

# SiC Schottky Diode Full Bridge Power Module

Preliminary

 $V_{RRM} = 650V$   
 $I_F = 25A @ T_C = 135^\circ C$ 

## Features

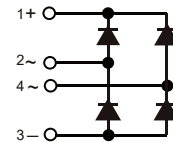
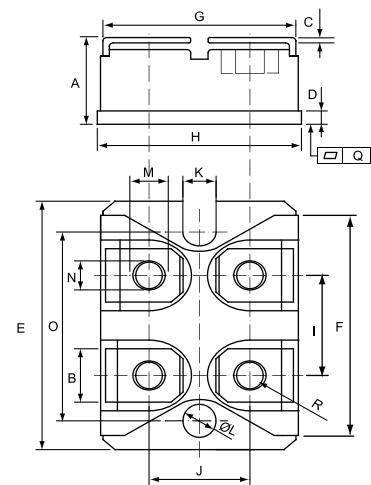
- Zero reverse recovery
- Zero forward recovery
- Temperature-independent switching behavior
- Positive temperature coefficient on VF
- Very low stray inductance
- High level of integration

## 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
CSRI4×25-065L1B	650V	650V

Maximum Rating	Symbol	Conditions	Value	Unit
Continuous forward current (per diode)	$I_F$	$T_C = 135^\circ C$	25	A
Surge non-repetitive forward current sine halfwave (per diode)	$I_{FSM}$	$T_C = 25^\circ C, t_p = 8.3 \text{ ms}$	200	
		$T_C = 150^\circ C, t_p = 8.3 \text{ ms}$	125	
Non-repetitive peak forward current (per diode)	$I_{F,max}$	$T_C = 25^\circ C, t_p = 10 \mu s$	800	
		$T_C = 150^\circ C, t_p = 10 \mu s$	500	
Repetitive peak reverse voltage	$V_{RRM}$	$T_J = 25^\circ C$	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	

	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	$V_F$	$I_F=25\text{A}, T_j=25\text{ }^\circ\text{C}$	-	1.50	1.70	
		$I_F=25\text{A}, T_j=175\text{ }^\circ\text{C}$	-	1.70	2.00	
Reverse current	$I_R$	$V_R=650\text{V}, T_j=25\text{ }^\circ\text{C}$	-	25	50	$\mu\text{A}$
		$V_R=650\text{V}, T_j=175\text{ }^\circ\text{C}$	-	50	200	

**AC Characteristics** (per diode)

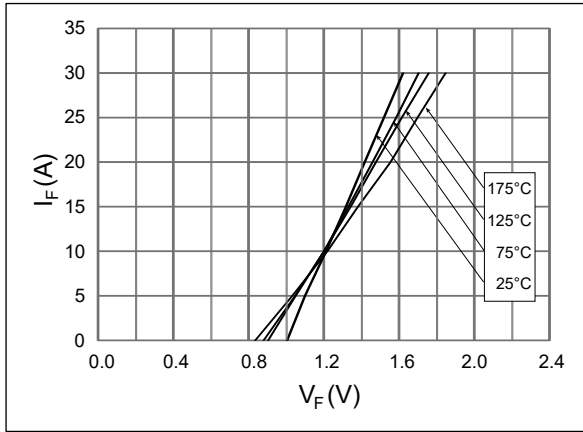
Static Characteristics	Symbol	Conditions	Values			Unit
			min.	typ.	max.	
Total capacitive charge	$Q_{rr}$	$V_R=400\text{V}, T_j=25\text{ }^\circ\text{C}$	-	44	-	nC
Total capacitance	C	$V_R=0\text{V}, f=1\text{ MHz}$ $T_j=25\text{ }^\circ\text{C}$	-	931	-	pF
		$V_R=200\text{V}, f=1\text{ MHz}$ $T_j=25\text{ }^\circ\text{C}$	-	168	-	
		$V_R=400\text{V}, f=1\text{ MHz}$ $T_j=25\text{ }^\circ\text{C}$	-	164	-	

**Thermal Characteristics** (per diode)

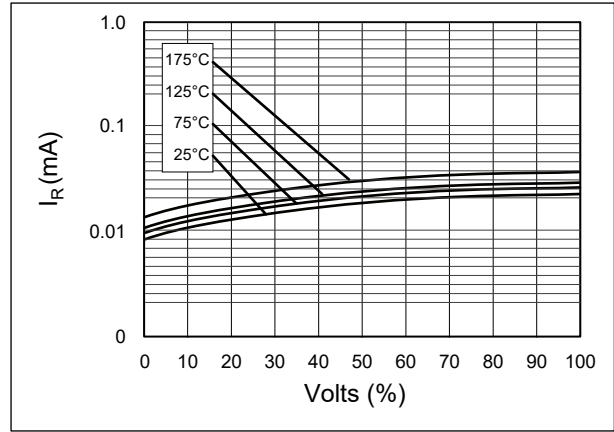
Static Characteristics	Symbol	Values	Unit
		typ.	
Thermal resistance from junction to case	$R_{\theta JC}$	0.56	$^\circ\text{C/W}$

## Typical Performance

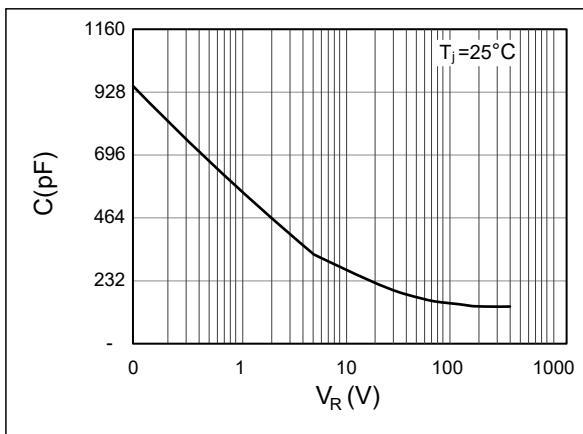
**Forward Characteristics** (parameterized on  $T_j$ )



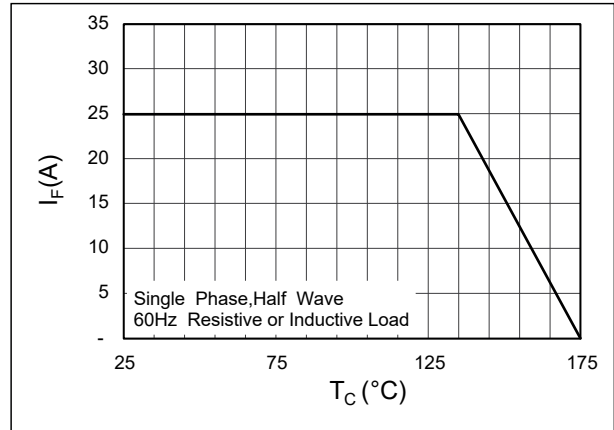
**Reverse Characteristics** (parameterized on  $T_j$ )



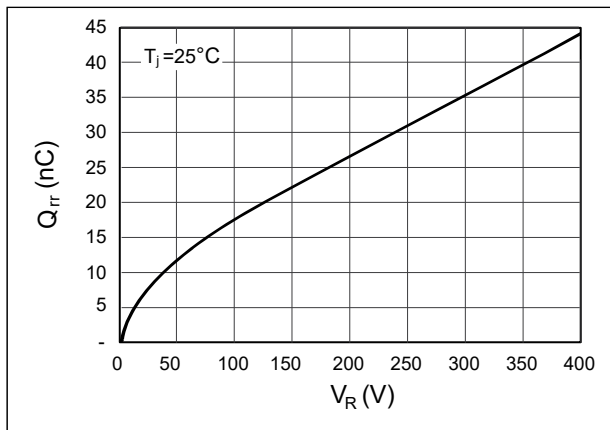
**Capacitance**



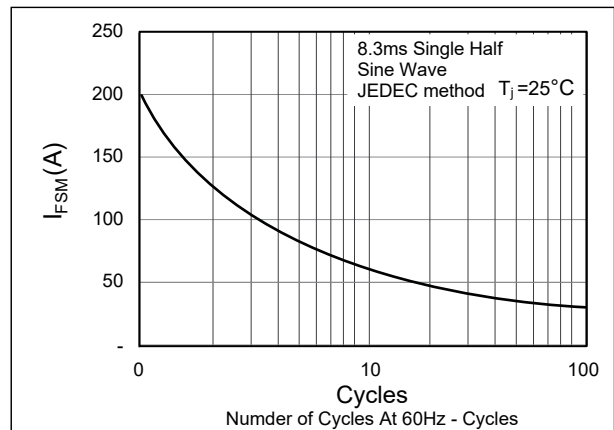
**Current Derating**



**Recovery Charge**



**Forward Surge Current**



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