

## 1200V Silicon Carbide Schottky Diode

### DESCRIPTION :

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation
- RoHS Compliant

$V_{RRM}$	1200V
$I_F$	50A ( $T_c=152^\circ\text{C}$ )
$Q_C$	268nC

### TYPICAL APPLICATIONS :

- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction



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
Surge Peak Reverse Voltage		$V_{RSM}$	1200	V
Continuous Forward Current	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=152^\circ\text{C}$	$I_F$	146.3 69.6 50	A
Non-Repetitive Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half sine pulse	$I_{FSM}$	350	A
Repetitive Peak Forward Surge Current	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half sine pulse	$I_{FRM}$	175	A
$i^2t$ value	$T_c=25^\circ\text{C}$ , $t_p=10\text{ms}$ , Half sine pulse	$\int i^2 dt$	612.5	$\text{A}^2\text{S}$
Power dissipation	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	$P_{tot}$	652 283	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		$R_{th(j-c)}$	0.23	$^{\circ}C/W$

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

Characteristic	Symbol	Min.	Typ.	Max.	Unit
DC Blocking Voltage	$V_{DC}$	1200			V
Forward Voltage IF = 50A, $T_J = 25^{\circ}C$ IF = 50A, $T_J = 175^{\circ}C$	$V_F$		1.43 2.00	1.7 2.5	V
Reverse Current VR = 1200V, $T_J = 25^{\circ}C$ VR = 1200V, $T_J = 175^{\circ}C$	$I_R$		35 132	100 600	$\mu A$
Total Capacitive Charge VR = 800V	$Q_C$		268		nC
Total capacitance VR = 0V, f = 1MHz VR = 400V, f = 1MHz VR = 800V, f = 1MHz	C		4072 254 205		pF
Capacitance Stored Energy VR = 800 V	$E_C$		138		$\mu J$

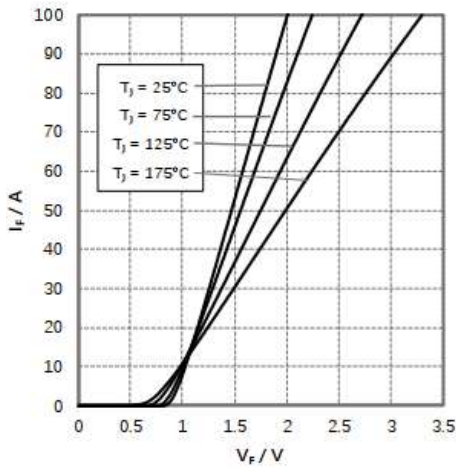


Figure 1. Forward characteristics

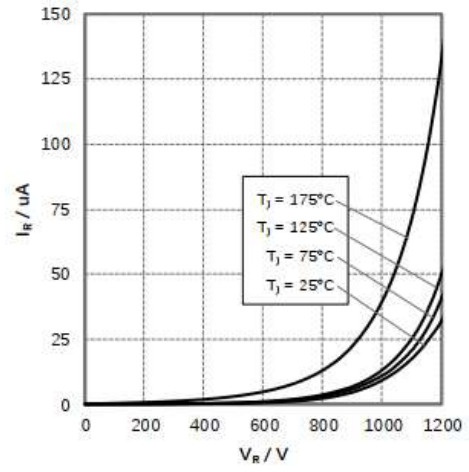


Figure 2. Reverse characteristics

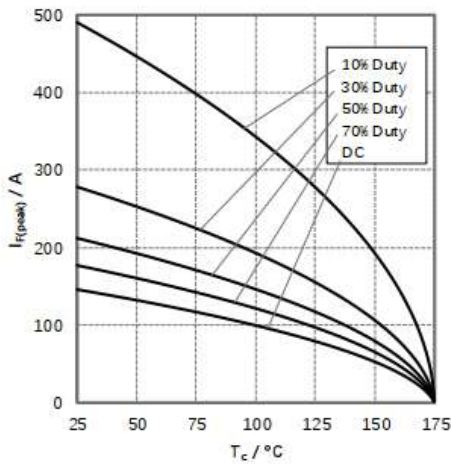


Figure 3. Current Derating

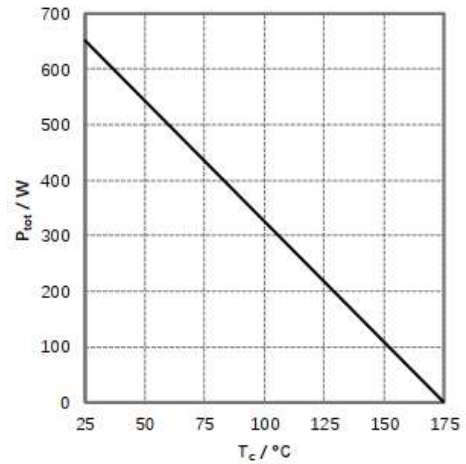


Figure 4. Power Dissipation

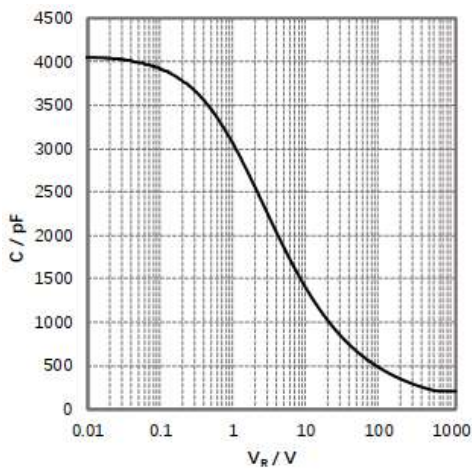


Figure 5. Capacitance vs. Reverse Voltage

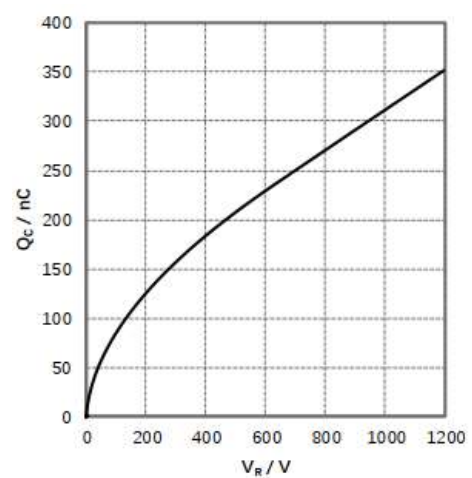


Figure 6. Capacitance Charge vs. Reverse Voltage

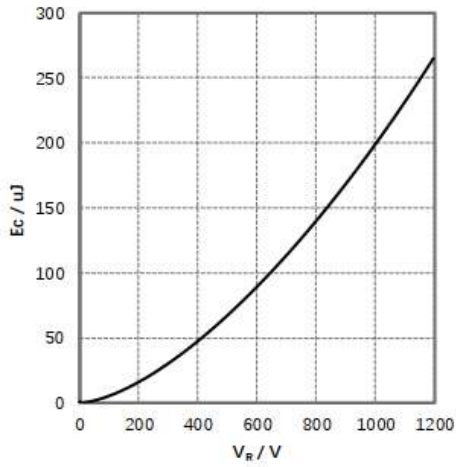


Figure 7. Capacitance Stored Energy

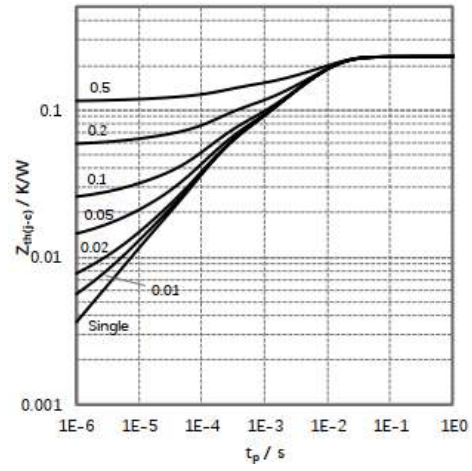
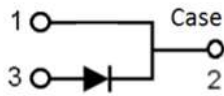
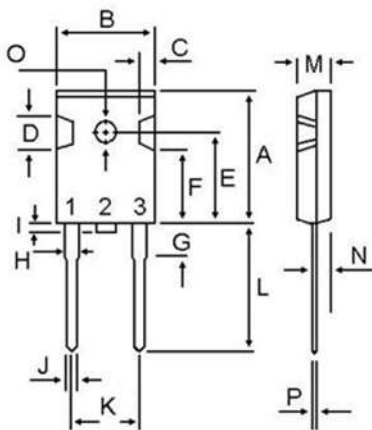


Figure 8. Transient Thermal Impedance

- 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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