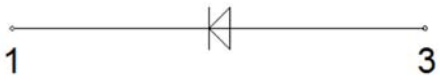
SiC Diode Power Module



V_{DC}	1200V
I_F	480A
$T_{J,max}$	175°C

Circuit



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
- RoHS compliant

■ Absolute Maximum Ratings (T_J=25°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Peak Repetitive Reverse Voltage	V_{RRM}	T_J=25°C	1200	V
DC Blocking Voltage	V_{DC}	T_J=25°C	1200	V
Continuous Forward Current	I_F	T_C=25°C, T_J=175°C	600	A
		T_C=70°C, T_J=175°C	480	
		T_C=135°C, T_J=175°C	250	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	T_C=25°C, T_P=10ms, Half Sine Wave	3240	A
I^2t Value	$\int I^2dt$	T_C=25°C, T_P=10ms	52480	A^2s
Power Dissipation	P_{Tot}	T_C=25°C	1400	W
Junction Temperature	T_J		-40…175	°C
Storage Temperature	T_{STG}		-40…150	°C

■ Electrical Characteristics (T_J=25°C unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Reverse Current	I_R	V_R=1200V, T_J=25°C	--	33	300	μA
		V_R=1200V, T_J=175°C	--	163	--	
Forward Voltage	V_F	I_F=480A, T_J=25°C	--	1.55	1.7	V
		I_F=480A, T_J=175°C	--	2.08	--	
Total Capacitance	C	V_R=1V, f=1MHz	--	31.49	--	nF
		V_R=400V, f=1MHz	--	2.59	--	
		V_R=800V, f=1MHz	--	1.97	--	
Total Capacitive Charge	Q_C	V_R=800V	--	2770	--	nC
Capacitance Stored Energy	E_C	V_R=800V	--	710	--	μJ

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

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Thermal Resistance, Junction to Case	R_{thJC}	Per leg		0.106		°C/W
Isolation Breakdown Voltage	V_{isol}	AC, 50Hz (R.M.S), t=10s		4500		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

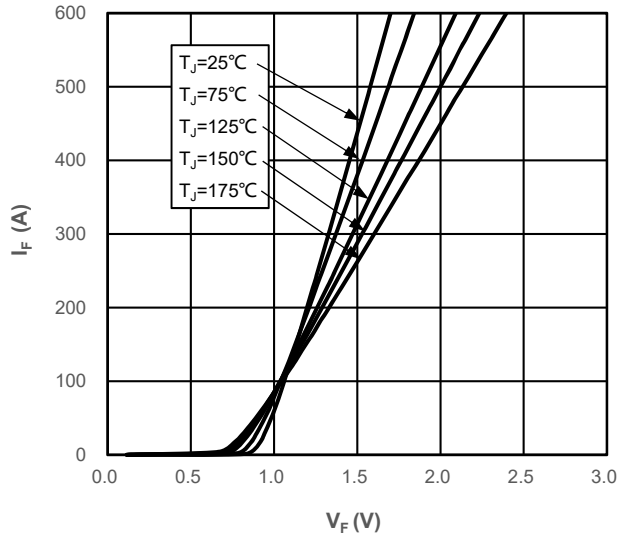


Fig2. Reverse Characteristics

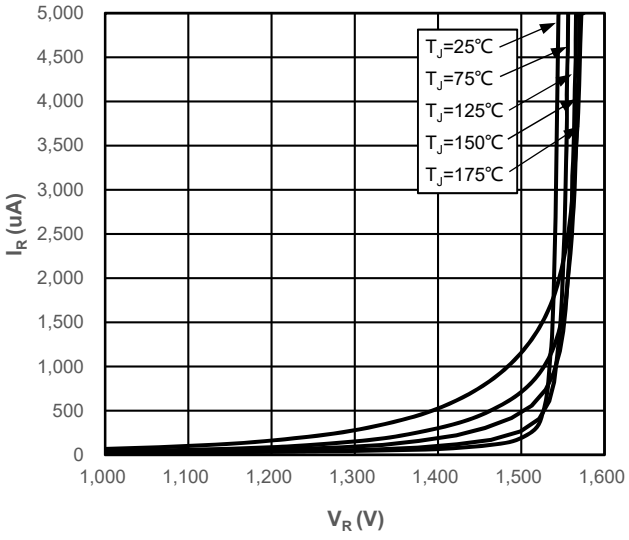


Fig3. Current Derating

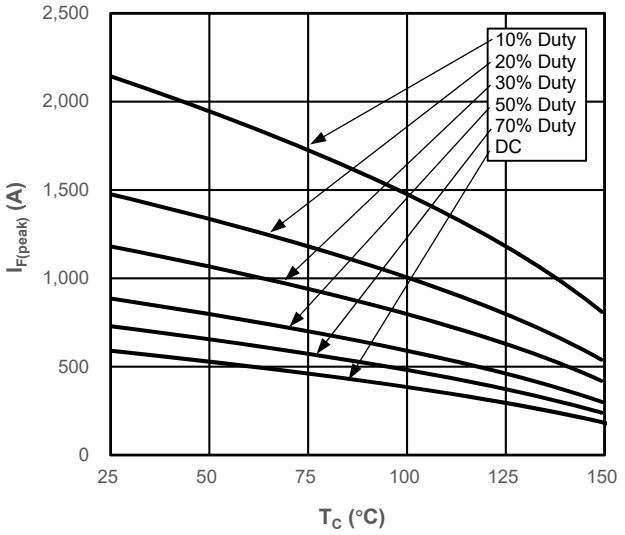


Fig4. Power Derating

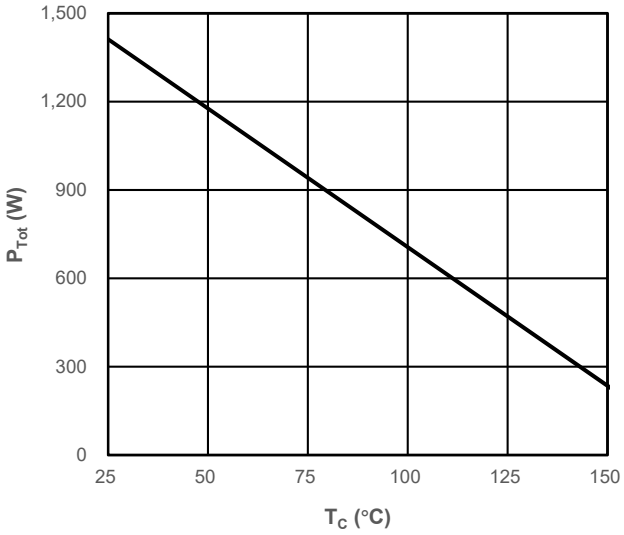


Fig5. Recovery Charge vs. Reverse Voltage

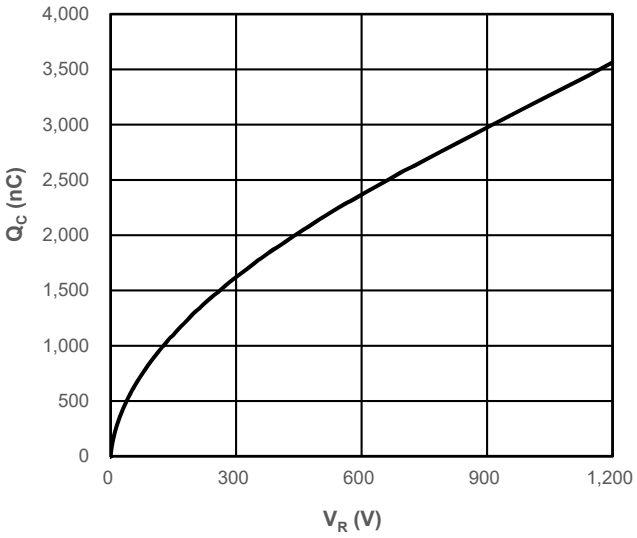


Fig6. Capacitance vs. Reverse Voltage

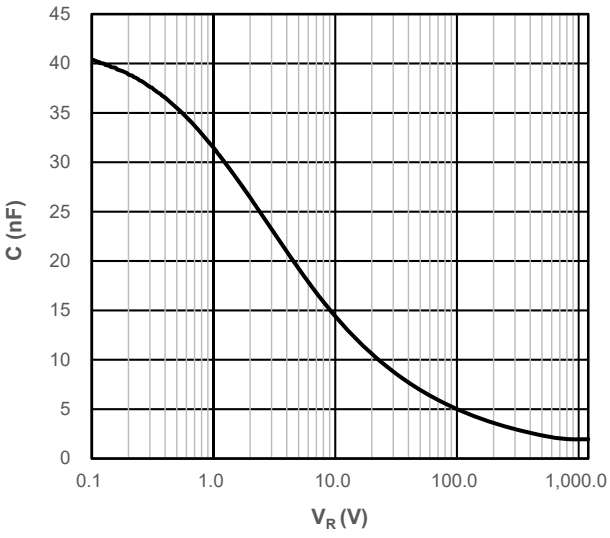


Fig7. Typical Capacitance Stored Energy

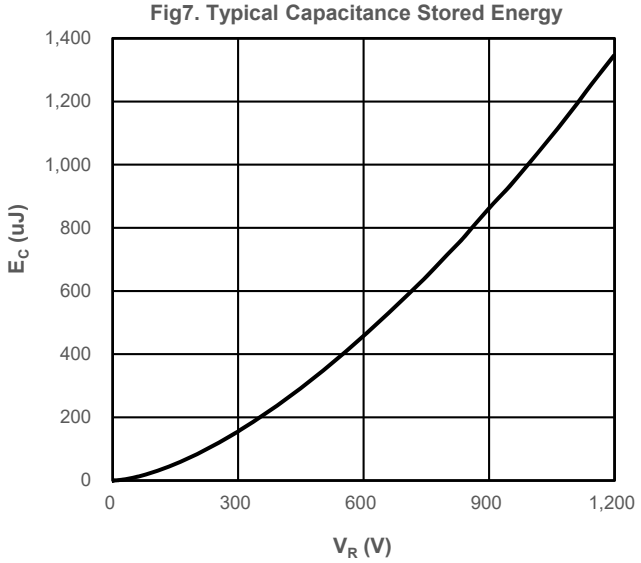
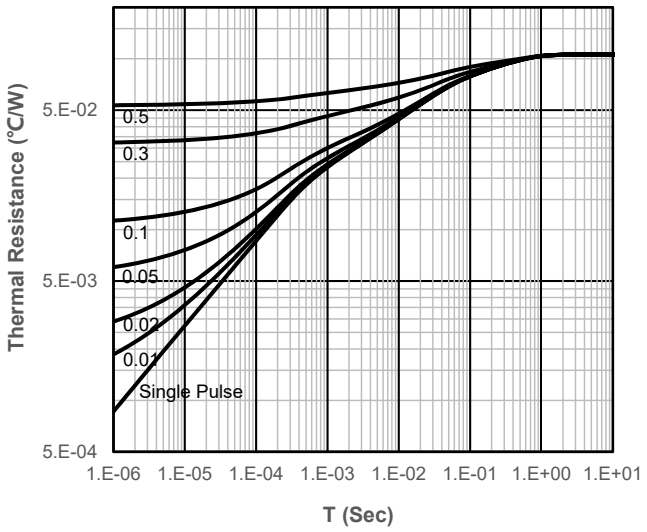
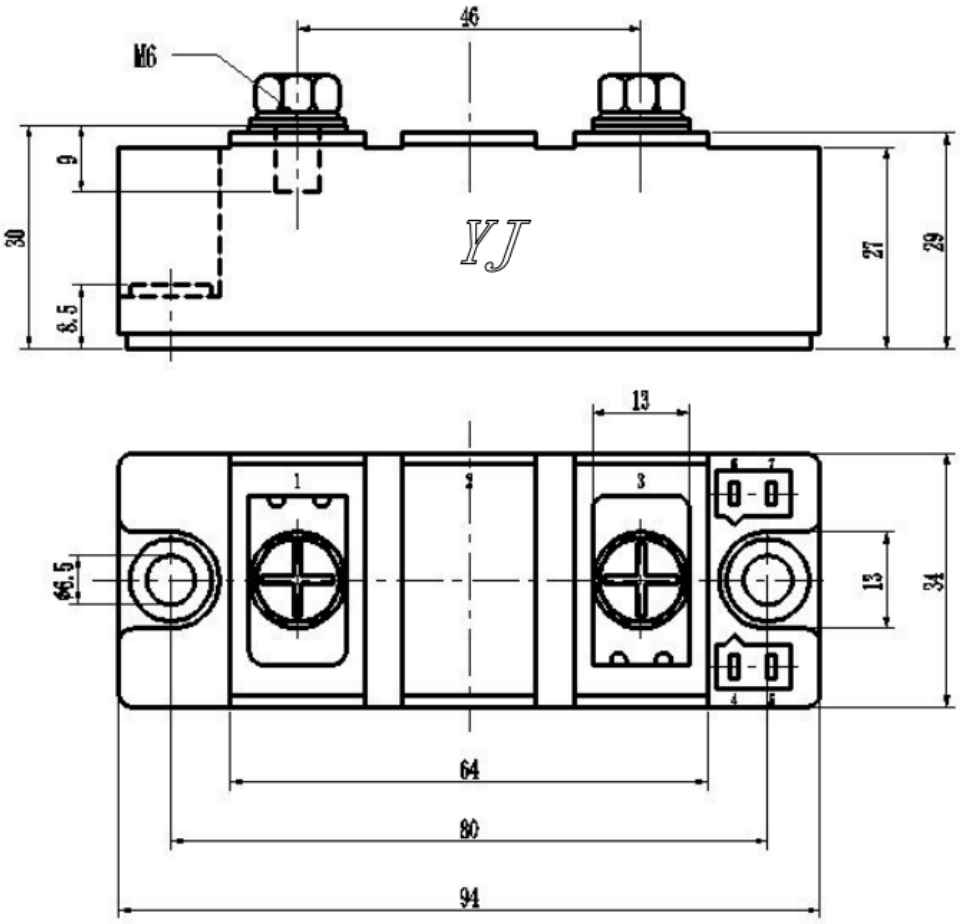


Fig8. Transient Thermal Impedance



■ Package Outline Information

CASE: F2



Dimensions in mm

Notice

All products, product specifications and data are subject to change without notice to improve reliability, function or design or otherwise. Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in STARSEA's terms and conditions of sale for such products, STARSEA assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of STARSEA products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.