Product Preview

The NXH015F120M3F1PTG is a power module containing 15 mΩ/1200 V SiC MOSFET full bridge and a thermistor with Al_2O_3 DBC in an F1 package.

Features

- 15 mΩ / 1200 V M3S SiC MOSFET Full Bridge
- Al_2O_3 DBC
- Thermistor
- Options with Pre Applied Thermal Interface Material (TIM) and without Pre Applied TIM
- Press Fit Pins
- These Devices are Pb Free, Halide Free and are RoHS Compliant

Typical Applications

- Solar Inverter
- Uninterruptible Power Supplies
- Electric Vehicle Charging Stations
- Industrial Power

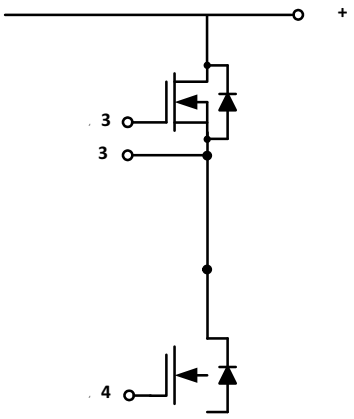


Figure 1. NXH015F120M3F1PTG Schematic Diagram

© Semiconductor Components Industries, LLC, 2023

PIN FUNCTION DESCRIPTION

Pin	Name	Description
1	AC2	Center point of full bridge 2
2	AC2	

RECOMMENDED OPERATING RANGES

Rating	Symbol	Min	Max	Unit
Module Operating Junction Temperature	T_J	−40	150	°C

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C unless otherwise noted)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
SiC MOSFET CHARACTERISTICS						
Zero Gate Voltage Drain Current	V_{GS} = 0 V, V_{DS} = 1200 V, T_J = 25°C	I_{DSS}	–	–	200	μA
Drain−Source On Resistance	V_{GS} = 18 V, I_D = 60 A, T_J = 25°C	$R_{DS(ON)}$	–	14.8	19	mΩ
	V_{GS} = 18 V, I_D = 60 A, T_J = 125°C		–	24.7	–	
	V_{GS} = 18 V, I_D = 60 A, T_J = 150°C		–	28.7	–	
	V_{GS} = 18 V, I_D = 60 A, T_J = 175°C		–	33	–	
Gate−Source Threshold Voltage	V_{GS} = V_{DS}, I_D = 30 mA	$V_{GS(TH)}$	2.04	2.4	4.4	V
Recommended Gate Voltage		V_{GOP}	−3	−	+18	V
Gate−to−Source Leakage Current	V_{GS} = +22/−10 V, V_{DS} = 0 V	I_{GSS}	−	–	±2	μA
Input Capacitance	V_{GS} = 0 V, f = 1 MHz, V_{DS} = 800 V	C_{ISS}	–	4696	–	pF
Reverse Transfer Capacitance		C_{RSS}	–	20.1	–	
Output Capacitance		C_{OSS}	–	287	–	
Total Gate Charge	V_{GS} = −3/18 V, V_{DS} = 800 V, I_D = 30 A	$Q_{G(TOTAL)}$	–	211	–	nC
Gate−Source Charge		Q_{GS}	–	16	–	nC
Gate−Drain Charge		Q_{GD}	–	50	–	nC
[redacted]		GINT	–	1.65	–	Ω
[redacted]		d(on)	–	33.3	–	ns
[redacted]		t_r	–	8.6	–	
Turn−off Delay Time						

ELECTRICAL CHARACTERISTICS (continued)(T_J = 25 °C unless otherwise noted)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
THERMISTOR CHARACTERISTICS						
Power Dissipation − Absolute Maximum	5 mA			34.2		mW
Power Dissipation Constant			–	1.4	–	mW/K
B−value	B(25/50), tolerance ±2%		–	3375	–	K
B−value	B(25/100), tolerance ±2%		–	3436	–	K

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

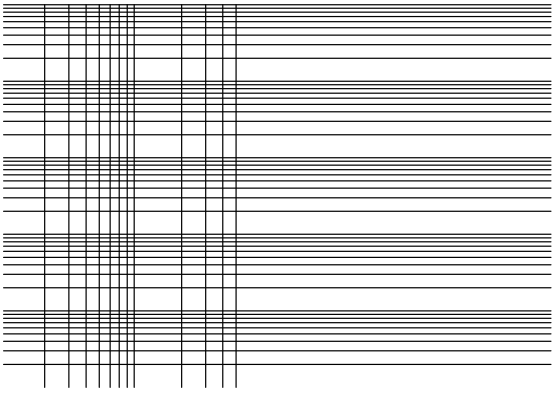
ORDERING INFORMATION

Orderable Part Number	Marking	Package	Shipping
NXH015F120M3F1PTG			

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS

M1, M2, M3, M4 SIC MOSFET CHARACTERISTIC



Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS

M1, M2, M3, M4 SIC MOSFET CHARACTERISTIC

Share Feedback
Your Opinion Matters

TYPICAL CHARACTERISTICS

M1, M2, M3, M4 SIC MOSFET CHARACTERISTIC

Table 1. CAUER NETWORKS

Cauer Element #	Rth (K/W)	Cth (Ws/K)
1	0.0004413	0.0013801
2	0.0029539	0.0003074
3	88 60.00295393	

88 60.002953975.55115.30754 326AUE9 .90709 15.30745F1P5071 refBT8 0 0 8 450.8786

onsemi, , and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba “**onsemi**” or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**’s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent−Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided “as−is” and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi**