

MB80DU12FJ



1200V SiC Power Module Dual Diode Pack

V_{DC}	1200V
I_F	2×40A
$T_{J,max}$	175°C

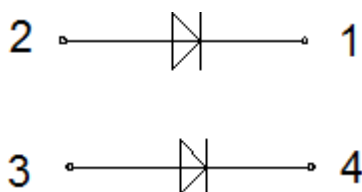
Applications

- 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

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	$T_C=25^\circ\text{C}, T_J=175^\circ\text{C}$	84	A
		$T_C=132^\circ\text{C}, T_J=175^\circ\text{C}$	40	
		$T_C=135^\circ\text{C}, T_J=175^\circ\text{C}$	38	
Non-Repetitive Peak Forward Surge Current	I_{FSM}	$T_C=25^\circ\text{C}, T_P=10\text{ms}, \text{Half Sine Wave}$	306	A
I^2t Value	$\int I^2 dt$	$T_C=25^\circ\text{C}, T_P=10\text{ms}$	468	A^2s
Power Dissipation	P_{Tot}	$T_C=25^\circ\text{C}$	277	W
Junction Temperature	T_J		-55...175	$^\circ\text{C}$
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	--	7.1	100	μA
		V _R =1200V, T _J =175°C	--	38	--	
Forward Voltage	V _F	I _F =40A, T _J =25°C	--	1.36	1.7	V
		I _F =40A, T _J =175°C	--	1.94	--	
Total Capacitance	C	V _R =0V, f=1MHz	--	2966	--	pF
		V _R =400V, f=1MHz	--	212	--	
		V _R =800V, f=1MHz	--	164	--	
Total Capacitive Charge	Q _C	V _R =800V	--	224	--	nC
Capacitance Stored Energy	E _C	V _R =800V	--	57	--	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	0.54	°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

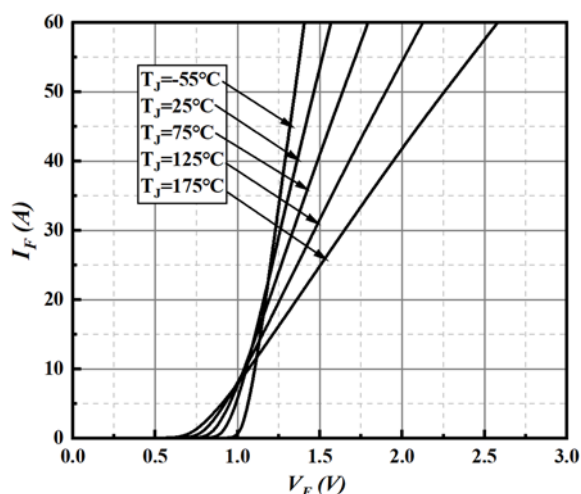


Fig1. Forward Characteristics (parameterized on T_J)

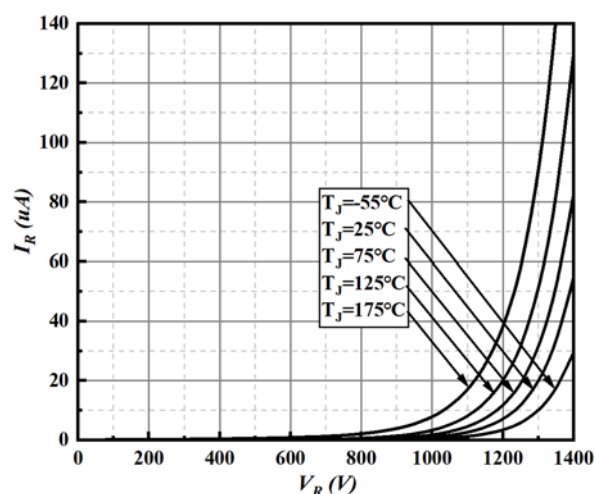


Fig2. Reverse Characteristics (parameterized on T_J)

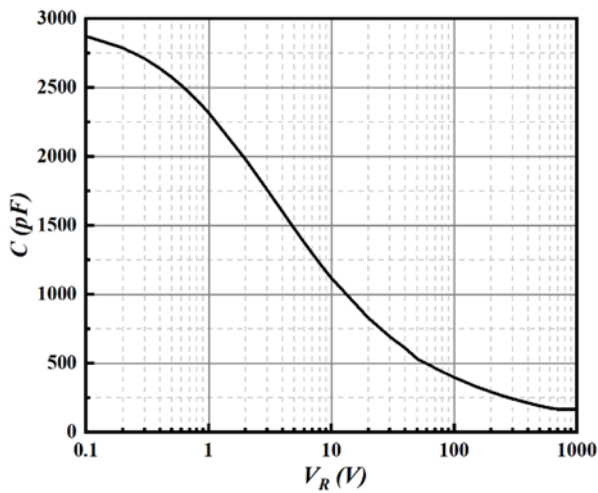


Fig3. Total Capacitance

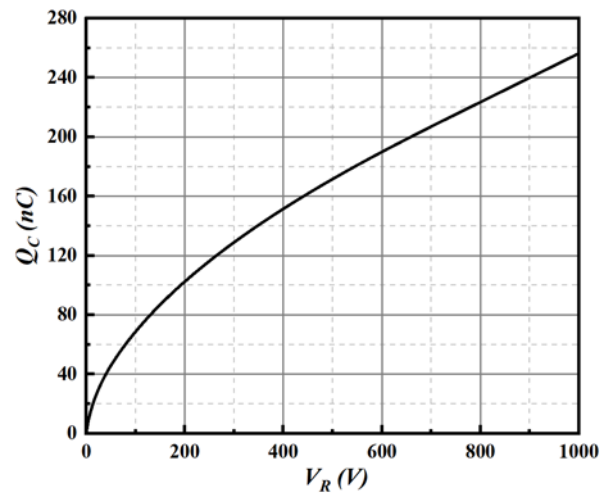


Fig4. Total Capacitive Charge

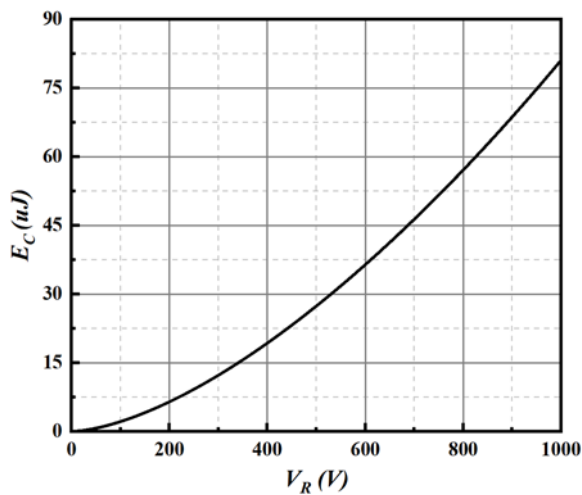


Fig5. Capacitance Stored Energy

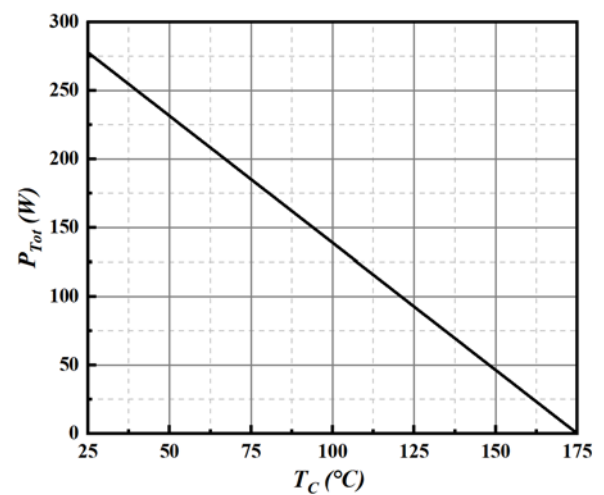


Fig6. Power Derating

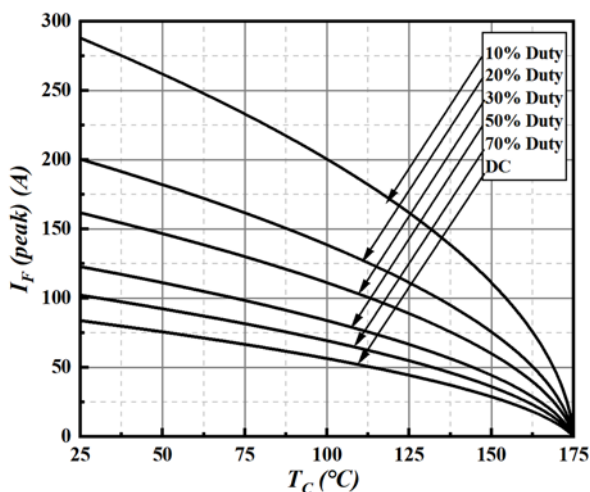


Fig7. Current Derating

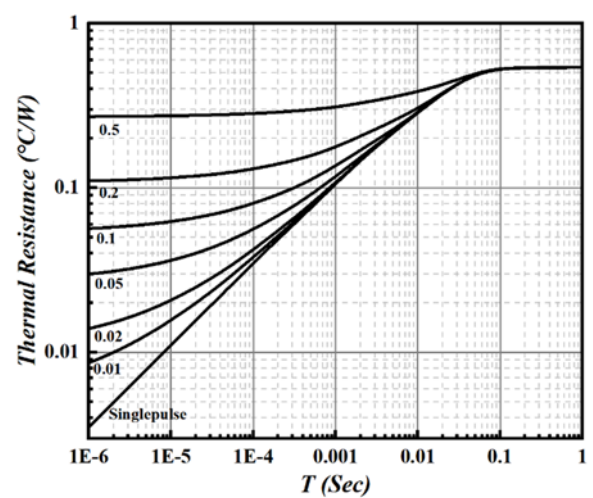
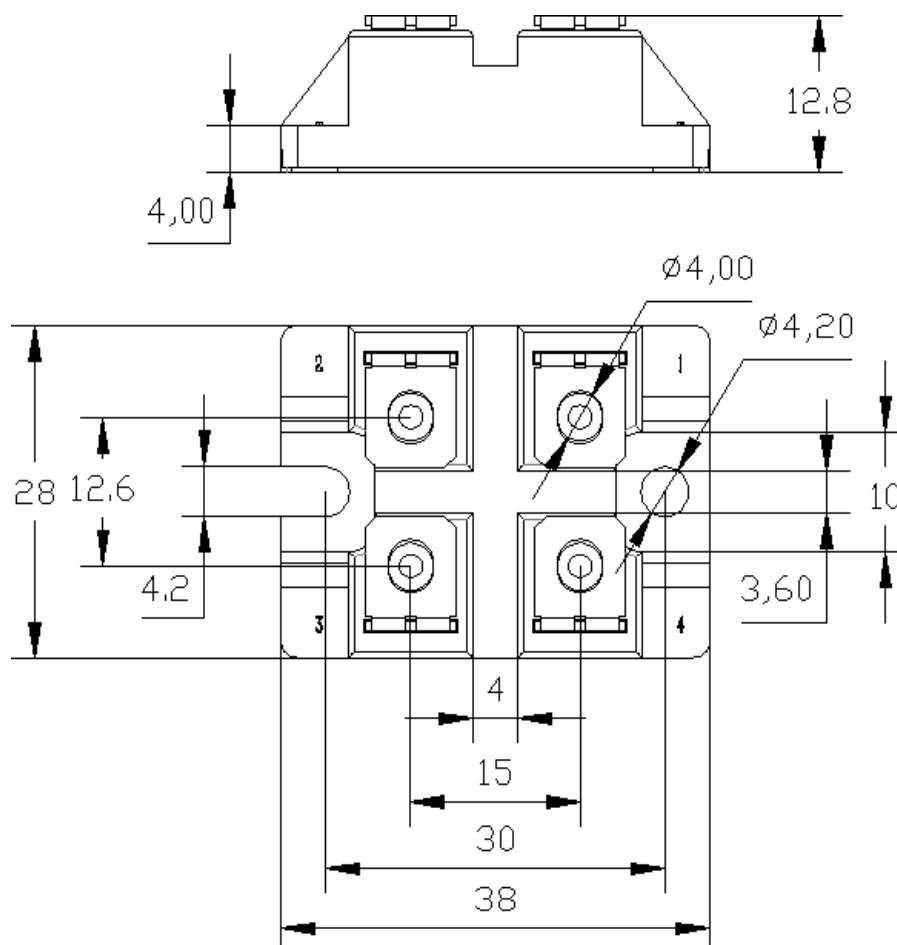


Fig8. Transient Thermal Impedance

CASE: FJ



Dimensions in mm

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