

1200V Silicon Carbide Schottky Diode

DESCRIPTION :

- Negligible reverse recovery
- High Speed Switching
- Positive temperature Coefficient
- Temperature Independent Switching
- RoHS Compliant

V_{RRM}	1200V
I_F	40A (TC=152°C)
Q_C	213nC

TYPICAL APPLICATIONS :

- Switch mode power supplies
- Solar inverters
- Data Center
- Uninterruptible power supplies (UPS)



TO-247AC

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

Characteristic	Condition	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	1200	V
Continuous Forward Current	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=152^\circ\text{C}$	I_F	113 55 40	A
Non-Repetitive Forward Surge Current	$T_C=25^\circ\text{C}$, $t_P=10\text{ms}$, Half sine pulse $T_C=110^\circ\text{C}$, $t_P=10\text{ms}$, Half sine pulse	I_{FSM}	249 207	A
Repetitive Peak Forward Surge Current	$T_C=25^\circ\text{C}$, $t_P=10\text{ms}$, Half sine pulse	I_{FRM}	208	A
i^2t value	$T_C=25^\circ\text{C}$, $t_P=10\text{ms}$ $T_C=110^\circ\text{C}$, $t_P=10\text{ms}$	$\int i^2 dt$	310 214	A^2S
Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$ $T_C=150^\circ\text{C}$	P_{tot}	595 257 99	W
Operation Junction temperature		T_J	-55~+175	$^\circ\text{C}$
Storage temperature		T_{STG}	-55~+175	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Typical	Unit
Thermal resistance, junction - case		$R_{th(j-c)}$	0.252	$^{\circ}\text{C}/\text{W}$

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	1200			V
Forward Voltage IF = 20A IF = 40A, $T_c = 25^{\circ}\text{C}$ IF = 40A, $T_c = 175^{\circ}\text{C}$	V_F		1.23 1.50 2.22	1.7	V
Reverse Current VR = 1200V, $T_c = 25^{\circ}\text{C}$ VR = 1200V, $T_c = 175^{\circ}\text{C}$	I_R		9 37	150	μA
Total Capacitive Charge VR = 800V	Q_C		213		nC
Total capacitance VR = 1V, f = 1MHz VR = 400V, f = 1MHz VR = 800V, f = 1MHz	C		2318 194 156		pF
Capacitance Stored Energy VR = 800 V	E_C		64		μJ

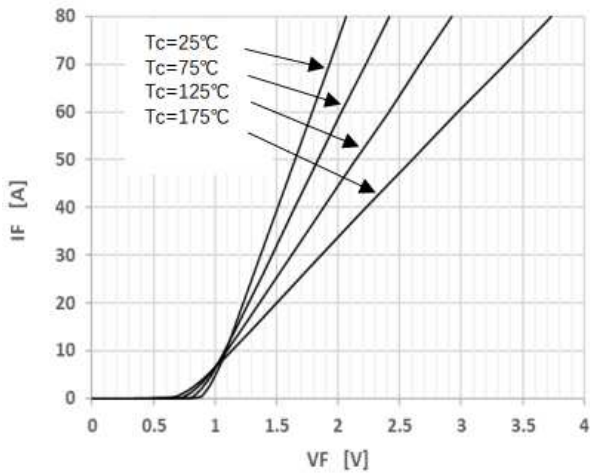


Figure 1. Forward characteristics

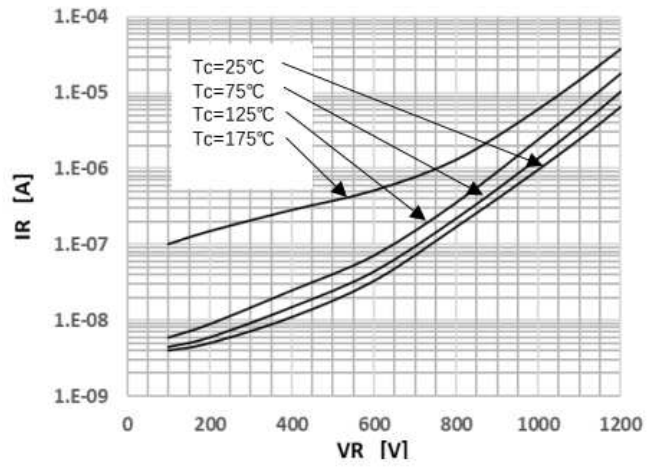


Figure 2. Reverse characteristics

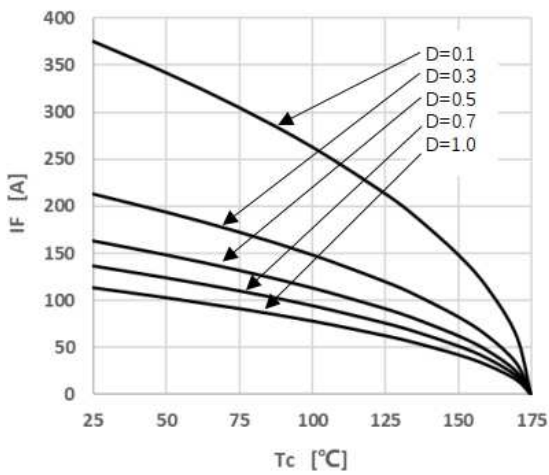


Figure 3. Peak Forward Current Derating

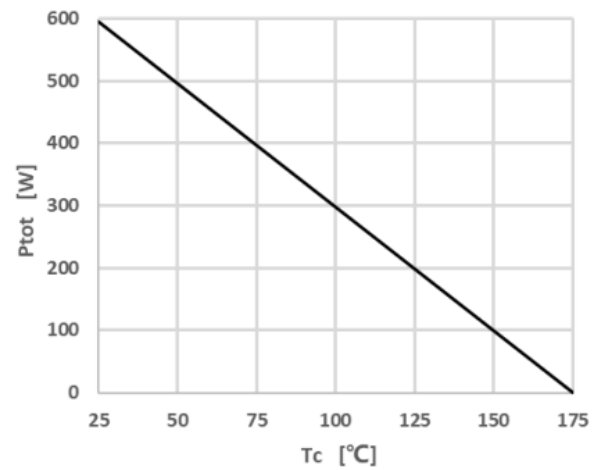


Figure 4. Power Dissipation

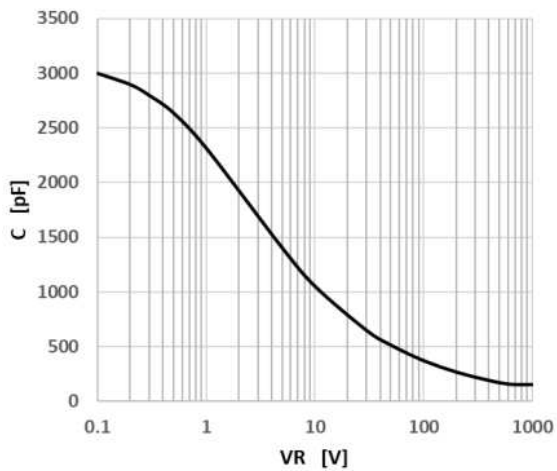


Figure 5. Capacitance vs. Reverse Voltage

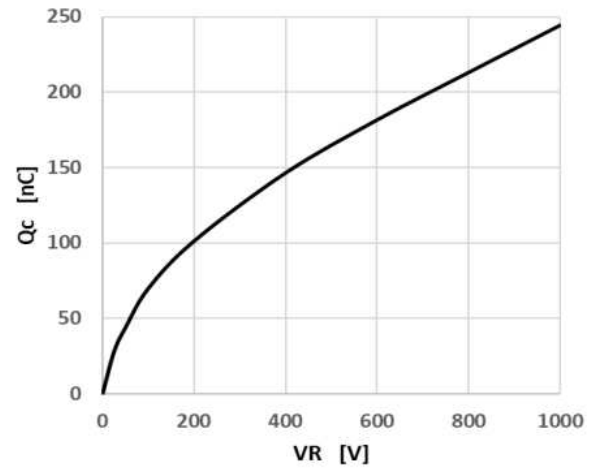


Figure 6. Capacitance Charge vs. Reverse Voltage

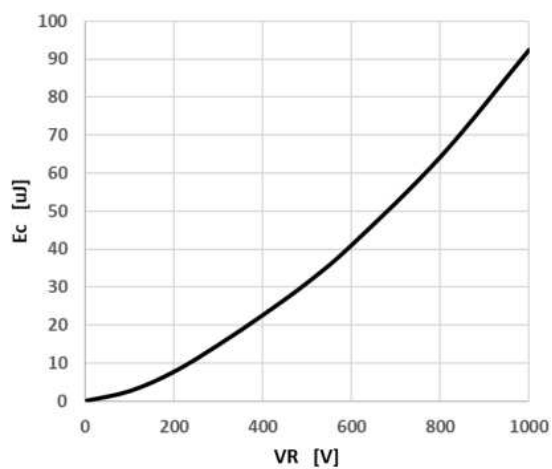


Figure 7. Capacitance Stored Energy

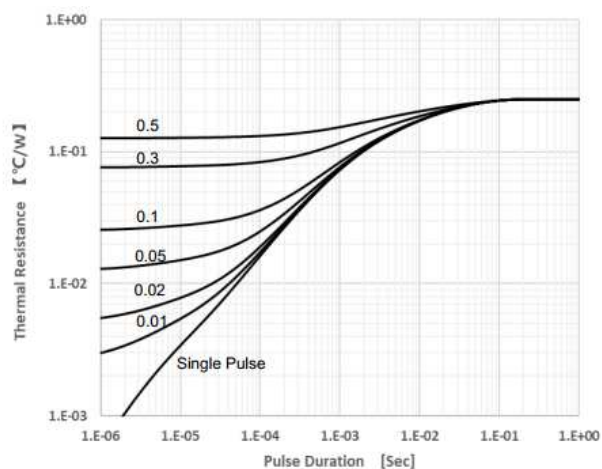
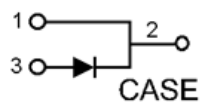
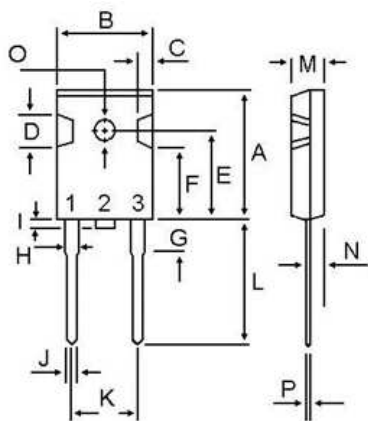


Figure 8. Transient Thermal Impedance

- Circuit diagram



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



DIM	MILLIMETERS	
	MIN	MAX
A	20.63	22.38
B	15.38	16.20
C	1.90	2.70
D	5.10	6.10
E	14.81	15.22
F	11.72	12.84
G	3.75	4.35
H	1.82	2.46
I	---	1.25
J	0.89	1.53
K	10.52	11.32
L	18.50	21.50
M	4.68	5.36
N	2.40	2.80
O	3.25	3.65
P	0.55	0.70

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