

1200V SiC Diode Power Module



V_{DC}	1200V
I_F	480A
$T_{J,max}$	150°C

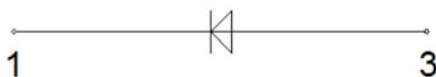
Applications

- Welding equipment
- Uninterruptible power supply (UPS)
- High frequency power supply
- Induction heating
- High speed rectifiers

Features

- SiC Schottky Diode
 - Zero reverse recovery
 - Zero forward recovery
 - Temperature independent switching behavior
 - Positive temperature coefficient on V_F
- Very low stray inductance
- Low forward voltage
- Isolated package (F2)
- Low noise switching

Circuit



Absolute Maximum Ratings ($T_J=25^\circ\text{C}$ unless otherwise specified, per leg)

Parameter	Symbol	Test Conditions	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}	$T_J=25^\circ\text{C}$	1200	V
DC Blocking Voltage	V_{DC}	$T_J=25^\circ\text{C}$	1200	V
Continuous Forward Current	I_F	$T_C=25^\circ\text{C}, T_J=150^\circ\text{C}$	711	A
		$T_C=85^\circ\text{C}, T_J=150^\circ\text{C}$	480	
		$T_C=135^\circ\text{C}, T_J=150^\circ\text{C}$	175	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^\circ\text{C}, T_P=10\text{ms}, \text{Half Sine Wave}$	3300	A
I^2t Value	$\int I^2 dt$	$T_C=25^\circ\text{C}, T_P=10\text{ms}$	54450	A^2s
Power Dissipation	P_{Tot}	$T_C=25^\circ\text{C}$	1869	W
Junction Temperature	T_J		-40...150	$^\circ\text{C}$
Storage Temperature	T_{STG}		-40...125	$^\circ\text{C}$

Electrical Characteristics (T_J=25°C unless otherwise specified, per leg)

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Reverse Current	I _R	V _R =1200V, T _J =25°C	--	59	200	μA
		V _R =1200V, T _J =150°C	--	233	--	
Forward Voltage	V _F	I _F =480A, T _J =25°C	--	1.63	1.8	V
		I _F =480A, T _J =150°C	--	2.04	--	
Total Capacitance	C	V _R =0V, f=1MHz	--	34.83	--	nF
		V _R =400V, f=1MHz	--	2.45	--	
		V _R =800V, f=1MHz	--	1.87	--	
Total Capacitive Charge	Q _C	V _R =800V	--	2601	--	nC
Capacitance Stored Energy	E _C	V _R =800V	--	669	--	μJ

Thermal and Package Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Value	Unit
Thermal Resistance, Junction to Case	R _{thJC}	Per leg	67	°C/kW
Isolation Breakdown Voltage	V _{isol}	AC, 50Hz (R.M.S), T=3s	3600	V
Mounting Torque	M	Recommended (M6 screw)	4.5	Nm
Terminal Connection Torque		Recommended (M6 screw)	4.5	
Weight	W		160	g

Typical Performance Per Leg

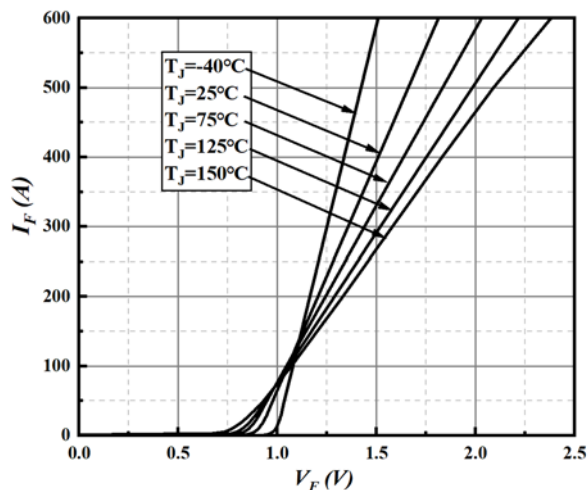


Fig1. Forward Characteristics (parameterized on T_J)

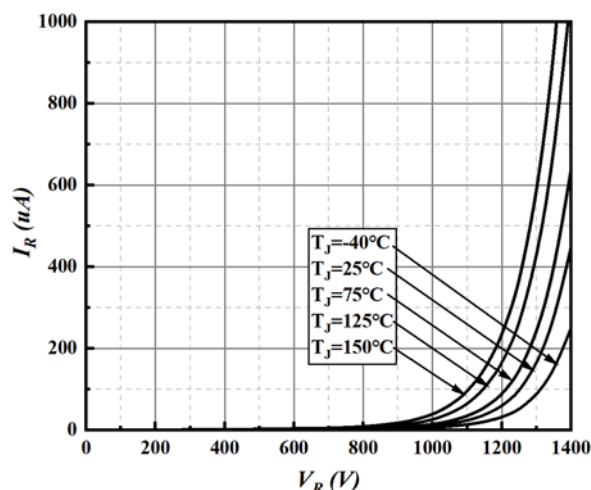


Fig2. Reverse Characteristics (parameterized on T_J)

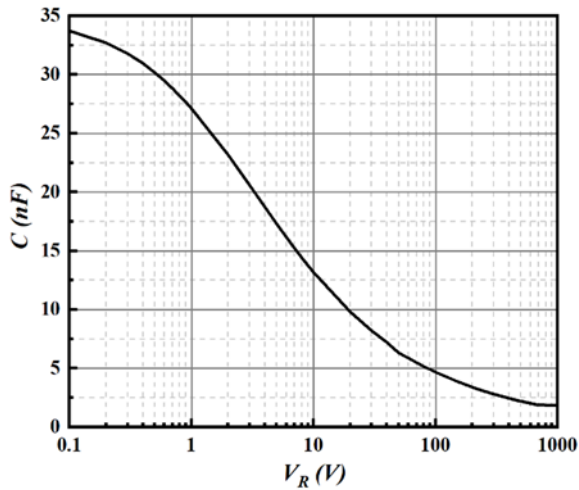


Fig3. Total Capacitance

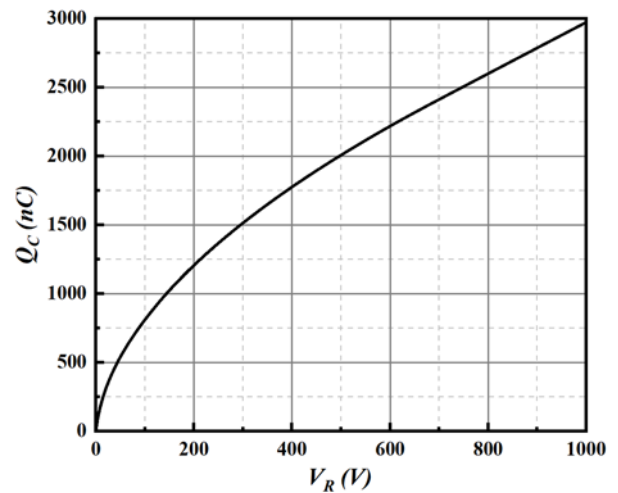


Fig4. Total Capacitive Charge

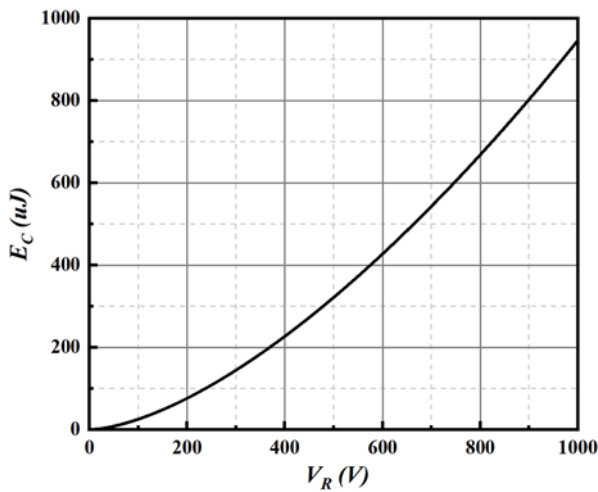


Fig5. Capacitance Stored Energy

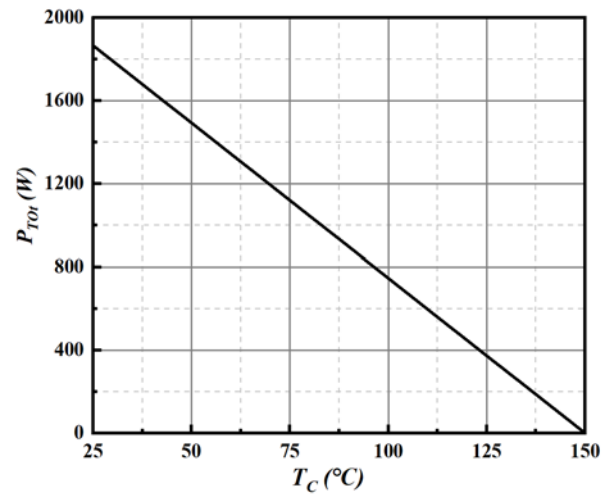


Fig6. Power Derating

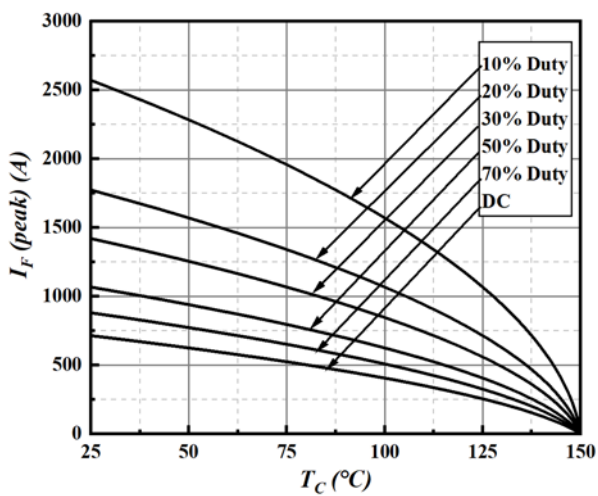


Fig7. Current Derating

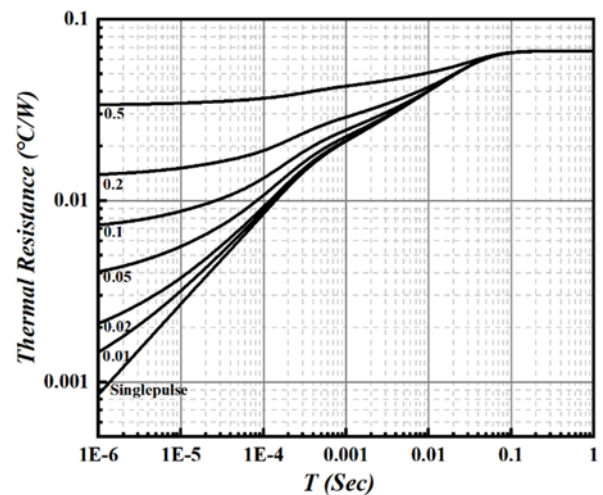


Fig8. Transient Thermal Impedance

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