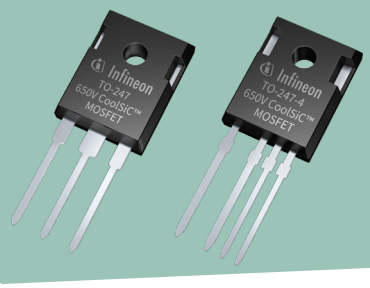


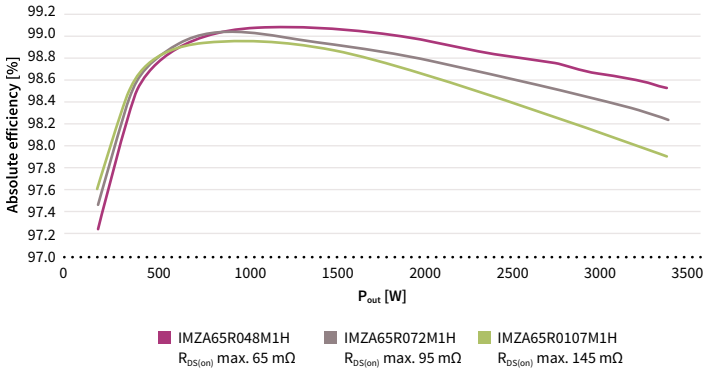
Product brief

CoolSiC™ MOSFETs 650 V

Delivering reliable and cost effective top performance

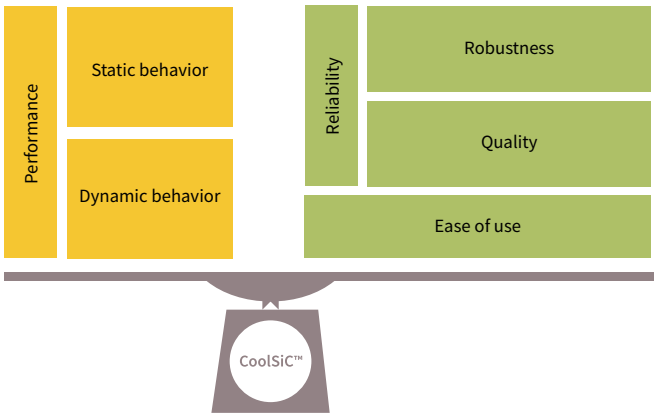
The CoolSiC™ MOSFETs 650 V are built on a state-of-the-art trench semiconductor process, optimized for the lowest losses in the application and the highest reliability in operation without any compromise. Infineon's CoolSiC™ MOSFET technology leverages the strong SiC material properties of silicon carbide, adding unique features which increase the device performance, robustness and ease of use. This enables engineers to easily design systems, which are more efficient, compact, reliable and cost effective.

Efficiency for CoolSiC™ MOSFETs 650 V in a 3.3 kW CCM totem pole PFC topology
V_{IN} = 230 V_{AC}; T_{amb} = 25°C



The CoolSiC™ MOSFET 650 V enables top efficiency topologies like the totem pole PFC, reaching 99%+ efficiency.

Leveraging SiC's material properties



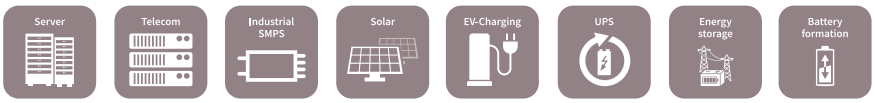
The CoolSiC™ MOSFETs 650 V leverage the silicon carbide material properties into a balanced and full-rounded product, combining high performance with reliability and ease of use.

Key features

- Low capacitances
- Optimized switching behavior at higher currents
- Commutation-robust fast-body diode with low reverse-recovery charge (Q_{rr})
- Superior gate-oxide reliability
- Excellent thermal behavior
- Increased avalanche capability
- Works with standard drivers

Key benefits

- High performance, high reliability and ease of use
- Allows high system efficiency
- Reduces system cost and complexity
- Enables small system size
- Works in topologies with continuous hard commutation
- Fit for high temperature and harsh operations
- Enables bidirectional topologies



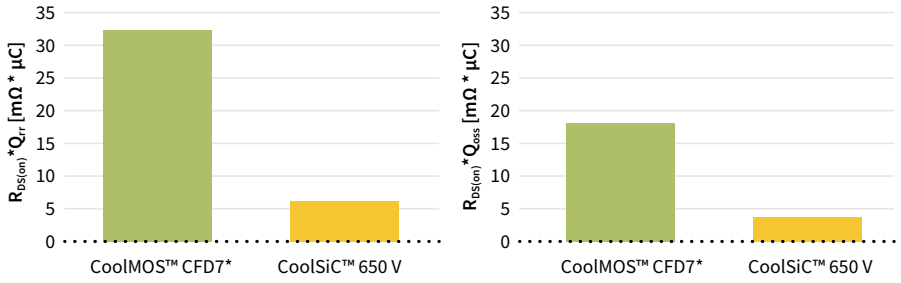
www.infineon.com/coolsic-mosfet-discretes

CoolSiC™ MOSFETs 650 V

Delivering reliable and cost effective top performance

The physical characteristics of silicon carbide, from wide bandgap through electron mobility to thermal conductivity, provide the basis to engineer high performance semiconductor products and solutions. Infineon's CoolSiC™ MOSFETs 650 V maximize the advantages of silicon carbide, offering outstanding performance while meeting contemporary power electronics design requirements, such as reliability and ease of use. As per performance, the CoolSiC™ MOSFETs 650 V show low $R_{DS(on)}$ dependency on temperature and low reduce switching losses. Superior gate-oxide reliability, excellent thermal behavior, advanced avalanche ruggedness and short circuit capabilities contribute to the robustness of the device. Additional unique features like, 0 V turn-off V_{GS}, wide V_{GS} range, and the use of silicon MOSFET drivers and driving schemas make CoolSiC™ MOSFETs 650 V easy to integrate and use.

Robustness for continuous hard commutation topologies



* Best CoolMOS™ SJ MOSFET reference in the market

The CoolSiC MOSFETs 650 V boast a low level of Q_{rr}, roughly 80% less of the best CoolMOS™ SJ MOSFET reference in the market, the CoolMOS™ CFD7. This ensures the robustness of the body diode, making the CoolSiC™ MOSFETs suitable for topologies with continuous hard commutation, such as the high-efficiency totem pole PFC, a topology that enables efficiency beyond 99%.
The CoolSiC™ MOSFETs 650 V enable simpler systems at lower cost, with small magnetics/heat sinks, compact system size, fewer components, meeting demanding efficiency and power density targets.

Product portfolio

TO-247-4	TO-247-3	$R_{DS(on)}$ typ. [mΩ]	$R_{DS(on)}$ max. [mΩ]
IMZA65R027M1H	IMW65R027M1H	27	34
IMZA65R048M1H	IMW65R048M1H	48	64
IMZA65R072M1H	IMW65R072M1H	72	94
IMZA65R107M1H	IMW65R107M1H	107	142

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