

1200V Silicon Carbide Schottky Diode

DESCRIPTION :

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- Excellent Surge Current Capability
- Positive Temperature Coefficient on V_F
- RoHS Compliant

V_{RRM}	1200V
I_F	50A (Tc=140°C)
Q_C	267nC

TYPICAL APPLICATIONS :

- SMPS, PFC
- UPS, EV/HEV
- Motor drives



TO-247AC

MAXIMUM RATINGS (at $T_J = 25^\circ\text{C}$, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	1200	V
Continuous Forward Current	Tc=25°C Tc=140°C	I_F	125 50	A
Non-Repetitive Forward Surge Current	Tc=25°C, t _p =10ms, Half sine pulse	I_{FSM}	450	A
i ² t value	Tc=25°C, t _p =10ms, Half sine pulse	$\int i^2 dt$	1012	A ² S
Power dissipation	Tc=25°C Tc=110°C	P_{tot}	454 196	W
Operation Junction temperature		T_J	-55~+175	°C
Storage temperature		T_{STG}	-55~+175	°C

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction - case		$R_{th(j-c)}$	0.33	°C/W

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	1200			V
Forward Voltage IF = 50A, $T_J = 25^\circ\text{C}$ IF = 50A, $T_J = 175^\circ\text{C}$	V_F		1.43 1.92	1.71 2.5	V
Reverse Current VR = 1200V, $T_J = 25^\circ\text{C}$ VR = 1200V, $T_J = 175^\circ\text{C}$	I_R		1.5 10	200 400	μA
Total Capacitive Charge VR = 800V	Q_C		267		nC
Total capacitance VR = 1V, f = 1MHz VR = 400V, f = 1MHz VR = 800V, f = 1MHz	C		2696 252 192		pF
Capacitance Stored Energy VR = 800 V	E_C		77		μJ

Typical Performance

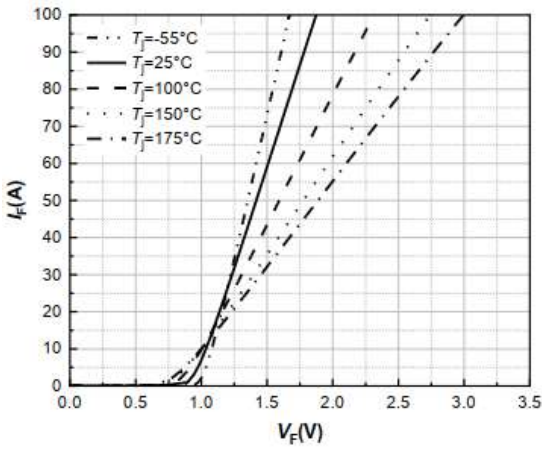


Figure 1. Forward characteristics

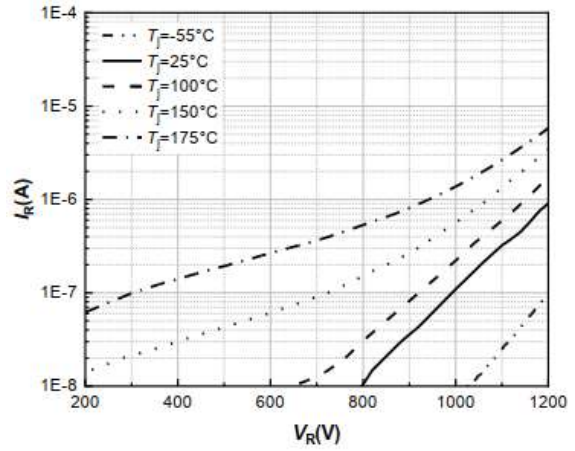


Figure 2. Reverse characteristics

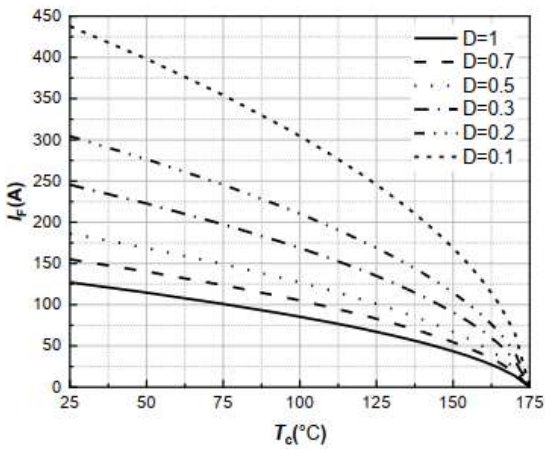


Figure 3. Current Derating

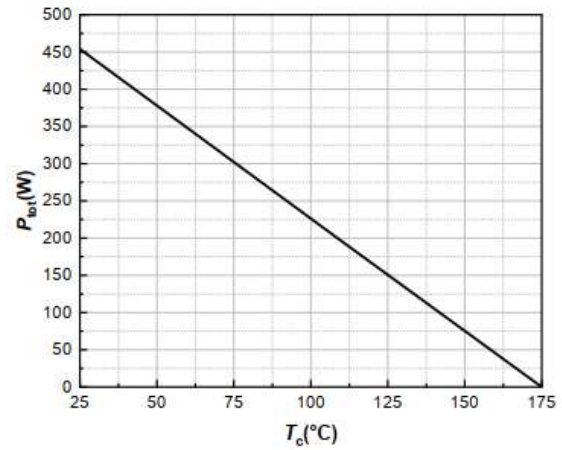


Figure 4. Power Dissipation

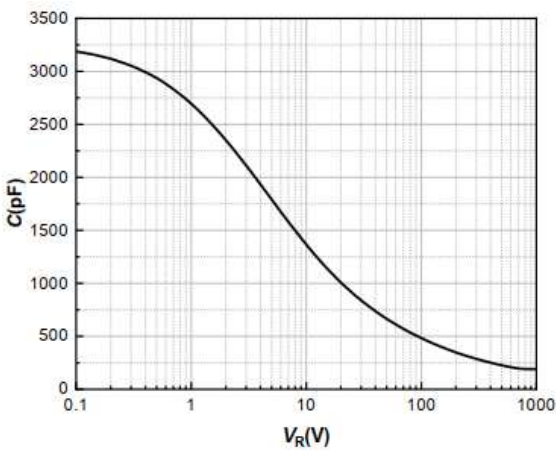


Figure 5. Capacitance vs. Reverse Voltage

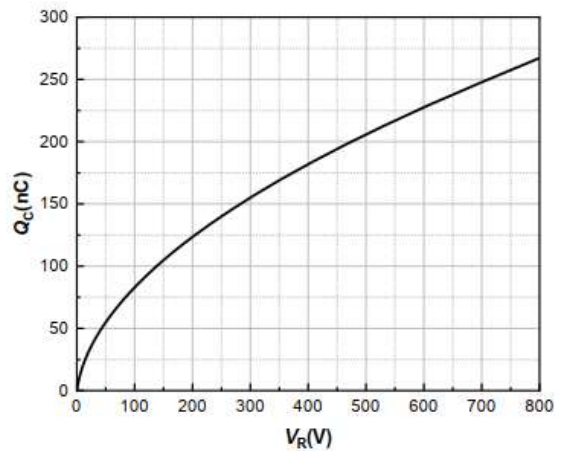


Figure 6. Capacitance Charge vs. Reverse Voltage

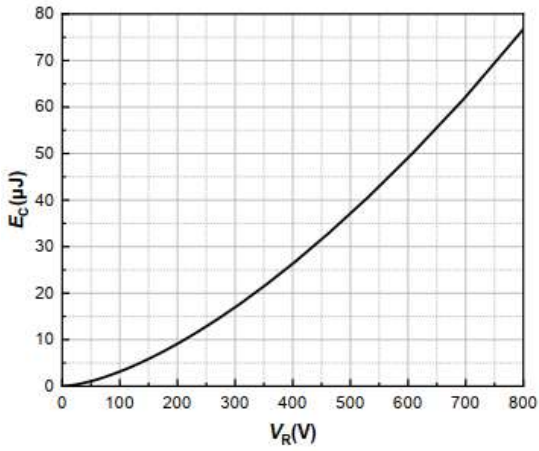


Figure 7. Capacitance Stored Energy

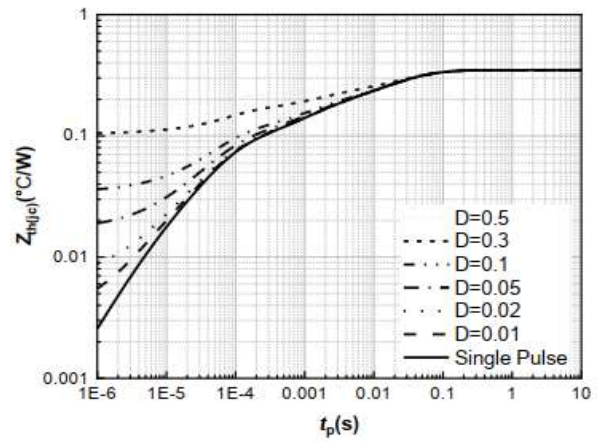
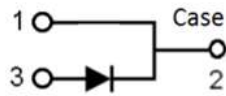
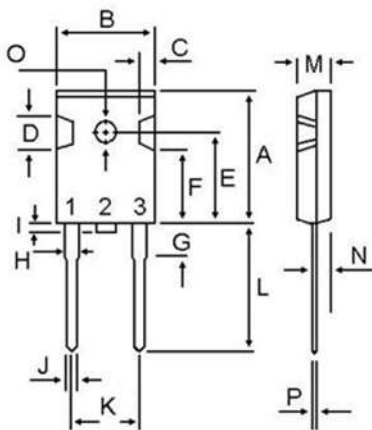


Figure 8. Transient Thermal Impedance

- Circuit diagram



- TO-247AC Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	20.80	21.80
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.50	15.50
F	11.20	13.20
G	3.75	4.35
H	1.90	2.30
I	---	1.25
J	1.00	1.40
K	10.52	11.32
L	19.50	20.50
M	4.68	5.36
N	2.30	2.60
O	3.45	3.85
P	0.48	0.72

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