Silicon Carbide Schottky Diode

Features

ð Positive temperature coefficient
ð Temperature-independent switching
ð Maximum working temperature at 175 ÁC
ð Unipolar devices and zero reverse recovery current
ð Zero forward recovery current
ð Essentially no switching losses
ð Reduction of heat sink requirements
ð AEC-Q101 qualified
ð High-frequency operation
ð Reduction of EMI

Typical Applications

Typical applications are in power factor correction(PFC), solar inverter, uninterruptible power supply, motor drives, photovoltaic inverter, electric car and charger.

Mechanical Data

Ð **Package**: TO-247AB
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
Ð **Terminals**: Tin plated leads
Ð **Polarity**: As marked

Maximum Ratings (T_C=25 Unless otherwise specified)

PARAMTETER	SYMBOL	UNIT	VALUE
Device marking code			D112040NCTQG3
Reverse voltage (Repetitive peak) @ T_j=25ÁC	V_{RRM}	V	1200
Reverse voltage (Surge peak) @ T_j=25ÁC	V_{RSM}	V	1200
Reverse voltage (DC) @ T_j=25ÁC	V_{DC}	V	1200
Continuous forward current @ T_C=25ÁC	I_F	A	43/86
Continuous forward current @ T_C=135ÁC			20/40 =11ÁC41

i^2t Value@ T_C=25ÁC ,tp=10ms	i^2dt	A^2S	128(1)
Operating junction and Storage temperature range	T_j ,T_{stg}	ÁC	-55 to +175

(1) Per Leg, (2)

yElectrical Characteristics (Per Leg)

PARAMTETER	SYMBOL	UNIT	TEST CONDITIONS	Typ.	Max.
Forward voltage drop	V_F	V	I_F=20A, T_j=25ÁC	1.45	1.55
			I_F=20A, T_j=175ÁC	2.1	-
Reverse leakage current	I_R	εA	V_R=1200V, T_j=25ÁC	3	20
			V_R=1200V, T_j=175ÁC	19	-
Total capacitive charge	Q_C	nC	V_R=800V, T_j=25ÁC , Q_C=∫$_0^{VR}$C(V)dV	91	-
Total capacitance	C	pF	V_R=0V, f=1MHZ	1280	-
			V_R=400V, f=1MHZ	87	-
			V_R=800V, f=1MHZ	64	-
Capacitance Stored Energy	E_C	εJ	V_R=800V	23	-

yThermal Characteristics (Ta=25 Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Thermal resistance	R_{dJ-C}	ÁC /W	0.91(1) 0.46(2)

(1) Per Leg, (2) Per Device

yTypical Characteristics (Per Leg)

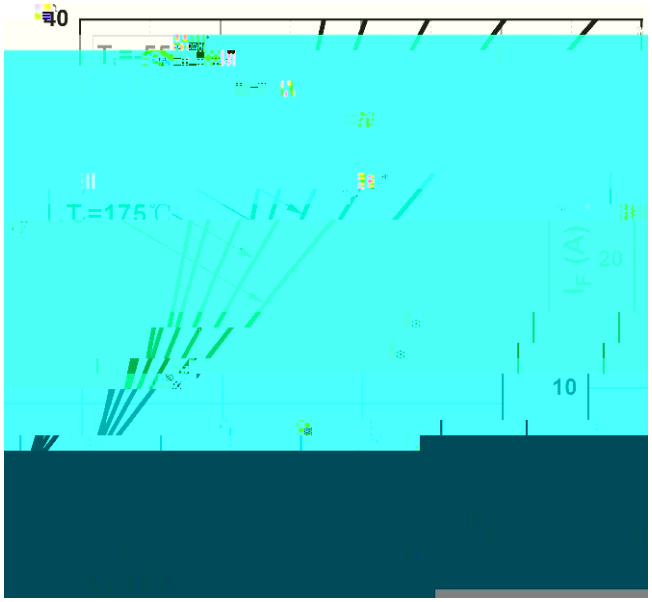

Figure 1. Forward Characteristics

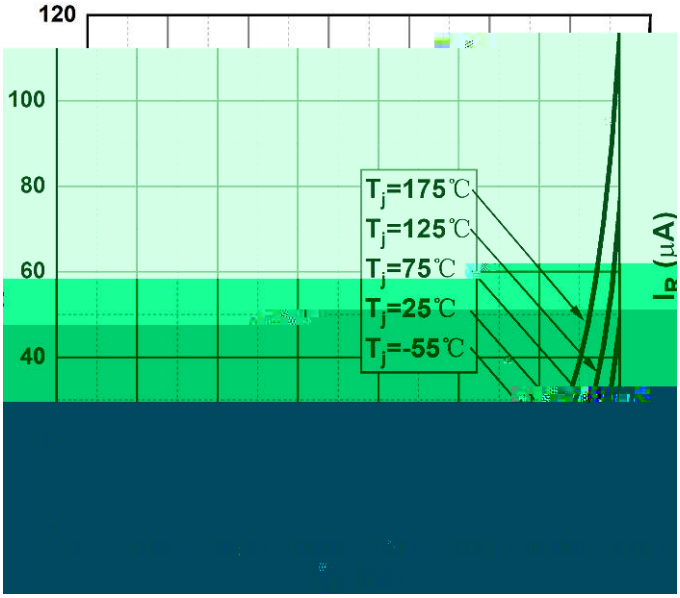

Figure 2. Reverse Characteristics

Figure 3. Capacitance vs. Reverse Voltage

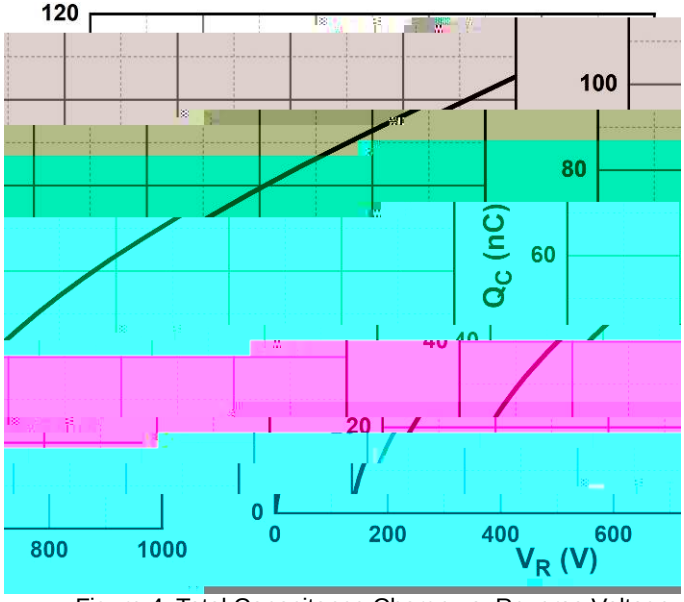

Figure 4. Total Capacitance Charge vs. Reverse Voltage

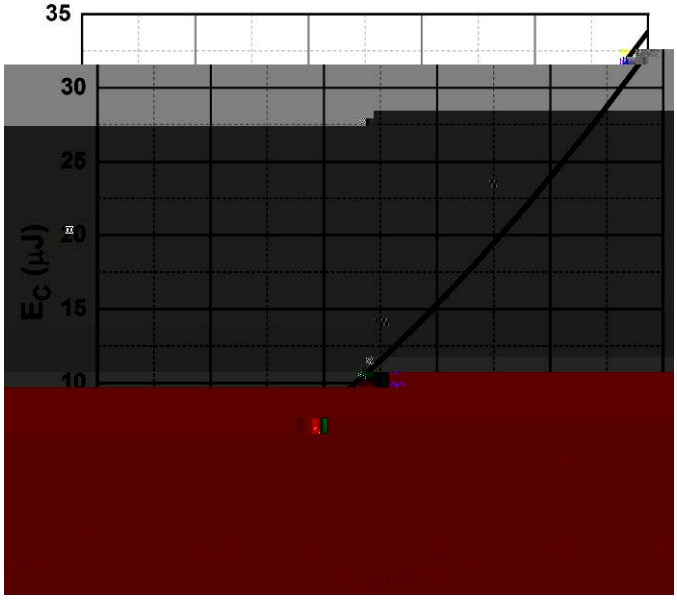

Figure 5. Capacitance Stored Energy

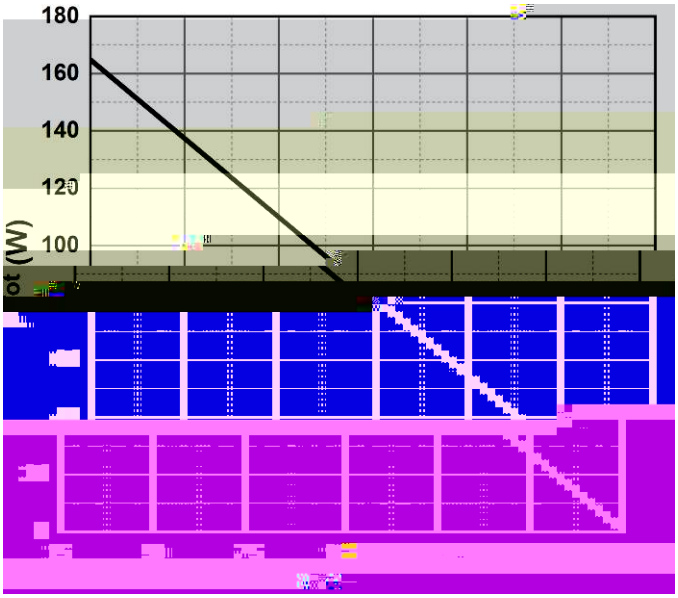

Figure 6. Power Derating

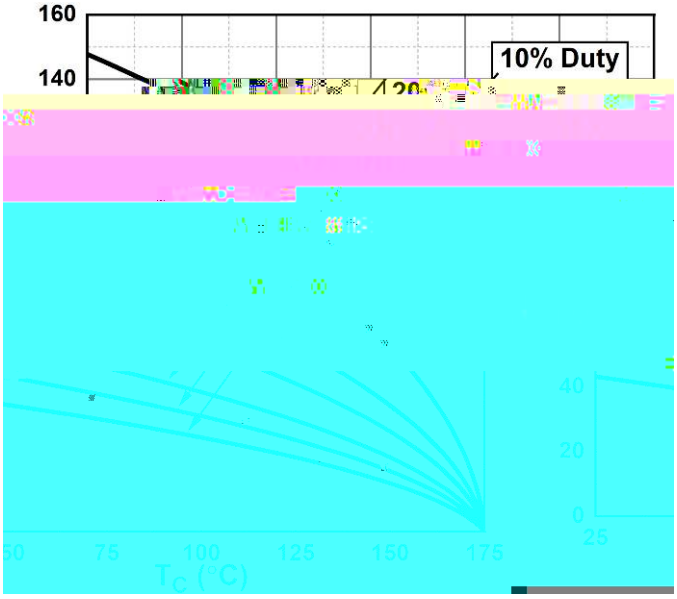

Figure 7. Current Derating

yTypical Characteristics (Device)

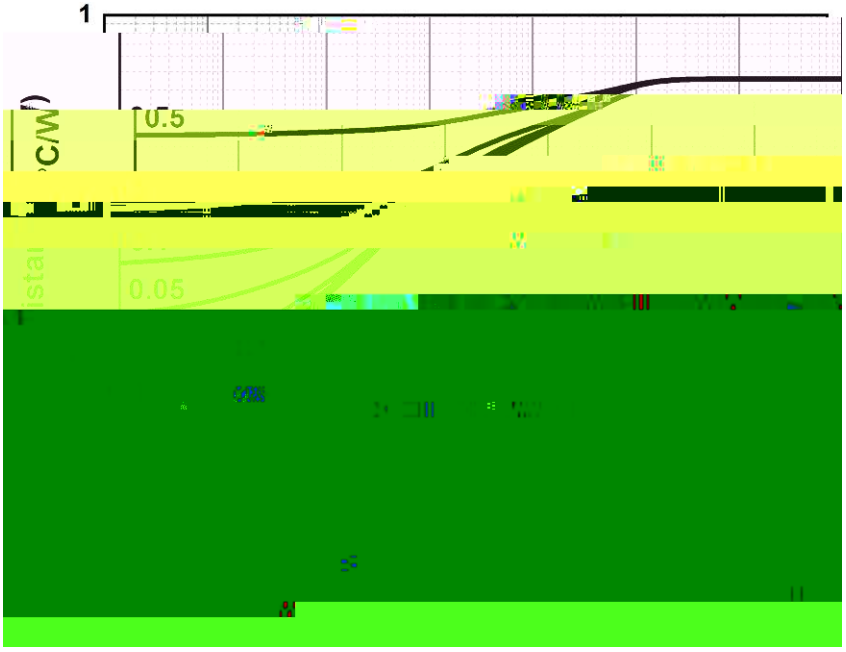

Figure 8. Transient Thermal Impedance

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