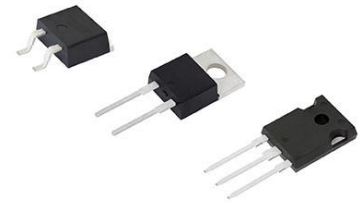


Increasing Efficiency and Reliability for Switching Power Designs, New 4 A to 40 A Gen 3 650 V SiC Schottky Diodes Feature an MPS Design, Offer Lower Forward Voltage Drop, Capacitive Charge, and Reverse Leakage Current

Product Benefits:

- Available with forward current from 4 A to 40 A
- Offered in TO-220AC 2L and TO-247AD 3L through-hole and D²PAK 2L (TO-263AB 2L) surface-mount packages
- Increase efficiency:
 - Low forward voltage drop down to 1.46 V
 - Low capacitive charge down to 12 nC
 - Low reverse leakage current down to 1.3 μ A
- Increased reliability:
 - Pass higher temperature reverse bias (HTRB) testing of 2000 hours and temperature cycling testing of 2000 thermal cycles
- High temperature operation to +175 °C



Market Applications:

- AC/DC PFC and DC/DC ultra high frequency output rectification in FBPS and LLC converters for energy generation and exploration applications

The News:

Vishay Intertechnology introduces 17 new Gen 3 650 V silicon carbide (SiC) Schottky diodes. Featuring a merged PIN Schottky (MPS) design, the Vishay Semiconductors devices combine high surge current robustness with low forward voltage drop, capacitive charge, and reverse leakage current to increase efficiency and reliability in switching power designs.

- The devices' MPS structure features a backside thinned via laser annealing technology, which reduces their forward voltage drop by 0.3 V compared to previous-generation solutions. In addition, their forward voltage drop times capacitive charge — a key figure of merit (FOM) for power efficiency — is 17 % lower
- The diodes' typical reverse leakage current is 30 % lower at room temperature and 70 % lower at high temperature than the closest competing solution. This reduces conduction losses to ensure high system efficiency during light loads and idling
- Unlike ultrafast diodes, the Gen 3 devices have virtually no recovery tail, which further improves efficiency
- Compared to silicon diodes with comparable breakdown voltage, the SiC devices offer higher thermal conductivity, lower reverse current, and shorter reverse recovery times
- The diodes' reverse recovery times are nearly temperature-independent, enabling operation at higher temperatures to +175 °C without the shifts in power efficiency caused by switching losses



The Key Specifications:

Part #	$I_{F(AV)}$ (A)	I_{FSM} (A)	V_F at I_F (V)	Q_C (nC)	Configuration	Package
VS-3C04ET07S2L-M3	4	29	1.5	12	Single	D ² PAK 2L
VS-3C06ET07S2L-M3	6	42	1.5	17	Single	D ² PAK 2L
VS-3C08ET07S2L-M3	8	54	1.5	22	Single	D ² PAK 2L
VS-3C10ET07S2L-M3	10	60	1.46	29	Single	D ² PAK 2L
VS-3C12ET07S2L-M3	12	83	1.5	34	Single	D ² PAK 2L
VS-3C16ET07S2L-M3	16	104	1.5	44	Single	D ² PAK 2L
VS-3C20ET07S2L-M3	20	110	1.5	53	Single	D ² PAK 2L
VS-3C04ET07T-M3	4	29	1.5	12	Single	TO-220AC 2L
VS-3C06ET07T-M3	6	42	1.5	17	Single	TO-220AC 2L
VS-3C08ET07T-M3	8	54	1.5	22	Single	TO-220AC 2L
VS-3C10ET07T-M3	10	60	1.46	29	Single	TO-220AC 2L
VS-3C12ET07T-M3	12	83	1.5	34	Single	TO-220AC 2L
VS-3C16ET07T-M3	16	104	1.5	44	Single	TO-220AC 2L
VS-3C20ET07T-M3	20	110	1.5	53	Single	TO-220AC 2L
VS-3C16CP07L-M3	2 x 8	54	1.5	22	Common cathode	TO-247AD 3L
VS-3C20CP07L-M3	2 x 10	60	1.46	29	Common cathode	TO-247AD 3L
VS-3C40CP07L-M3	2 x 20	110	1.5	53	Common cathode	TO-247AD 3L

Availability:

Samples and production quantities of the new SiC diodes are available now, with lead times of eight weeks.

Contact Information:

The Americas

Diodes-Americas@vishay.com

Europe

Diodes-Europe@vishay.com

Asia/Pacific

Diodes-Asia@vishay.com