



SQJQ510E 100 V MOSFET Enables Higher Efficiency and Power Density in Automotive Applications



Vishay Siliconix has introduced the SQJQ510E, a 100 V n-channel MOSFET in the PowerPAK[®] 8x8L package. This AEC-Q101 qualified, Automotive Grade device features the latest 100 V TrenchFET[®] Gen V technology to achieve a maximum $R_{DS(on)}$ of 1.86 m Ω , which represents a 26 % improvement over the previous generation. The improved $R_{DS(on)}$ reduces conduction loss — which generates excess heat — and enables higher output for various high power applications.



The new silicon technology also achieves a typical $R_{DS(on)}^*Q_g$ figure of merit (FOM) of 133 m Ω^*nC — a 65 % improvement compared to the previous generation. The device's low FOM reduces power losses from conduction and gate driving to increase efficiency in fast switching applications and DC/DC converters.

The PowerPAK 8x8L package of the SQJQ510E utilizes a wire-free design to minimize both electrical and thermal resistance, and features gullwing leads designed to achieve maximum mechanical stress relief. The package has also undergone rigorous stress tests to ensure the integrity of the connection to the PCB and high board-level reliability.

The highly reliable SQJQ510E offers a maximum junction temperature up to 175 °C, which leads to an extended lifetime compared to devices with lower temperature ratings.

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Fast Facts

Product Benefits:

- Low R_{DS(on)} reduces conduction loss
- Leading R_{DS}*Q_g FOM for fasts switching applications
- Increases power density
- Gullwing leads increase board-level reliability

Market Applications:

- 48 V boardnet
- Battery management systems
- DC/DC conversion
- Synchronous rectification
- Motor drive control
- On-board chargers
- Power and load switches

The Key Specifications:

Package	Part Number	Ch.	V _{DS} (V)	V _{GS} (V)	R _{DS(on)} (mΩ) @ V _{GS} = 10 V		Qg typ. @	R _{Ds} *Qg FOM	100 % Rg
					Тур.	Max.	(nC)	(mΩ*nC)	tested
PowerPAK 8x8L	<u>SQJQ510E</u>	Ν	100	± 20	1.55	1.86	86	132	Yes

The SQJQ510E has been released to production and is ready for sampling and order entry.

Useful Links

- Datasheet
- Product Page
- <u>Automotive Grade MOSFETs</u>

Contact Information

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