

# MB60DU12ST



## 1200V SiC Power Module Dual Diode Pack

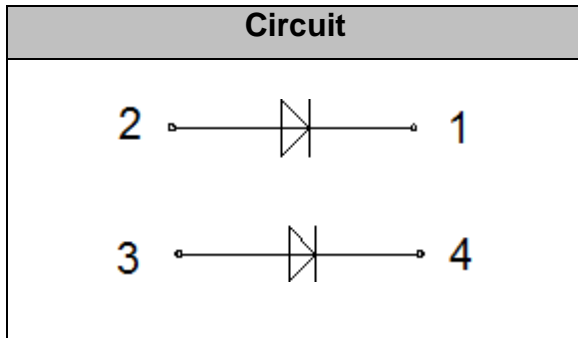
$V_{DC}$	1200V
$I_F$	2×30A
$T_{J,max}$	175°C

### 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



### 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	$I_F$	$T_C=25^\circ\text{C}, T_J=175^\circ\text{C}$	70	A
		$T_C=146^\circ\text{C}, T_J=175^\circ\text{C}$	30	
		$T_C=135^\circ\text{C}, T_J=175^\circ\text{C}$	35	
Non-Repetitive Peak Forward Surge Current	$I_{FSM}$	$T_C=25^\circ\text{C}, T_P=10\text{ms}, \text{Half Sine Wave}$	225	A
$I^2t$ Value	$\int I^2 dt$	$T_C=25^\circ\text{C}, T_P=10\text{ms}$	253	$\text{A}^2\text{s}$
Power Dissipation	$P_{Tot}$	$T_C=25^\circ\text{C}$	242	W
Junction Temperature	$T_J$		-55...175	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-55...175	$^\circ\text{C}$

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## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified, per leg)

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =1200V, T <sub>J</sub> =25°C	--	3.6	100	μA
		V <sub>R</sub> =1200V, T <sub>J</sub> =175°C	--	22	--	
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =30A, T <sub>J</sub> =25°C	--	1.41	1.8	V
		I <sub>F</sub> =30A, T <sub>J</sub> =175°C	--	2.02	--	
Total Capacitance	C	V <sub>R</sub> =0V, f=1MHz	--	2225	--	pF
		V <sub>R</sub> =400V, f=1MHz	--	161	--	
		V <sub>R</sub> =800V, f=1MHz	--	131	--	
Total Capacitive Charge	Q <sub>C</sub>	V <sub>R</sub> =800V	--	171	--	nC
Capacitance Stored Energy	E <sub>C</sub>	V <sub>R</sub> =800V	--	44	--	μJ

## Thermal and Package Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Value	Unit
Thermal Resistance, Junction to Case	R <sub>thJC</sub>	Per leg	0.62	°C/W
Isolation Breakdown Voltage	V <sub>isol</sub>	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

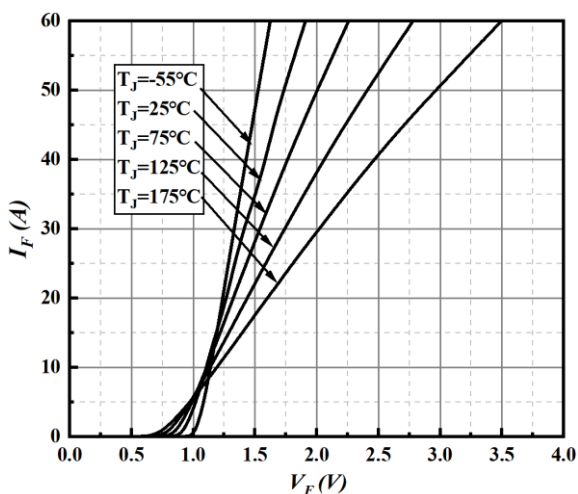


Fig1. Forward Characteristics (parameterized on T<sub>J</sub>)

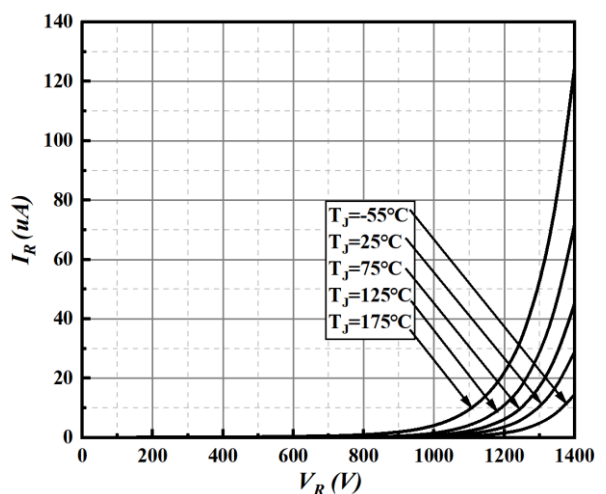


Fig2. Reverse Characteristics (parameterized on T<sub>J</sub>)

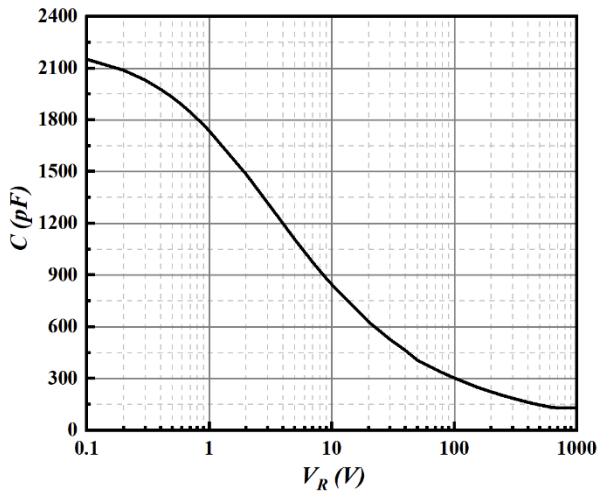


Fig3. Total Capacitance

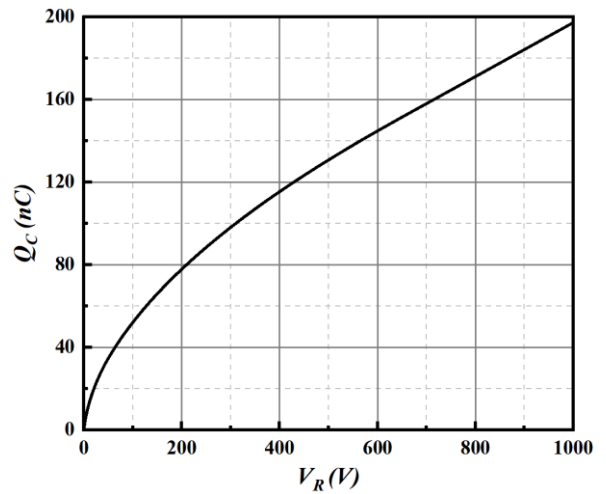


Fig4. Total Capacitive Charge

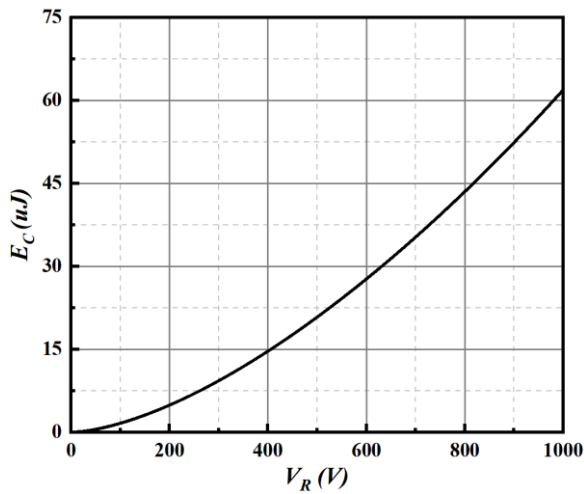


Fig5. Capacitance Stored Energy

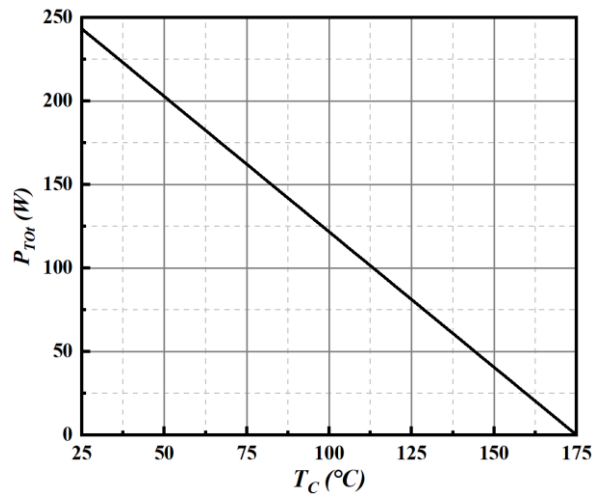


Fig6. Power Derating

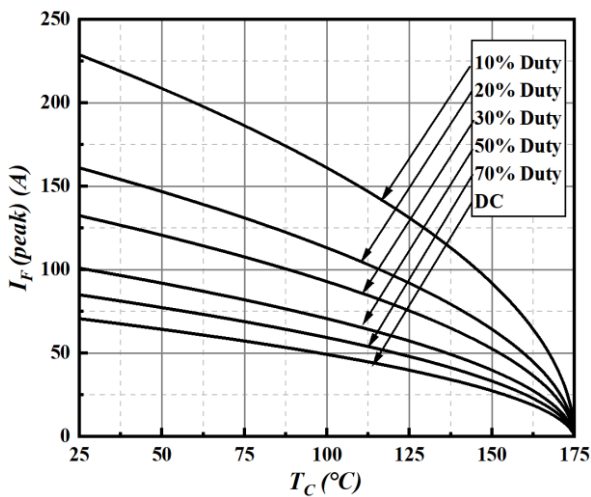


Fig7. Current Derating

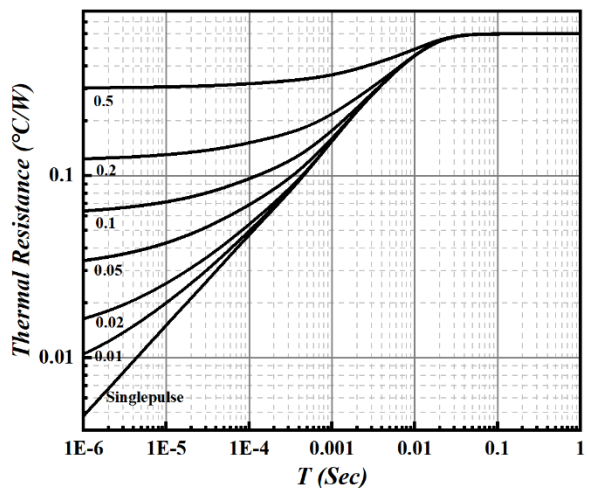
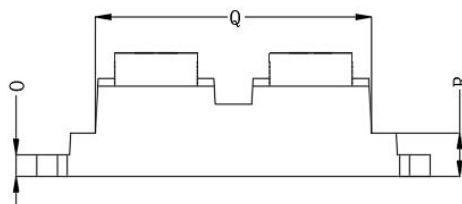
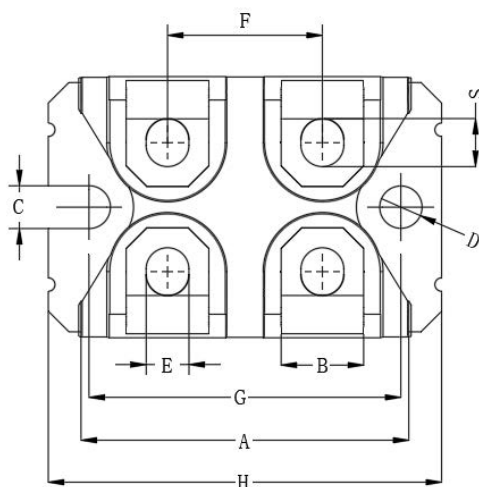
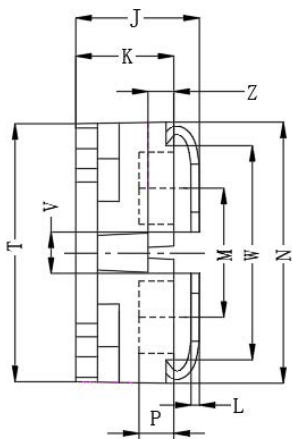


Fig8. Transient Thermal Impedance

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## 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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