

## Product Overview

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

For complete documentation, see the data sheet.

ON Semiconductor's J-Series silicon photomultiplier (SiPM) sensors have been optimized for high-performance timing applications, such as ToF-PET (time of flight positron emission tomography). Due to increased microcell density, J-Series sensors can achieve a photon detection efficiency (PDE) of 50% and with sensitivity extending down into the UV. They feature industry-leading low dark count rates of 50 kHz/mm<sup>2</sup> and because the sensors are created using a high-volume CMOS silicon process they feature an exceptional breakdown voltage uniformity of  $\pm 250$  mV.

J-Series sensors are available in 3 mm, 4 mm and 6 mm sizes packaged in a TSV chip scale package that is compatible with industry standard, lead-free, reflow soldering processes. J-Series sensors also feature ON Semiconductor's unique fast output for fast timing capability.

#### Features

- High-density microcells
- J-Series sensors feature ON Semiconductor's unique 'fast output' terminal
- Temperature stability of 21.5 mV/°C
- Exceptional breakdown voltage uniformity of  $\pm 250$  mV
- Available in a reflow solder compatible TSV chip-scale package
- Ultra-low dark count rates of 50 kHz/mm<sup>2</sup> typical
- Optimized for high-performance timing applications, such as ToF-PET
- 3 mm, 4 mm and 6 mm sensor sizes
- Bias voltage of <30 V

#### Benefits

- Results in a 50% photon detection efficiency (PDE) at 420 nm
- Improved signal rise time and the microcell recovery time
- Negates the need for active voltage control
- Industry-leading uniformity
- TSV package results in almost zero deadspace allowing the creation of high fill factor arrays and is ferrous-metal free

#### Applications

- Medical Imaging
- Hazard & Threat
- 3D Ranging & Sensing
- 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
MICROFJ-30020-TSV-TR	Pb-free Halide free	NEW	Single	3 mm x 3 mm	20	420	38	50	ODCSP-8
MICROFJ-30020-TSV-TR1	Pb-free Halide free	NEW	Single	3 mm x 3 mm	20	420	38	50	ODCSP-8
MICROFJ-30035-TSV-TR	Pb-free Halide free	NEW	Single	3 mm x 3 mm	35	420	50	50	ODCSP-8
MICROFJ-30035-TSV-TR1	Pb-free Halide free	NEW	Single	3 mm x 3 mm	35	420	50	50	ODCSP-8
MICROFJ-40035-TSV-TR	Pb-free Halide free	NEW	Single	4 mm x 4 mm	35	420	50	50	ODCSP-16
MICROFJ-40035-TSV-TR1	Pb-free Halide free	NEW	Single	4 mm x 4 mm	35	420	50	50	ODCSP-16
MICROFJ-60035-TSV-TR	Pb-free Halide free	NEW	Single	6 mm x 6 mm	35	420	50	50	ODCSP-36
MICROFJ-60035-TSV-TR1	Pb-free Halide free	NEW	Single	6 mm x 6 mm	35	420	50	50	ODCSP-36

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

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