

SiC Schottky Diode Full Bridge Power Module

Preliminary

 $V_{RRM} = 1,200V$
 $I_F = 50A @ T_C = 135^{\circ}C$

Features

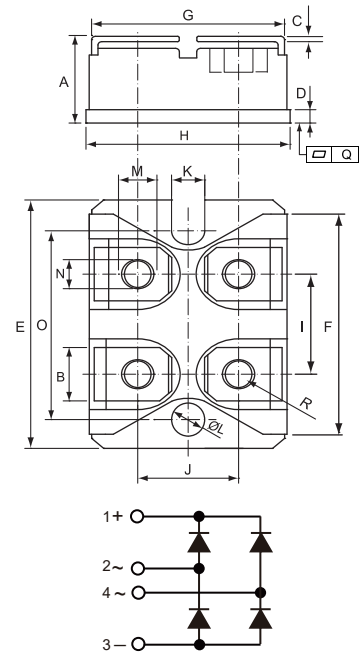
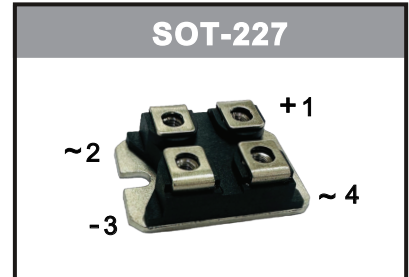
- Zero reverse recovery
- Zero forward recovery
- Temperature-independent switching behavior
- Positive temperature coefficient on VF
- Very low stray inductance
- High level of integration

Benefits

- Outstanding performance at high-frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction-to-case thermal resistance
- RoHS compliant

Applications

- Switch mode power supplies rectifier
- Induction heating
- Welding equipment
- High-speed rectifiers



Maximum Ratings

Part Number	Maximum Recurrent Peak Reverse Voltage	Maximum DC Blocking Voltage
CSRI4×50-120L3B	1200V	1200V

Maximum Rating	Symbol	Conditions	Value	Unit
Continuous forward current (per diode)	I_F	$T_C = 135^{\circ}C$	50	A
Surge non-repetitive forward current sine halfwave (per diode)	I_{FSM}	$T_C = 25^{\circ}C, t_p = 8.3 \text{ ms}$	400	
		$T_C = 150^{\circ}C, t_p = 8.3 \text{ ms}$	250	
Non-repetitive peak forward current (per diode)	$I_{F,max}$	$T_C = 25^{\circ}C, t_p = 10 \mu s$	1600	
		$T_C = 150^{\circ}C, t_p = 10 \mu s$	1000	
Repetitive peak reverse voltage	V_{RRM}	$T_J = 25^{\circ}C$	1200	V
Isolation voltage (between All Terminals and Baseplate)	V_{iso}	50/60 Hz, $t = 1 \text{ min}$ $I_{ISOL} \leq 1 \text{ mA}$	2500	V
Mounting torque	M_d	To heatsink	1.3	Nm
		To terminal	1.1	

	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.460	0.483	11.68	12.28
B	0.307	0.323	7.80	8.20
C	0.030	0.033	0.75	0.85
D	0.071	0.081	1.80	2.05
E	1.488	1.504	37.80	38.20
F	1.248	1.260	31.70	32.00
G	0.917	0.957	23.30	24.30
H	0.996	1.008	25.30	25.60
I	0.579	0.602	14.70	15.30
J	0.492	0.516	12.50	13.10
K	0.161	0.169	4.10	4.30
L	0.161	0.169	4.10	4.30
M	0.181	0.197	4.60	5.00
N	0.165	0.181	4.20	4.60
O	1.181	1.197	30.00	30.40
Q	-0.002	0.004	-0.05	0.10
R	M4*8			

Electrical Characteristics, at $T_J=25\text{ }^\circ\text{C}$, unless otherwise specified. (per diode)

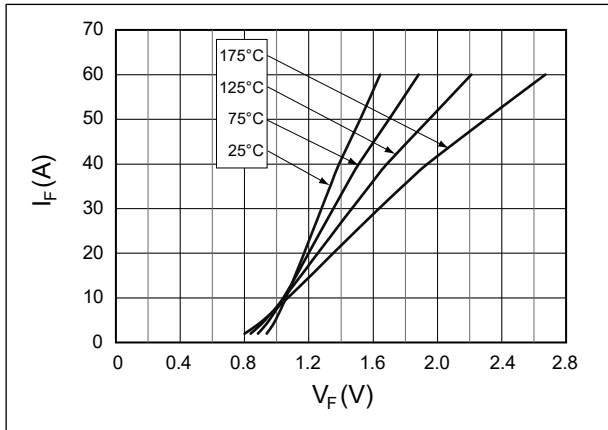
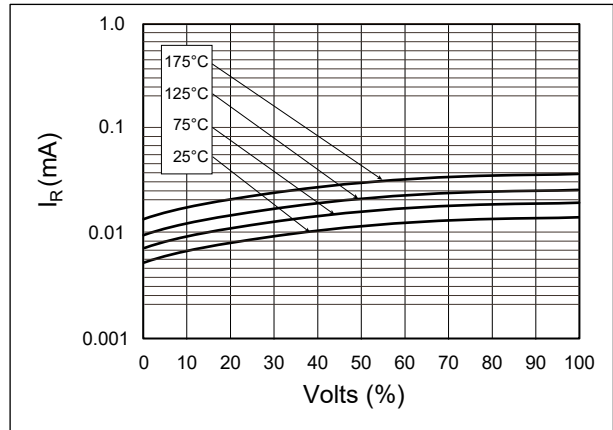
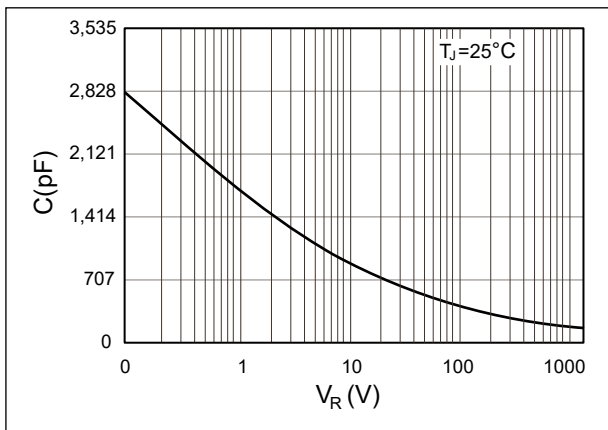
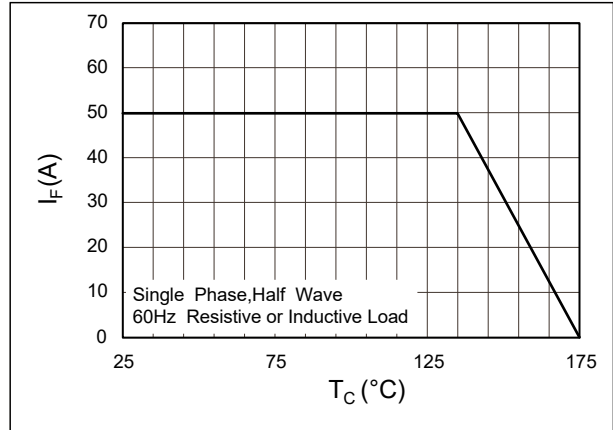
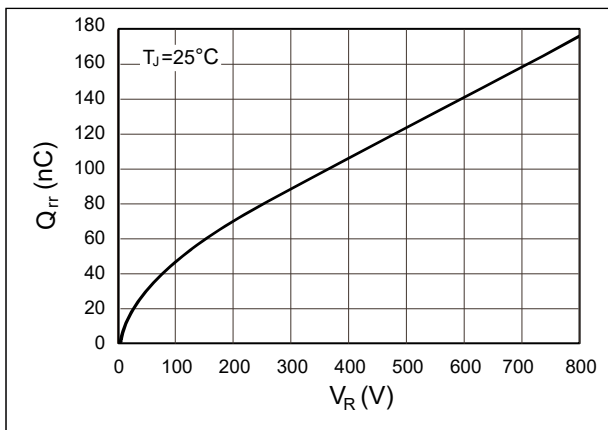
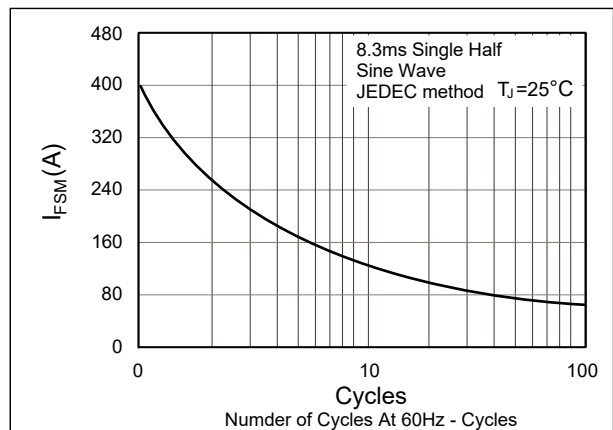
Static Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}		1,200	-	-	V
Diode forward voltage	V_F	$I_F=50\text{A}$, $T_J=25\text{ }^\circ\text{C}$	-	1.5	1.7	V
		$I_F=50\text{A}$, $T_J=175\text{ }^\circ\text{C}$	-	2.3	2.5	
Reverse current	I_R	$V_R=1,200\text{V}$, $T_J=25\text{ }^\circ\text{C}$	-	5	25	μA
		$V_R=1,200\text{V}$, $T_J=175\text{ }^\circ\text{C}$	-	50	250	

AC Characteristics (per diode)

Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Total capacitive charge	Q_{rr}	$di/dt=1100\text{A}/\mu\text{s}$ $I_F=50\text{A}$, $V_R=800\text{V}$	-	177	-	nC
Total capacitance	C	$V_R=0\text{V}$, $f=100\text{KHz}$ $T_J=25\text{ }^\circ\text{C}$	-	2,828	-	pF
		$V_R=400\text{V}$, $f=100\text{KHz}$ $T_J=25\text{ }^\circ\text{C}$	-	230	-	
		$V_R=800\text{V}$, $f=100\text{KHz}$ $T_J=25\text{ }^\circ\text{C}$	-	164	-	

Thermal Characteristics (per diode)

Characteristics	Symbol	Values	Unit
		typ.	
Thermal resistance from junction to case	$R_{\theta JC}$	0.28	$^\circ\text{C}/\text{W}$

Typical Performance
Forward Characteristics (parameterized on T_J)

Reverse Characteristics (parameterized on T_J)

Capacitance

Current Derating

Recovery Charge

Forward Surge Current


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