

SiC Schottky Diode Full Bridge Power Module

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

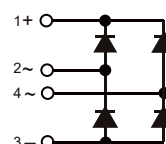
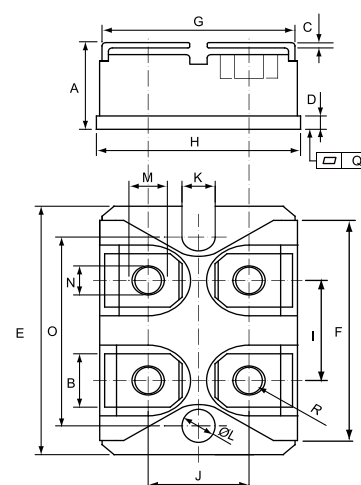
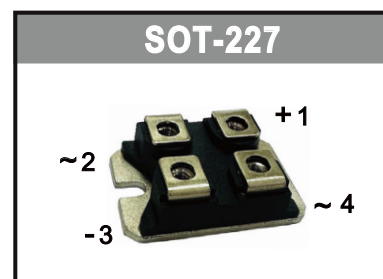
Operating Junction Temperature : - 55 °C to +175 °C

Storage Temperature : -55 °C to +175 °C

Part Number	Maximum Recurrent Peak Reverse Voltage	Maximum DC Blocking Voltage
CSRI4X50-065L2B	650V	650V

Maximum Rating	Symbol	Conditions	Value	Unit
Continuous forward current (per diode)	I_F	$T_C=135\text{ }^{\circ}\text{C}$	50	A
Surge non-repetitive forward current sine halfwave (per diode)	I_{FSM}	$T_C=25\text{ }^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	400	
		$T_C=150\text{ }^{\circ}\text{C}$, $t_p=8.3\text{ ms}$	250	
Non-repetitive peak forward current (per diode)	$I_{F,max}$	$T_C=25\text{ }^{\circ}\text{C}$, $t_p=10\text{ }\mu\text{s}$	1600	
		$T_C=150\text{ }^{\circ}\text{C}$, $t_p=10\text{ }\mu\text{s}$	1000	
Repetitive peak reverse voltage	V_{RRM}	$T_J=25\text{ }^{\circ}\text{C}$	650	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		To heatsink	1.3	Nm
		To terminal	1.1	

$V_{RRM}=650\text{V}$
 $I_F=50\text{A}@T_C=135^{\circ}\text{C}$



	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)

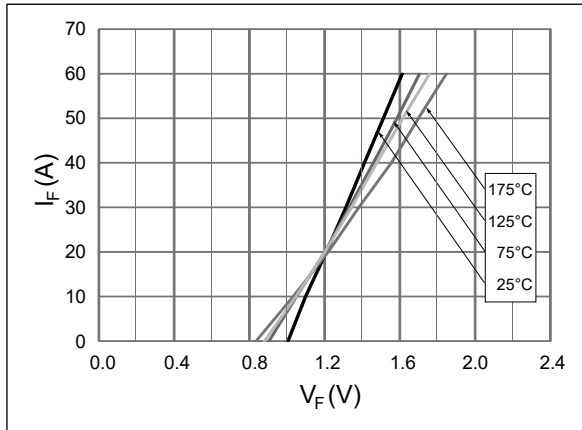
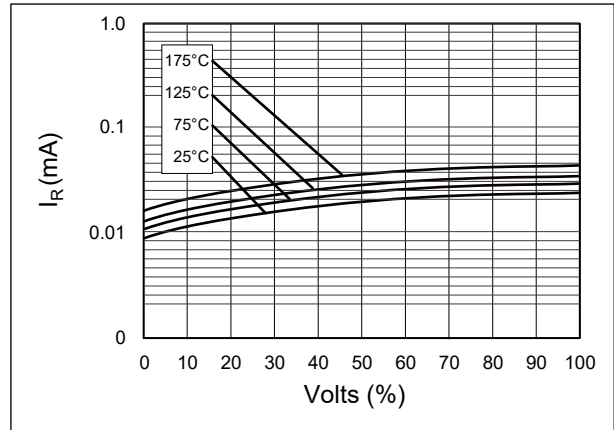
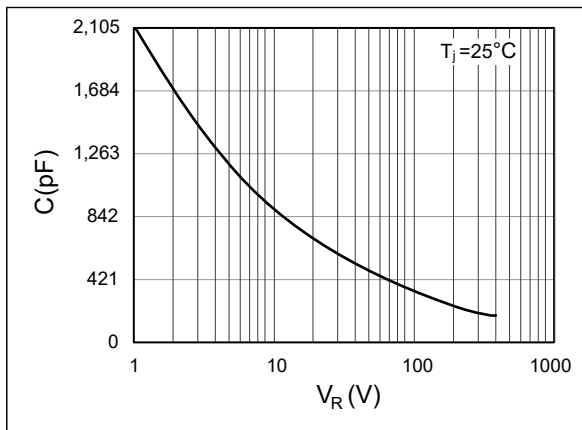
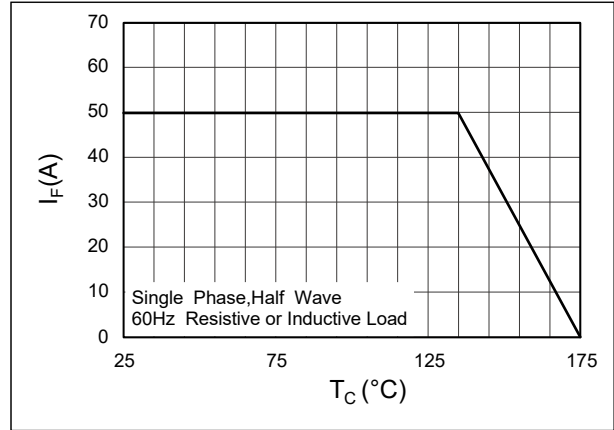
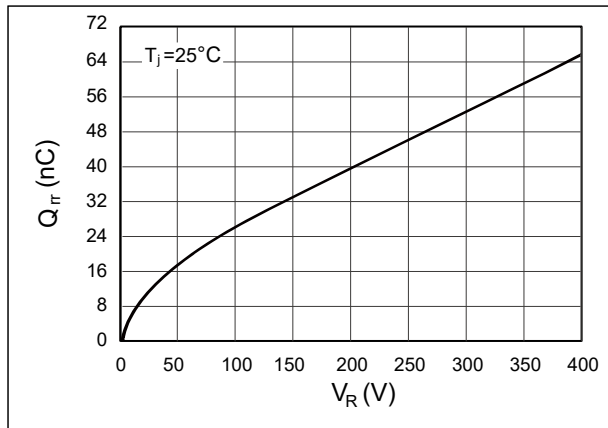
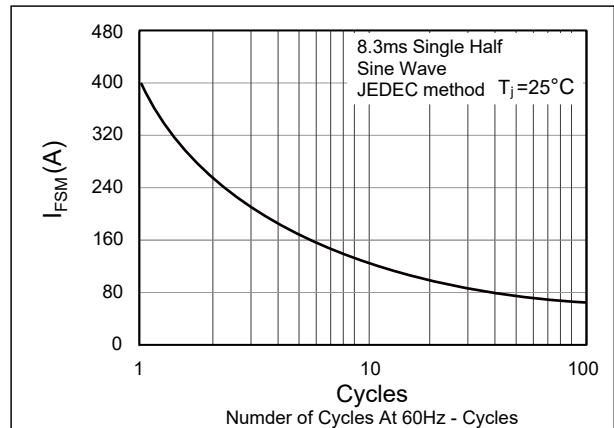
Static Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
DC blocking voltage	V_{DC}		650	-	-	V
Diode forward voltage	V_F	$I_F=50\text{A}$, $T_j=25\text{ }^{\circ}\text{C}$	-	1.50	1.70	
		$I_F=50\text{A}$, $T_j=175\text{ }^{\circ}\text{C}$	-	1.70	2.00	
Reverse current	I_R	$V_R=650\text{V}$, $T_j=25\text{ }^{\circ}\text{C}$	-	30	60	μA
		$V_R=650\text{V}$, $T_j=175\text{ }^{\circ}\text{C}$	-	60	250	

AC Characteristics (per diode)

Static Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Total capacitive charge	Q_{rr}	$V_R=400\text{V}$, $T_j=25\text{ }^{\circ}\text{C}$	-	68	-	nC
Total capacitance	C	$V_R=1\text{V}$, $f=1\text{ MHz}$ $T_j=25\text{ }^{\circ}\text{C}$	-	2105	-	pF
		$V_R=200\text{V}$, $f=1\text{ MHz}$ $T_j=25\text{ }^{\circ}\text{C}$	-	240	-	
		$V_R=400\text{V}$, $f=1\text{ MHz}$ $T_j=25\text{ }^{\circ}\text{C}$	-	183	-	

Thermal Characteristics (per diode)

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

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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