch 0.14 (mm) (180LPI)	40	20	5.5
GP1A101B2KSF	6.5	-10 to +70	3.3	Digital output (Capable of multiplying output)	Linear scale slit pitch 0.17 (mm) (150LPI)	120	20	20
GP1A101C2KSF	6.5	-10 to +70	3.3		Linear scale slit pitch 0.14 (mm) (180LPI)	120	20	20

\* High precision read and low affection of angle error from vibration thanks to the multi-segment PD system.  
Duty ratio: 50±15%, phase difference: 90±45°



#### <For amusement use>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Detecting and emitting gap (mm)	Slit width (mm)	Electro-optical characteristics					
					Operating voltage Vcc (V)		Low level output voltage			
					MIN.	MAX.	Vol (V) MAX.	Light cut-off	IOL (mA)	VCC (V)
GP1A204HCS0		Connector with lock, screw mounting type, high resistant to noise	4.0	0.5	10.8	24	0.4	Yes	5	10.8 to 24



### ◆ Reflective type

#### <Case type, phototransistor output>

(Ta = 25°C)

Model No.	Internal connection diagram	Features	Electro-optical characteristics						
			Peak photocurrent			Response time			
			ICP (mA)	If (mA)	VCE (V)	tr (μs) TYP.	Ic (mA)	RL (kΩ)	VCE (V)
GP2S29SVJ00F		Long focal distance (with prism system*1), compact, screw mounting type	0.4 to 3.0*1	20	5	38	0.5	1	2

\* Topr: -25 to +85°C

\*1 Space between prism and sensor is 8 mm.



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## ■ Proximity Sensor

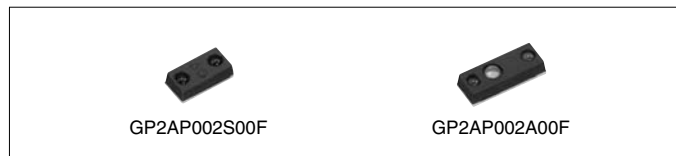
(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics				
		Vcc (V)	Topr (°C)	Dissipation current Icc (μA) TYP.	Detecting distance Lon (mm) MIN.	Non-detecting distance Loff (mm) MAX.	Maximum acceptable illuminance Ex (lx) MIN.	Peak emission wavelength λp (nm)
☆GP2AP002S00F	Compact size (4.4 × 2.6 × 1.0 t mm) Disparities in detecting distance results are greatly reduced using a built-in circuit for reduction of light-detecting sensitivity disparities Built-in LEDs for simple optical design and I <sup>2</sup> C output	3.8	-25 to +85	240	25	150	3 000	940

## ■ Proximity Sensor with Integrated Ambient Light Sensor

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics								
		Vcc (V)	Topr (°C)	Dissipation current Icc (μA) TYP.	Proximity sensor portion				Ambient light sensor portion			
					Detecting distance Lon (mm) MIN.	Non-detecting distance Loff (mm) MAX.	Maximum acceptable illuminance Ex (lx) MIN.	Peak emission wavelength λp (nm)	Recommended illuminance range Ex (lx) MIN.	Peak sensitivity wavelength λp (nm)	Output current	
Io1 (μA) TYP.	Io2 (μA) TYP.											
☆GP2AP002A00F	LED and ambient light sensor combined in a single package (5.6 × 2.1 × 1.2 t mm) Disparities in detecting distance results are greatly reduced using a built-in circuit for reduction of light-detecting sensitivity disparities Built-in LEDs for simple optical design and I <sup>2</sup> C output	3.8	-25 to +80	310	25	160	3 000	940	3 to 55 000	555	20 (at Ev = 100 lx)	30 (at Ev = 1 000 lx)



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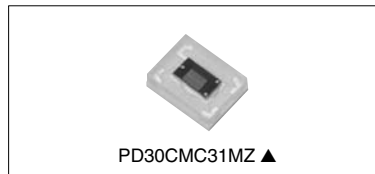


## ■ RGB Color Sensor

(Ta = 25°C)

Model No.	Features	Package	Peak sensitivity wavelength (nm)			Light receiving sensitivity (A/W) TYP.			Topr (°C)
			Blue	Green	Red	Blue	Green	Red	
PD30CMC31MZ▲	RGB 3-color LED compatible 3-PD structure Filter-on chip structure allows for both infrared light reducing characteristics and a more compact size (1.1 mm thick)	Surface mounting 3 x 4 mm	460	540	620	0.18	0.23	0.16	-40 to +85

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



## ■ Ambient Light Sensors

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings			Electro-optical characteristics					
			Vcc (V)	Io (mA)	Topr (°C)	Recommended supply voltage Vcc (V)	Recommended illuminance range Ex (lx)	Dissipation current Icc (μA) TYP.	Peak sensitivity wavelength λp (nm)	Output current (μA) TYP.	
GA1A2S100SS	Built-in amplification circuit Peak sensitivity characteristic close to human visual sensitivity Output characteristic: Linear current output for illuminance Lead frame (straight) type	Transparent epoxy resin (3 × 4 mm)	7.0	5	-40 to +85	2.7 to 3.6	10 to 10 000	500	555	480 (at Ev = 1 000 lx)	48 (at Ev = 100 lx)
GA1A2S100LY	Built-in amplification circuit Peak sensitivity characteristic close to human visual sensitivity Output characteristic: Linear current output for illuminance Lead frame (L bend) type		7.0	5	-40 to +85	2.7 to 3.6	10 to 10 000	500	555	480 (at Ev = 1 000 lx)	48 (at Ev = 100 lx)
GA1A1S202WP	Built-in amplification circuit Peak sensitivity characteristic close to human visual sensitivity Output characteristic: Logarithmic current output for illuminance	Compact SMD (2.0 × 1.6 × 0.6 mm) Leadless	7.0	1	-40 to +85	2.3 to 3.2	3 to 55 000	70	555	20 (at Ev = 100 lx)	30 (at Ev = 1 000 lx)
☆GA1A1S203WP	Built-in amplification circuit Peak sensitivity characteristic close to human visual sensitivity Output characteristic: Logarithmic current output for illuminance Thin type	Compact SMD (2.0 × 1.6 × 0.42 mm) Leadless	7.0	1	-40 to +85	2.3 to 3.2	3 to 55 000	70	555	20 (at Ev = 100 lx)	30 (at Ev = 1 000 lx)
☆GA1A1S204WP	Built-in amplification circuit Peak sensitivity characteristic close to human visual sensitivity Output characteristic: Logarithmic current output for illuminance Back-mount-available type	Compact SMD (3.3 × 2.0 × 0.6 mm) Back-mount available, leadless	7.0	1	-40 to +85	2.3 to 3.2	3 to 55 000	70	555	20 (at Ev = 100 lx)	30 (at Ev = 1 000 lx)
GA1A1S100WP	Built-in amplification circuit Peak sensitivity characteristic close to human visual sensitivity Output characteristic: Linear current output for illuminance	Compact SMD (2.0 × 1.6 × 0.6 mm) Leadless	7.0	10	-40 to +85	2.7 to 3.6	10 to 5 000	1 460	555	1420 (at Ev = 1 000 lx)	142 (at Ev = 100 lx)



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## ■ OPIC Light Detectors ( "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. )

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics							
			V <sub>CC</sub> (V)	P (mW)	I <sub>O</sub> (mA)	T <sub>OPR</sub> (°C)	EVLH (lx) MAX.	EVHL (lx) MAX.	V <sub>CC</sub> (V)	t <sub>PLH</sub> (μs) TYP.	t <sub>PHL</sub> (μs) TYP.	V <sub>CC</sub> (V)	E <sub>v</sub> (lx)	R <sub>L</sub> (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



### <Low-voltage operation>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings			Electro-optical characteristics								
			P (mW)	I <sub>O</sub> (mA)	T <sub>OPR</sub> (°C)	Operating supply voltage (V)	EVLH (lx) MAX.	EVHL (lx) MAX.	V <sub>CC</sub> (V)	t <sub>PLH</sub> (μs) TYP.	t <sub>PHL</sub> (μs) TYP.	V <sub>CC</sub> (V)	E <sub>v</sub> (lx)	R <sub>L</sub> (Ω)
IS489E	Built-in Schmidt trigger circuit and amplifier	Transparent epoxy resin with condenser (lens)	80	2	-25 to +85	1.4 to 7.0	-	15	3	1.3	8.5	3	125	3 000



### <Model employing a light modulation system>

(Ta = 25°C)

Model No.	Type	Package	Absolute maximum ratings				Electro-optical characteristics*2						External disturbing light illuminance EvDx(lx) TYP.
			V <sub>CC</sub> (V)	P (mW)	I <sub>O</sub> (mA)	T <sub>OPR</sub> (°C)	V <sub>OL</sub> (V) MAX.	V <sub>OH</sub> (V) MIN.	t <sub>PLH</sub> (μs) TYP.	t <sub>PHL</sub> (μs) TYP.	V <sub>CC</sub> (V)	R <sub>L</sub> (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<sub>CC</sub> = 5 V

\*3 Straight lead type (IS471FSE) is also available.



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**<For laser beam printers (laser beam origin detection)>**

(Ta = 25°C)

Model No.	Type	Package	Electro-optical characteristics			
			Recommended supply voltage V <sub>CC</sub> (V)	V <sub>OH</sub> (V) MIN.	V <sub>OL</sub> (V) MAX.	H → L delay time variation Δt <sub>PHL</sub> (ns) MAX.
GA220T2L1IZ	2-PD, differential type	Transparent epoxy resin 18-pin	4.5 to 5.5	4.9	0.6	±8.5



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## ■ Phototransistor Lineup

Package	Output type	Features	Half sensitivity angle	Model No.	
				Standard	Visible light cut-off
Epoxy resin with lens (ø3 mm)	Single phototransistor	General purpose	±20°	PT380	PT380F
	Darlington phototransistor	High sensitivity	±20°	PT381	PT381F
Epoxy resin with lens	Single phototransistor	General purpose/Narrow acceptance	±13°	PT480E0000F	PT480FE0000F
	Darlington phototransistor	Compact, thin	±35°	PT4800E0000F	PT4800FE000F / PT4850FE000F
		High sensitivity/Narrow acceptance	±13°	PT481E00000F	PT481FE0000F
		High sensitivity/Narrow acceptance/Long lead	±13°	—	PT483F1E000F
		High sensitivity/Compact, thin	±35°	PT4810E0000F	PT4810FE000F
		High sensitivity/Intermediate acceptance	±40°	—	PT491FE0000F
		High sensitivity/Intermediate acceptance/Long lead	±40°	—	PT493FE0000F
Surface mounting leadless type	Single phototransistor	Compact	±60°	PT600T	—
		Compact (surface mounting type)	±70°	PT200MC0NP	—
		Compact (infrared cut type)	±60°	PT202MR0MP1	—
		Compact (side view/top view mounting possible)	±15°	PT100MC0MP	PT100MF0MP
	Darlington phototransistor	Compact	±60°	PT601T	—
		Compact (side view/top view mounting possible)	±15°	—	PT100MF1MP



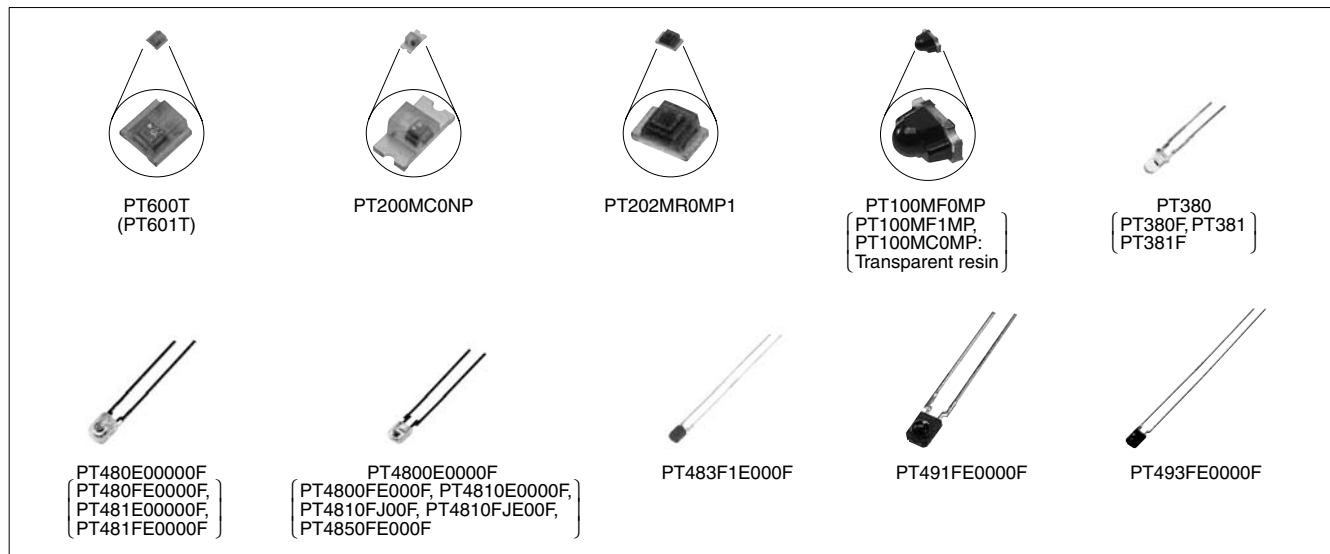
## Phototransistors

Type	Model No.	Package	Absolute maximum ratings			Ic (mA)				ICEO(A)		Δθ (°) TYP.	λp (nm) TYP.
			VCEO (V)	Pc (mW)	Topr (°C)	MIN.	MAX.	VCE (V)	Ee (mW/cm <sup>2</sup> )	MAX.	VCE (V)		
Single	PT380*3	ø3 epoxy resin	35	50	-25 to +85	0.16	1.17	5	Ev, 100 lx	1 × 10 <sup>-7</sup>	20	±20	800
	PT380F*1,3		35	50	-25 to +85	0.095	0.9	5	Ev, 100 lx	1 × 10 <sup>-7</sup>	20	±20	860
	PT600T*3	Surface mounting leadless type	35	50	-25 to +85	0.7	TYP. 3.5	5	5	1 × 10 <sup>-7</sup>	20	±60	880
	PT200MC0NP*3		50	50	-25 to +85	0.016	0.059	5	0.1	1 × 10 <sup>-7</sup>	20	±70	930
	PT202MR0MP*1*2,3		5	5	-30 to +85	—	TYP. 0.043	1.5	Ev, 100 lx	1 × 10 <sup>-7</sup>	1.5	±60	620
	PT100MCOMP	Surface mounting leadless type with lens	35	75	-30 to +85	1.7	5.1	5	1	1 × 10 <sup>-7</sup>	20	±15	900
	PT100MF0MP*1		35	75	-30 to +85	1.15	3.45	5	1	1 × 10 <sup>-7</sup>	20	±15	910
	PT480E0000F	Epoxy resin with lens	35	75	-25 to +85	0.4	TYP. 1.7	5	1	1 × 10 <sup>-7</sup>	20	±13	800
	PT480FE0000F*1		35	75	-25 to +85	0.25	TYP. 0.8	5	1	1 × 10 <sup>-7</sup>	20	±13	860
	PT4800E0000F		35	75	-25 to +85	0.12	TYP. 0.4	5	1	1 × 10 <sup>-7</sup>	20	±35	800
PT4800FE0000F*1	35		75	-25 to +85	0.08	TYP. 0.25	5	1	1 × 10 <sup>-7</sup>	20	±35	860	
PT4850FE0000F*1	35		75	-25 to +85	0.12	0.56	5	1	1 × 10 <sup>-7</sup>	20	±35	860	
Darlington	PT381*3	ø3 epoxy resin	35	50	-25 to +85	0.12	1.5	10	Ev, 2 lx	1 × 10 <sup>-6</sup>	10	±20	800
	PT381F*1,3		35	50	-25 to +85	0.07	1.08	10	Ev, 2 lx	1 × 10 <sup>-6</sup>	10	±20	860
	PT481E0000F	Epoxy resin with lens	35	75	-25 to +85	1.5	25	2	0.1	1 × 10 <sup>-6</sup>	10	±13	800
	PT481FE0000F*1		35	75	-25 to +85	0.9	27	2	0.1	1 × 10 <sup>-6</sup>	10	±13	860
	PT4810E0000F		35	75	-25 to +85	0.45	7.0	2	0.1	1 × 10 <sup>-6</sup>	10	±35	800
	PT4810FJE00F*1		35	75	-25 to +85	0.27	6.0	2	0.1	1 × 10 <sup>-6</sup>	10	±35	860
	PT483F1E000F*1		35	75	-25 to +85	1.5	4.0	2	0.1	1 × 10 <sup>-6</sup>	10	±13	860
	PT491FE0000F*1		35	75	-25 to +85	0.2	0.8	2	Ev, 2 lx	1 × 10 <sup>-6</sup>	10	±40	860
	PT493FE0000F*1		35	75	-25 to +85	0.2	0.8	2	Ev, 2 lx	1 × 10 <sup>-6</sup>	10	±40	860
	PT601T*3		Leadless chip type	35	50	-25 to +85	0.03	0.3	10	0.01	1 × 10 <sup>-6</sup>	10	±60
PT100MF1MP*1	Surface mounting leadless type with lens	35	75	-30 to +85	0.2	1.2	5	0.01	1 × 10 <sup>-6</sup>	10	±15	860	

\*1 Visible light cut-off type

\*2 Infrared cut-off type

\*3 Handled by the LED division.



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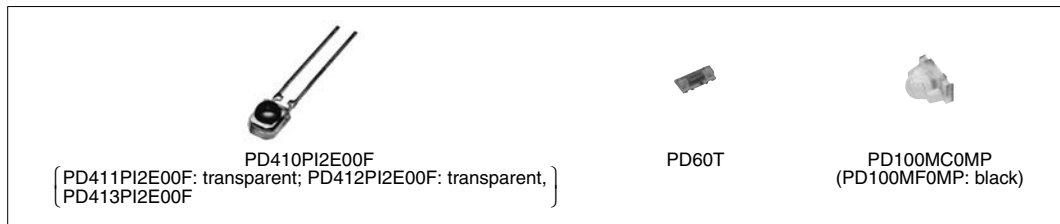
## ■ PIN Photodiodes

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm <sup>2</sup> )	Topr (°C)	Isc (μA) MIN.	Ev (lx)	Id (A) MAX.	VR (V)	tr, tf (μs) TYP.	λp (nm) TYP.		
										VR (V)	RL (kΩ)	
PD410PI2E00F*1	PIN type	Visible light cut-off epoxy resin with condenser (lens)	3.31	-25 to +85	2.5	100	1 × 10 <sup>-8</sup>	10	0.2	10	1	1 000
PD411PI2E00F		Transparent epoxy resin with condenser (lens)	3.31	-25 to +85	5.0	100	1 × 10 <sup>-8</sup>	10	0.2	10	1	960
PD412PI2E00F		Transparent epoxy resin with condenser (lens)	3.31	-25 to +85	3.5	100	1 × 10 <sup>-8</sup>	10	0.25	10	1	800
PD413PI2E00F*1	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 <sup>-8</sup>	10	0.2	10	1	960
PD60T*2	Chip device type	Transparent resin	-	-25 to +85	TYP. 4	1 000	1 × 10 <sup>-8</sup>	10	0.1	10	1	960
PD100MCOMP	Surface mounting leadless type	Transparent epoxy resin board with lens	-	-30 to +85	0.6	100	1 × 10 <sup>-8</sup>	10	0.01	15	0.18	820
PD100MFOMP*1	Surface mounting leadless type	Visible light cut-off epoxy resin board with lens	-	-30 to +85	0.4	100	1 × 10 <sup>-8</sup>	10	0.01	15	0.18	850

\*1 Visible light cut-off type

\*2 Handled by the LED division.



## ■ Laser Power Monitoring Photodiodes for Optical Disc System

(Ta = 25°C)

Model No.	Features	Package (Material)	Active area (mm)	Topr (°C)	Isc (mA) TYP.	Ev (lx)	Id (A) MAX.	VR (V)	λp (nm) TYP.
PD102TS0MP0F	High response speed (cut-off frequency: 400 MHz) For blue-violet laser diode (Light receiving sensitivity: TYP. 0.25 A/W at λ = 405 nm)	Silicon resin	ø0.7	-40 to +80	217	Ee = 54 μW/cm <sup>2</sup>	1.5 × 10 <sup>-9</sup>	5	760



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## ■ Infrared Emitting Diode Lineup

Type	Package	Features	Half intensity angle	Model No.
Single-end lead (Top view type)	Epoxy resin with lens (ø3 mm type)	General purpose	±13°	GL380
		High output type	±13°	GL381
		High speed signal transmission (12 MHz)	±17°	GL382
Single-end lead (Side view type)	Epoxy resin with lens	General purpose/Narrow beam angle	±13°	GL480E00000F
	Flat epoxy resin	Compact and thin	±30°	GL4800E0000F
		Wide beam angle	±90°	GL4100E0000F
Single-end lead (Top view type)	Epoxy resin with lens (ø5 mm type)	Low forward voltage type	±21°	GL560
		Low forward voltage type/Narrow beam angle	±13°	GL561
		High output type	±25°	GL537
		High output type/Narrow beam angle	±13°	GL538
Surface mount type	Leadless	Compact	±60°	GL610T
	Epoxy resin with lens/ leadless  (Mountable for Top view/ Side view type)	Compact/Narrow beam angle	±10°	GL100MN0MP
		High output type (Output: radiant flux/ radiant intensity indicated)	±10°/ ±9°	GL100MN1MP / GL100MN3MP
			Compact/Wide beam angle	±80°



## ■ Infrared Emitting Diodes

(Ta = 25°C)

Model No.	Package, features	Absolute maximum ratings				Radiant flux $\Phi_e$ (mW)			V <sub>F</sub> (V)			$\Delta\theta$ (°) TYP.	$\lambda_p$ (nm) TYP.
		I <sub>F</sub> (mA)	V <sub>R</sub> (V)	P (mW)	T <sub>opr</sub> (°C)	MIN.	TYP.	I <sub>F</sub> (mA)	TYP.	MAX.	I <sub>F</sub> (mA)		
GL380*2	ø3 epoxy resin	60	6	150	-25 to +85	4.5*1	11*1	50	1.3	1.5	50	±13	950
GL381*2		60	6	150	-25 to +85	8.5*1	20*1	50	1.3	1.5	50	±13	950
GL382*2	ø3 epoxy resin, for high speed signal transmission:12 MHz	60	4	-	-25 to +85	6	18	50	1.5	1.7	50	±17	880
GL480E0000F	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
GL4100E0000F	Side-view flat type, epoxy resin	50	6	75	-25 to +85	1.0	-	20	1.2	1.4	20	±90	950
GL560*2	ø5 epoxy resin	100	6	150	-25 to +85	5*1	14*1	50	1.25	1.37	50	±21	940
GL561*2		100	6	150	-25 to +85	12*1	25*1	50	1.25	1.37	50	±13	940
GL537*2		100	6	150	-25 to +85	6*1	13*1	50	1.3	1.5	50	±25	950
GL538*2		100	6	150	-25 to +85	15*1	30*1	50	1.3	1.5	50	±13	950
GL610T*2	Leadless chip type	50	6	150	-25 to +85	0.7	2	20	1.3	1.5	50	±60	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
GL100MN3MP	Surface mounting leadless type, epoxy resin board with lens, high output type	50	6	75	-30 to +85	3.0*1	6.0*1	20	1.25	1.5	20	±9	940
GL100MD1MP1	Surface mounting leadless type, epoxy resin board with lens, wide beam angle	50	6	75	-30 to +85	-	6.0 (MAX.)	20	-	1.5	20	±80	940

\*1 Radiant intensity mW/sr

\*2 Handled by the LED division.



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## Distance Measuring Sensor Lineup

Output	Range of distance measuring	Features	Model No.
1-bit digital output according to distance measuring	4 to 30 cm	1-bit digital output (detected distance: 15/13 cm)	GP2D150AJ00F/GP2Y0D413K0F
	10 to 80 cm	1-bit digital output (detected distance: 24 cm)	GP2Y0D21YK0F
	20 to 150 cm	1-bit digital output (detected distance: 80 cm)	GP2Y0D02YK0F
		Battery drive compatible, compact, 1-bit digital output (detected distance: 5/10 cm)	GP2Y0D805Z0F/GP2Y0D810Z0F
		Wide operating temperature type (-40 to +85°C) (detected distance: 10 cm)	GP2Y0D810Z1F
		Compact, thin 1-bit digital output (detected distance: 10/40 cm)	GP2Y0D310K/GP2Y0D340K
Analog voltage output according to distance measuring	4 to 30 cm	Analog output	GP2D120XJ00F/GP2Y0A41SK0F
	10 to 80 cm	Analog output	GP2Y0A21YK0F
	10 to 150 cm	Compact (22 × 8 × 7.2 [T] mm), Analog output	GP2Y0A60SZ0F/GP2Y0A60SZLF
	20 to 150 cm	Analog output	GP2Y0A02YK0F
	100 to 550 cm	Analog output	GP2Y0A710K0F
		Battery drive compatible, compact, 1-bit digital output (detected distance: 1.5 cm) Capable of operation at high temperature (-30 to +105°C)	GP2Y5D91S00F

## Wide Angle Sensor Lineup

Output	Range of distance measuring	Detection angle of view	Model No.
Voltage output according to distance measuring	4 to 30 cm	25° (When using 5 beams)	GP2Y3A001K0F
	20 to 150 cm	25° (When using 5 beams)	GP2Y3A002K0F
	40 to 300 cm	25° (When using 5 beams)	GP2Y3A003K0F

## High-Precision Displacement Sensor

Output	Range of distance measuring	Features	Model No.
Voltage output according to distance measuring	4.5 to 6.0 mm	Resolution: 50 μm	GP2Y0AH01K0F

## Paper Size Sensor (Using Optical Distance Measuring Method) Lineup

Output	Features	Model No.
1-bit output	1-beam (detection height: 60 mm) Thin type (T: 11.5 mm)	GP2Y2D160K0F
Analog output relative to measuring distance	1-beam (detection height: 80 mm) Thin type (T: 11.5 mm)	GP2Y2A180K0F
	2-beam (detection height: 80 mm) Thin type (T: 11.5 mm)	GP2Y2A280K0F



### ■ Dust Sensor Unit Lineup

Output	Features	Model No.
Analog output	Pulse analog output, single-shot detection of house dust, general purpose	GP2Y1010AU0F

### ■ Color Toner Concentration (Deposition Amount) Sensor Lineup

Output	Features	Model No.
Analog output	Employs diffuse reflection system + mirror reflection system	GP2TC2J0000F
	Employs diffuse reflection system + mirror reflection system	GP2Y40010K0F
	Mirror reflection system	GP2Y40020K0F

### ■ Smoke Sensor Module (For Fire Alarms) Lineup

Features	Model No.
Built-in microcomputer	GP2Y6001AK0F



## Distance Measuring Sensors (1)

### ◆ Digital output

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics*1					
		Vcc (V)	Topt (°C)	Detected distance (cm)	Distance measuring range (cm)	VOH (V) MIN.	VOL (V) MAX.	Dissipation current	
								Operating (mA)	Standby (µA)
GP2Y0D805Z0F	Light detector, infrared LED and signal processing circuit, short distance measuring type, battery drive compatible (operating power supply: 2.7 to 6.2 V)	-0.3 to +7	-10 to +60	5	-	Vcc -0.6	0.6	MAX. 6.5	MAX. 8
GP2Y0D810Z0F	Light detector, infrared LED and signal processing circuit, short distance measuring type, battery drive compatible (operating power supply: 2.7 to 6.2 V)	-0.3 to +7	-10 to +60	10	-	Vcc -0.6	0.6	MAX. 6.5	MAX. 8
GP2Y0D810Z1F	Light detector, infrared LED and signal processing circuit, short distance measuring type, battery drive compatible (operating power supply: 2.7 to 6.2 V)	-0.3 to +7	-40 to +85	10	-	Vcc -0.6	0.6	TYP. 5	MAX. 8
GP2Y5D91S00F	Light detector, infrared LED and signal processing circuit, short distance measuring type, battery drive compatible (operating power supply: 2.7 to 6.2 V), capable of operation at high temperature	-0.3 to +7	-30 to +105	1.5	-	Vcc -0.6	0.6	TYP. 7	-
GP2Y0D310K	Digital voltage output according to the measured distance of GP2Y0D340K	-0.3 to +7	-10 to +60	10	-	Vcc -0.3	0.6	MAX. 35	-
GP2Y0D340K	Compact, thin type (15 x 9.6 x 8.7 mm: sensor part), Light detector, infrared LED and signal processing circuit, digital voltage output according to the measured distance	-0.3 to +7	-10 to +60	40	-	Vcc -0.3	0.6	MAX. 35	-
GP2Y0D21YK0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, digital voltage output	-0.3 to +7	-10 to +60	24	10 to 80	Vcc -0.3	0.6	MAX. 40	-
GP2D150AJ00F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, digital voltage output	-0.3 to +7	-10 to +60	15	4 to 30	Vcc -0.3	0.6	MAX. 50	-
GP2Y0D413K0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, digital voltage output	-0.3 to +7	-10 to +60	13	4 to 30	Vcc -0.3	0.6	-	-
GP2Y0D02YK0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, long distance measuring type (No external control signal required), digital voltage output according to the measured distance	-0.3 to +7	-10 to +60	80	20 to 150	Vcc -0.3	0.6	MAX. 50	-

\*1 Vcc = 5 V

\* PSD: Position Sensitive Detector

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## Distance Measuring Sensors (2)

### ◆ Analog output

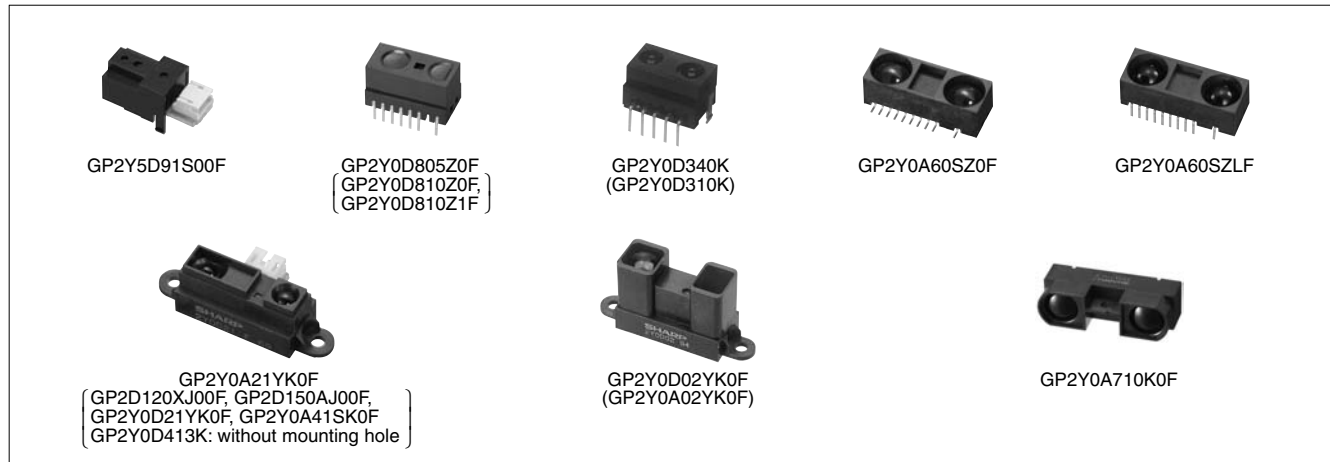
(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics*1				
		Vcc (V)	Topr (°C)	Distance measuring range (cm)	VoH (V) MIN.	VoL (V) MAX.	Dissipation current	
							Operating (mA)	Standby (µA)
GP2Y0A21YK0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, linear voltage output	-0.3 to +7	-10 to +60	10 to 80	Vo (TYP.) = 0.4 V (at L = 80 cm), ΔVo (TYP.) = 1.9 V (at L: 80 cm → 10 cm)		MAX. 40	-
GP2D120XJ00F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, linear voltage output	-0.3 to +7	-10 to +60	4 to 30	Vo (TYP.) = 0.4 V (at L = 30 cm), ΔVo (TYP.) = 2.25 V (at L = 30 cm → 4 cm)		MAX. 50	-
GP2Y0A41SK0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, short measuring cycle (16.5 ms)	-0.3 to +7	-10 to +60	4 to 30	Vo (TYP.) = 0.4 V (at L = 30 cm), ΔVo (TYP.) = 2.25 V (at L = 30 cm → 4 cm)		MAX. 22	-
GP2Y0A60SZ0F/ GP2Y0A60SZLF	*2 Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, compact type (22 x 8 x 7.2 mm), long distance measuring type (No external control signal required)	-0.3 to +5.5	-10 to +60	10 to 150	Vo (TYP.) = 0.4 V (at L = 150 cm), ΔVo (TYP.) = 2.0 V (at L = 150 cm → 20 cm)		MAX. 50	-
GP2Y0A02YK0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, long distance measuring type (No external control signal required)	-0.3 to +7	-10 to +60	20 to 150	Vo (TYP.) = 0.4 V (at L = 150 cm), ΔVo (TYP.) = 2.05 V (at L = 150 cm → 20 cm)		MAX. 50	-
GP2Y0A710K0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, long distance measuring type (No external control signal required)	-0.3 to +7	-10 to +60	100 to 550	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 GP2Y0A60SZ0F: Surface mount type  
GP2Y0A60SZLF: Board insertion type

\* PSD: Position Sensitive Detector



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## Wide Angle Sensors

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics				
		Vcc (V)	Topr (°C)	Distance measuring range (cm)	Output terminal voltage (V)	Output voltage difference (V)	Input voltage (V)	
							VinH	LEDL
GP2Y3A001K0F	Distance measuring sensor united with PSD*, infrared LED and signal processing circuit, distance measuring sensor application product, wide range (field of view) detection using 5 infrared beams	-0.3 to +7	-10 to +60	4 to 30	TYP. 2.85*1	TYP. 1.6*4	MIN. 4.5	MAX. 0.5
GP2Y3A002K0F		-0.3 to +7	-10 to +60	20 to 150	TYP. 2.3*2	TYP. 1.6*5	MIN. 4.5	MAX. 0.5
GP2Y3A003K0F		-0.3 to +7	-10 to +60	40 to 300	TYP. 2.3*3	TYP. 1.2*6	MIN. 4.5	MAX. 0.5

\* PSD: Position Sensitive Detector

Reflector used: White paper (Gray chart R-27/white surface, made by Kodak Corp., reflectance 90%)

L = Reflector - Sensor distance

\*1 L = 4 cm

\*4 Change in output voltage from L = 4 cm to 10 cm

\*2 L = 20 cm

\*5 Change in output voltage from L = 20 cm to 80 cm

\*3 L = 40 cm

\*6 Change in output voltage from L = 40 cm to 100 cm



## Paper Size Sensors

(Ta = 25°C)

Model No.	Features	Operating temperature	Supply voltage	Paper detection height	LED beam pitch	Approved value of paper position sliding	Paper detection density	Dissipation current
		Topr (°C)	Vcc (V)	H (mm)	Lp (mm)	$\Delta x$ (mm)	OD	Icc (mA)
GP2Y2D160K0F	Thin type (T: 11.5 mm), using optical distance measuring method (1-beam), digital output (1-bit)	-10 to +65	5 ± 0.5	TYP. 60	-	MIN. ±7.5	0.7 or less*1	MAX. 40
GP2Y2A180K0F	Thin type (T: 11.5 mm), analog output using optical distance measuring method (1-beam)	-10 to +65	5 ± 0.5	TYP. 80	-	-	-	MAX. 25
GP2Y2A280K0F	Thin type (T: 11.5 mm), analog output using optical distance measuring method (2-beam)	-10 to +65	5 ± 0.5	TYP. 80	TYP. 21	-	-	MAX. 50

\* This table shows the characteristics when configured in the paper size sensor system.

\*1 Reflectivity: 18% or more, OD = log (1/T), T: Reflectivity



## High-Precision Displacement Sensor

(Ta = 25°C)

Model No.	Features	Topr (°C)	Operating supply voltage (V)	Dissipation current (mA)	Distance measuring range (mm)	Distance characteristic of output
GP2Y0AH01K0F	Resolution: 50 $\mu$ m	-10 to +60	4.5 to 5.5	TYP. 20	4.5 to 6.0	TYP. 1.70 V Variation in output over range (4.5 to 6.0 mm)



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## ■ Dust Sensor Unit

(Ta = 25°C)

Model No.	Features	Topr (°C)	Electro-optical characteristics				
			Operating supply voltage (V)	Dissipation current (mA)	Detection sensitivity V/(0.1 mg/m <sup>3</sup> )	Output voltage at no dust Voc (V)	Output voltage range VoH (V)
GP2Y1010AU0F	Built-in infrared emitting diode, photodiode and signal processing circuit, compact, single-shot detection of house dust	-10 to +65	4.5 to 5.5	TYP. 11	TYP. 0.5	TYP. 0.9	MIN. 3.4



## ■ Smoke Sensor Module (For Fire Alarms)

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings		Electro-optical characteristics	
		Topr (°C)	Supply voltage (V)	Average dissipation current (μA)	Output voltage when no smoke (V)
GP2Y6001AK0F	<ul style="list-style-type: none"> <li>Thin, compact module integrating sensors and microcomputer</li> <li>Low dissipation current</li> <li>Can be made to order with custom functions.</li> </ul>	-10 to +50	-0.3 to +3.8	TYP. 16	TYP. 1.25



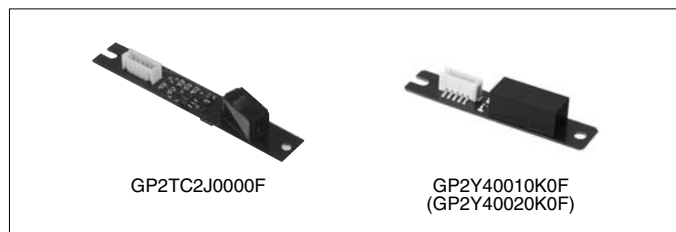
## ■ Color Toner Concentration (Deposition Amount) Sensors

(Ta = 25°C)

Model No.	Features	Topr (°C)	Electro-optical characteristics		
			Dissipation current*1 (mA)	Output voltage*2 V01 (V)	Output voltage*2 V02 (V)
GP2TC2J0000F	Employs diffuse reflection system + mirror reflection system, high-precision detection of toner concentration on photo-sensitive drum, 2-line analog output (2-PD)	0 to +60	TYP. 4	TYP. 1.17	TYP. 2.81
GP2Y40010K0F	Employs diffuse reflection system + mirror reflection system, high-precision detection of toner concentration on transfer belt, 2-line analog output (2-PD)	0 to +60	TYP. 4	TYP. 1.27	MAX. 3.5 TYP. 2.87
GP2Y40020K0F	Mirror reflection system, high-precision detection of toner concentration on transfer belt, 1-line analog output (1-PD)	0 to +60	TYP. 4	-	TYP. 2.81

\*1 Dissipation current with LED current of I<sub>FM</sub> = 0 mA

\*2 With reflection object A (Reflectance: 15.6%)



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## ■ Fiber Optics Lineup for Audio Equipment

Connector type	Type	Outline	Features	High speed signal transmission	Model No.		
					Supply voltage 3 to 5 V	Supply voltage 5 V	
Square connector (EIAJ RC-5720B)	Fiber optic transmitter	Without mounting hole	With shutter	Horizontal mounting type	MAX. 13.2 Mb/s	GP1FMV51TK0F	
					MAX. 15.5 Mb/s	GP1FMV31TK0F	
		With mounting hole	With shutter	Horizontal mounting type		MAX. 13.2 Mb/s	GP1FAV51TK0F*1
						MAX. 15.5 Mb/s	GP1FAV31TK0F
				MAX. 50 Mb/s	GP1FAV55TK0F		
			Vertical mounting type		MAX. 13.2 Mb/s	GP1FSV51TK0F	
					MAX. 15.5 Mb/s	GP1FSV31TK0F (mounting height: 15 mm) GP1FSA31TK0F (mounting height: 10 mm) GP1FSB31TK0F (mounting height: 8.5 mm)	
			With protection cap	Horizontal mounting type		MAX. 13.2 Mb/s	GP1FAV50TK0F*1
						MAX. 15.5 Mb/s	GP1FAV30TK0F
			Fiber optic receiver	Without mounting hole	With shutter	Horizontal mounting type	
		MAX. 15.5 Mb/s					GP1FMV31RK0F
	With mounting hole	With shutter		Horizontal mounting type		MAX. 13.2 Mb/s	GP1FAV51RK0F
						MAX. 15.5 Mb/s	GP1FAV31RK0F
		With protection cap		Horizontal mounting type		MAX. 25 Mb/s	GP1FAV53RK0F▲
					MAX. 13.2 Mb/s	GP1FAV50RK0F	
		MAX. 15.5 Mb/s	GP1FAV30RK0F				

\*1 TTL drive compatible

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

Connector type	Type	Outline	Features	High speed signal transmission	Model No.
					Supply voltage 3 V
Optical mini-jack ø3.5 mm (JIS C 6650)	Fiber optic transmitter	Thin type (t: 4.2 mm)	Capable of detection/transmission of optical/electrical signals	MAX. 8 Mb/s	GP1FD310TP0F
				MAX. 25 Mb/s	GP1FD320TP0F



## ■ Fiber Optic Transmitters (Square Connector)

(Ta = 25°C)

Model No.	Appearance		Features	Absolute maximum ratings		Electro-optical characteristics					
	Mounting hole	Shutter		Vcc (V)	Topr (°C)	Supply voltage (V)	Propagation delay time		Dissipation current Icc (mA) MAX.	Pulse width distortion Δtw (ns)	Transmission speed T (Mb/s) MAX.
							tPLH (ns) MAX.	tPHL (ns) MAX.			
GP1FMV31TK0F	No	Yes	Compact	-0.5 to +7	-20 to +70	2.7 to 5.25	180	180	12	±15	15.5
GP1FMV51TK0F	No	Yes	Compact	-0.5 to +7	-20 to +70	4.75 to 5.25	180	180	13	±15	13.2
GP1FAV30TK0F	Yes	No	Low voltage drive, with protection cap	-0.5 to +7	-20 to +70	2.7 to 5.25	180	180	12	±15	15.5
GP1FAV50TK0F	Yes	No	TTL drive compatible, with protection cap	-0.5 to +7	-20 to +70	4.75 to 5.25 Input voltage: MIN. 2.0 V	180	180	13	±15	13.2
GP1FAV51TK0F	Yes	Yes	TTL drive compatible	-0.5 to +7	-20 to +70	4.75 to 5.25	180	180	13	±15	13.2
GP1FSV51TK0F	No	Yes	Vertical mounting (mounting height: 15 mm), low voltage drive	-0.5 to +7	-20 to +70	4.75 to 5.25	180	180	13	±15	13.2
GP1FAV31TK0F	Yes	Yes	Low voltage drive	-0.5 to +7	-20 to +70	2.7 to 5.25	180	180	12	±15	15.5
GP1FSV31TK0F	No	Yes	Vertical mounting (mounting height: 15 mm), low voltage drive	-0.5 to +7	-20 to +70	2.7 to 5.25	180	180	13	±15	15.5
GP1FAV55TK0F	Yes	Yes	High response speed	-0.5 to +7	-20 to +70	4.75 to 5.25	180	180	13	±15	50
GP1FSA31TK0F	No	Yes	Vertical mounting (mounting height: 10 mm)	-0.5 to +7	-20 to +70	2.7 to 5.25	180	180	13	±15	15.5
GP1FSB31TK0F	No	Yes	Vertical mounting (mounting height: 8.5 mm)	-0.5 to +7	-20 to +70	2.7 to 5.25	180	180	13	±15	15.5

## ■ Fiber Optic Transmitters (ø3.5 mm Optical Mini-jack)

(Ta = 25°C)

Model No.	Features	Absolute maximum ratings			Electro-optical characteristics					
		Vcc (V)	Vin (V)	Topr (°C)	Supply voltage (V)	Propagation delay time		Dissipation current Icc (mA) MAX.	Pulse width distortion Δtw (ns)	Transmission speed T (Mb/s) MAX.
						tPLH (ns) MAX.	tPHL (ns) MAX.			
GP1FD310TP0F	Compact, thin type (t: 4.2 mm), optical mini-jack (low voltage type)	-0.5 to +7	-0.5 to Vcc + 0.5	-20 to +70	2.7 to 3.6	180	180	12	±30	8
GP1FD320TP0F	Compact, thin type (t: 4.2 mm), high speed, optical mini-jack (low voltage type)	-0.5 to +7	-0.5 to Vcc + 0.5	-20 to +70	2.3 to 5.5	180	180	12	±11	25

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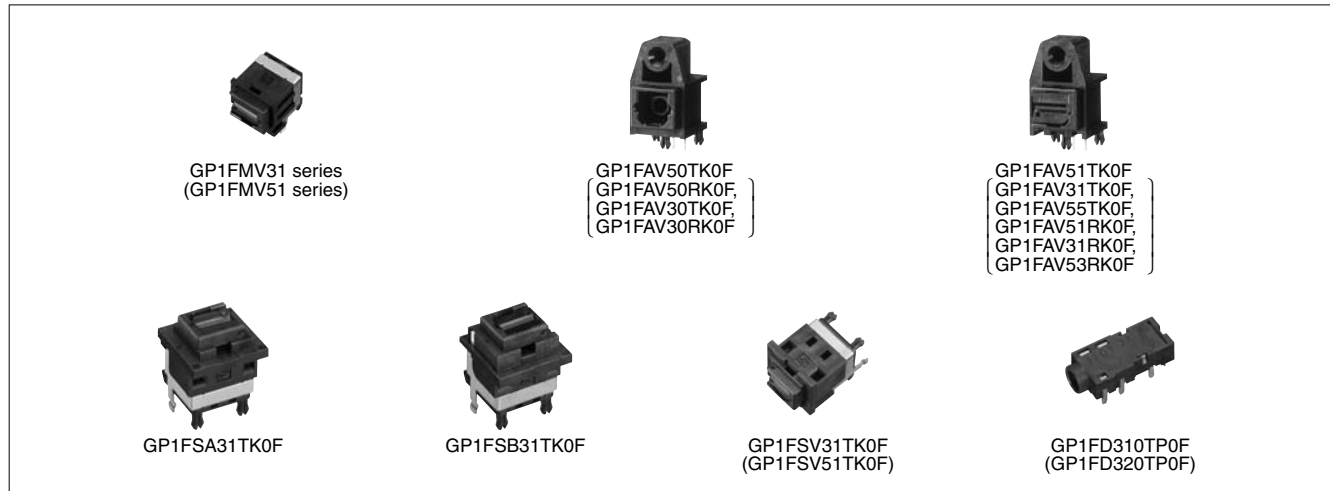


## ■ Fiber Optic Receivers (Square Connector)

(Ta = 25°C)

Model No.	Appearance		Features	Absolute maximum ratings			Electro-optical characteristics					
	Mounting hole	Shutter		Vcc (V)	IoL (mA)	Topr (°C)	Supply voltage (V)	Propagation delay time		Dissipation current Icc (mA) MAX.	Pulse width distortion Δtw (ns)	Transmission speed T (Mb/s) MAX.
								tPLH (ns) MAX.	tPHL (ns) MAX.			
GP1FMV31RK0F	No	Yes	Compact, low voltage drive	-0.5 to +7	10	-20 to +70	2.7 to 3.6	180	180	15	±20	15.5
GP1FMV51RK0F	No	Yes	Compact	-0.5 to +7	10	-20 to +70	4.75 to 5.25	180	180	25	±20	13.2
GP1FAV30RK0F	Yes	No	Low voltage drive, with protection cap	-0.5 to +7	10	-20 to +70	2.7 to 3.6	180	180	15	±20	15.5
GP1FAV50RK0F	Yes	No	With protection cap	-0.5 to +7	10	-20 to +70	4.75 to 5.25	180	180	25	±20	13.2
GP1FAV51RK0F	Yes	Yes		-0.5 to +7	10	-20 to +70	4.75 to 5.25	180	180	25	±20	13.2
GP1FAV31RK0F	Yes	Yes	Low voltage drive	-0.5 to +7	10	-20 to +70	2.7 to 3.6	180	180	15	±20	15.5
GP1FAV53RK0F ▲	Yes	Yes	High response speed (up to 4x)	-0.5 to +7	10	-20 to +70	4.75 to 5.25	180	180	25	±20	25

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## ■ Infrared Data Communication Device Lineup

Communication system	Transmission speed	Transmission distance	Features	Operating supply voltage	Model No.
IrDA data (IrDA 1.x)	FIR 4 Mb/s (Receiver only)	250 cm		3.0 to 3.6 V	GP2W4020XPMF
		150 cm		3.0 to 3.6 V	GP2W4010YP0F
	FIR 4 Mb/s (Integrated receiver and transmitter type)	100 cm	Compact, thin (height: 2.5 mm), low voltage operation type, LP/HP mode switching function	2.7 to 3.6 V	GP2W1004YP0F
			LP/MP/HP mode switching function	2.7 to 5.5 V	GP2W1001YP0F
		50/20 cm	LP/HP mode switching function, remote control transmission function, compact, thin (height: 1.5 mm)	2.6 to 3.6 V	GP2W3152YP0F
			LP/HP mode switching function, remote control transmission function, top view type (height: 1.75 mm)	2.6 to 3.6 V	GP2W3172XP0F
		50/20 cm	LP/HP mode switching and remote control transmission functions	2.4 to 3.6 V	GP2W3120YP0F
		50/20 cm	LP/HP mode switching function	2.7 to 3.6 V	GP2W1320YP0F
		70/20 cm	LP/MP/HP mode switching and remote control transmission functions	2.6 to 3.3 V	GP2W3104YP0F
	SIR 115.2 kb/s (Integrated receiver and transmitter type)	100 cm	Compact, low dissipation current	2.4 to 5.5 V	GP2W0004YP0F/ GP2W0004XP0F
		80 cm	Remote control transmission function, compact, low dissipation current	2.4 to 5.5 V	GP2W3020YP
	SIR LP 115.2 kb/s (Integrated receiver and transmitter type)	20 cm	Built-in LED constant current circuit, 3-state output	2.0 to 3.6 V	GP2W0110VX/ GP2W0110VY



## ■ Infrared Data Communication Devices

### ◆ FIR Compliant Devices (Receiver Only)

Model No.	Communication system	Transmission speed	Description	Maximum reception distance*1 (cm)	Supply voltage (V DC)	Outline dimensions (mm)
GP2W4020XPMF	Uni-directional communication (receiving only)	4 Mb/s	IrSS™-compliant, receiving-only type	250	3 to 3.6	21 × 7 × 7.1
GP2W4010YP0F	Uni-directional communication (receiving only)	9.6 k to 4 Mb/s	IrSS™-compliant, receiving-only type	150	3 to 3.6	10 × 4 × 4.5

\*1 Radiant intensity at transmitting side: 100 mW/sr



### ◆ FIR Compliant Devices (Integrated Receiver and Transmitter Type)

Model No.	Communication system	Transmission speed	Description	Transmission distance (cm)	Supply voltage (V DC)	Outline dimensions (mm)
GP2W3152YP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	With remote control transmission function, LP/HP mode switching function	21/35	2.6 to 3.6	7.9 × 2.8 × 1.5
GP2W3172XP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	With remote control transmission function, LP/HP mode switching function	21/35	2.6 to 3.6	8.8 × 2.5 × 1.75
GP2W3120YP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	With remote control transmission function, LP/HP mode switching function	21/35	2.6 to 3.6	7.16 × 2.73 × 1.82
GP2W1004YP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	LP/HP mode switching function	21/100	2.4 to 3.6	7.9 × 2.85 × 2.5
GP2W1001YP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	LP/MP/HP mode switching function	21/100	2.7 to 5.5	10.01 × 4.4 × 3.5
GP2W1320YP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	Compact, thin, low dissipation current (Icc: TYP. 0.45 mA)	21/35	2.7 to 3.6	7.16 × 2.73 × 1.82
GP2W3104YP0F	Bi-directional (half-duplex) communication	9.6 k to 4 Mb/s	With remote control transmission function, LP/MP/HP mode switching function	21/70	2.6 to 3.3	7.9 × 2.85 × 2.5



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#### ◆SIR Compliant Devices (Integrated Receiver and Transmitter Type)

Model No.	Communication system	Transmission speed	Description	Transmission distance (cm)	Supply voltage (V DC)	Outline dimensions (mm)
GP2W0004YP0F	Bi-directional (half-duplex) communication	9.6 k to 115.2 kb/s	Low dissipation current (I <sub>cc</sub> : 130 μA MAX.)	100	2.4 to 5.5	9.21 × 3.76 × 2.71
GP2W0004XP0F	Bi-directional (half-duplex) communication	9.6 k to 115.2 kb/s	Low dissipation current (I <sub>cc</sub> : 130 μA MAX.)	100	2.4 to 5.5	9.2 × 3.35 × 2.95
GP2W3020YP	Bi-directional (half-duplex) communication	9.6 k to 115.2 kb/s	With remote control transmission function (Transmission distance TYP. 7 m, I <sub>F</sub> = 350 mA) Low dissipation current (I <sub>cc</sub> : 130 μA MAX.)	80	2.4 to 5.5	7.9 × 2.85 × 2.15



GP2W0004YP0F

GP2W0004XP0F

GP2W3020YP

#### ◆SIR LP Compliant Devices (Integrated Receiver and Transmitter Type)

Model No.	Communication system	Transmission speed	Description	Transmission distance (cm)	Supply voltage (V DC)	Outline dimensions (mm)
GP2W0110VX/VY	Bi-directional (half-duplex) communication	2.4 k to 115.2 kb/s	Top-view and side view compatible (Model name is prescribed based on the packaging status.), lead-free type available	20	2.0 to 3.6	6.8 × 2.35 × 2.1

GP2W0110VX  
(GP2W0110VY)

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## IR Detecting Unit for Remote Control Lineup

Type	Package		Features	Model No.		
	Form	Detection position*5 (from PCB)		Operating voltage: 5 V	Operating voltage: 3 to 5 V	
IR detecting unit for remote control	Lead L bend with holder	16.0 mm*1	Compact size	GP1UM28XK0VF series	GP1UE28xXKCx series	
		12.0 mm*2	Compact size, Strengthened resistance to electromagnetic induction noise (Mesh type)	GP1UM28RK0VF series	GP1UE28xRKCx series	
			Compact size	GP1UM27XK0VF series	GP1UE27xXKCx series	
		6.8 mm*3	Compact size, Strengthened resistance to electromagnetic induction noise (Mesh type)	GP1UM27RK0VF series	GP1UE27xRKCx series	
			Compact size	GP1UM26XK0VF series	GP1UE26xXKCx series	
	Lead straight with holder	19.0 mm	Compact size, Strengthened resistance to electromagnetic induction noise (Mesh type)	GP1UM29QK0VF series	GP1UE29xQKCx series	
			Compact size	GP1UM28YK0VF series	GP1UE28xYKCx series	
		9.6 mm	Compact size, Strengthened resistance to electromagnetic induction noise (Mesh type)	GP1UM28QK0VF series	GP1UE28xQKCx series	
	Compact, thin type SMD (4.5 × 5.0 × 1.3 t mm)				GP1USC3xXP series	
	Compact type SMD (6.8 × 2.1 × 2.35 t mm)				GP1UF31 series	
	Holderless	Lead straight 6.0 mm			GP1UX51QS series	GP1UXCxxQS series
		Lead L bend*4 5.3 mm			GP1UX51RK series	GP1UXCxxRK series

\*1 Mesh type (strengthened resistance to electromagnetic induction noise): 16.4 mm

\*2 Mesh type: 12.4 mm

\*3 Mesh type: 7.2 mm

\*4 Mesh type: 5.3 mm

\*5 Lead straight: Distance from lens center to mounting board upper surface

No mesh lead L bend: Distance from tip of lens to mounting board upper surface

Mesh-type lead L bend: Distance from tip of mesh to mounting board upper surface

## IR Detecting Units for Remote Control

(Ta = 25°C)

Series No.	Absolute maximum ratings		Electrical characteristics				Size (mm)	Remarks
	Vcc (V)	ToPr (°C)	Icc (mA) <sup>*1</sup> MAX.	V <sub>OH</sub> (V) MIN.	V <sub>OL</sub> (V) MAX.	f <sub>o</sub> (kHz) TYP.		
GP1UE26xXKCx*7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*8	0.45*8	40*14	5.6 × 9.6 × 6.8	*5, CMOS type
GP1UE27xXKCx*7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*8	0.45*8	40*14	5.6 × 9.6 × 12.0	*5, CMOS type
GP1UE28xXKCx*7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*8	0.45*8	40*14	5.6 × 9.6 × 16.0	*5, CMOS type
GP1UE28xYKCx*7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*8	0.45*8	40*14	5.6 × 8.6 × 12.5(9.6)*2	*5, CMOS type
GP1UE26xRKCx*4,7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.6 × 9.6 × 7.2	*5, CMOS type
GP1UE27xRKCx*4,7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.6 × 9.6 × 12.4	*5, CMOS type
GP1UE28xRKCx*4,7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.6 × 9.6 × 16.4	*5, CMOS type
GP1UE28xQKCx*4,7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.6 × 9.0 × 12.5(9.6)*2	*5, CMOS type
GP1UE29xQKCx*4,7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.6 × 16.2 × 21.9(19)*2	*5, CMOS type
GP1UM26XKOVF*11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*9	0.45*9	40*3	5.6 × 9.6 × 6.8	*5
GP1UM27XKOVF*11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*9	0.45*9	40*3	5.6 × 9.6 × 12.0	*5
GP1UM28XKOVF*11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*9	0.45*9	40*3	5.6 × 9.6 × 16.0	*5
GP1UM28YKOVF*11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*9	0.45*9	40*3	5.6 × 8.6 × 12.5(9.6)*2	*5
GP1UM26RKOVF*4,11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*10	0.45*10	40*3	5.6 × 9.6 × 7.2	*5
GP1UM27RKOVF*4,11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*10	0.45*10	40*3	5.6 × 9.6 × 12.4	*5
GP1UM28RKOVF*4,11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*10	0.45*10	40*3	5.6 × 9.6 × 16.4	*5
GP1UM28QKOVF*4,11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*10	0.45*10	40*3	5.6 × 9.0 × 12.5(9.6)*2	*5
GP1UM29QKOVF*4,11	0 to 6.0	-10 to +70	0.6 (0.65)*15	Vcc-0.5*10	0.45*10	40*3	5.6 × 16.2 × 21.9(19)*2	*5
GP1UXCxxQS*7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.5 × 5.3 × 7.5	*5, CMOS type, Pin configuration (Pin No. 2: GND)
GP1UXCxxRK*7	0 to 6.0	-10 to +70	0.5	Vcc-0.5*12	0.45*12	40*14	5.5 × 5.3 × 7.5	*5, CMOS type, Pin configuration (Pin No. 2: GND), Folded lead
GP1UX51QS*11	0 to 6.0	-10 to +70	0.6	Vcc-0.5*10	0.45*10	40*13	5.5 × 5.3 × 7.5	*5, Pin configuration (Pin No. 2: GND)
GP1UX51RK*11	0 to 6.0	-10 to +70	0.6	Vcc-0.5*10	0.45*10	40*13	5.5 × 5.3 × 7.5	*5, Pin configuration (Pin No. 2: GND), Folded lead
GP1UF31xXP0F/ GP1UF31xYP0F*7,17	0 to 6.0	-30 to +85	0.4	Vcc-0.5*16	0.45*16	40*6	6.8 × 2.1 × 2.35	*5, Surface mount compatible, reflow soldering compatible
☆GP1USC3xXP*7	0 to 6.0	-30 to +85	0.6	Vcc-0.5	0.5	40*14	5 × 4.5 × 1.3	*5, Surface mount compatible, reflow soldering compatible

\*1 When no signal is input (during input light).

\*2 Figures in parentheses indicate the distance to the light detection center.

\*3 In addition to the fo = 40kHz type, types fo = 36, 38, 36.7, 56.8, and 32.75 kHz are also available.

\*4 Type with strengthened resistance to electromagnetic induction noise.

\*5 A voltage regulator circuit is built-in but may be affected by the usage environment. Install with an externally mounted C and R as a power supply filter.

\*6 In addition to the fo = 40 kHz type, types fo = 36, 38, and 36.7 kHz are also available.

\*7 Operating voltage: 2.7 to 5.5 V

\*8 Distance to transmitter on optical axis is 0.2 to 10.0 m. Ev < 10 lx when burst wave is input as shown in the right figure.

\*9 Distance to transmitter on optical axis is 0.2 to 10.5 m. Ev < 10 lx when burst wave is input as shown in the right figure. (fo = 56.8 kHz: 0.2 to 9.0 m)

\*10 Distance to transmitter on optical axis is 0.2 to 8.5 m. Ev < 10 lx when burst wave is input as shown in the right figure. (fo = 56.8 kHz: 0.2 to 7.0 m, fo = 32.75 kHz: 0.2 to 6.5 m)

\*11 Operating voltage: 4.5 to 5.5 V

\*12 Distance to transmitter on optical axis is 0.2 to 8.0 m. Ev < 10 lx when burst wave is input as shown in the right figure.

\*13 Distance to transmitter on optical axis is 0.2 to 6.5 m. Ev < 10 lx when burst wave is input as shown in the right figure.

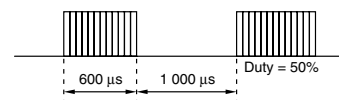
\*14 In addition to the fo = 40 kHz type, types fo = 32.75, 36, 36.7, and 38 kHz are also available.

\*15 fo = 56.8 kHz

\*16 Distance to transmitter on optical axis is 0.2 to 5.0 m. Ev < 10 lx when burst wave is input as shown in the right figure.

\*17 GP1UF31xXP0F: Top view taped package, GP1UF31xYP0F: Side view taped package

<Burst wave>



GP1UM series, GP1UE series have different fo values for each model.

### Notice

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GP1UM26XK0VF  
(GP1UE26xXKCx)



GP1UM27XK0VF  
(GP1UE27xXKCx)



GP1UM28XK0VF  
(GP1UE28xXKCx)



GP1UM28YK0VF  
(GP1UE28xYKCx)



GP1UM26RK0VF  
(GP1UE26xRKCx)



GP1UM27RK0VF  
(GP1UE27xRKCx)



GP1UM28RK0VF  
(GP1UE28xRKCx)



GP1UM28QK0VF  
(GP1UE28xQKCx)



GP1UM29QK0VF  
(GP1UE29xQKCx)



GP1UX51QS  
(GP1UXC1xQS)



GP1UF31xXP0F  
(GP1UF31xYP0F)



GP1USC3xXP

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