新芯微电子
NewChip
Microelectronics

N2M-1200-0160

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

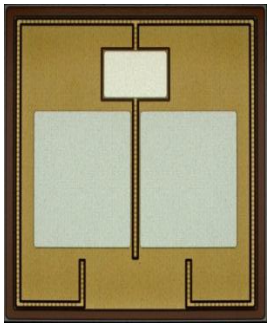
Benefits

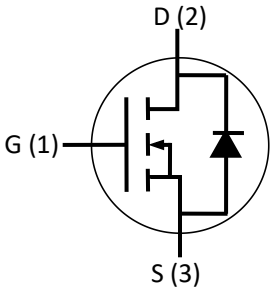
- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

Applications

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

Package





Part Number	Package
N2M-1200-0160	2.40*2.65

Maximum Ratings (T_c = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{DSmax}	Drain - Source Voltage	1200	V	V_{GS}=0V,I_D=100μA	
V_{GSmax}	Gate - Source Voltage	-10/+25	V	Absolute maximum values	
V_{GSop}	Gate - Source Voltage	-5/+20	V	Recommended operational values	
I_D	Continuous Drain Current	17 11	A	V_{GS}=20V , T_C=25°C V_{GS}=20V , T_C=100°C	
P_D	Power Dissipation	127	W	T_C=25°C, T_J=150°C	
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +150	°C		

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=100μA	
$V_{GS(th)}$	Gate Threshold Voltage	2.0	2.4	4.0	V	V_{GS}= V_{DS}, I_{DS}=2.5mA,T_C=25°C	
			1.8			V_{GS}= V_{DS}, I_{DS}=2.5mA,T_C=150°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		160	192	mΩ	V_{GS}=20V, I_D=10A, T_C=25°C	
			285			V_{GS}=20V, I_D=10A, T_C=150°C	
g_{fs}	Transconductance		4.2		S	V_{GS} = 20 V, I_D = 10A, T_J = 25 °C	
			4.0			V_{GS} = 20 V, I_D = 10A, T_J = 150 °C	
Ciss	Input Capacitance		950		pF	V_{GS}=0V, V_{DS}=1000 V, f=1MHz V_{AC}=25 mV	
Coss	Output Capacitance		35.0				
Crss	Reverse Transfer Capacitance		8.5				
E_{ON}	Turn-On Switching Energy		95		μJ	V_{DS}=800V, V_{GS}=-5/20V, I_D= 10A, $R_{G(ext)}$ = 2.5Ω, L= 256 μH	
E_{OFF}	Turn-Off Switching Energy		48				
$t_{d(on)}$	Turn-On Delay Time		12		ns	V_{DD}=800V, V_{GS}=-5/20 V I_D = 10A, $R_{G(ext)}$ = 2.5 Ω , R_L=80Ω , Timing relative to V_{DS}	
t_r	Rise Time		20				
$t_{d(off)}$	Turn-Off Delay Time		15				
t_f	Fall Time		10				
$R_{G(int)}$	Internal Gate Resistance		5.8		Ω	f=1 MHz, V_{AC}=25mV	
Q_{gs}	Gate to Source Charge		9		nC	V_{DD}=800V, V_{GS}=-5/20 V I_D = 10A	
Q_{gd}	Gate to Drain Charge		17				
Q_g	Total Gate Charge		42				

Reverse Diode Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	3.5		V	V_{GS} = -5V, I_{SD} = 5 A, T_J = 25 °C	
		3.3		V	V_{GS} =- 5V, I_{SD} = 5 A, T_J = 150 °C	
I_S	Continuous Diode Forward Current		17	A	T_C = 25°C	

Mechanical Parameters

Parameter	Typ.	Unit
Die Size	2.40 x 2.65	mm
Souece Pad Size	1.40*0.75	mm
Gate Pad Size	0.80*0.50	mm
Thickness	180 ± 10%	μm
Wafer Size	150	mm
Top Side Metalization (Al)	4	μm
Bottom Side Metalization (Ni/Ag)	1.5	μm