Product Preview

The NXH010P120M3F1 is a power module containing 10 mΩ/1200 V SiC MOSFET half−bridge and a thermistor in an F1 package.

Features

- 10 mΩ/1200 V M3S SiC MOSFET Half−Bridge
- 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

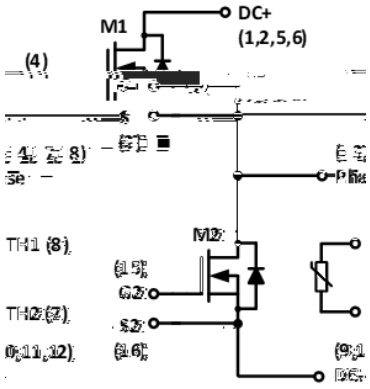
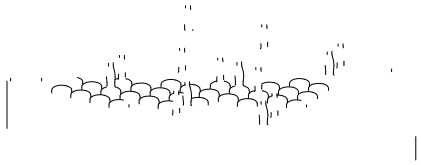


Figure 1. NXH010P120M3F1 Schematic Diagram

This document contains information on a product under development. **onsemi** reserves the right to change or discontinue this product without notice.

PACKAGE PICTURE



PIM18 33.8x42.5 (PRESS FIT)
CASE 180BW

MARKING DIAGRAM

NXH010P120M3F1PzG	=	Specific Device Code
z	=	T (with TIM), blank (without TIM)
AT	=	Assembly & Test Site Code
YYWW	=	Year and Work Week Code

PIN CONNECTIONS

See Pin Function Description for pin names

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

PIN FUNCTION DESCRIPTION

Pin	Name	Description
1	DC+	

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
SiC MOSFET			
Drain−Source Voltage	V_{DSS}	1200	V
Gate−Source Voltage	V_{GS}	+22/−10	V
Continuous Drain Current @ T_c = 80°C (T_J = 175°C)	I_D	105	A
Pulsed Drain Current (T_J = 150°C)	I_{Dpulse}	316	A
Maximum Power Dissipation (T_J = 175°C)	P_{tot}	272	W
Minimum Operating Junction Temperature	T_{JMIN}	−40	°C
Maximum Operating Junction Temperature	T_{JMAX}	175	°C
THERMAL PROPERTIES			
Storage Temperature Range	T_{stg}	−40 to 150	°C
INSULATION PROPERTIES			
Isolation Test Voltage, t = 1 s, 60 Hz	V_{is}	4800	V_{RMS}
Creepage Distance		12.7	mm
CTI		600	
Substrate Ceramic Material		Al_2O_3	
Substrate Ceramic Material Thickness		0.32	mm

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. Refer to ELECTRICAL CHARACTERISTICS, RECOMMENDED OPERATING RANGES and/or APPLICATION INFORMATION for Safe Operating parameters.

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

Parameter	Test Conditions°	Symbol	Min	Typ	Max	Unit

ORDERING INFORMATION

Orderable Part Number	Marking	Package	Shipping
NXH010P120M3F1PTG	NXH010P120M3F1PTG	F1HALFBR: Case 180BW Press−fit Pins with pre−applied thermal interface material (TIM) (Pb−Free / Halide Free)	28 Units / Blister Tray
NXH010P120M3F1PG	NXH010P120M3F1PG	F1HALFBR: Case 180BW Press−fit Pins (Pb−Free / Halide Free)	28 Units / Blister Tray

TYPICAL CHARACTERISTICS

M1/M2 SIC MOSFET CHARACTERISTIC

Figure 2. MOSFET Typical Output Characteristic V_{GS} = 15 V

Figure 3. MOSFET Typical Output Characteristic V_{GS} = 18 V

Figure 4. MOSFET Typical Output Characteristic V_{GS} = Var.

Figure 5. Body Diode Forward Characteristic

Figure 6. $R_{DS(on)}$ Drain−to−Source ON Resistance vs. Junction Temperature

Figure 7. Reverse Bias Safe Operating

TYPICAL CHARACTERISTICS

M1/M2 SIC MOSFET CHARACTERISTIC

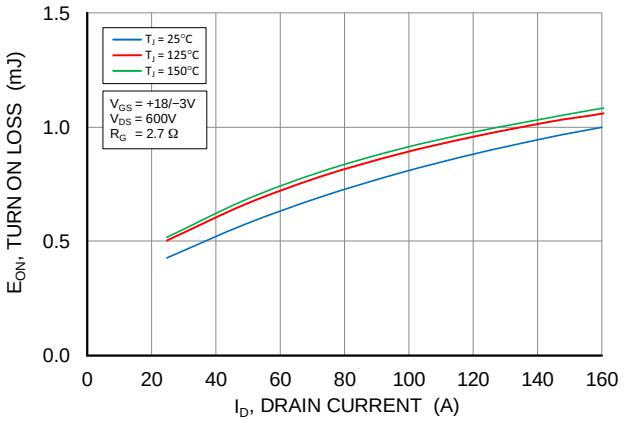


Figure 8. Switching on Loss vs. Drain Current V_{DS} = 600 V

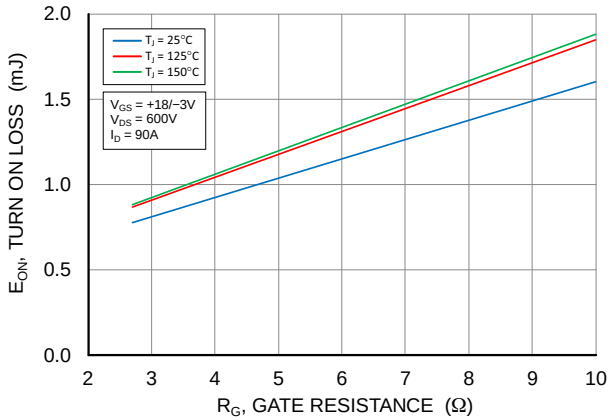


Figure 9. Switching on Loss vs. Gate Resistance V_{DS} = 600 V

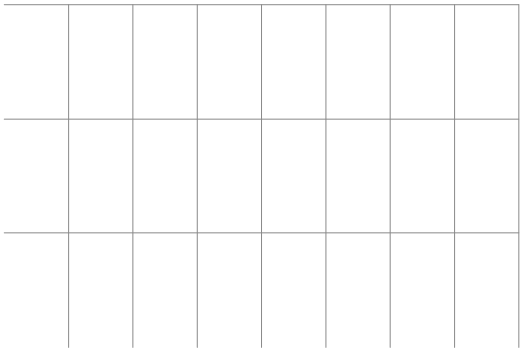


Figure 10. Switching off Loss vs. Drain Current V_{DS} = 600 V

Figure 11. Switching off Loss vs. Gate Resistance V_{DS} = 600 V

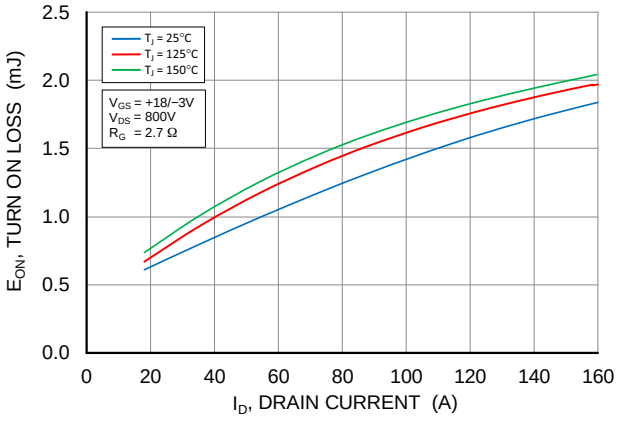


Figure 12. Switching on Loss vs. Drain Current V_{DS} = 800 V

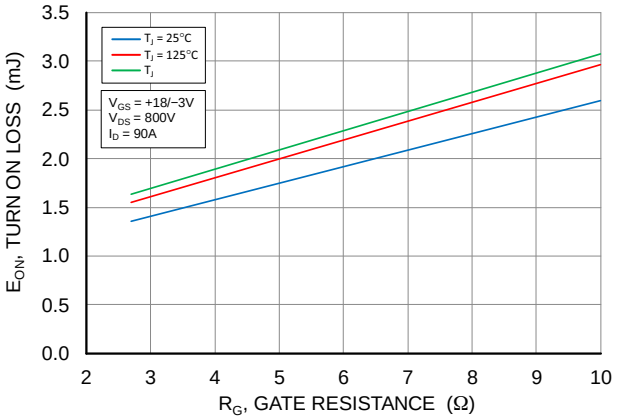


Figure 13. Switching on Loss vs. Gate Resistance V_{DS} = 800 V

TYPICAL CHARACTERISTICS

M1/M2 SIC MOSFET CHARACTERISTIC

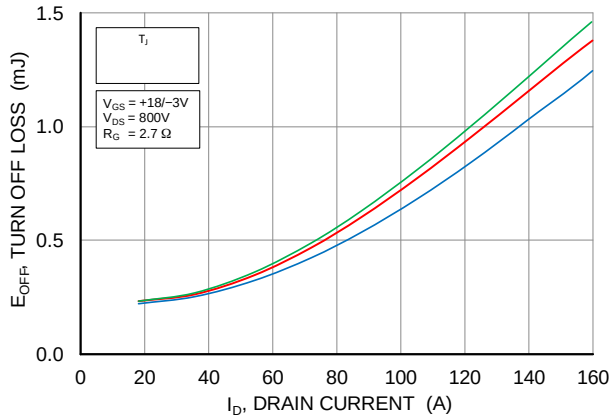


Figure 14. Switching off Loss vs. Drain Current V_{DS} = 800 V

Figure 15. Switching off Loss vs. Gate Resistance V_{DS} = 800 V

TYPICAL CHARACTERISTICS

M1/M2 SIC MOSFET CHARACTERISTIC

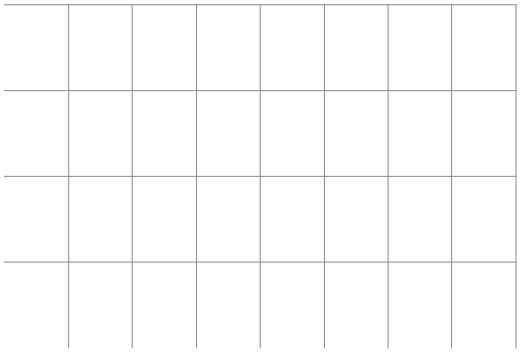
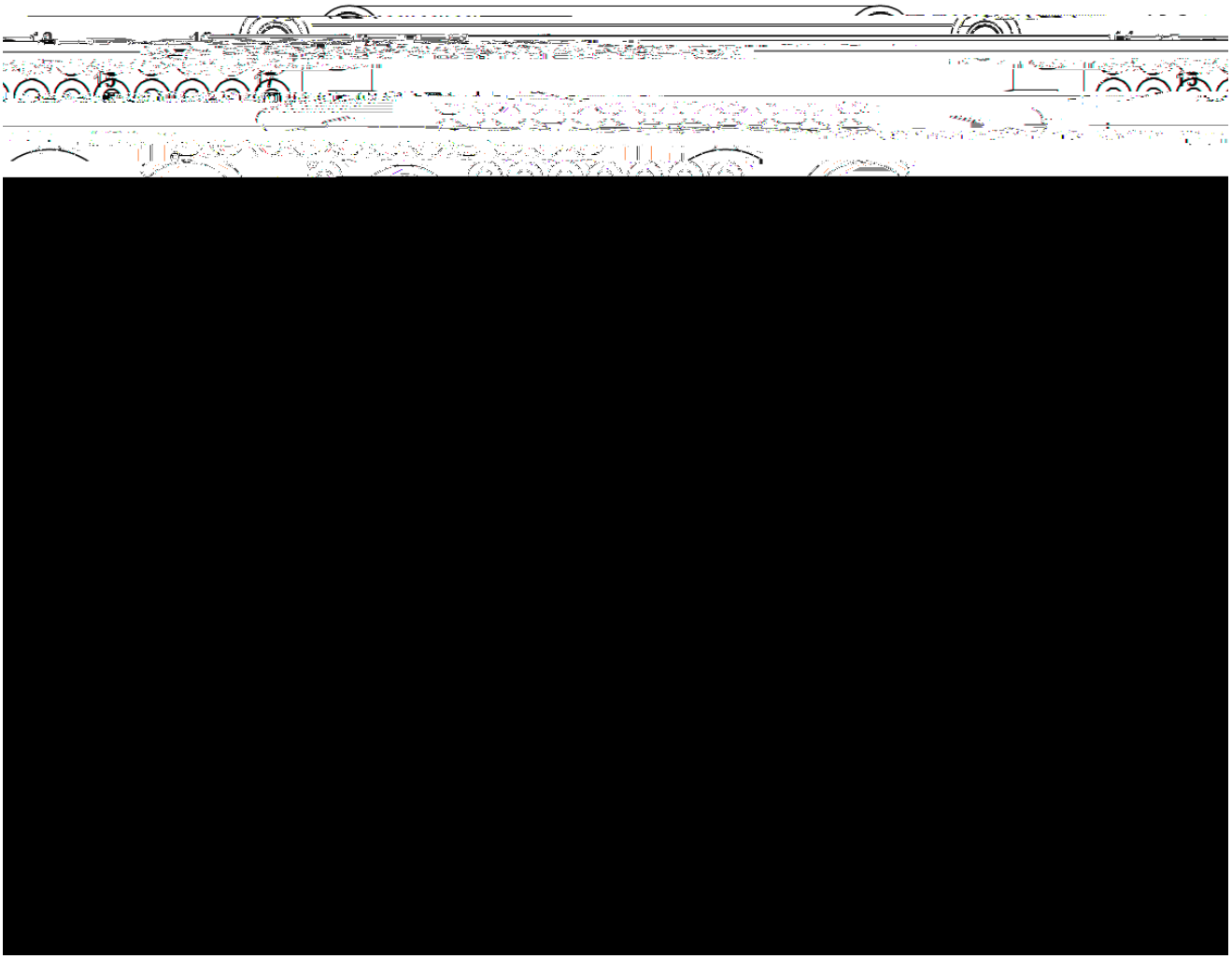


Figure 20. di/dt Turn OFF vs. Drain Current V_{DS} = 800 V

Figure 21. di/dt Turn OFF vs. Gate Resistance V_{DS} = 800 V

PIN POSITION INFORMATION

scale = 2.5 : 1



PIM18 33.8x42.5 (PRESS FIT)
CASE 180BW
ISSUE B

DATE 30 APR 2021

GENERIC
MARKING DIAGRAM*