VISHAY

The DNA of tech.

SQJ182ER Top-Cooled Automotive MOSFET

80 V N-Channel MOSFET for 48 V Automotive Applications

AUTOMOTIVE GRADE

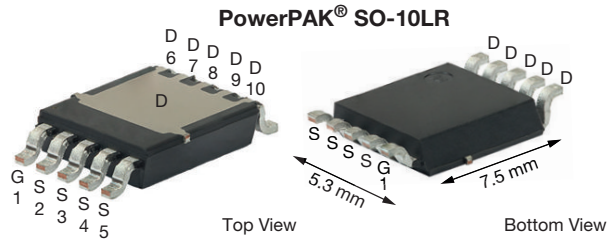
ADVANTAGE

Top-cooled package design enhances heat dissipation through the engine control unit housing, thereby reducing thermal stress on the printed circuit board (PCB) and enabling higher power density and reliability.

KEY PRODUCT FEATURES

- ✓ AEC-Q101 qualified
- ✓ Minimizes heat transfer into the PCB
- ✓ Typical $R_{DS(ON)}$ of 2.11 mΩ / maximum $R_{DS(ON)}$ of 2.55 mΩ
- ✓ Typical package footprint of 5.3 mm by 7.5 mm
- ✓ Increases board-level reliability
- ✓ Second source compatibility

PowerPAK® SO-10LR



RESOURCES

Product Page

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MARKETS AND APPLICATIONS

AUTOMOTIVE

- General purpose automotive applications
- 48 V systems
- DC/DC converters
- Motor drives / inverters
- EPS
- Liquid pumps
- Power and load switching

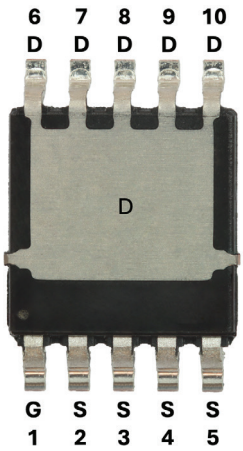
KEY PRODUCT BENEFITS

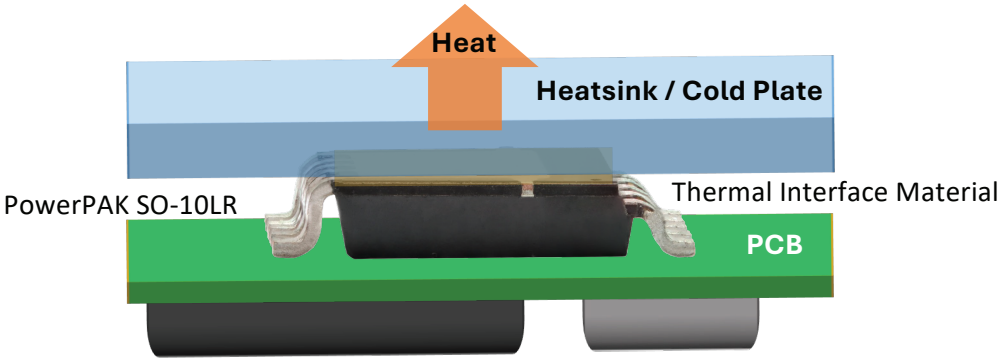
On-resistance	↓
R_{DS}-Q_g FOM	↓
Power losses	↓
PCB temperature	↓
PCB cost	↓
Efficiency	↑
Current output	↑
Power density	↑
Relief for mechanical and thermal stress	↑
Board level reliability	↑

ADDITIONAL BENEFITS

- ~16.74² mm exposed thermal pad on the top side directs heat dissipation through the heatsink or the ECU case
- Reduces heat transfer into PCB and saves costs
- Low $R_{DS(ON)}$ reduces conduction loss and increases current load
- Low Q_g reduces power loss from gate driving
- Gullwing leads are optimized to achieve maximum relief for thermal stress
- The shape of leads promotes solder fillet formation and enables automatic optical inspection (AOI)Enhanced mechanical stress relief and increased board-level reliability
- Maximum junction temperature of 175 °C

PowerPAK SO-10LR
Top View





The exposed top pad of the PowerPAK SO-10LR package provides a low-resistance thermal path, enabling direct heat dissipation to the heatsink rather than through the PCB. With the PCB no longer serving as the primary thermal path, the vias can be eliminated. This simplification reduces PCB cost and complexity, thereby increasing power density.