



1200V SiC Power Module Dual Diode Pack

V_{DC}	1200V
I_F	2×60A
$T_{J,max}$	175°C

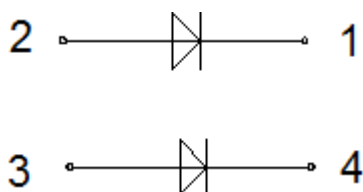
Applications

- 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

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	$T_C=25^\circ\text{C}, T_J=175^\circ\text{C}$	107	A
		$T_C=117^\circ\text{C}, T_J=175^\circ\text{C}$	60	
		$T_C=135^\circ\text{C}, T_J=175^\circ\text{C}$	48	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^\circ\text{C}, T_P=10\text{ms}, \text{Half Sine Wave}$	450	A
I^2t Value	$\int I^2 dt$	$T_C=25^\circ\text{C}, T_P=10\text{ms}$	1012	A^2s
Power Dissipation	P_{Tot}	$T_C=25^\circ\text{C}$	350	W
Junction Temperature	T_J		-55...175	$^\circ\text{C}$
Storage Temperature	T_{STG}		-55...175	$^\circ\text{C}$

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	--	2.4	100	μA
		V _R =1200V, T _J =175°C	--	109	--	
Forward Voltage	V _F	I _F =60A, T _J =25°C	--	1.49	1.8	V
		I _F =60A, T _J =175°C	--	2.22	--	
Total Capacitance	C	V _R =0V, f=1MHz	--	4775	--	pF
		V _R =400V, f=1MHz	--	307	--	
		V _R =800V, f=1MHz	--	222	--	
Total Capacitive Charge	Q _C	V _R =800V	--	326	--	nC
Capacitance Stored Energy	E _C	V _R =800V	--	84	--	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	0.43	°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		29	g

Typical Performance Per Leg

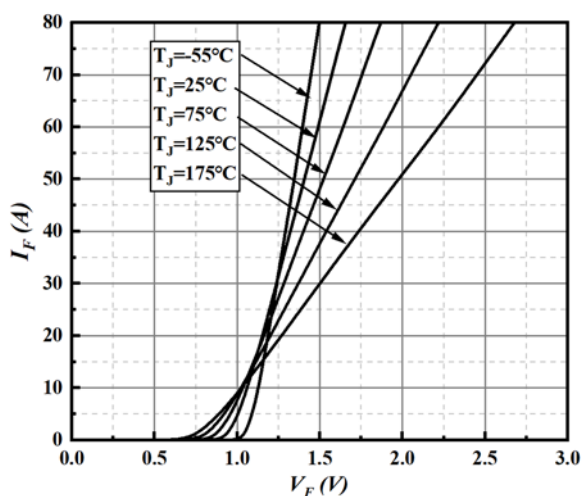


Fig1. Forward Characteristics (parameterized on T_J)

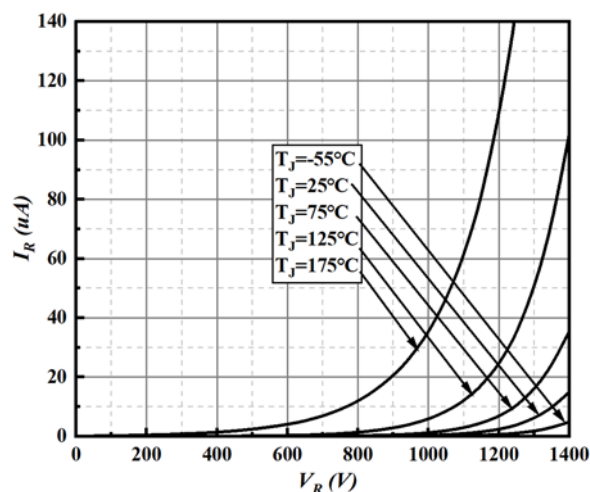


Fig2. Reverse Characteristics (parameterized on T_J)

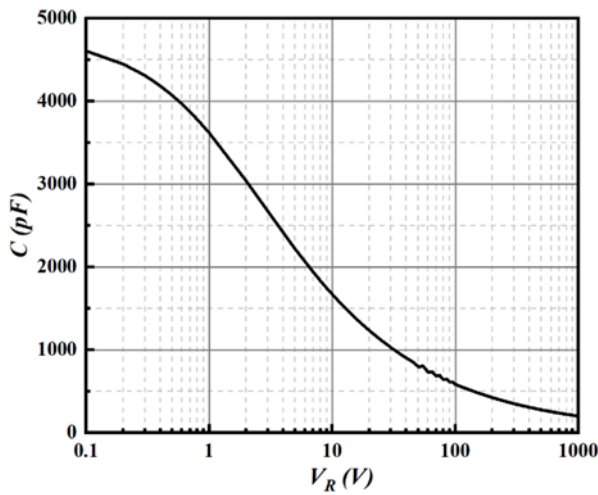


Fig3. Total Capacitance

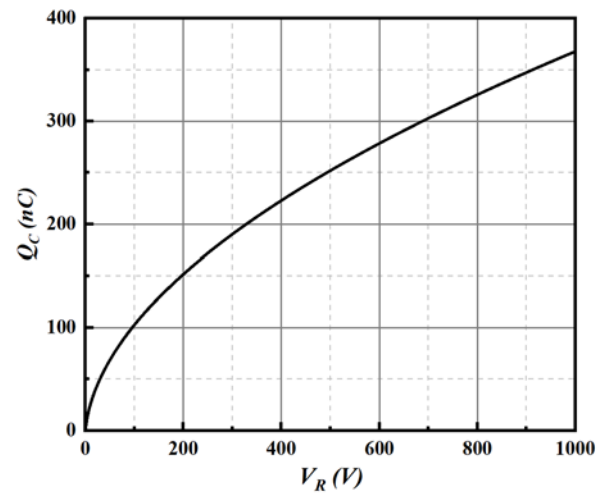


Fig4. Total Capacitive Charge

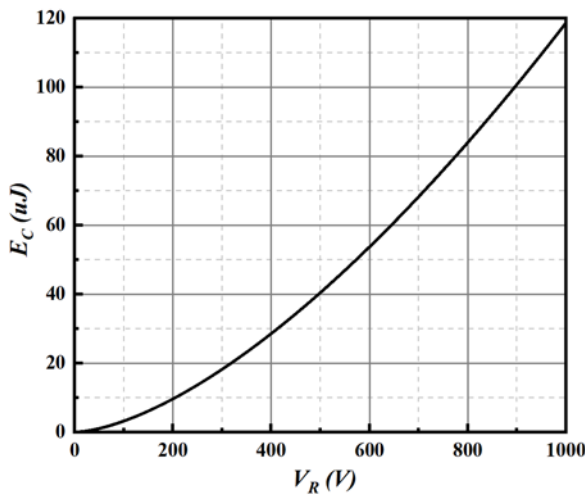


Fig5. Capacitance Stored Energy

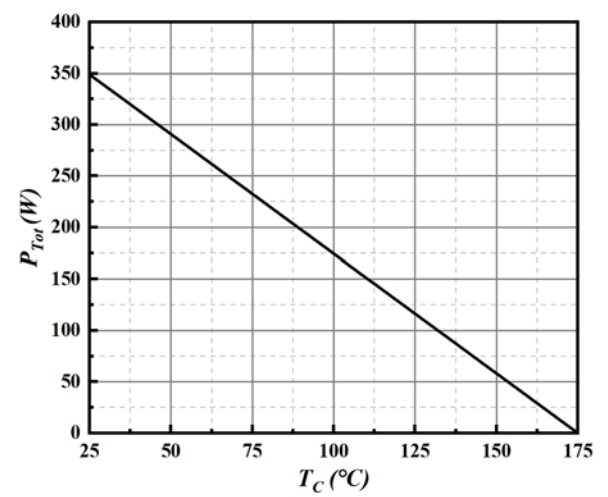


Fig6. Power Derating

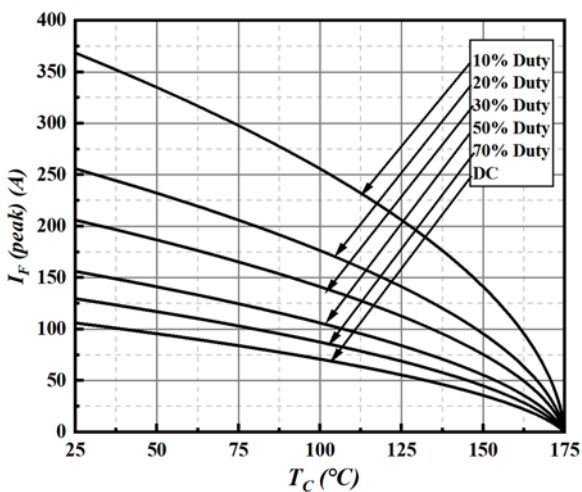


Fig7. Current Derating

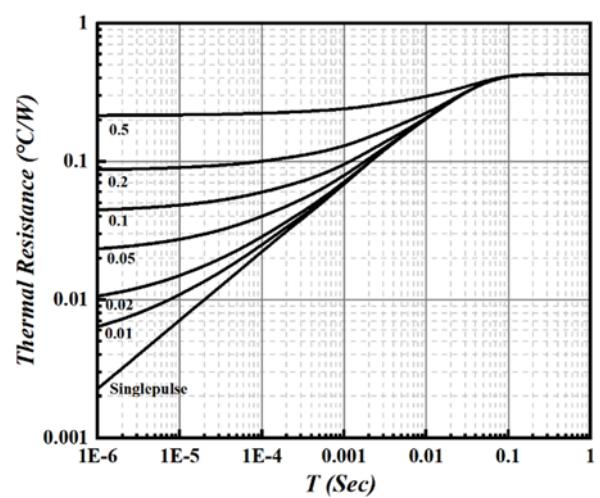
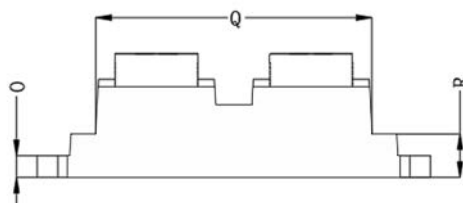
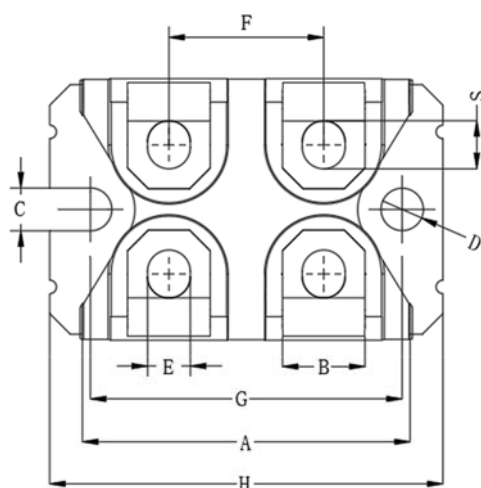
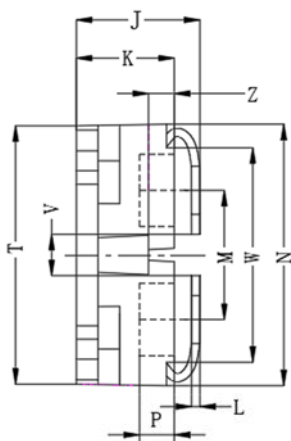


Fig8. Transient Thermal Impedance

MB120DU12ST

Package Outline Information

CASE: ST



DIM	Millimeter	
	min	max
A	31.60	31.80
B	7.70	8.10
C	4.20	4.40
D	4.20	4.40
E	4.10	4.40
F	14.90	15.10
G	30.10	30.30
H	37.70	38.20
J	12.00	12.60
K	9.35	9.65
L	0.74	0.84
M	12.40	12.80
N	24.80	25.60
O	1.90	2.10
P	2.92	3.32
Q	26.60	27.00
R	3.80	4.20
S	4.95	5.45
T	23.70	24.30
V	3.50	5.50
W	20.55	20.85
Z	2.50	2.70

Dimensions in mm

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