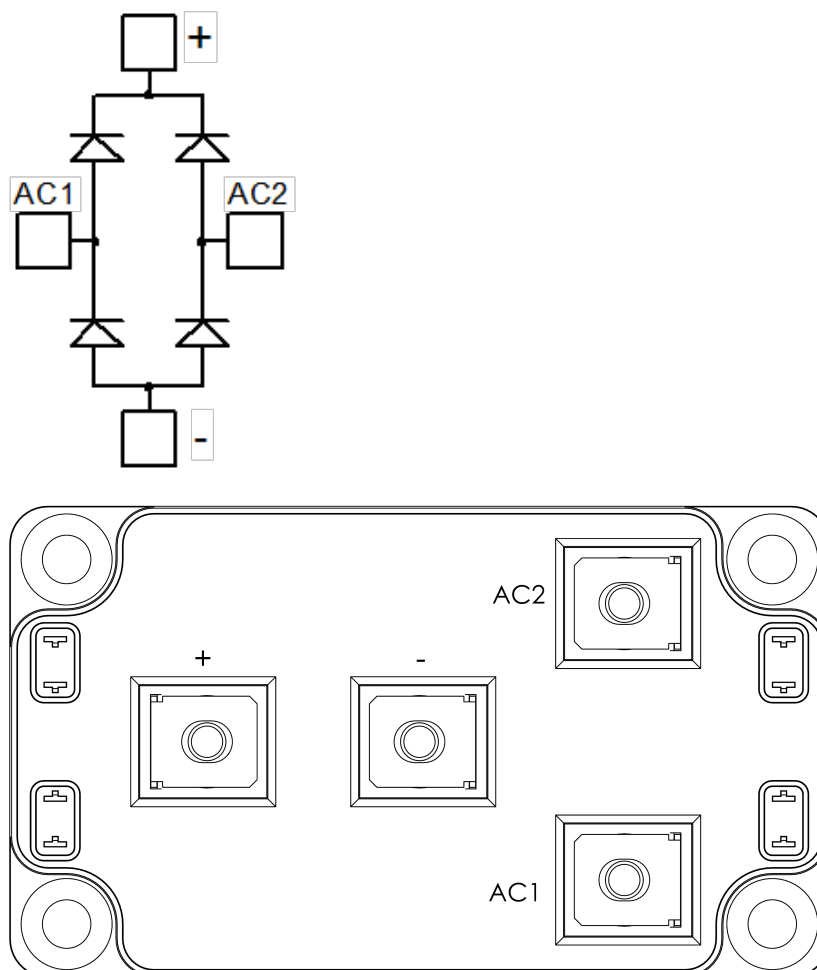


MSCDC200H120AG SiC Diode Full Bridge Power Module

1 Product Overview

This section shows the product overview for the MSCDC200H120AG device.



All ratings at $T_j = 25^{\circ}\text{C}$, unless otherwise specified.

Caution: These devices are sensitive to electrostatic discharge. Proper handling procedures should be followed.

1.1 Features

The following are key features of the MSCDC200H120AG device:

- Silicon Carbide (SiC) Schottky Diode
 - Zero reverse recovery
 - Zero forward recovery
 - Temperature Independent switching behavior
 - Positive temperature coefficient on VF
- High blocking voltage
- Low stray inductance
- M5 power connectors
- Aluminum Nitride (AlN) substrate for improved thermal performance

1.2 Benefits

The following are benefits of the MSCDC200H120AG device:

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

1.3 Applications

The MSCDC200H120AG device is designed for the following applications:

- Uninterruptible Power Supply (UPS)
- Induction heating
- Welding equipment
- High-speed rectifiers

2 Electrical Specifications

This section shows the electrical specifications for the MSCDC200H120AG device.

2.1 Absolute Maximum Ratings

The following table shows the absolute maximum ratings per diode for the MSCDC200H120AG device.

Table 1 • Absolute Maximum Ratings

Symbol	Parameter	Maximum Ratings	Unit
V_{RRM}	Repetitive peak reverse voltage	1200	V
I_F	DC forward current	$T_C = 95\text{ }^{\circ}\text{C}$ 200	A

The following table shows the thermal and package characteristics of the MSCDC200H120AG.

Table 2 • Thermal and Package Characteristics

Symbol	Characteristic			Min	Max	Unit
V _{ISOL}	RMS isolation voltage, any terminal to case t =1 minute, 50 Hz/60 Hz			4000		V
T _J	Operating junction temperature range			−40	175	°C
T _{JOP}	Recommended junction temperature under switching conditions			−40	T _{Jmax} −25	
T _{STG}	Storage temperature range			−40	125	
T _C	Operating case temperature			−40	125	
Torque	Mounting torque	To heatsink	M6	3	5	N.m
		For terminals	M5	2	3.5	
Wt	Package weight				300	g

2.2 Electrical Performance

The following table shows the electrical characteristics per diode of the MSCDC200H120AG.

Table 3 • Electrical Characteristics Per Diode

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_F	Diode forward voltage	$I_F = 200\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$		1.5	1.8	V
				$T_J = 175\text{ }^{\circ}\text{C}$ 2.1		
I_{RM}	Reverse leakage current	$V_R = 1200\text{ V}$ $T_J = 25\text{ }^{\circ}\text{C}$		60	800	μA
				$T_J = 175\text{ }^{\circ}\text{C}$ 1000		
Q_C	Total capacitive charge	$V_R = 600\text{ V}$		896		nC
C	Total capacitance	$f = 1\text{ MHz}, V_R = 400\text{ V}$		984		pF
		$f = 1\text{ MHz}, V_R = 800\text{ V}$		728		
R_{thJC}	Junction to case thermal resistance				0.16	$^{\circ}\text{C/W}$

2.3 Performance Curves

This section shows the typical performance curves for the MSCDC200H120AG device.

Figure 1 • Maximum Transient Thermal Impedance

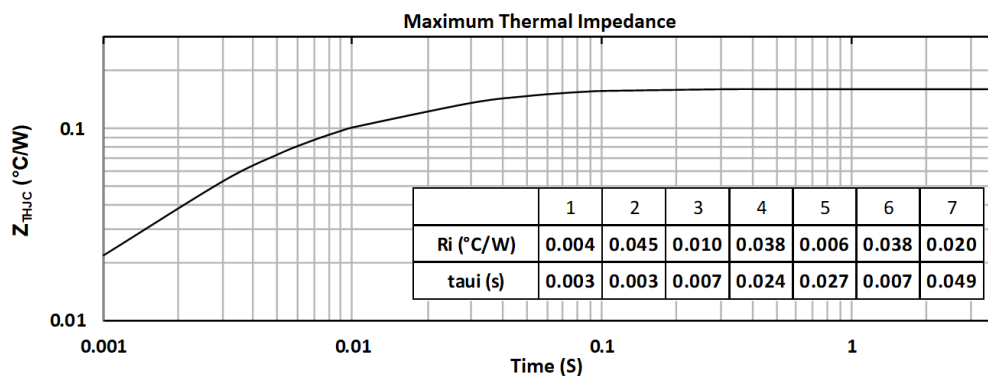


Figure 2 • Forward Current vs Forward Voltage

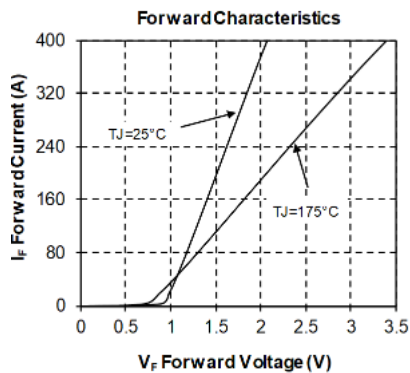
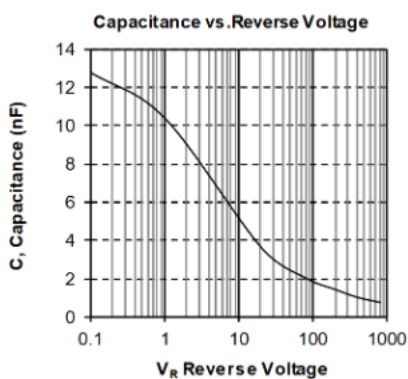


Figure 3 • Capacitance vs. Reverse Voltage



**Microsemi Headquarters**

One Enterprise, Aliso Viejo,
CA 92656 USA
Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996
Email: sales.support@microsemi.com
www.microsemi.com

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MSCC-0344-DS-01001-1.0-0519 | May 2019 | Final