

SiC Diode Power Module



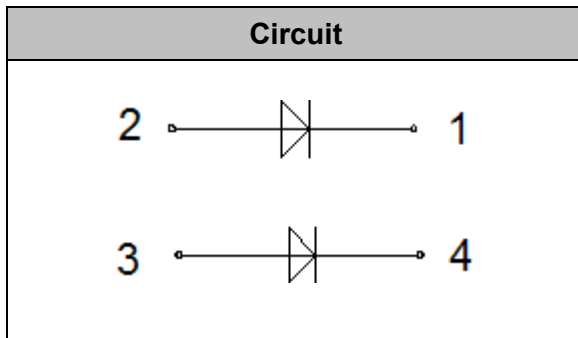
V_{DC}	1700V
I_F	2×40A
$T_{J,max}$	175°C

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



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

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE	UNIT
Peak Repetitive Reverse Voltage	V_{RRM}	$T_J=25^\circ\text{C}$	1700	V
DC Blocking Voltage	V_{DC}	$T_J=25^\circ\text{C}$	1700	V
Continuous Forward Current	I_F	$T_C=25^\circ\text{C}, T_J=175^\circ\text{C}$	86	A
		$T_C=135^\circ\text{C}, T_J=175^\circ\text{C}$	40	
		$T_C=145^\circ\text{C}, T_J=175^\circ\text{C}$	33	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^\circ\text{C}, T_P=10\text{ms}, \text{Half Sine Wave}$	515	A
I^2t Value	$\int I^2 dt$	$T_C=25^\circ\text{C}, T_P=10\text{ms}$	1325	A^2s
Power Dissipation	P_{Tot}	$T_C=25^\circ\text{C}$	310	W
Operating Junction Temperature	$T_{J,op}$		-55...175	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55...175	$^\circ\text{C}$



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■ Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Reverse Current	I_R	$V_R=1700\text{V}$, $T_J=25^{\circ}\text{C}$	--	3.2	30	μA
		$V_R=1700\text{V}$, $T_J=175^{\circ}\text{C}$	--	17.2	--	
Forward Voltage	V_F	$I_F=40\text{A}$, $T_J=25^{\circ}\text{C}$	--	1.42	1.71	V
		$I_F=40\text{A}$, $T_J=175^{\circ}\text{C}$	--	2.10	--	
Total Capacitance	C	$V_R=1\text{V}$, $f=1\text{MHz}$	--	3037	--	pF
		$V_R=800\text{V}$, $f=1\text{MHz}$	--	190	--	
		$V_R=1700\text{V}$, $f=1\text{MHz}$	--	165	--	
Total Capacitive Charge	Q_C	$V_R=1700\text{V}$	--	430	--	nC
Capacitance Stored Energy	E_C	$V_R=1700\text{V}$	--	233	--	μJ

■ Thermal and Package Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	VALUE			UNIT
			Min.	Typ.	Max.	
Thermal Resistance, Junction to Case	R_{thJC}	Per leg		0.48		$^{\circ}\text{C/W}$
Isolation Breakdown Voltage	V_{isol}	AC, 50Hz (R.M.S), $t=1\text{min}$	3000			V
Mounting Torque	M	Recommended (M4 screw)	1.1		1.5	Nm
Terminal Connection Torque		Recommended (M4 screw)	1.1		1.5	
Weight	W			25		g



■ Typical Performance Per Leg

Fig1. Forward Characteristics

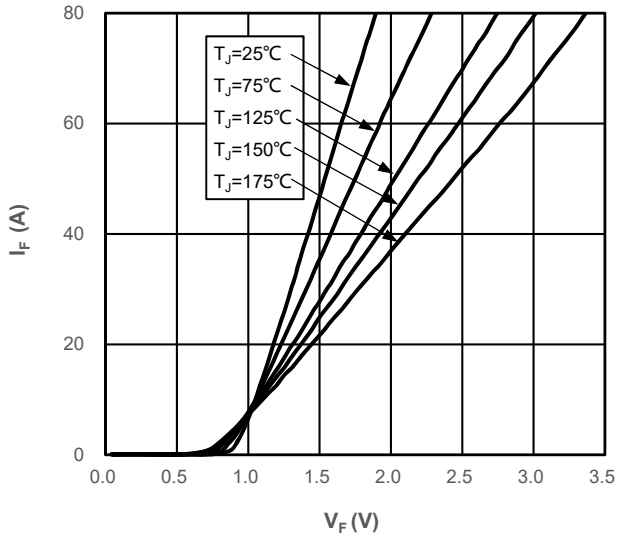


Fig2. Reverse Characteristics

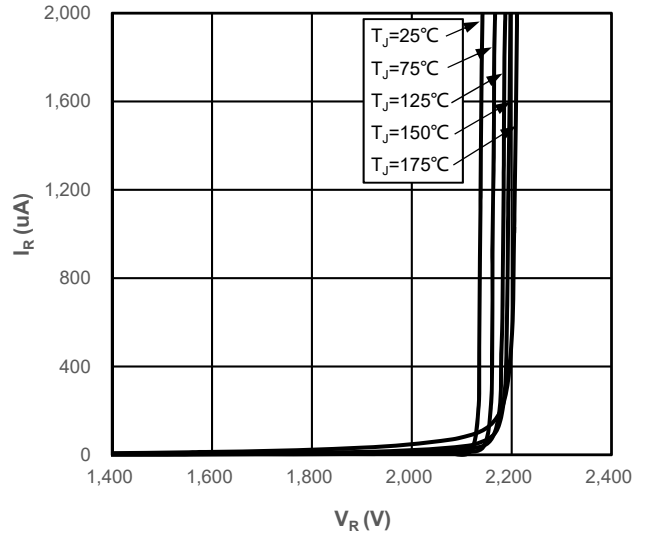


Fig3. Current Derating

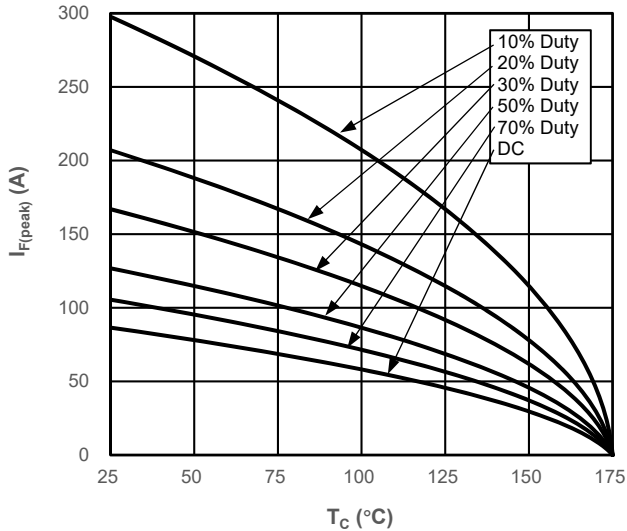


Fig4. Power Derating

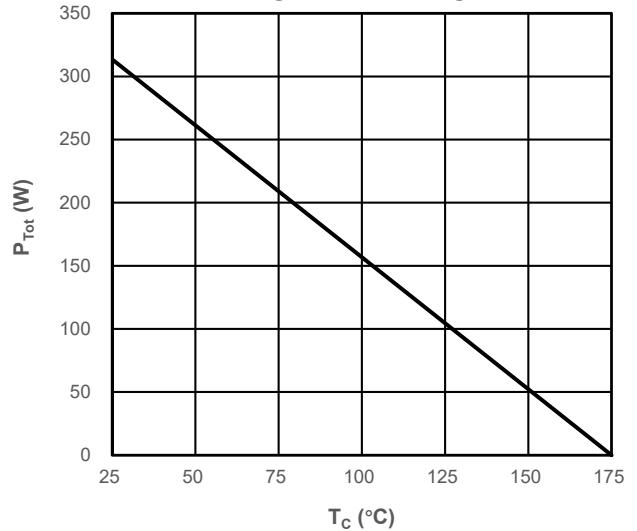


Fig5. Recovery Charge vs. Reverse Voltage

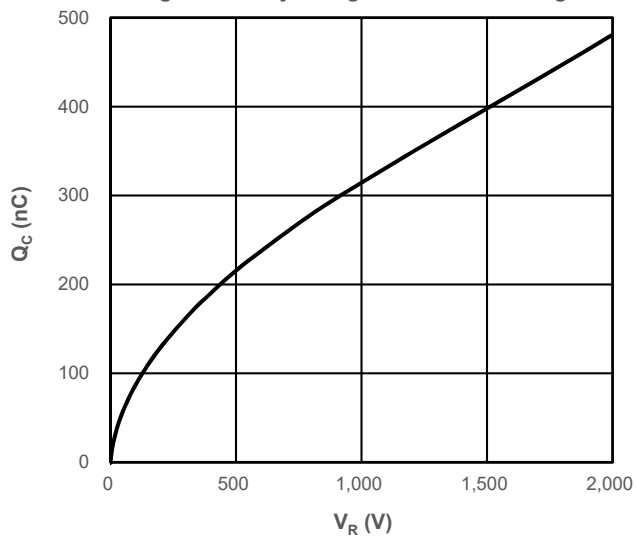
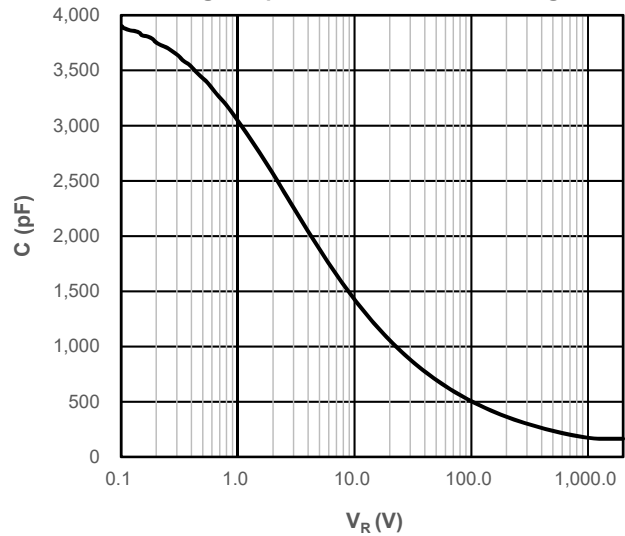


Fig6. Capacitance vs. Reverse Voltage





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Fig7. Typical Capacitance Stored Energy

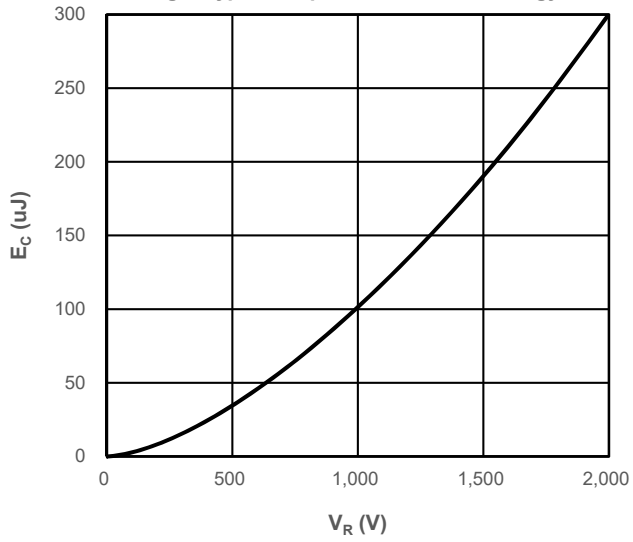
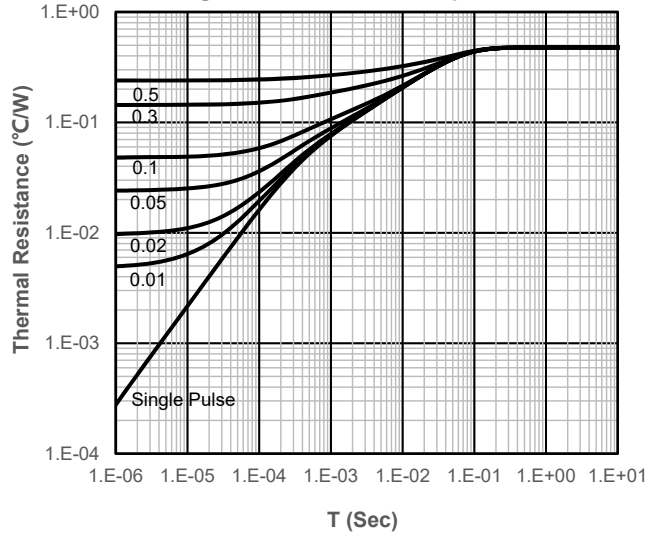
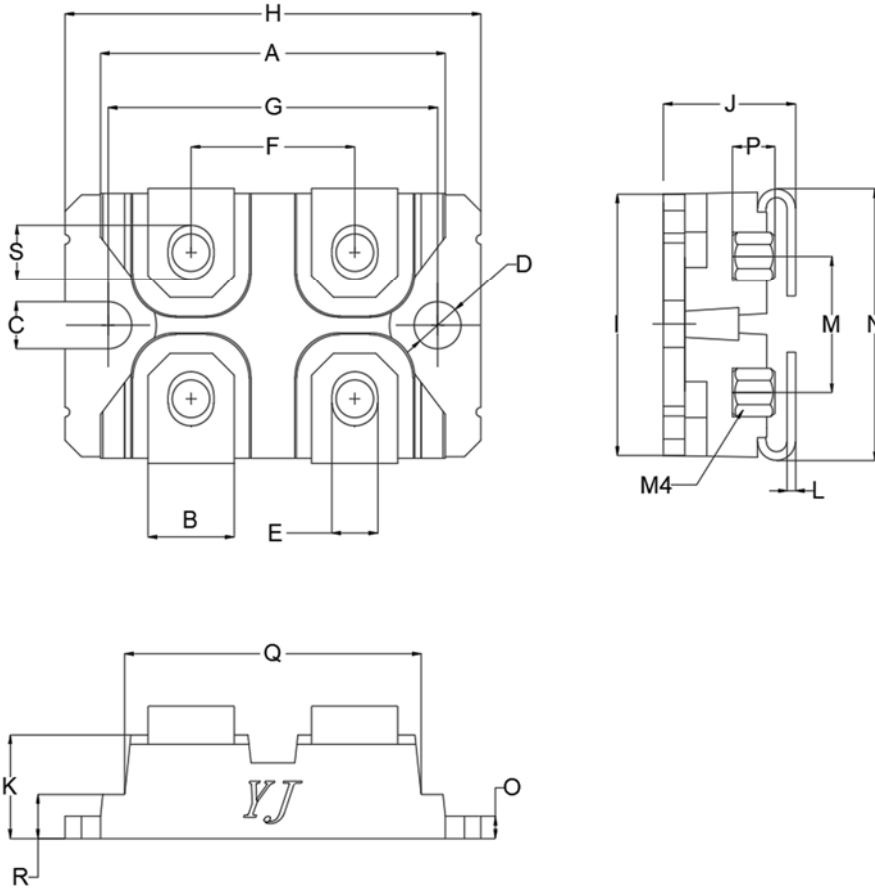


Fig8. Transient Thermal Impedance



■ Package Outline Information

CASE: ST



DIM	Millimeter	
	min	max
A	31.40	31.60
B	7.70	8.10
C	4.20	4.40
D	4.20	4.40
E	4.10	4.30
F	14.90	15.10
G	30.10	30.40
H*	38.00	38.40
I	23.80	24.20
J*	12.20	12.70
K*	9.40	9.60
L	0.75	0.85
M	12.40	12.80
N*	24.50	25.40
O*	1.90	2.10
P	3.10	3.95
Q*	26.60	27.00
R*	3.80	4.20
S	5.10	5.40

Marked * is primary/accnt size



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