



Vishay Intertechnology Gen 4.5 650 V E Series Power MOSFET Delivers Industry's Lowest $R_{DS(ON)} \cdot Q_g$ and $R_{DS(ON)} \cdot C_{o(er)}$ FOMs

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Superjunction Device Enables High Power Ratings and Density While Lowering Conduction and Switching Losses to Increase Efficiency

MALVERN, Pa., March 26, 2025 (GLOBE NEWSWIRE) -- Vishay Intertechnology, Inc. (NYSE: VSH) today introduced a new Gen 4.5 650 V E Series power MOSFET that delivers high efficiency and power density for telecom, industrial, and computing applications. Compared to previous-generation devices, the Vishay Siliconix n-channel [SiHK050N65E](#) slashes on-resistance by 48.2 % while offering a 65.4 % lower resistance times gate charge, a key figure of merit (FOM) for 650 V MOSFETs used in power conversion applications.

Vishay offers a broad line of MOSFET technologies that support all stages of the power conversion process, from high voltage inputs to the low voltage outputs required to power the latest high tech equipment. With the SiHK050N65E and other devices in the Gen 4.5 650 V E Series family, the company is addressing the need for efficiency and power density improvements in two of the first stages of the power system architecture — power factor correction (PFC) and subsequent DC/DC converter blocks. Typical applications will include servers, edge computing, and super computers; UPS; high intensity discharge (HID) lamps and fluorescent ballast lighting; telecom SMPS; solar inverters; welding equipment; induction heating; motor drives; and battery chargers.

Built on Vishay's latest energy-efficient E Series superjunction technology, the SiHK050N65E's low typical on-resistance of 0.048 Ω at 10 V results in a higher power rating for applications > 6 kW. With 50 V of additional breakdown voltage, the 650 V device addresses 200 VAC to 277 VAC input voltages and the Open Compute Project's Open Rack V3 (ORV3) standards. In addition, the MOSFET offers ultra low gate charge down to 78 nC. The resulting FOM of 3.74 $\Omega \cdot \text{nC}$ translates into reduced conduction and switching losses to save energy and increase efficiency. This allows the device to address the specific titanium efficiency requirements in server power supplies or reach 96 % peak efficiency.

For improved switching performance in hard-switched topologies such as PFC and two-switch forward designs, the MOSFET released today provides low typical effective output capacitances $C_{o(er)}$ and $C_{o(tr)}$ of 167 pF and 1119 pF, respectively. The device's resulting resistance times $C_{o(er)}$ FOM is an industry-low 8.0 $\Omega \cdot \text{pF}$. The SiHK050N65E is offered in the PowerPAK® 10 x 12 package with a Kelvin connection for reduced gate noise and provides increased dv/dt ruggedness. RoHS-compliant and halogen-free, the MOSFET is designed to withstand overvoltage transients in avalanche mode with guaranteed limits through 100 % UIS testing.

Samples and production quantities of the SiHK050N65E are available now. For lead time information, please contact your local sales office.

Vishay manufactures one of the world's largest portfolios of discrete semiconductors and passive electronic components that are essential to innovative designs in the automotive, industrial, computing, consumer, telecommunications, military, aerospace, and medical markets. Serving customers worldwide, Vishay is **The DNA of tech.**® Vishay Intertechnology, Inc. is a Fortune 1,000 Company listed on the NYSE (VSH). More on Vishay at www.Vishay.com.

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Link to product datasheet:

<http://www.vishay.com/ppg?92559> (SiHK050N65E)

Link to product photo:

<https://www.flickr.com/photos/vishay/albums/72177720324565106>

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