

## Product Overview

### RB-SERIES SiPM: Silicon Photomultipliers, NIR-Enhanced

For complete documentation, see the data sheet.

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

The RB-Series is a range of Silicon Photomultipliers (SiPM) providing increased sensitivity into the red and NIR region of the electromagnetic spectrum. 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 micro 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. 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
- Unique 'fast output' terminal
- Compact and robust MLP package
  
- PDE of >10 % at 905 nm
- Single photon sensitivity
- 1 mm sensor size, which a choice of microcell size
- <50 V bias voltage

#### Applications

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

#### 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

#### End Products

- LiDAR and Ranging systems

## Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Type	Array Format	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 non AEC-Q and PPAP	Active	Single		1 mm x 1 mm	10	850 905	4	2500	CWDFN-4
MICRORB-10010-MLP-TR1		Pb-free Halide free non AEC-Q and PPAP	Active	Single		1 mm x 1 mm	10	850 905	4	2500	CWDFN-4
MICRORB-10020-MLP-TR		Pb-free Halide free non AEC-Q and PPAP	Active	Single		1 mm x 1 mm	20	850 905	7.3	2700	CWDFN-4
MICRORB-10020-MLP-TR1		Pb-free Halide free non AEC-Q and PPAP	Active	Single		1 mm x 1 mm	20	850 905	7.3	2700	CWDFN-4
MICRORB-10035-MLP-TR		Pb-free Halide free non AEC-Q and PPAP	Active	Single		1 mm x 1 mm	35	850 905	10.3	2600	CWDFN-4
MICRORB-10035-MLP-TR1		Pb-free Halide free non AEC-Q and PPAP	Active	Single		1 mm x 1 mm	35	850 905	10.3	2600	CWDFN-4

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

Created on: 10/29/2020