

2010

Product Catalog



Opto Electronics

Optical Sensors



Optical Sensors

ROHM optical sensors are designed to meet a variety of sensing needs. The integrated manufacturing process, from die fabrication to final assembly, enables a wide degree of customization and ensures unsurpassed reliability.

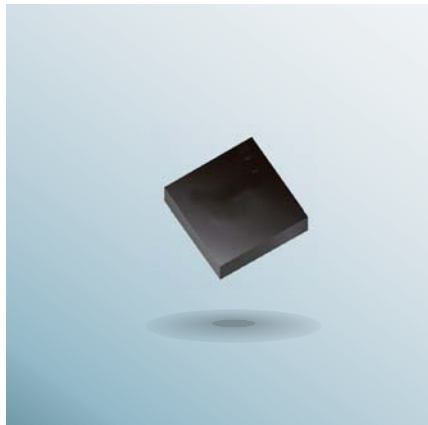


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Optical Surface Mount 4-Direction Detection Sensor

RPI-1040



4-way Detection in the World's Thinnest* (0.8mm) Package

*July 2009 Survey

Product Outline

4-way detection at 90° intervals is enabled utilizing an infrared diode, phototransistor, and shield. Integration is easy and makes instantaneous detection possible. In addition, the simple design and optical method minimizes malfunctions and ensures a high degree of precision. Conventional products often exhibit noise during rotation. The RPI-1040, however, utilizes a novel light shield that results in silent operation.

Broad Compatibility

Optically detects the orientation of devices, making it ideal for a variety of uses, including image orientation and fall detection.

Orientation Detection

Simplify preview for image correction (i.e. autofocus, white balance adjustment)

Video Devices

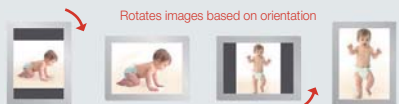
(Mobile Phones, Digital Cameras)



Image Rotation

Image Rotation Based On Device Position

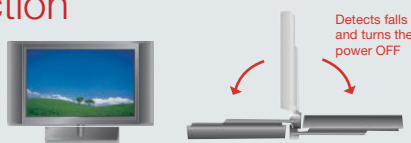
Photo Display Devices
(Projectors, Photo Frames)



Fall Detection

Movement Sensing

(LCD TVs)



Specifications

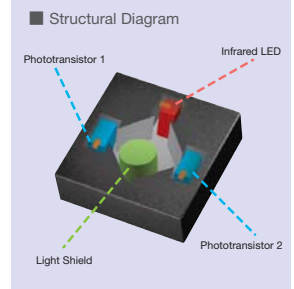
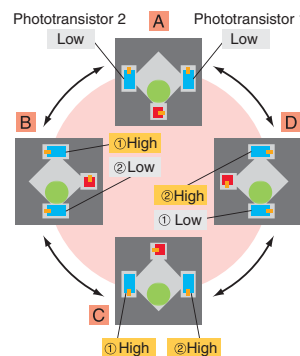
	Typ.	Conditions
Collector Current	50µA(min.)	IF=5mA, VCE=5V (When Unshielded)
Leakage Current	20µA(max.)	IF=5mA, VCE=5V (When Shielded)

Optimally detects orientation in a wide range of applications

Visit our website for additional examples
www.rohm.com/products/opto_device/sensor/4_direction/uses.html

Operating Principle

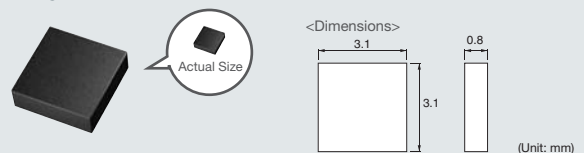
An infrared LED and 2 phototransistors (High/Low) are utilized for 4-way detection



New Silent Construction Rotating sound eliminated

During operation the movement of the ball shield is suppressed for greater applicability.

Package





















Volume and area reduced 79% and 37%, respectively, compared to conventional products



Product Lineup

Transmission Type Photointerrupters


■ Linear Phototransistor Output

Package	Exterior	Part No.	Standard Characteristics					RoHS	
			Detection Groove Width (mm)	Slit Width (mm)	I _c (mA)	V _{CE} (V)	I _F (mA)		t _r , t _f (s)
Ultraminiature SMD Type		RPI-0125	1.2	0.3	0.45Min. 4.95Max.	5	20	10	Yes
		New RPI-0128	1.2	0.2	1Min. 5Max.	5	5	10	Yes
		New RPI-0129	1.2	0.7	0.95Min. 4.95Max.	5	20	10	Yes
Miniature SMD Type		RPI-0226	2.0	0.3	0.1Min.	5	5	50	Yes
Ultra-Compact Type		RPI-122	0.8	0.25	0.18Min.	0.7	3	10	Yes
		RPI-121	1.0	0.4	0.7Min.	5	20	10	Yes
		RPI-124	1.2	0.15	0.3Min.	5	20	10	Yes
		RPI-125	1.2	0.3	0.4Min. 5Max.	5	20	10	Yes
		New RPI-128	1.2	0.2	1Min. 5Max.	5	5	10	Yes
		RPI-129B	1.2	0.7	0.95Min. 4.95Max.	5	20	10	Yes
		New RPI-130	1.2	0.3	2Min. 10Max.	5	10	10	Yes
Compact Type		RPI-131	1.2	0.4	0.7Min.	5	20	10	Yes
		RPI-221	2.0	0.4	0.2Min.	5	20	10	Yes
		RPI-222	2.0	0.2	0.18Min.	5	10	10	Yes
		RPI-243	2.0	0.4	0.5Min.	5	20	10	Yes
		RPI-246	2.0	0.2	0.35Min.	5	20	10	Yes
		RPI-352	3.0	0.4	0.2Min.	5	20	10	Yes
		RPI-441C1	4.0	0.5	0.2Min.	5	20	10	Yes

Package	Exterior	Part No.	Standard Characteristics					RoHS	
			Detection Groove Width (mm)	Slit Width (mm)	I _c (mA)	V _{CE} (V)	I _F (mA)		tr, tf (s)
General Type		RPI-392	4.0	0.5	0.5Min.	5	20	10	Yes
		RPI-579	5.0	0.5	0.5Min.	5	20	10	Yes
		RPI-579N1	5.0	0.5	0.5Min.	5	20	10	Yes
Eco-Friendly Type		★ RPI-352E	3.0	0.4	0.18Min.	5	10	10	Yes
		RPI-441C1E	4.0	0.5	0.2Min.	5	10	10	Yes
		RPI-579N1E	5.0	0.5	0.5Min.	5	10	10	Yes
High Profile Type		RPI-303	3	0.4	0.5Min. 2.0Max.	5	20	10	Yes
Actuator Type		RPI-5100	Actuator Type		0.2Min.	5	20	10	Yes
2-Phase Output Type		New RPI-151	1.5	(2.2)	0.25Min.	5	5	10	Yes
With Connector		★ RPI-2500	5	0.5	1.0Min.	2	10	40	Yes




★ : Under development

Digital Phototransistor Output



Package	Exterior	Part No.	Standard Characteristics					RoHS	
			Detection Groove Width (mm)	Slit Width (mm)	V _F (V)	V _{OL} (V)	Threshold Input Current (mA)		Output Type
Compact Type		RPI-1133	1.1	0.3	1.2	0.35Max.	2.5*	ON When light beam is interrupted.	Yes

* I_{FHL} Max. value




Reflective Type Photosensors (Photoreflectors)

Package	Exterior	Part No.	Standard Characteristics						RoHS
			LED λ_P (nm)	Ptr λ_P (nm)	I _c (mA)	V _{CE} (V)	I _F (mA)	tr, tf (μ s)	
Case Type		RPR-220	940	800	0.08Min. 0.8Max.	2	10	10	Yes
		RPR-220UC30N	630	600	0.08Min. 0.8Max.	5	10	10	Yes
		RPR-220PC30N	470	800	0.08Min. 0.8Max.	5	10	10	Yes





4-Direction Detector


Package	Exterior	Part No.	Standard Characteristics						RoHS
			LED λ_P (nm)	Ptr λ_P (nm)	I _c (mA)	V _{CE} (V)	I _F (mA)	tr, tf (μ s)	
Surface Mount Type		RPI-1031	940	800	0.1Min.	5	5	10	Yes
		New RPI-1040	940	800	0.05Min.	5	5	10	Yes

Phototransistors

Package	Exterior	Part No.	Features	Visible Light Filter	Absolute Maximum Ratings			Standard Characteristics					RoHS
					V _{CEO} (V)	P _c Max. (mW)	I _{CEO} Max. (μ A)	V _{CE} (V)	I _c (mA)	λ_P (nm)	tr, tf (μ s)	$\theta_{1/2}$ (deg)	
Surface Mount Type (Side-view)	 RPM-012PB	RPM-012PB	Ultra-small size, High sensitivity, Automatic mounting, Reflow-compatible	○	32	75	0.5	10	0.56Min.	800	10	12	Yes
ϕ 3 Resin	 RPT-38PB3F	RPT-34PB3F	Visible light filter	○	32	150	0.5	10	2.0Min.	800	10	36	Yes
		RPT-37PB3F	Visible light filter, Polarity discrimination	○	32	150	0.5	10	2.0Min.	800	10	36	Yes
		RPT-38PB3F	Visible light filter	○	32	150	0.5	10	2.0Min.	800	10	36	Yes
Resin Side View Type	 RPM-20PB	RPM-20PB	Visible light filter	○	32	100	0.5	10	0.5Min.	800	10	14	Yes
		RPM-22PB	Visible light filter, Wide viewing angle	○	32	100	0.5	10	0.48Min.	800	10	32	Yes

Infrared Light Emitting Diodes

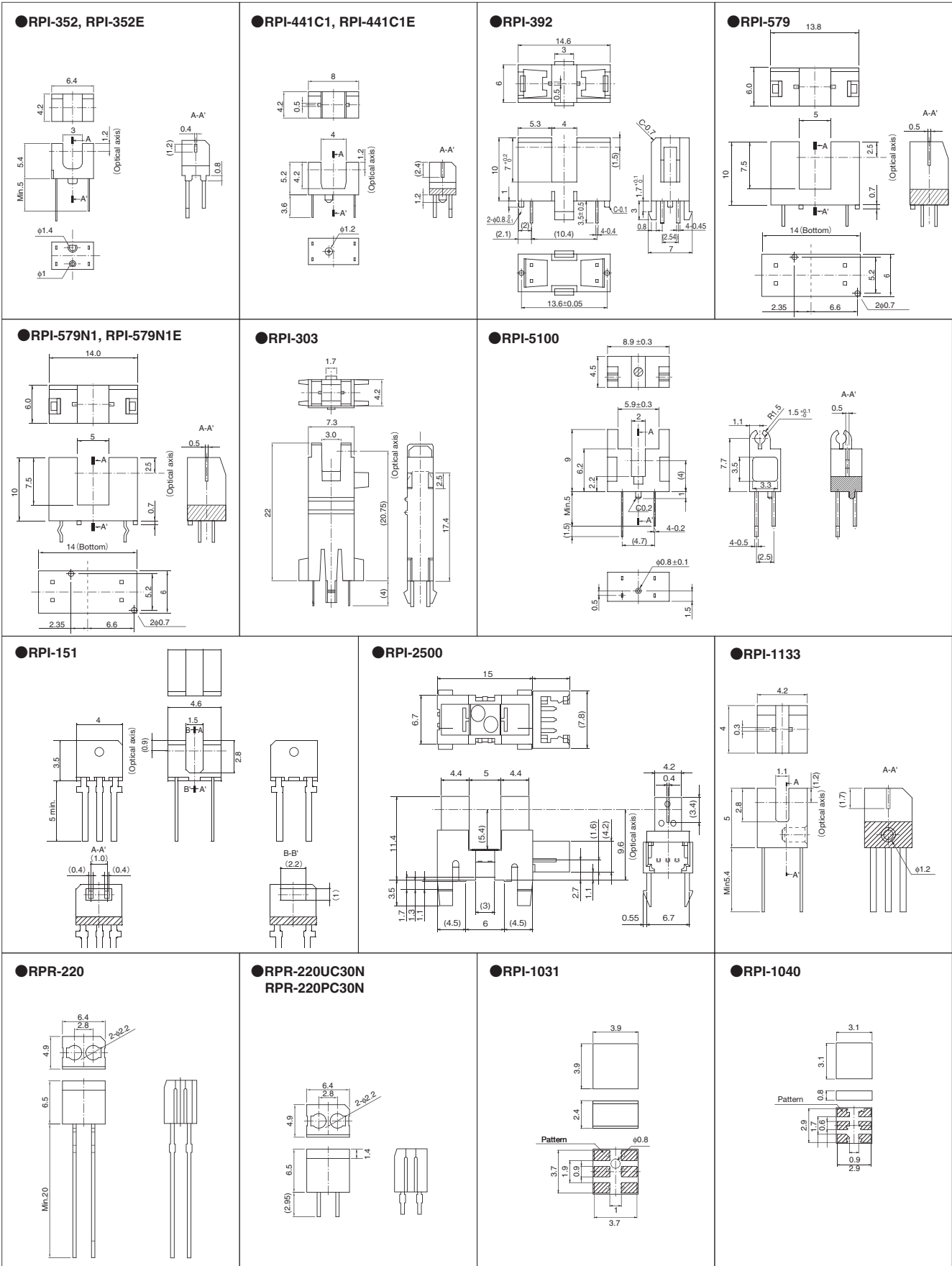
Package	Exterior	Part No.	Features	Absolute Maximum Ratings		Standard Characteristics						RoHS
				I_F (mA)	P_o (mW)	I_F (mA)	V_F (V)	I_F (mA)	λ_P (nm)	tr,tf (μs)	θ 1/2 (deg)	
Surface Mount Type (Side-view)	 SIR-012SB	SIM-012SB	Ultra-small size, High power, Automatic mounting, Reflow-compatible	40	3.5	20	1.2	20	950	1	12	Yes
φ3 Resin	 SIR-341ST3F	SIR-320ST3F	Optimized for card remote controls	75	9.0	50	1.2	50	940	1	18	Yes
		SIR-34ST3F	Optimized for remote controls	100	8.0	50	1.3	100	950	1	27	Yes
		SIR-341ST3F	Compact, high power	75	8.4	50	1.3	100	940	1	16	Yes
φ5 Resin	 SIR-568ST3F	SIR-505STA47	Direct mount type	100	8.0	50	1.38	100	950	1	15	Yes
		SIR-56ST3F	Optimized for remote controls	100	8.0	50	1.3	100	950	1	15	Yes
		SIR-563ST3F	High output, Optimized for remote controls	100	11.0	50	1.34	50	940	1	15	Yes
		SIR-568ST3F	High speed LED for optical communications	100	13.0	50	1.6	50	850	fc=50MHz	13	Yes
Resin Side View Type	 SIM-20ST	SIM-20ST	General purpose molded type	50	7.0	50	1.3	50	950	1	15	Yes
		SIM-22ST	General purpose molded type	50	7.0	50	1.3	50	950	1	30	Yes

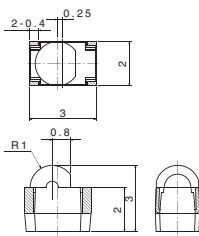
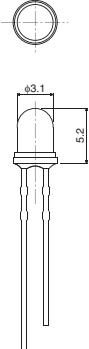
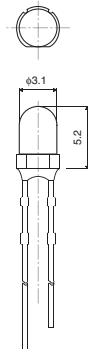
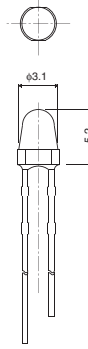
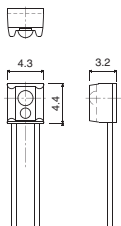
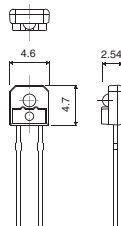
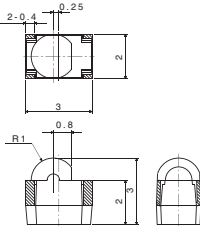
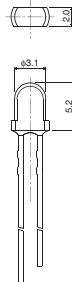
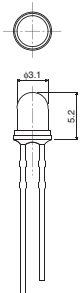
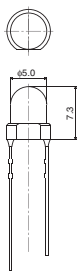
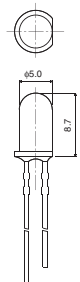
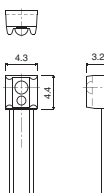
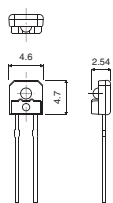
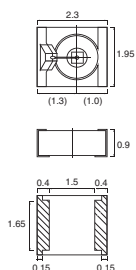
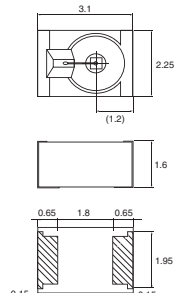
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				I_F (mA)	I_E (mW/sr)	I_F (mA)	V_F (V)	I_F (mA)	λ_P (nm)	tr,tf (μs)	θ 1/2 (deg)	
Surface Mount Type (Top view)	 SIM-040ST	★ SIM-030ST	Low profile (0.9mm), Ideal for proximity sensors	100	30	100	1.7	100	870	0.1	20	Yes
		★ SIM-040ST	High power, Ideal for proximity sensors	100	40	100	1.7	100	870	0.1	20	Yes

★ : Under development

Dimensions (Unit : mm)

<p>● RPI-0125</p>	<p>● RPI-0128</p>	<p>● RPI-0129</p>	<p>● RPI-0226</p>
<p>● RPI-122</p>	<p>● RPI-121</p>	<p>● RPI-124</p>	<p>● RPI-125</p>
<p>● RPI-128</p>	<p>● RPI-129B</p>	<p>● RPI-130</p>	<p>● RPI-131</p>
<p>● RPI-221</p>	<p>● RPI-222</p>	<p>● RPI-243</p>	<p>● RPI-246</p>



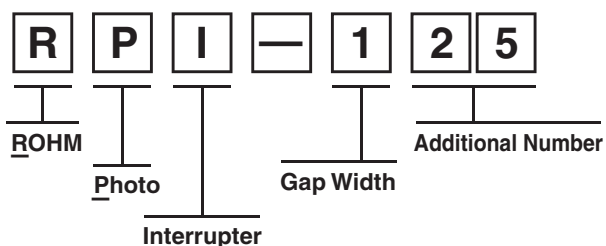
<p>●RPM-012PB</p> 	<p>●RPT-34PB3F</p> 	<p>●RPT-37PB3F</p> 	<p>●RPT-38PB3F</p> 
<p>●RPM-20PB</p> 	<p>●RPM-22PB</p> 	<p>●SIM-012SB</p> 	<p>●SIR-320ST3F</p> 
<p>●SIR-34ST3F/341ST3F</p> 	<p>●SIR-505STA47</p> 	<p>●SIR-56ST3F/563ST3F/568ST3F</p> 	<p>●SIM-20ST</p> 
<p>●SIM-22ST</p> 	<p>●SIM-030ST</p> 	<p>●SIM-040ST</p> 	

Part No. Explanation

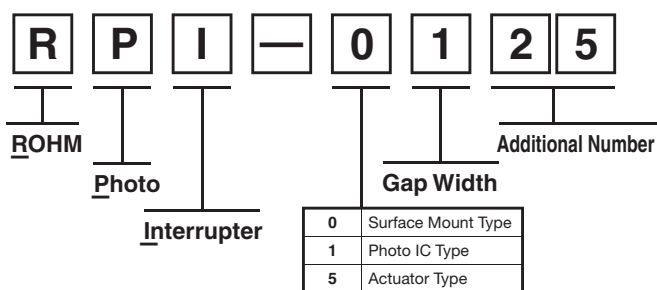
Part No. Explanation (Optical Sensors)

Transmission Type

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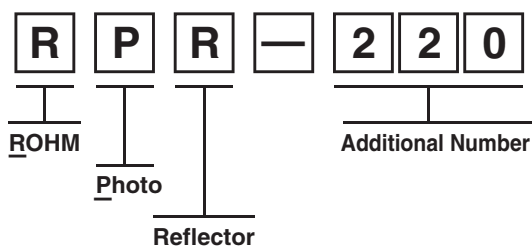


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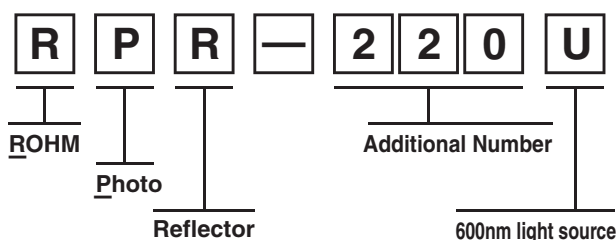


Reflective Type

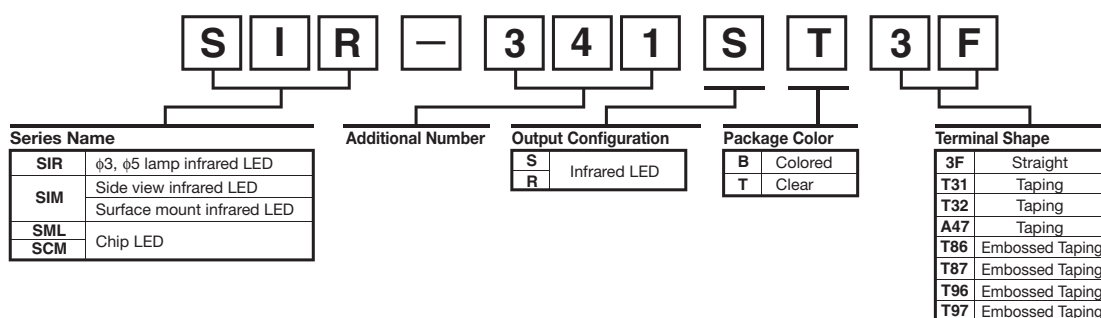
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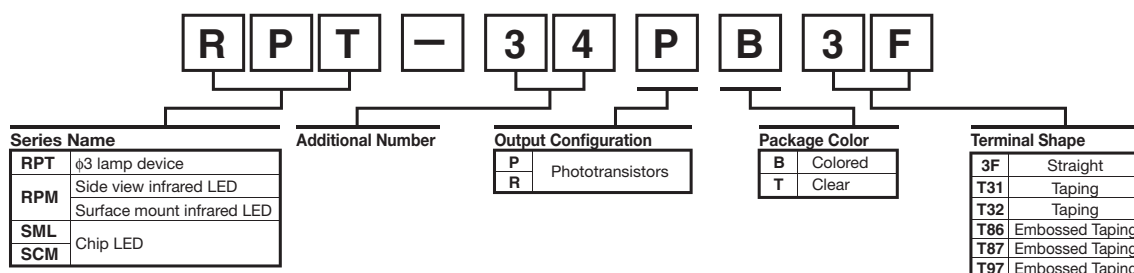
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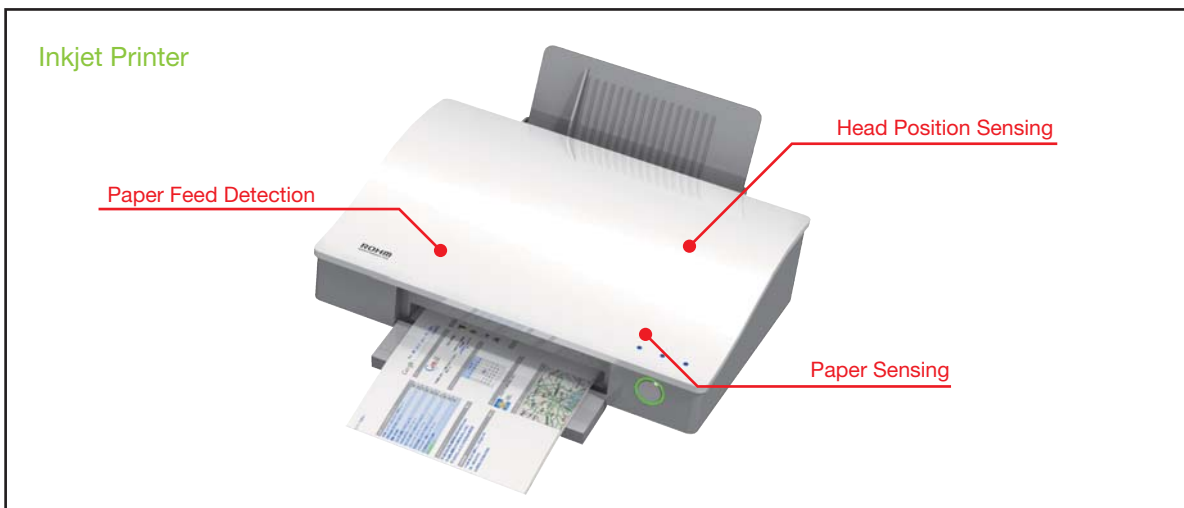
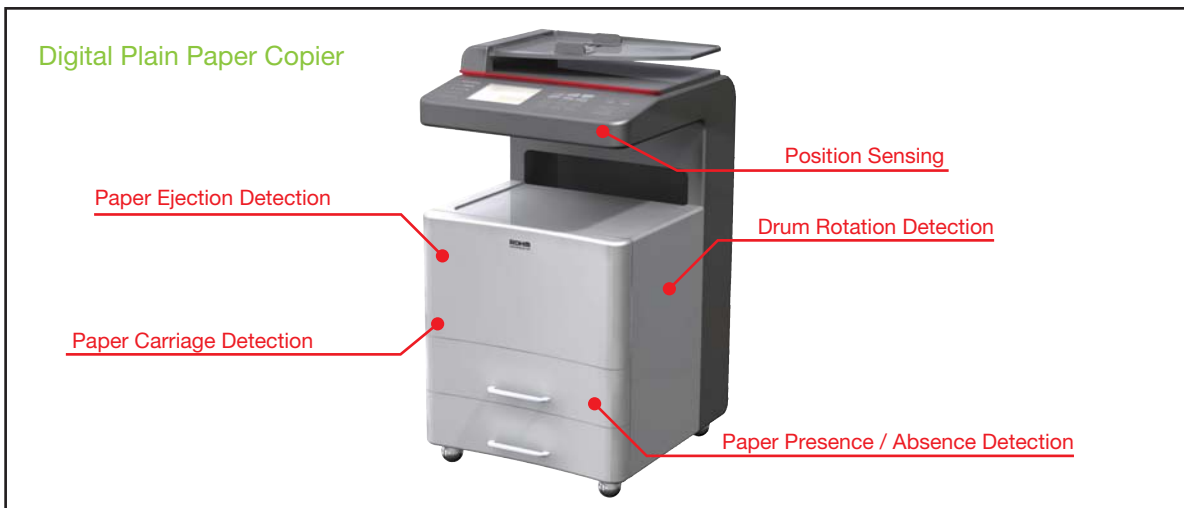
Part No. Explanation (Infrared Light Emitting Diodes)

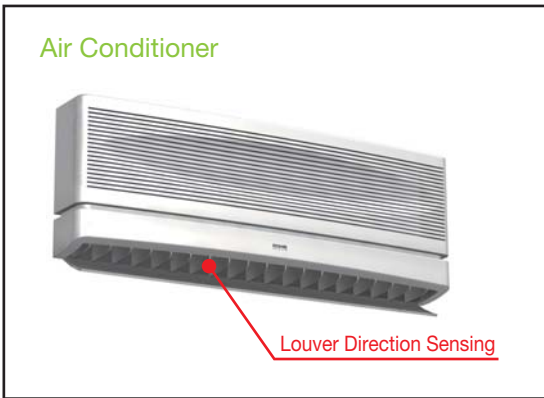
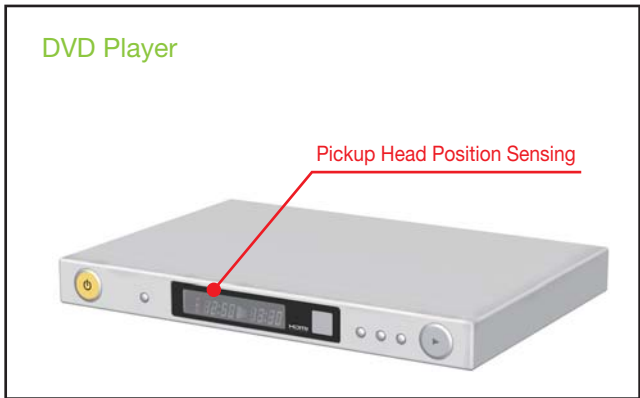
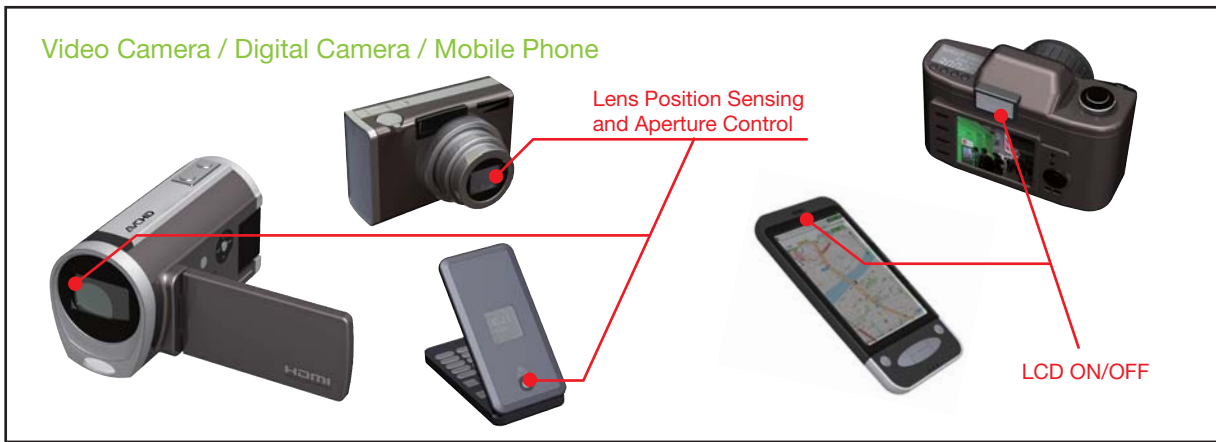


Part No. Explanation (Phototransistors)



Application Examples





Others

Classification	Device	Applications
Home electronic appliances	Massage chairs	Internal structure position sensing
	Sewing machines	Motor rotation sensing Sensing of vertical motion of the needle and fabric feed timing
Industrial equipment	Automated production equipment	Internal structure position sensing
Others	Gaming devices (pinball machines, etc.)	Internal structure position sensing

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Chicago	+1-847-368-1006	Oulu	+358-8-5372930	Ningbo	+86-574-87654201	Kaohsiung	+886-7-237-0881
Dallas	+1-972-473-3748	Barcelona	+34-9375-24320	Qingdao	+86-532-8577-9312	Singapore	+65-6332-2322
Denver	+1-303-708-0908	Hungary	+36-1-4719338	Suzhou	+86-512-6807-1300	Philippines	+63-2-807-6872
Detroit	+1-248-348-9920	Poland	+48-22-5757213	Wuxi	+86-510-82702693	Thailand	+66-2-254-4890
Nashville	+1-615-620-6700	Russia	+7-495-739-41-74	Guangzhou	+86-20-3878-8100	Kuala Lumpur	+60-3-7958-8355
Mexico	+52-33-3123-2001	Seoul	+82-2-8182-700	Huizhou	+86-752-205-1054	Penang	+60-4-2286453
Dusseldorf	+49-2154-9210	Masan	+82-55-240-6234	Fuzhou	+86-591-8801-8698	Kyoto	+81-75-365-1218
Munich	+49-8999-216168	Dalian	+86-411-8230-8549	Dongguan	+86-769-8393-3320	Yokohama	+81-45-476-2290
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