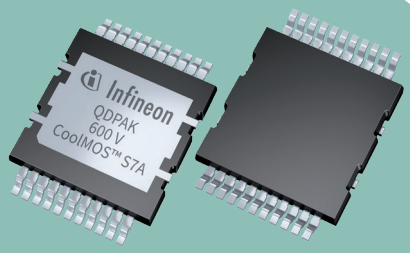


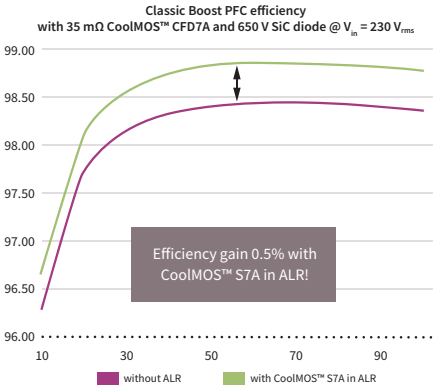
Product brief

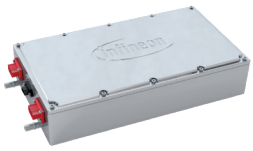
600 V CoolMOS™ S7A

Best-in-class $R_{DS(on)}$*A SJ MOSFET for slow switching automotive applications

The new automotive-grade 600 V CoolMOS™ S7A superjunction MOSFET addresses xEV applications where MOSFETs are switched at low frequency, such as HV eFuse, HV eDisconnect, and on-board charger in the slow-switching leg of the PFC stage. The more stringent requirements for increased power density, safety, and reliability in these applications are met by combining the superior robustness and performance of the S7A MOSFET with the innovative package concept offered by the QDPAK TSC. The new MOSFET design offers a cost-optimized, distinctively low on-resistance $R_{DS(on)}$ of 10 mΩ, enabling increased power density and minimized conduction losses. The top-side cooled QDPAK package offers increased efficiency and controllability thanks to its' intrinsic kelvin source, high power dissipation capability, and innovative cooling concept.

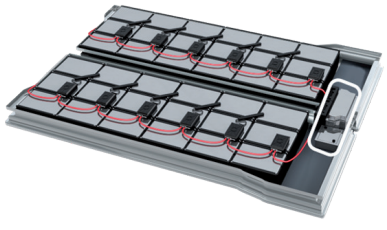
Difference between using or not using the active line rectification



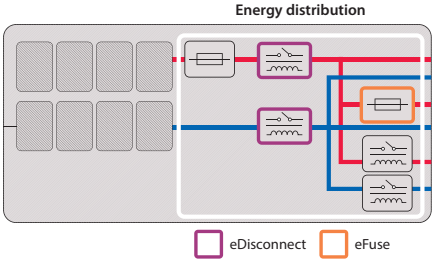


An efficiency improvement of +0.5% and a reduction in power losses of -30% can be achieved in a classic boost PFC topology for OBC by replacing the diode bridge with the S7A in an ALR active line rectification.

CoolMOS™ S7A is the semiconductor solution for HV eDisconnect and HV eFuse. It answers eMobility needs with respect to reliability (maintenance-free), flexible and cost-optimized system integration, scalability, and minimized failure propagation.



Component battery architecture representation



www.infineon.com/s7a
www.infineon.com/ev-solutions
www.Infineon.com/BMS

Key features

- Best-in-class $R_{DS(on)}$: 10 mΩ
- Smallest $R_{DS(on)}$ in SMD packages
- Optimized for conduction performance
- Improved thermal resistance
- High pulse current capability
- Body diode robustness at AC line commutation
- Kelvin-source concept

Key benefits

- Minimized conduction losses
- Increased energy efficiency
- More compact and easier designs
- Increased power density
- Lower TCO cost or BOM cost
- Flexible system integration
- Variable cooling strategy
- Scalable technology

Key applications

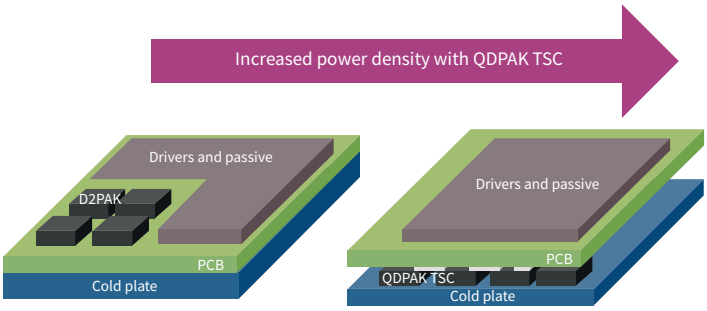
- HV eFuse
- HV eDisconnect
- On-board charger

600 V CoolMOS™ S7A

Best-in-class $R_{DS(on)}$*A SJ MOSFET for slow switching automotive applications

Optimized technology for slow switching applications

The CoolMOS™ S7A family is built on a successful technical optimization of the renowned CoolMOS™ 7 technology that removes from the device redundant features related to switching performance, as they are not needed in low frequency switching applications. Thus, this new Infineon technology is cost-optimized, without neglecting quality or performance, and designed to meet the highest automotive quality going well beyond the AEC Q101 standard.



Novel top-side cooled QDPAK package – the most "powerful" SMD

The CoolMOS™ S7A technology features a 10 mΩ chip in a top-side cooled package, the QDPAK. Its innovative technology allows for bigger chip implementations reaching the lowest $R_{DS(on)}$ in the market in an SMD. Thanks to its inbuilt 4th pin Kelvin source configuration and low parasitic source inductance, switching losses are minimized while controllability and ease of use are increased. The new cooling concept enables the thermal decoupling of board and semiconductor. This way higher chip temperatures are possible and system designers can benefit from the increased flexibility in the PCB design.

Product portfolio

$R_{DS(on)}$ max. [mΩ]	QDPAK TSC	QDPAK BSC	PG-TO247-3
40		IPQC60R040S7A**	
22	IPDQ60R022S7A**	IPQC60R022S7A**	IPW60R022S7A**
17		IPQC60R017S7A**	
10	IPDQ60R010S7A*	IPQC60R010S7A**	IPW60R010S7A**

*Released
**Coming soon

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