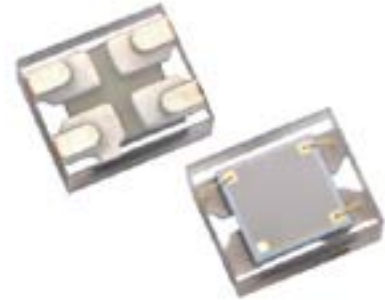


Silicon Photomultiplier RB-Series

ON SEMI'S RB SERIES OF RED-ENHANCED SECOND GENERATION SILICON PHOTOMULTIPLIERS (SiPM) WITH HIGH RESPONSIVITY AT A LOW BIAS VOLTAGE.

The MicroRB sensors provide further sensitivity improvements in the red and NIR region of the electromagnetic spectrum. All R-Series SiPM sensors feature high responsivity, fast signal response and a low temperature coefficient of operating voltage, all achieved at a low bias voltage. The sensor is packaged in a compact and robust MLP (molded lead frame) package that is suitable for reflow solder processes. Both the sensor and the package are designed for volume production with the product delivered on tape and reel.

SiPM sensors are an improvement over avalanche photodiodes (APD) and PIN diodes due to their high gain and single photon sensitivity. This enables the detection of low reflectivity targets at very long distance in LiDAR applications. Unlike the similarly-operated SPAD that can only detect single photons, the SiPM overcomes this limitation by incorporating a 'microcell' structure that allows for multi-photon detection with a high dynamic range. It is strongly recommended that those new to SiPM sensors consult the Introduction to Silicon Photomultipliers Tech Note. Full product details can be found in the RB-Series Datasheet.



APPLICATION

- 3D Ranging & Sensing
- Medical Imaging
- Hazard & Threat
- Biophotonics & Sciences
- High Energy Physics



SENSOR SUMMARY

	10010	10020	10035
Performance Parameters			
Typical operating bias voltage	47V	33V	30V
Spectral range	300 nm - 1050 nm		
Responsivity @ 905 nm @ max. bias	52 kA/W	270 kA/W	420 kA/W
PDE @ 905 nm @ max. bias	4.00%	7.30%	10.30%
Gain	0.7×10^6	0.9×10^6	1.7×10^6
Microcell recharge time constant	12 ns	21 ns	73 ns
Physical Parameters			
Active area			
No. of microcells	4296	1590	620
Microcell fill factor	43%	63%	76%
Package dimensions	-40°C - +85°C		
Recommended operating temperature range	1.5 mm x 1.8 mm		
Maximum storage temperature	105°C		
Soldering conditions	Lead-free, reflow soldering process compatible		
Encapsulant type	Clear transfer molding compound		
Encapsulant refractive index	1.57 @ 589 nm		

ORDERING INFORMATION

Product Code	Microcell size	Sensor active area	Package description
MicroRB-10010-MLP	10 μ m		4-side tileable, surface mount, molded leadframe package (MLP)
MicroRB-SMA-10010			MLP sensor mounted onto a PCB with SMA connectors for bias and output.
MicroRB-SMTPA-10010			MLP packaged sensor mounted onto a pin adapter board.
MicroRB-10020-MLP	20 μ m	1 mm x 1 mm	4-side tileable, surface mount, molded leadframe package (MLP)
MicroRB-SMA-10020			MLP sensor mounted onto a PCB with SMA connectors for bias and output.
MicroRB-SMTPA-10020			MLP packaged sensor mounted onto a pin adapter board.
MicroRB-10035-MLP	35 μ m		4-side tileable, surface mount, molded leadframe package (MLP)
MicroRB-SMA-10035			MLP sensor mounted onto a PCB with SMA connectors for bias and output.
MicroRB-SMTPA-10035			MLP packaged sensor mounted onto a pin adapter board.



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