

N2M-1200-0080

Silicon Carbide Power MOSFET

N-channel Enhancement Mode

Features

- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness
- Halogen Free, RoHS Compliant

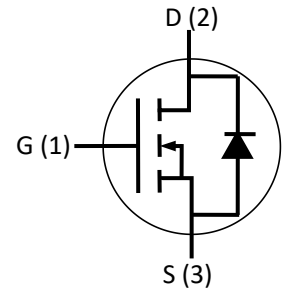
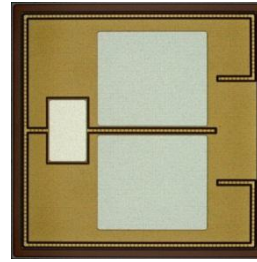
Benefits

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power applications

Package



Part Number	Die Size
N2M-1200-0080	3.3mm*3.3mm

Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	1200			V	$V_{GS}=0V, I_D=100\mu A$	
$V_{GS(th)}$	Gate Threshold Voltage	2.0	2.4	4.0	V	$V_{GS}=V_{DS}, I_{DS}=5mA, T_C=25^\circ C$	Fig. 6
			1.73			$V_{GS}=V_{DS}, I_{DS}=5mA, T_C=150^\circ C$	
I_{DSS}	Zero Gate Voltage Drain Current		1	100	μA	$V_{DS}=1200V, V_{GS}=0V$	
I_{GSS}	Gate-Source Leakage Current		20	200	nA	$V_{GS}=20V, V_{DS}=0V$	
$R_{DS(on)}$	Drain-Source on-state Resistance		80	98	m Ω	$V_{GS}=20V, I_D=20A, T_C=25^\circ C$	Fig. 4
			120			$V_{GS}=20V, I_D=20A, T_C=150^\circ C$	
g_{fs}	Transconductance		7.0		S	$V_{GS}=20V, I_D=20A, T_J=25^\circ C$	Fig. 5
			6.6			$V_{GS}=20V, I_D=20A, T_J=150^\circ C$	
C_{iss}	Input Capacitance		2016		pF	$V_{GS}=0V, V_{DS}=1000V, f=1MHz$	Fig. 8
C_{oss}	Output Capacitance		17.9				

Crss	Reverse Transfer Capacitance	72.6				
E _{ON}	Turn-On Switching Energy	180		μJ	V _{DS} =800V, V _{GS} =-5/20V, I _D = 20A, R _{G(ext)} = 5Ω, L= 142 μH	
E _{OFF}	Turn-Off Switching Energy	70				
t _{d(on)}	Turn-On Delay Time	23		ns	V _{DD} =800V, V _{GS} =-5/20 V I _D = 20A, R _{G(ext)} = 5 Ω , R _L =40Ω , Timing relative to V _{DS}	
t _r	Rise Time	60				
t _{d(off)}	Turn-Off Delay Time	17				
t _f	Fall Time	12				
R _{G(int)}	Internal Gate Resistance	2.8		Ω	f=1 MHz, V _{AC} =25mV	
Q _{gs}	Gate to Source Charge	23		nC	V _{DD} =800V, V _{GS} =-5/20 V I _D = 20A	Fig. 9
Q _{gd}	Gate to Drain Charge	26				
Q _g	Total Gate Charge	85				

Reverse Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V _{SD}	Diode Forward Voltage	3.5		V	V _{GS} = -5V, I _{SD} = 10 A, T _J = 25 °C	Fig. 7
		3.3		V	V _{GS} = -5V, I _{SD} = 10 A, T _J = 150 °C	
I _S	Continuous Diode Forward Current		15	A	T _C = 25 °C	

Mechanical Parameters

Parameter	Typ.	Unit
Die Size	3.30*3.30	mm
Source Pad Size	1.40*1.20	mm
Gate Pad Size	0.78*0.47	mm
Die Thickness	180 ± 30	μm
Wafer Size	150	mm
Top Side Source Metalization (Al)	4	μm
Top Side Gate Metalization (Al)	4	μm
Cathode Metalization (Ni/Ag)	1.5	μm

