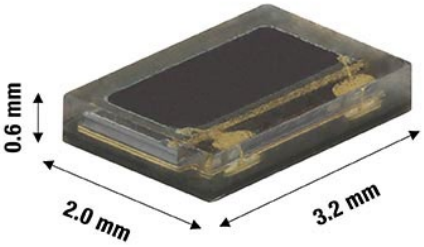
VEMD8083 Silicon PIN Photodiode Delivers Smaller Size and Enhanced Sensitivity for Biomedical Applications; Offers Large Sensitive Area of 2.8 mm² and High Reverse Light Current to 16 µA in Compact 3.2 mm by 2.0 mm by 0.6 mm Form Factor

Product Benefits:

- Enhanced sensitivity
- Compact 3.2 mm by 2.0 mm top-view, surface-mount package with a low 0.6 mm profile
- Large radiant sensitive area of 2.8 mm²
- High reverse light current to 16 µA at 940 nm
- Pin to pin compatible with competing solutions
- Suitable for visible and near infrared radiation
- Wide spectral range from 350 nm to 1100 nm
- Fast rise and fall times of 30 ns
- Low diode capacitance of 50 pF
- ± 60° angle of half-sensitivity
- Moisture sensitivity level (MSL) of 3 in accordance with J-STD-020 for a floor life of 168 hours
- RoHS-compliant, halogen-free, and Vishay Green



Market Applications:

- Biomedical applications such as heart rate and blood oxygen monitoring

The News:

Vishay Intertechnology broadens its optoelectronics portfolio with the introduction of a new high speed silicon PIN photodiode with enhanced sensitivity to visible and infrared light.

- The VEMD8083 offers a smaller form factor than previous-generation solutions, allowing for integration into compact wearables, such as smart rings and consumer health monitoring devices
- While its chip size is reduced, the photodiode's package is optimized to support a large radiant sensitive area, which enables high reverse light current
- The device's high sensitivity is especially valuable in biomedical applications like photoplethysmography (PPG), where it detects variations in blood volume and flow by measuring light absorption or reflection from blood vessels
  - Accurate detection in these scenarios is essential for diagnosing and monitoring conditions such as cardiovascular disease
- For high sampling rates, the VEMD8083 offers fast rise and fall times and low diode capacitance

The Key Specifications:

- Radiant sensitive area: 2.8 mm²
- Dimensions: 3.2 mm by 2.0 mm by 0.6 mm

- Range of spectral bandwidth: 350 nm to 1100 nm
- Typical reverse light current:
  - 11 µA at 525 nm
  - 14 µA at 660 nm
  - 16 µA at 940 nm
- Diode capacitance: 50 pF
- Rise and fall times: 30 ns

Availability:
Samples and production quantities of the VEMD8083 are available now, with lead times of 21 weeks.

To access the product datasheet on the Vishay Website, go to
http://www.vishay.com/ppg?80492 (VEMD8083)

Contact Information:

THE AMERICAS
Jim Toal
jim.toal@vishay.com

EUROPE
Boris Lazic
boris.lazic@vishay.com

ASIA/PACIFIC
Jason Soon
jason.soon@vishay.com