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SQJQ140ER Top-Side Cooled Automotive 40 V MOSFET

Reduce PCB Temperature and Increase Power Density

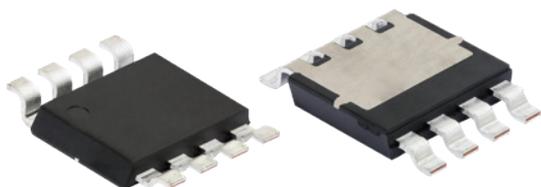


ADVANTAGE

The SQJQ140ER provides an optimized solution for automotive designs that use a heatsink.

KEY PRODUCT FEATURES

- ✓ AEC-Q101 qualified
- ✓ Top-cooled feature improves efficiency and thermal transfer flow
- ✓ Micro-ohm specs: typical $R_{DS(ON)}$ of $570 \mu\Omega$ / maximum $R_{DS(ON)}$ of $650 \mu\Omega$
- ✓ High current rating
- ✓ Gullwing leads relieve mechanical and thermal stress



MARKETS AND APPLICATIONS



AUTOMOTIVE

- 12 V systems
- Output and load switch
- Battery management
- Motor drive control
- DC/DC converters

KEY PRODUCT BENEFITS

PCB temperature	↓
Adjacent device temperature	↓
Overall costs	↓
PCB copper content	↓
Power losses	↓
Mechanical and thermal stress	↓
Thermal efficiency	↑
Current output	↑
Power density	↑
Board-level reliability	↑

RESOURCES



[Order Samples](#)



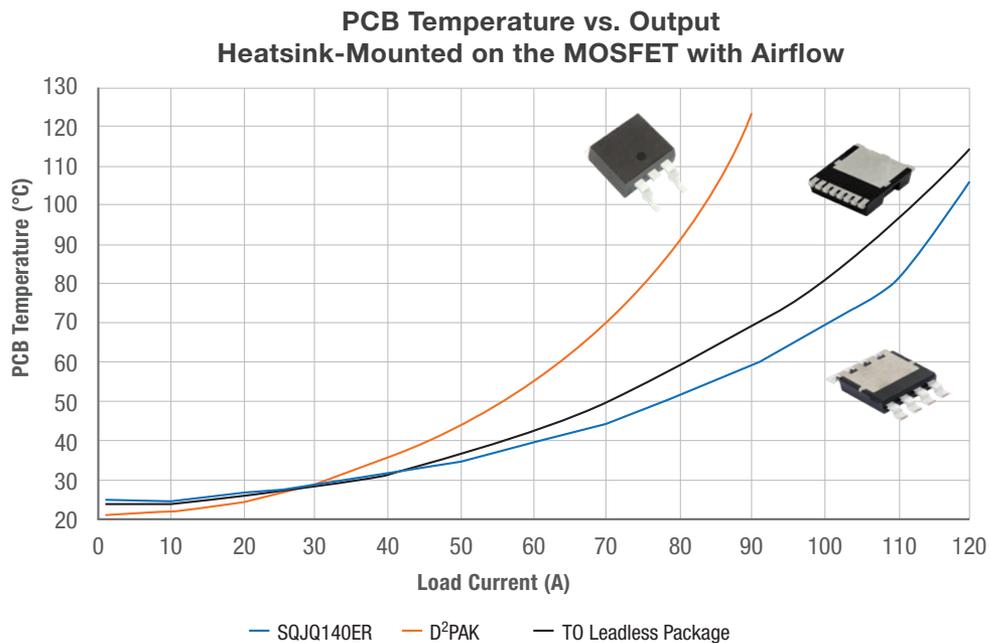
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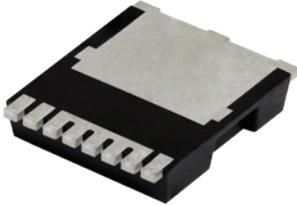
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ADDITIONAL BENEFITS

- Heat is directly dissipated to the heatsink
- No vias needed in the PCB area of the MOSFET
- Less PCB copper content required, reducing costs
- Improved ΔT allows for higher power output and power density
- PCB is no longer the dominant thermal path, remaining components can be downscaled
- Lower PCB temperature reduces negative performance impact on adjacent components



The figure compares the PCB temperature characteristics for the SQJQ140ER and the flagship 40 V devices in D²PAK and TO leadless (TO-LL) packages, with heatsinks mounted on the MOSFET. The PCB with the PowerPAK 8 x 8LR was 15 % cooler than the board with the TO-LL package and maintained the lowest temperature across the current loads. The top-cooled feature promotes thermal dissipation to the heatsink and causes less thermal stress to the PCB with a 28 % smaller package footprint than the TO-LL.

PowerPAK 8 x 8LR	TO-Leadless	D ² PAK
		
8 mm x 10.4 mm	15.8 mm x 10.4 mm	9.9 mm x 11.6 mm