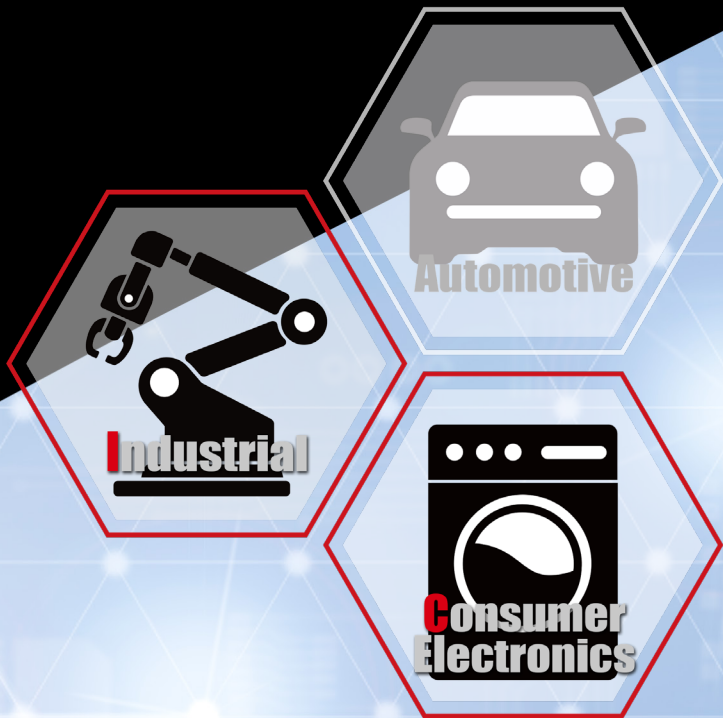


Detects fast-moving objects with high accuracy

Ultra-Compact High-Speed Response Analog Output Optical Proximity Sensor (VCSEL Photoreflector)

RPR-0730



Overview: Analog Output Optical Proximity Sensor (VCSEL Photoreflector)



The RPR-0730 is an ultra-compact optical proximity sensor (photoreflector) that integrates a proprietary 940nm VCSEL as the light-emitting element - offering superior directionality and lower power consumption than conventional LEDs – along with ROHM's high-speed phototransistor as the light-receiving element. This combination enables faster, more precise detection, making it ideal for demanding applications such as print detection in multifunction and label printers as well as rotation sensing in motors and gears - areas where conventional digital output types often fall short.

Features

- **Enables detection of ultra-fine widths as small as 0.1mm not possible with LEDs**

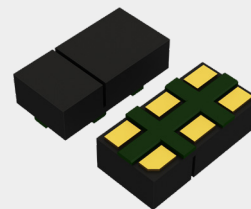
Achieves high detection accuracy by adopting a VCSEL element with narrow beam angle as the light-emitting component

- **Capable of detecting fast-moving objects**

Utilizing an analog-output phototransistor as the light-receiving element achieves a high-speed response of just 10μs

- **Compact surface-mount package enhances design flexibility across a variety of applications**

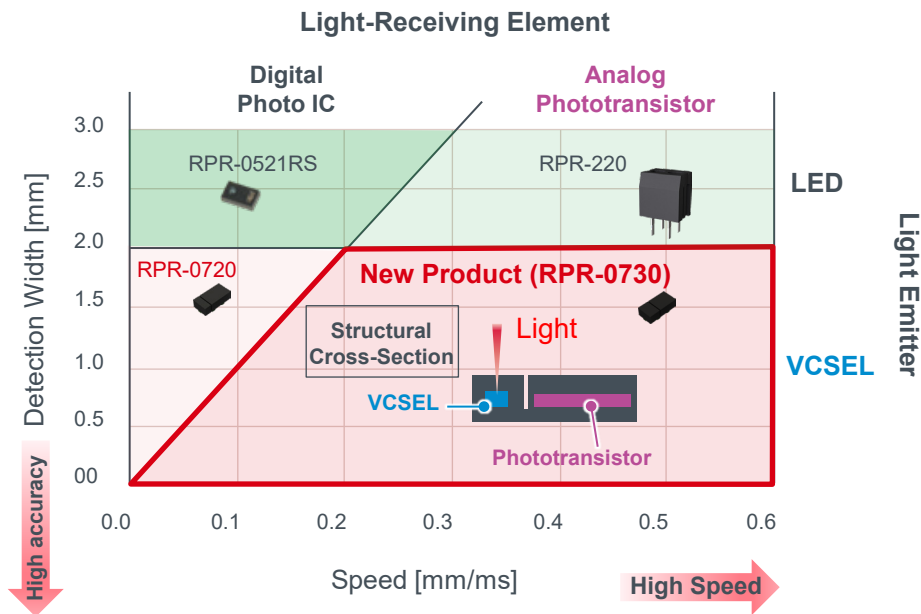
Small 2.0×1.0×0.55mm form factor supports mounting in confined spaces



RPR-0730
2.0×1.0 t=0.55mm

Capable of Detecting Small, Fast-Moving Objects with Widths as Narrow as 0.1mm

ROHM Optical Photoreflector and Detection Performance



Application Examples

[Paper/Label Detection]



Multifunction printers, etc.



Label printers

[Rotation Detection]



Industrial equipment, motors, etc.



[Object Detection in Industrial Equipment and Conveyance Systems]



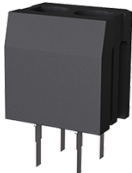
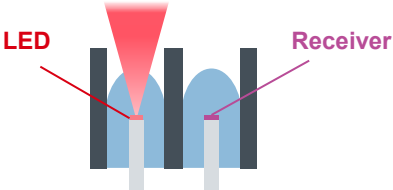
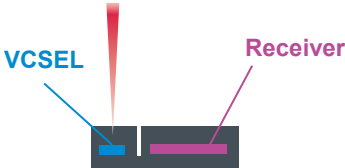
Package conveyor



Specimen transport

Ideal for a wide range of applications that demand high-speed, high-accuracy detection

Compact Surface-Mount Package Improves Application Design Flexibility

Conventional Product RPR-220	New Product RPR-0730
LED + Analog Phototransistor (Leaded)	Laser (VCSEL) + Analog Phototransistor (Surface Mount)
	
6.4×4.9×6.5mm (not including the leads)	2.0×1.0×0.55mm
	
Detection range: 5 to 100mm	Detection range: 0 to 10mm

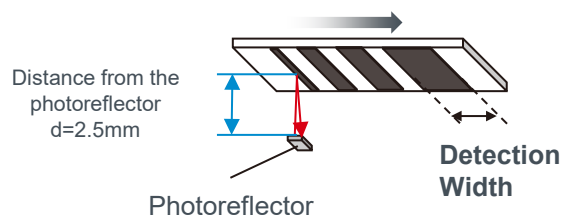
Package area

reduced approx.

93%

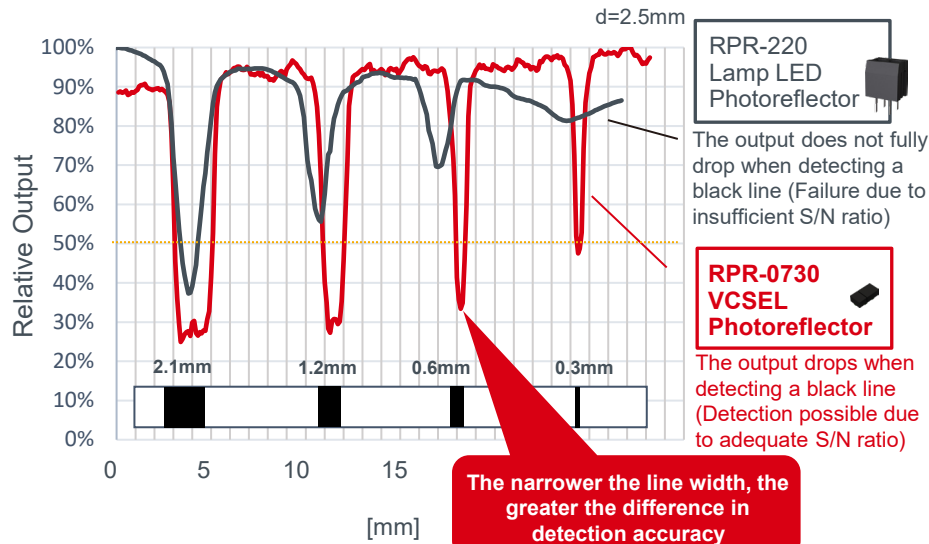
Fine Line Detection Measurement Environment

Paper feed in parallel with the photoreflexor



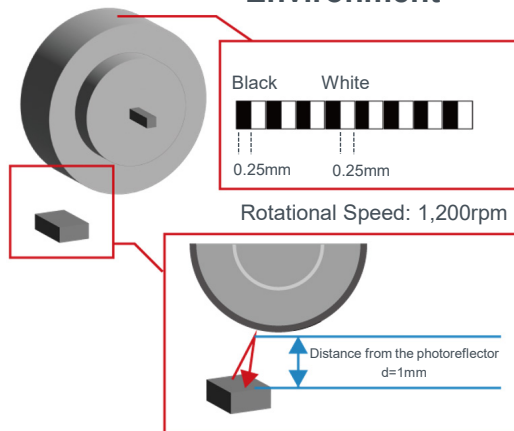
Light emitted from the light source is reflected off the target object and then detected by the receiver

Relative Output Comparison



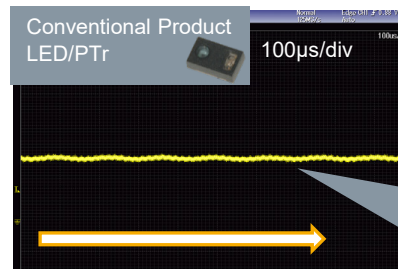
Capable of accurately detecting even fine lines, enabling not only paper presence detection but also black/white distinction and identification of labels and films

Rotation Detection Measurement Environment

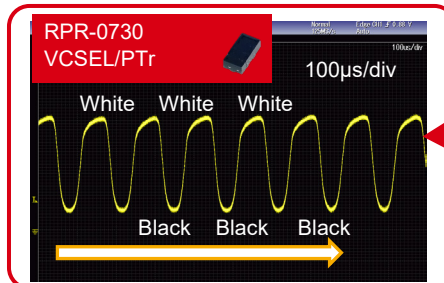


Light emitted from the light source is reflected off a high-speed rotating (1200rpm) black-and-white disk and then detected by the receiver

Output Waveform Comparison



Conventional sensors fail to detect due to inadequate output differentiation between the white and black areas



Capable of clearly distinguishing white and black areas even during high-speed rotation with line widths as narrow as 0.25mm

Enables easy detection of high-speed rotating objects and their rotational states

Optical Proximity Sensor Lineup (Photoreflectors)

■ Analog Output

Part No.	Interface	Light Emitter	Sensor Type	Detection Range [mm]	Forward Current I_F [mA]	V_{CEO} [V]	Dark Current [μ A]	Collector Current [mA]	Operating Temperature Range [°C]	Package Size [mm]
New RPR-0730  	Analog	VCSEL (940nm)	Proximity	0 to 10	5	30	0.1	0.69 to 1.79	-30 to +85	2.0×1.0×0.55
RPR-220  	Analog	LED (940nm)	Proximity	5 to 50	50	30	0.5	0.08 to 0.8	-25 to +85	6.4×4.9×6.5 (not including the leads)
RPR-220UC30N  	Analog	LED (630nm)	Proximity	5 to 12	30	30	10	0.08 to 0.8	-25 to +85	6.4×4.9×6.5 (not including the leads)

■ Digital Output

Part No.	Interface	Light Emitter	Sensor Type	Detection Range [mm]	Operating Voltage [V]	Light Source Voltage [V]	Current Consumption [μ A]	Operating Temperature Range [°C]	Package Size [mm]
RPR-0720  	I ² C (12bit)	VCSEL (940nm)	Proximity	0 to 15	1.7 to 3.6	2.7 to 4.5	up to 35	-30 to +85	2.0×1.0×0.55
RPR-0521RS  	I ² C (12bit)	LED (940nm)	Ambient light, Proximity	5 to 100	2.5 to 3.6	2.8 to 5.5	10 to 300	-25 to +85	3.94×2.36×1.35

Click on the  icon to access the product page and the  icon to view the datasheet on ROHM's website.

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