SiC Diode Power Module

V_{DC}	650V
I_F	2×90A
$T_{J,max}$	175°C

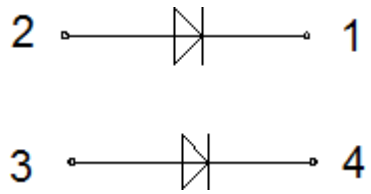
Applications

- 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 (SOT-227)
- Low noise switching
- RoHS compliant

Circuit



■ 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	650	V
DC Blocking Voltage	V_{DC}	T_J=25°C	650	V
Continuous Forward Current	I_F	T_C=25°C, T_J=175°C	110	A
		T_C=65°C, T_J=175°C	90	
		T_C=135°C, T_J=175°C	45	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	T_C=25°C, T_P=10ms, Half Sine Wave	350	A
I^2t Value	$\int I^2dt$	T_C=25°C, T_P=10ms	610	A^2s
Power Dissipation	P_{Tot}	T_C=25°C	245	W
Operating Junction Temperature	$T_{J,op}$		-40…175	°C
Storage Temperature	T_{STG}		-40…125	°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=650V, T_J=25°C	--	2.1	100	μA
		V_R=650V, T_J=175°C	--	3.8	--	
Forward Voltage	V_F	I_F=90A, T_J=25°C	--	1.58	1.8	V
		I_F=90A, T_J=175°C	--	1.99	--	
Total Capacitance	C	V_R=1V, f=1MHz	--	2755	--	pF
		V_R=200V, f=1MHz	--	345	--	
		V_R=400V, f=1MHz	--	327	--	
Total Capacitive Charge	Q_C	V_R=400V	--	188	--	nC
Capacitance Stored Energy	E_C	V_R=400V	--	23	--	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		0.61		°C/W
Isolation Breakdown Voltage	V_{isol}	AC, 50Hz (R.M.S), t=3s	3600			V
Mounting Torque	M	Recommended (M4 screw)	1		1.5	Nm
Terminal Connection Torque		Recommended (M4 screw)	1		1.5	
Weight	W			32		g

■ Typical Performance Per Leg

Fig1. Forward Characteristics

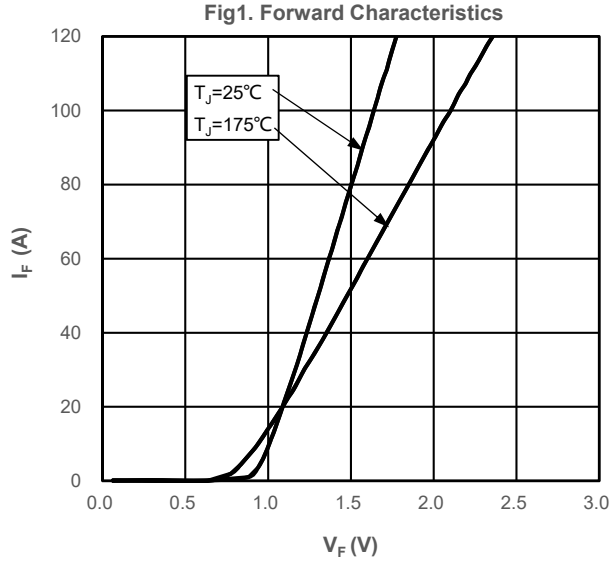


Fig2. Reverse Characteristics

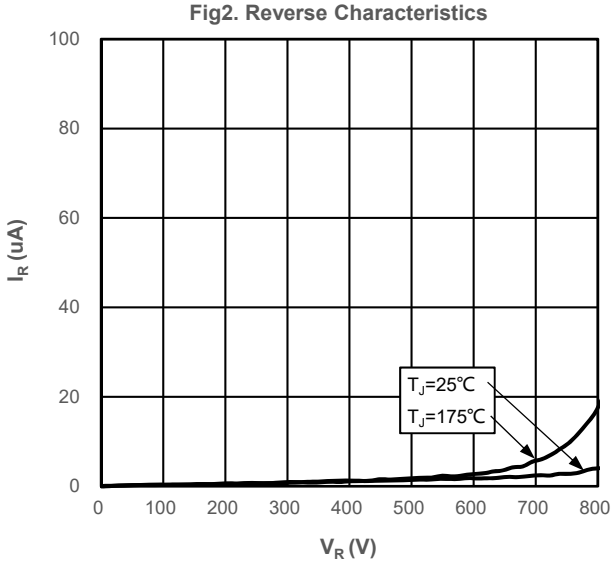


Fig3. Current Derating

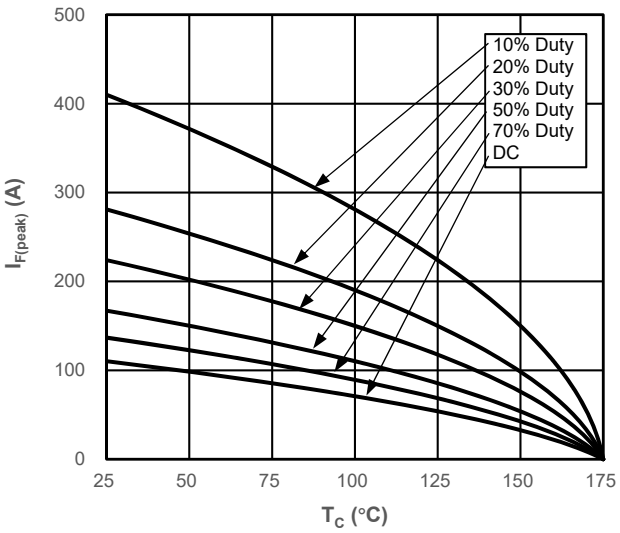


Fig4. Power Derating

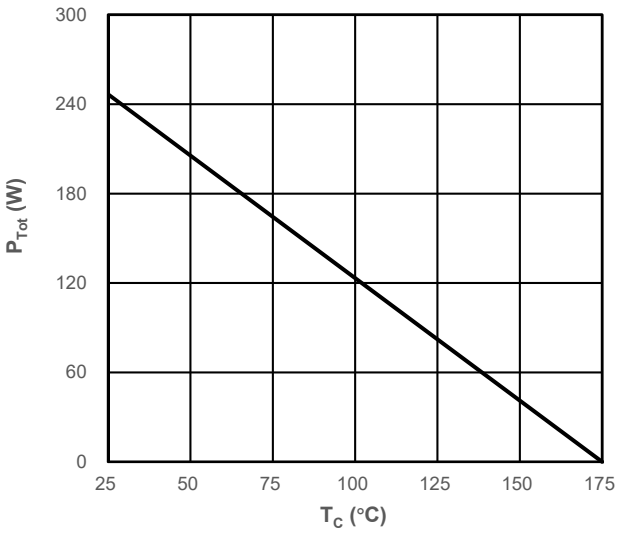


Fig5. Recovery Charge vs. Reverse Voltage

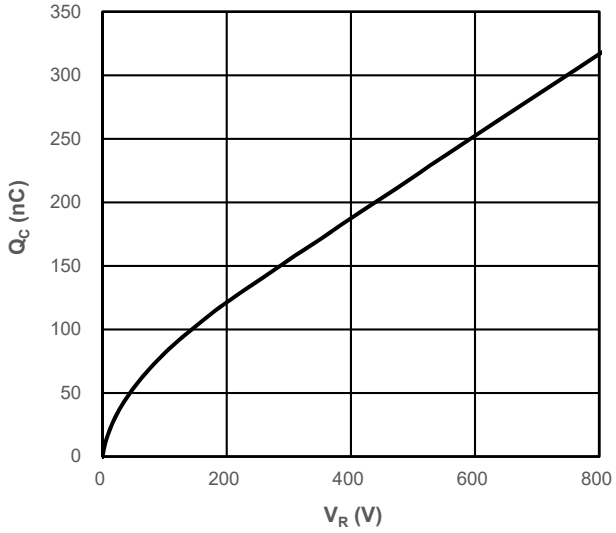


Fig6. Capacitance vs. Reverse Voltage

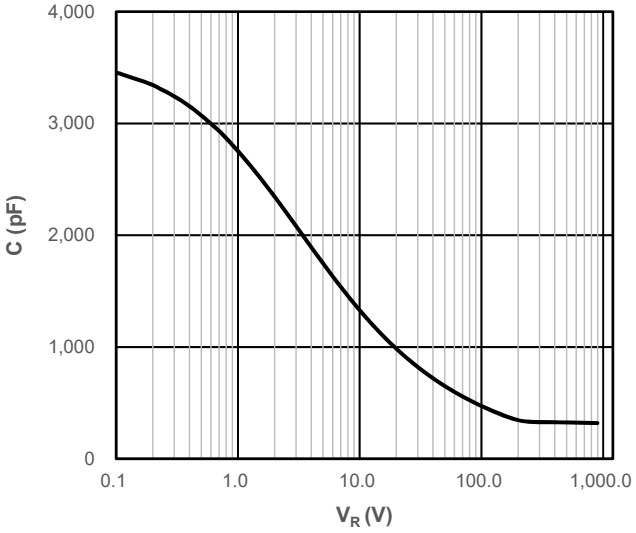


Fig7. Typical Capacitance Stored Energy

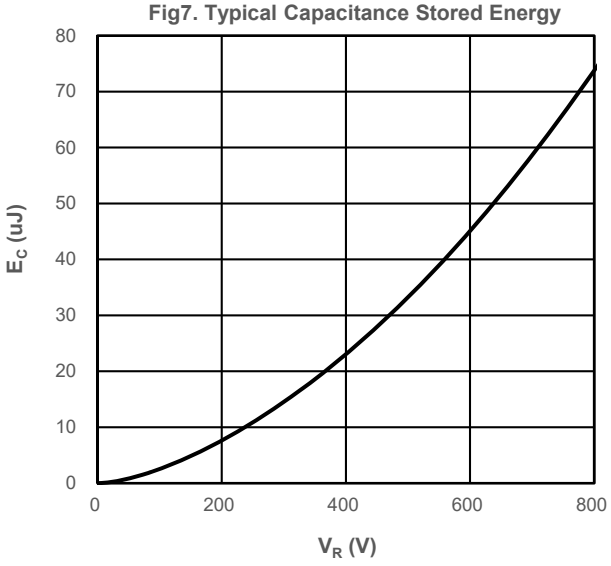
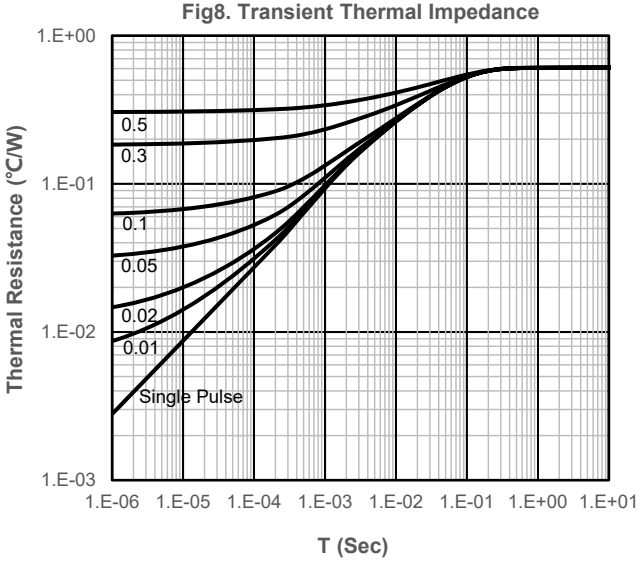
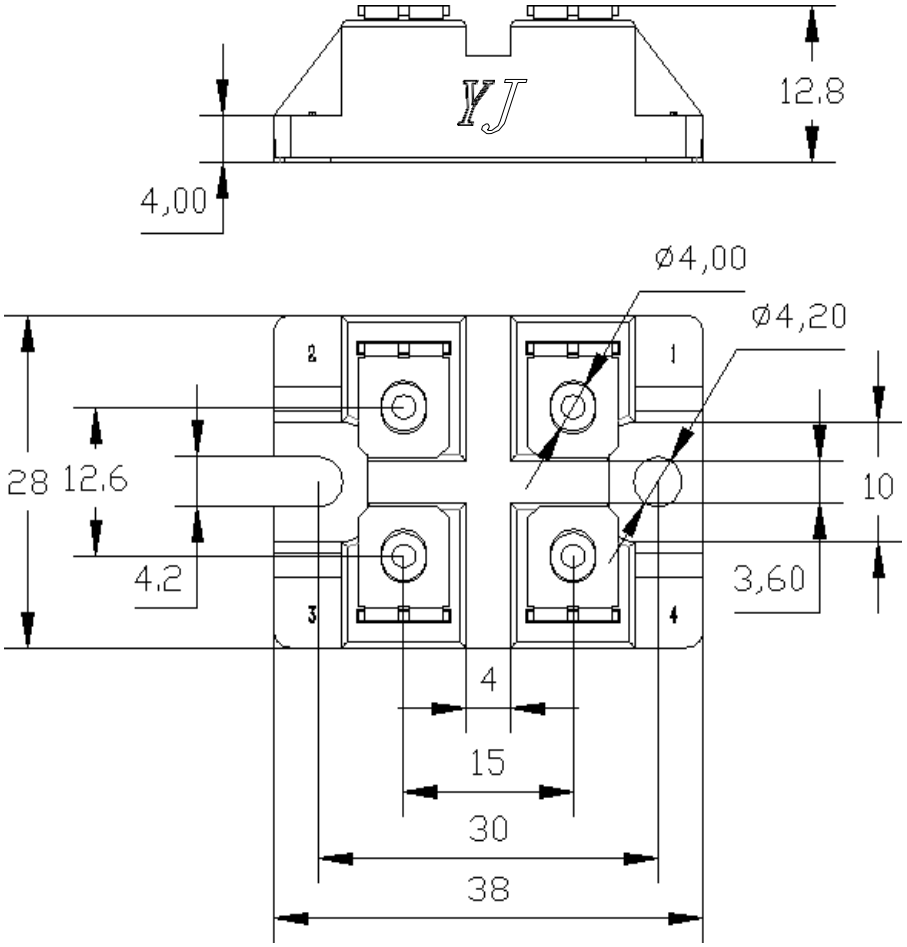


Fig8. Transient Thermal Impedance



■ Package Outline Information

CASE: FJ



Dimensions in mm

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