1200V, 10A SILICON CARBIDE SCHOTTKY DIODE

FEATURES

▲ 1.2 kV Schottky Rectifier
▲ Maximum Operating Junction Temperature 175°C
▲ Zero Reverse and Forward Recovery
▲ Fast and Temperature-independent Switching
▲ Positive Temperature Coefficient on V_F

KEY PERFORMANCE

Parameter	Value
V_{RRM}	1200V
I_F	10A
Q_C	47nC

ADVANTAGES AND BENEFITS

▲ Extremely Low Standby and Switching Power Losses
▲ Higher Efficiency than when using Si Diodes
▲ High Frequency Operation
▲ Very Low Heat Sink Requirements
▲ Paralleling of Devices Without Thermal Runaway

BARE DIE INFORMATION

Upon request

APPLICATIONS

▲ Rectification, Boost and Free Wheeling
▲ Switching Mode Power Supplies (SMPS)
▲ Battery chargers (EV, OBC, computers)
▲ Power Factor Correction (PFC)
▲ Uninterruptible Power Supplies (UPS)
▲ High Voltage Multipliers
▲ Induction Heating

ORDERING INFORMATION

Part Number	Package	Marking
KE12DJ10B-A2	-	-

Other packages and packaging configurations possible upon request.

ABSOLUTE MAXIMUM RATINGS

T_C = 25 ˚C unless otherwise specified

Parameter	Symbol	Values	Unit	Note/Test Condition
DC Blocking Voltage	V_R	1200	V	
Repetitive Peak Reverse Voltage	V_{RRM}	1200	V	
Surge Peak Reverse Voltage	V_{RSM}	1200	V	
Continuous Forward Current	I_F	17 10	A	T_C=125°C T_C=155°C
Repetitive Peak Forward Surge Current	I_{FRM}	70 63	A	T_C=25°C, t_p=10ms half sinewave T_C=110°C, t_p=10ms half sinewave
Non-repetitive Peak Forward Surge Current	I_{FSM}	90 80	A	T_C=25°C, t_p=10ms half sinewave T_C=110°C, t_p=10ms half sinewave
Power Dissipation	P_{tot}	156 68	W	T_C=25°C T_C=110°C
i²t value	$\int i^2dt$	40.5 32	A^2s	T_C=25°C, t_p=10ms half sinewave T_C=110°C, t_p=10ms half sinewave
Operating Temperature Range	T_J	-55 to +175	°C	
Storage Temperature Range	T_{STG}	-55 to +175	°C	

Caution: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur, and reliability may be affected.

ELECTRICAL CHARACTERISTICS

Temperature range: -55°C<T_j<175°C, unless otherwise stated.

Parameter	Symbol	Value		Unit	Note/Test Condition
		Typ	Max		
Forward Voltage	V_F	1.5 2.1	1.8	V	I_F=10A, T_J=25°C I_F=10A, T_J=175°C
Reverse Current	I_R	1 20	100 400	μA	V_R=1200V, T_J=25°C V_R=1200V, T_J=175°C
Total Capacitive Charge	Q_C	47		nC	V_R=800V, T_J=25°C, $Q_C(V_R) = \int_0^{V_R} C(V)dV$
Total Capacitance	C	660 45 32		pF	V_R=0.1V, T_J=25°C, f=1MHz V_R=400V, T_J=25°C, f=1MHz V_R=800V, T_J=25°C, f=1MHz
Capacitance Stored Energy	E_C	10		μJ	V_R=800V, T_J=25°C

TYPICAL PERFORMANCE

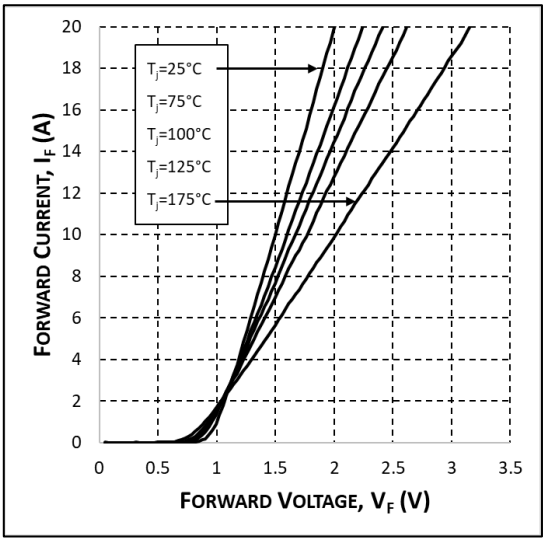

Fig 1. Typical Forward I-V characteristics

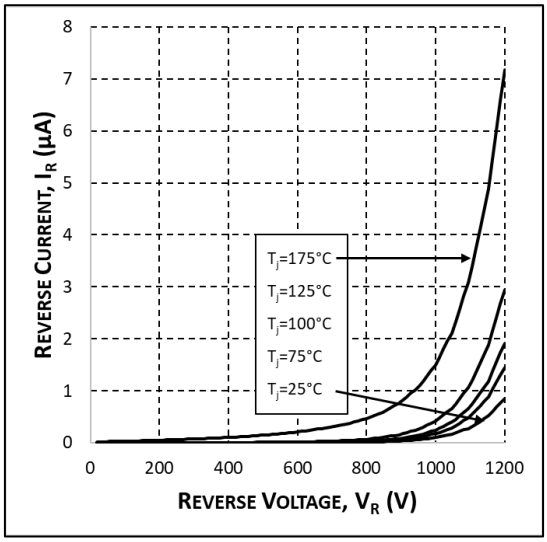

Fig 2. Typical Reverse I-V characteristics

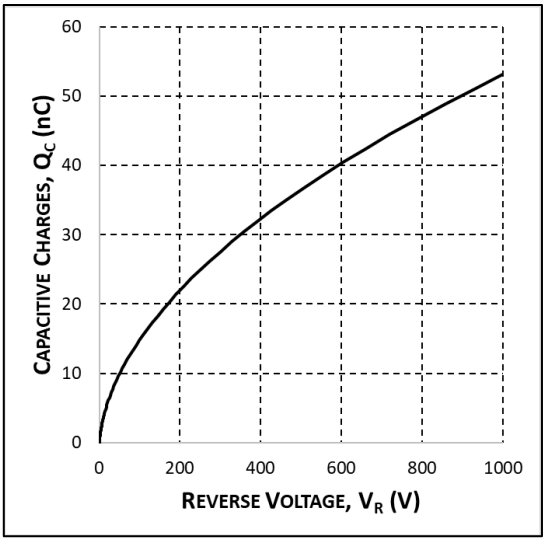

Fig 3. Total Capacitive Charges vs. Reverse Voltage

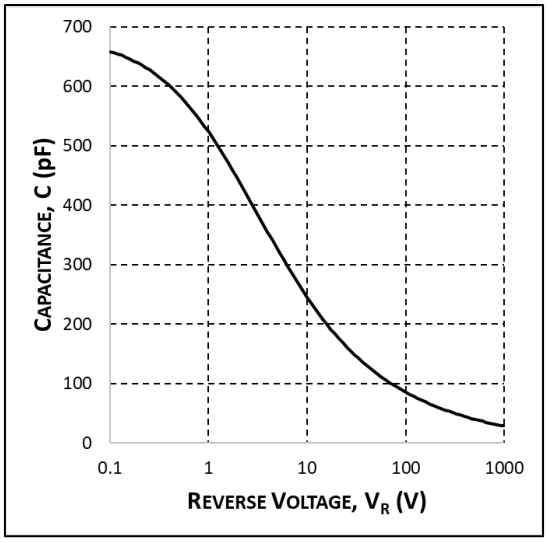

Fig 4. Capacitance vs. Reverse Voltage

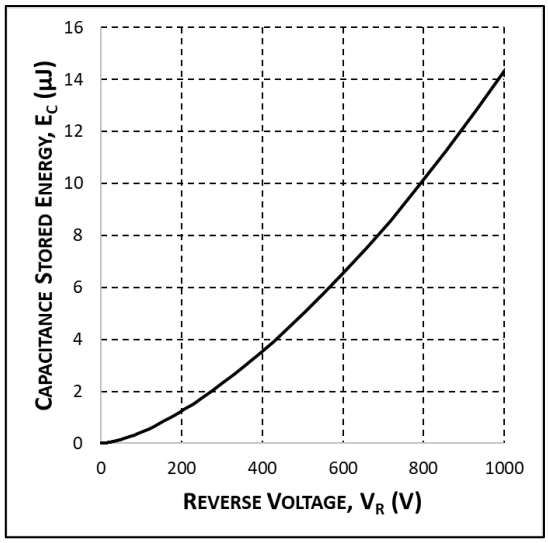

Fig 5. Typical Capacitance Stored Energy vs. Reverse Voltage

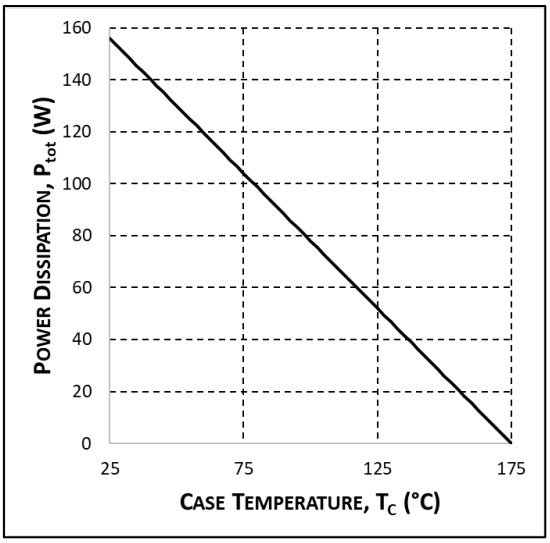

Fig 6. Power Derating

REVISION HISTORY

Revision	Date	Description
1A	2020-07-03	First issue
1B	2020-08-21	Correct table “Electrical characteristics”, page 2, 3rd line (Reverse Current), 2nd test condition temperature T_J=25°C to T_J=175°C

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