

650V Silicon Carbide Schottky Diode

DESCRIPTION :

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

V_{RRM}	650V
I_F	10A (TC=154°C)
Q_C	30nC

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}	650	V
Continuous Forward Current	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=154^\circ\text{C}$	I_F	32 15 10	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}	92 88	A
Repetitive Peak Forward Surge Current	$T_C=25^\circ\text{C}$, $t_P=10\text{ms}$, Half sine pulse	I_{FRM}	85	A
i^2t value	$T_C=25^\circ\text{C}$, $t_P=10\text{ms}$ $T_C=110^\circ\text{C}$, $t_P=10\text{ms}$	$\int i^2 dt$	40 38	A^2S
Power dissipation	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$ $T_C=150^\circ\text{C}$	P_{tot}	130 56 21	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		$R_{th(j-c)}$	1.15	$^{\circ}\text{C}/\text{W}$

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	V_{DC}	650			V
Forward Voltage IF = 5A IF = 10A, $T_c = 25^{\circ}\text{C}$ IF = 10A, $T_c = 175^{\circ}\text{C}$	V_F		1.17 1.37 1.66	1.6	V
Reverse Current VR = 650V, $T_c = 25^{\circ}\text{C}$ VR = 650V, $T_c = 175^{\circ}\text{C}$	I_R		5 12	60	μA
Total Capacitive Charge VR = 400V	Q_C		30		nC
Total capacitance VR = 1V, f = 1MHz VR = 200V, f = 1MHz VR = 400V, f = 1MHz	C		455 57 56		pF
Capacitance Stored Energy VR = 400 V	E_C		4.9		μJ

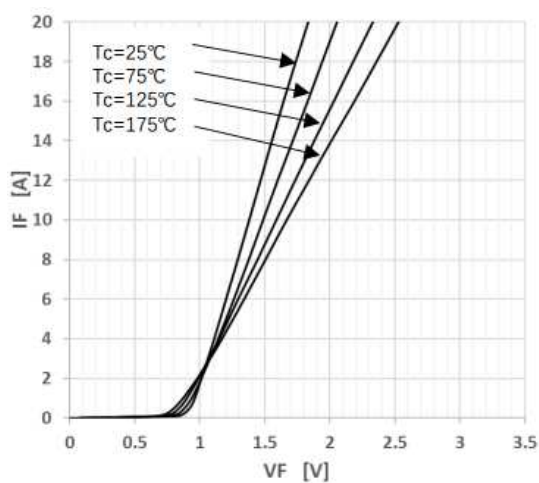


Figure 1. Forward characteristics

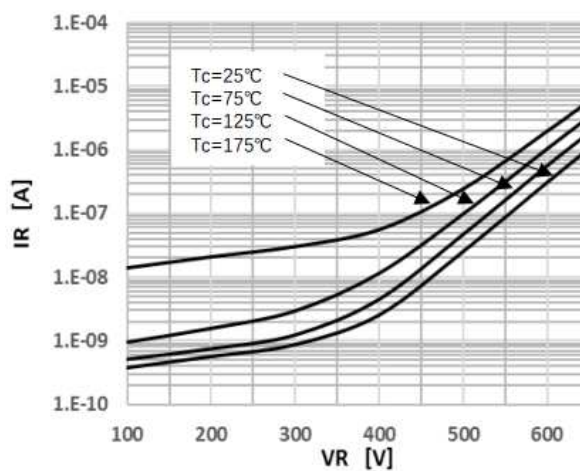


Figure 2. Reverse characteristics

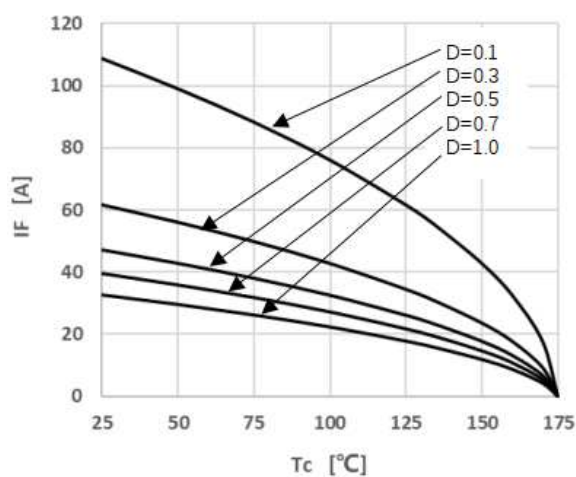


Figure 3. Peak Forward Current Derating

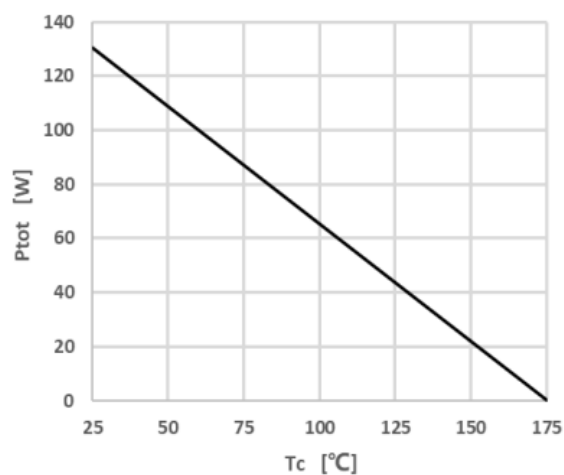


Figure 4. Power Dissipation

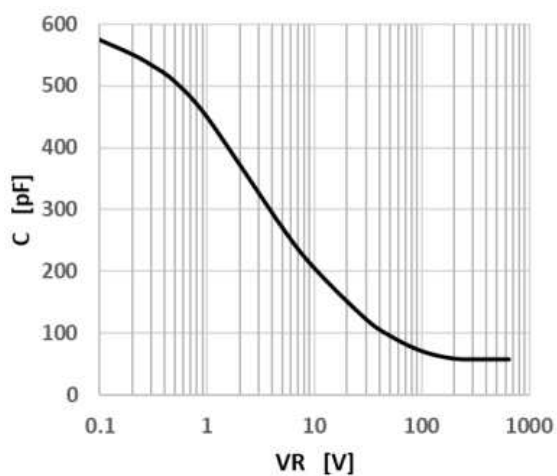


Figure 5. Capacitance vs. Reverse Voltage

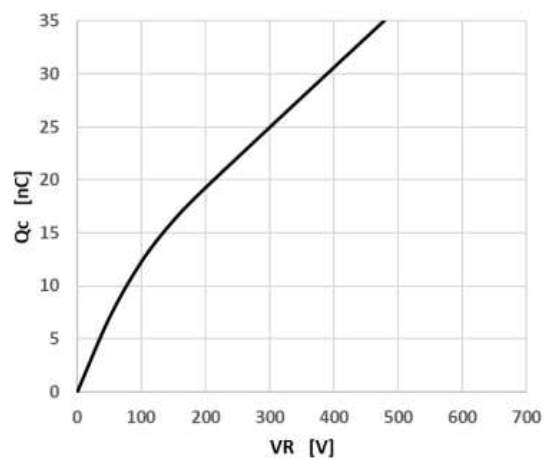


Figure 6. Capacitance Charge vs. Reverse Voltage

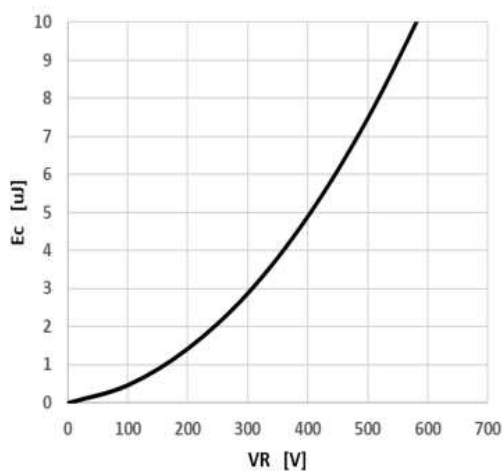


Figure 7. Capacitance Stored Energy

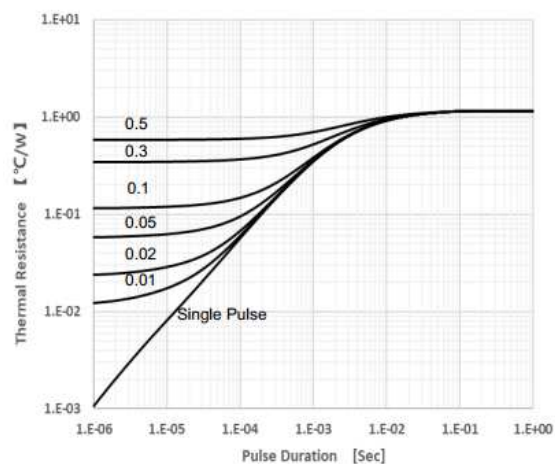
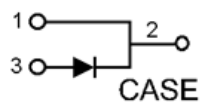
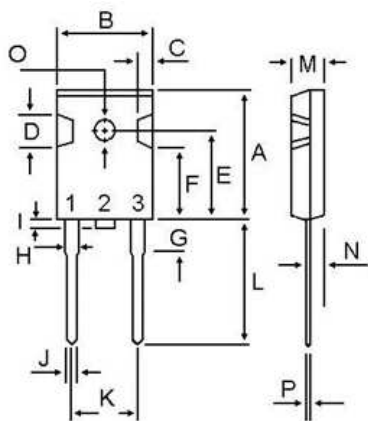


Figure 8. Transient Thermal Impedance

- 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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