

MXPQ120A045Sx Series SiC MOSFETs

1200 V SiC N-Channel MOSFETs for High Voltage Automotive Applications


 AUTOMOTIVE
GRADE

ADVANTAGE



MaxSiC® 1200 V MOSFETs deliver robust and high efficiency solutions for automotive power management applications, enabling energy savings by combining excellent AC and dynamic characteristics.

KEY PRODUCT FEATURES

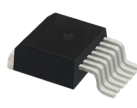
- ✓ AEC-Q101 qualified
- ✓ Three packaging options: TO-263-7 (D²PAK), TO-247-4L, and TO-247-3L
- ✓ Short circuit withstand time = 3 μ s
- ✓ Lower $R_{DS(ON)}$ than competing products at elevated temperatures
- ✓ T_J max. = 175 °C
- ✓ 100 % UIS tested



TO-247-3L



TO-247-4L



TO-263-7

MARKETS AND APPLICATIONS



MOBILITY

- Automotive on-board chargers
- Automotive DC/DC converters for EVs / HEVs
- Auxiliary drives
- Traction inverters
- EV charging

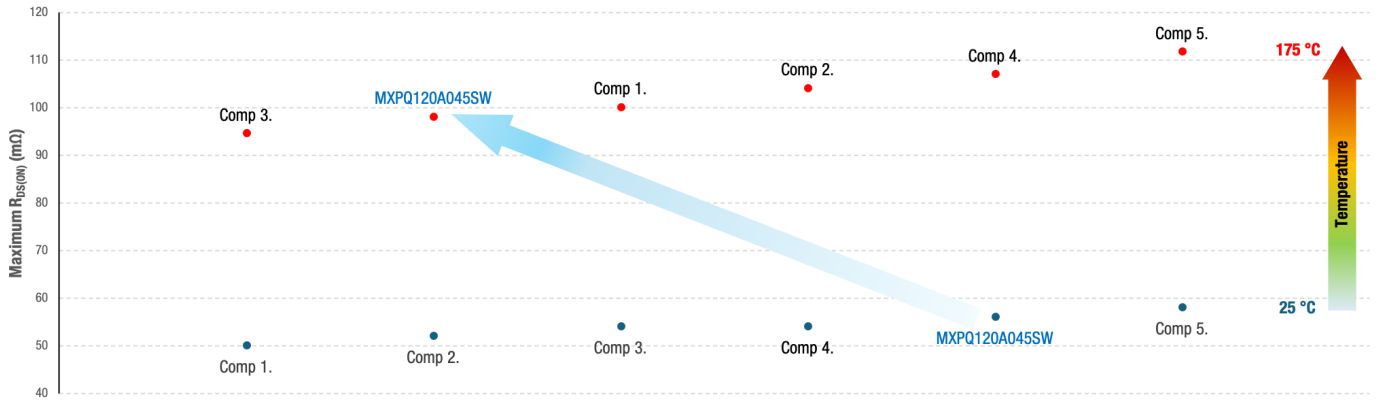
ADDITIONAL BENEFITS

- Very low E_{on} and E_{off} reduce switching losses, lower thermal management requirements, and enable higher switching frequencies
- Q_{gd} / Q_{gs} ratio < 1 helps prevent undesired Miller turn-on and shoot-through
- Very low Q_{rr} results in soft reverse recovery and minimizes oscillations and voltage overshoot
- Exhibit lower $R_{DS(ON)}$ at elevated temperatures due to reduced temperature thermal coefficient, resulting in lower conduction losses under real operating conditions

RESOURCES


[Product Page](#)

Maximum $R_{DS(ON)}$ vs. Junction Temperature



Ranking	Comp 1.	Comp 2.	Comp 3.	Comp 4.	MaxSiC	Comp 5.
$R_{DS(ON)}$ Max. (mΩ) at 25 °C	50	52	54	54	56	58
Ranking	Comp 3.	MaxSiC	Comp 1.	Comp 2.	Comp 4.	Comp 5.
$R_{DS(ON)}$ Max.* (mΩ) at 175 °C	95	98	100	104	107	112

The figure above shows that three of the four competing parts, although exhibiting lower $R_{DS(ON)}$ at 25 °C than the MXPQ120A04SW, demonstrate higher $R_{DS(ON)}$ at elevated temperatures that more accurately represent practical operating conditions. Consequently, using the MXPQ120A04SW enables lower conduction losses and improved efficiency as board temperature rises and the system operates at higher output levels.

*The maximum high temperature $R_{DS(on)}$ values are extrapolated from the 25 °C maximum specifications and the $R_{DS(on)}$ vs. Junction Temperature curves published in the datasheets.

Product Table

Part Number	Package	V_{DS} (V)	Typ. $R_{DS(ON)}$ at 25 °C (mΩ)	Q_g (nC)	C_{OSS} (pF)	Max. I_D (A)	Qualification
MXPQ120A045SE	D ² PAK-7L	1200	45	82	91	52	Automotive
MXPQ120A045SL	TO-247 4L	1200	45	83	96	51	Automotive
MXPQ120A045SW	TO-247 3L	1200	45	84	98	51	Automotive

All products are released to production.