

## Product Overview

### R-SERIES SiPM: Silicon Photomultiplier Sensors, R-Series (SiPM)

For complete documentation, see the data sheet.

RB-Series: Red-Enhanced Silicon Photomultipliers (SiPM)

The R-Series is a new range of Silicon Photomultipliers (SiPM) providing increased sensitivity into the red and NIR region of the electromagnetic spectrum. The current release from the R-Series are the RB sensors that provide improved photon detection efficiency and reduced crosstalk over the previous RA sensors. The RB sensors feature single photon sensitivity, high responsivity and fast signal response, all achieved at a low bias voltage. The sensor is packaged in a compact and robust molded leadframe package (MLP) that is suitable for reflow solder processes. Both the sensor and the package are designed for volume production, and are delivered on tape and reel.

The primary application for the RB SiPM sensors is for LiDAR and ranging applications that use 905 nm light. These SiPM sensors are an improvement over avalanche photodiodes (APD) and PIN diodes due to their high gain and single photon sensitivity. For LiDAR applications, this enables the detection of low reflectivity targets at very long distance. 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.

#### Features

- High gain and detection efficiency
- From a unique 'fast output' terminal
- PDE of >10 % at 905 nm
- Single photon sensitivity
- 1 mm sensor size, which a choice of microcell size
- Compact and robust MLP package
- <50 V bias voltage

#### Benefits

- High responsivity of >100 kA/W @905 nm
- Ultra-fast rise times and pulse widths
- Evaluation boards with either SMA connectors or pins are available

#### Applications

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

#### Part Electrical Specifications

Product	Compliance	Status	Type	Active Area Dimensions	Microcell Size (µm)	Optimized Wavelength (nm)	PDE @ Max Overvoltage (%)	DCR @ Typical Overvoltage (KHz/mm <sup>2</sup> )	Package Type
MICRORB-10010-MLP-TR	Pb-free Halide free	Product Preview		1 mm x 1 mm	10	905 850	4	2500	MICRORB-100XX-MLP
MICRORB-10010-MLP-TR-E	Pb-free Halide free	Active							MICRORB-100XX-MLP
MICRORB-10010-MLP-TR1	Pb-free Halide free	Product Preview		1 mm x 1 mm	10	905 850	4	2500	MICRORB-100XX-MLP
MICRORB-10020-MLP-TR	Pb-free Halide free	NEW		1 mm x 1 mm	20	905 850	7.3	2700	MICRORB-100XX-MLP
MICRORB-10020-MLP-TR1	Pb-free Halide free	NEW		1 mm x 1 mm	20	850 905	7.3	2700	MICRORB-100XX-MLP
MICRORB-10035-MLP-TR	Pb-free Halide free	NEW		1 mm x 1 mm	35	850 905	10.3	3800	MICRORB-100XX-MLP
MICRORB-10035-MLP-TR1	Pb-free Halide free	NEW		1 mm x 1 mm	35	850 905	10.3	3800	MICRORB-100XX-MLP

For more information please contact your local sales support at [www.onsemi.com](http://www.onsemi.com).

