Vishay Intertechnology 40 V MOSFET in PowerPAK® 10x12 Package Offers Best in Class RDS(ON) of 0.34 mΩ to Increase Efficiency

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Space-Saving Device Features BWL Design and High I_D to 795 A to Increase Power Density, While Low R_{thJC} of 0.21 °C/W Improves Thermal Performance

MALVERN, Pa., Dec. 04, 2024 (GLOBE NEWSWIRE) -- To provide higher efficiency and power density for industrial applications, Vishay Intertechnology, Inc. (NYSE: VSH) today introduced a new 40 V TrenchFET® Gen V n-channel power MOSFET in the PowerPAK® 10x12 package with best in class on-resistance. Compared to competing devices in the same footprint, the Vishay Siliconix SiJK140E slashes on-resistance by 32 % while offering 58 % lower on-resistance than 40 V MOSFETs in the TO-263-7L.

With on-resistance down to 0.34 m typical at 10 V, the device released today minimizes power losses from conduction to increase efficiency while improving thermal performance with a low R_{thJC} of 0.21 C/W typical. By allowing designers to utilize one device instead of two in parallel to achieve the same low on-resistance, the SiJK140E also improves reliability and mean time between failures (MTBF).

The MOSFET features a bond-wireless (BWL) design that minimizes parasitic inductance while maximizing current capability. While TO-263-7L solutions in bond-wired (BW) packages are limited to currents of 200 A, the SiJK140E offers a continuous drain current up to 795 A for increased power density while providing a robust SOA capability. Occupying an area of 120 mm^2, the device's PowerPAK 10x12 package saves 27 % PCB space compared to the TO-263-7L while offering a 50 % lower profile.

The SiJK140E is ideal for synchronous rectification, hot swap switching, and OR-ing functionality. Typical applications will include motor drive controls, power tools, welding equipment, plasma cutting machines, battery management systems, robotics, and 3D printers. To avoid shoot-through in these products, the standard-level FET offers a high threshold voltage of 2.4Vgs. RoHS-compliant and halogen-free, the MOSFET is 100 % Rg and UIS tested.

Comparison Table PowerPAK 10 x 12 vs. TO-263-7L

Part number		SiJK140E	SUM40014M	Performance Improved
Package		PowerPAK10x12	TO-263-7L	-
Dimensions (mm)		10 x 12	10.4 x 16	+27%
Height (mm)		2.4	4.8	+50%
V_{DS} (V)		40	40	-
V_{GS} (V)		20	20	-
Configuration		Single	Single	-
V_{GSth} (V)	**Min.**	2.4	1.1	+118%
$R_{DS(on)}$ (mΩ) @ 10 V_{GS}	**Typ.**	0.34	0.82	+58%
	Max.	0.47	0.99	+53%
Q_g (nC) @ 10 V_{GS}	**Typ.**	312	182	-
FOM	**-**	106	149	+29%
I_D (A)	**Max.**	795	200	+397%
R_{thJC} (C/W)	**Max.**	0.21	0.4	+47%

Samples and production quantities of the SiJK140E are available now, with lead times of 36 weeks.

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.

Vishay on Facebook: http://www.facebook.com/VishayIntertechnology
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Link to product datasheet:
http://www.vishay.com/ppg?62451 (SiJK140E)

Link to product photo:
https://www.flickr.com/photos/vishay/albums/72177720322038317

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