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80-V MOSFET Offers Low On-Resistance In 8-mm x 8-mm Footprint

From Vishay Intertechnology, the Vishay Siliconix SiEH4800EW 80-V TrenchFET Gen IV n-channel power MOSFET in the PowerPAK 8x8SW bond-wireless (BWL) package offers what's described as best-in-class on-resistance. Compared to competing devices in the same footprint, the Vishay Siliconix SiEH4800EW offers 15% lower on-resistance while reducing $R_{TH(JC)}$ by 18% says the vendor.

With on-resistance down to 0.88 mΩ typical at 10 V, the device minimizes power losses from conduction to increase efficiency while improving thermal performance with a low maximum $R_{TH(JC)}$ of 0.36°C/W. With its 8-mm by 8-mm footprint, the device occupies 50% less PCB space than MOSFETs in the TO-263 package while offering an ultra-low profile of 1 mm (see the figure and the table).

The SiEH4800EW implements a fused lead to increase the source PAD solderable area to 3.35 mm², which is four times larger than a traditional PIN solder area. This decreases the current density between the MOSFET and PCB, reducing the risk of electromigration risk and enabling a more robust design. In addition, the device's wettable flanks enhance solderability while making it easier to visually inspect the reliability of solder joints.

The MOSFET is well suited for synchronous rectification 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. In these applications, the device offers high-temperature operation to +175°C, and its BWL design minimizes parasitic inductance while maximizing current capability.

RoHS-compliant and halogen-free, the MOSFET is 100% Rg and UIS tested. Samples and production quantities of the SiEH4800EW are available now, with lead times of 13 weeks. For more information, see the SiEH4800EW product page.

Figure. Housed in the PowerPAK 8x8SW bond-wireless package, the SiEH4800EW n-channel 80-V MOSFET is a space-saving device offering a max $R_{TH(JC)}$ of just 0.36°C/W and wettable flanks to improve thermal performance and solderability in industrial applications.

Table. D²PAK versus PowerPAK 8x8L versus PowerPAK 8x8SW.

Part number	SUM60020E	SiJH5800E	SiEH4800EW
Package	TO-263	PowerPAK 8x8L	PowerPAK 8x8SW
Dimensions (mm)	16 x 10	8.0 x 8.0*	8.0 x 8.0*
Height (mm)	4.8	1.7	1.0*
V_{DS} (V)	80	80	80
V_{GS} (V)	± 20	± 20	± 20
Configuration	Single	Single	Single

$V_{GS(th)}$ (V)	Min.	2.0	2.0	2.0
$R_{DS(ON)}$ (mΩ) at 10 V_{GS}	Typ.	1.75	0.97	0.88*
	Max.	2.1	1.35	1.15*
I_D (A)	Max.	150	302	608*
$R_{TH(JC)}$ (°C/W)	Max.	0.4	0.45	0.36*
Fused lead implement		No	No	Yes

*Best in class according to the vendor.