PRODUCT BRIEF

OptiMOS™ 80 V SSO10T Automotive MOSFETs

Best Cooling Performance. Enables More Compact Designs.

Infineon introduces a portfolio of MOSFETs in our innovative, top-side cooled SSO10T 5x7mm² SMD package. The SSO10T package helps customers achieve big advancements in cooling and power density. The family consists of products made with OptiMOS™ 7 80 V and OptiMOS™ 5 80 V power semiconductor technologies.

These MOSFETs are designed specifically with the high performance, quality, and robustness needed for demanding automotive applications.

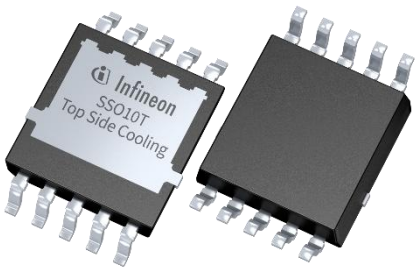
The SSO10T package transfers virtually no heat into the PCB; the heat flows through the top of the package into a heatsink, which is typically the ECU housing. Thermal impedance and thermal resistance are both improved up to 50% as compared to a standard 5x6mm², bottom-side cooled package MOSFET.

Key features

- Direct cooling path to ECU housing
- Virtually no heat flows into PCB
- Industry's largest exposed pad area
- Freedom to route traces under package
- Can mount parts on opposite side of PCB
- Industry's best on-resistance, $R_{DS(on)}$
- Fast switching times (turn on/off)
- Tight threshold voltage, $V_{GS(th)}$, range
- Extended qualification beyond AEC-Q101
- Enhanced electrical testing
- Package is listed with JEDEC

Heat flowing out the top creates the opportunity for ECU volume reduction (because it does not need to be used for heatsinking the PCB can be made smaller; components can be placed on the opposite side of the PCB directly beneath the MOSFET and PCB traces can be routed directly underneath the SSO10T package). There is also an opportunity for system cost savings (because thermal vias in the PCB can be avoided, the PCB may not need heavy copper, the PCB could be shrunk, and lower temperature grade components could be used).

The SSO10T package is JEDEC listed so a second source for top-side cooled 5x7mm² MOSFETs is possible. However Infineon's SSO10T does offer the largest exposed pad, which brings more efficient cooling. Infineon also has the advantage of offering the industry's best-in-class 80 V product today with a $R_{DS(on)}$ of 1.63 mΩ maximum to help customers minimize conduction losses.



Key benefits

- Enables excellent thermal management
- Thermal impedance improved 20% to 50%
- Thermal resistance improved 20% to 50%
- Helps reduce ECU volume or PCB area
- Helps reduce PCB cost (area, Cu, vias)
- Reduces PCB and system design effort
- Helps achieve highest power density
- Minimized conduction losses
- Superior switching performance
- Well-suited for parallel placement
- Quality and robustness for automotive
- Potential for second source supplier

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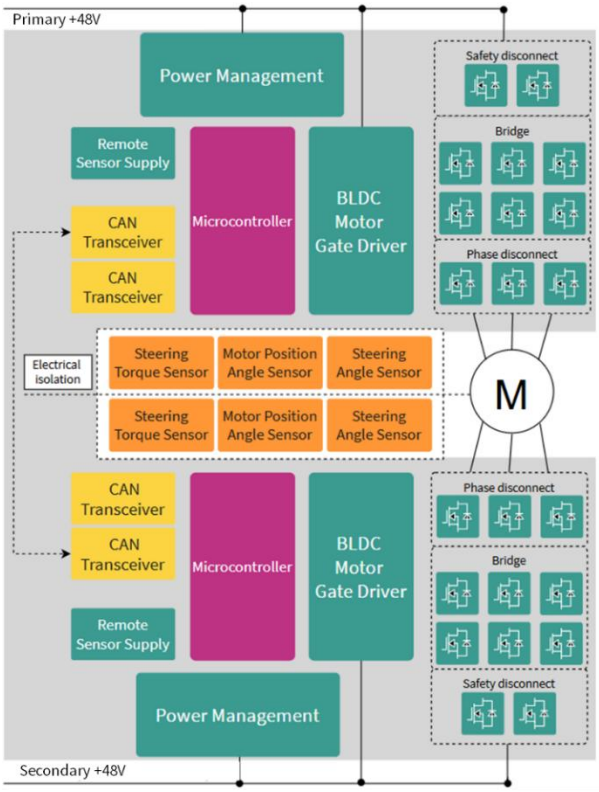
Example block diagram: Fail-operational 48 V electric power steering (EPS) system block diagram



OptiMOS™ 80 V SSO10T package MOSFETs are used in the Bridge, Phase Disconnect, and Safety Disconnect circuits.

Product Name	Orderable Part Number (OPN)	Ordering Code	V_{DS} [V]	$R_{DS(on)}$ max at 10V [mΩ]	Q_G typ. [nC]	I_D max. at 25°C [A]
IAUCN08S7N016T	IAUCN08S7N016TATMA1	SP005981920	80	1.63	83	175
IAUCN08S7N019T	IAUCN08S7N019TATMA1	SP005981924	80	1.94	68	175
IAUCN08S7N024T	IAUCN08S7N024TATMA1	SP005981928	80	2.44	54	165
IAUCN08S7N036T	IAUCN08S7N036TATMA1	SP006084578	80	3.60	36	129
IAUCN08S7N045T	IAUCN08S7N045TATMA1	SP005911511	80	4.54	27	99
IAUCN08S5N068T	IAUCN08S5N068TATMA1	SP005446270	80	6.9	25.4	80
IAUCN08S5L160T	IAUCN08S5L160TATMA1	SP006060865	80	11.0	15	42

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