AMG100N1700MB

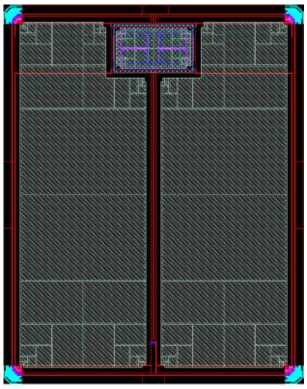
1700V N-Channel MOSFET Gen3

Description

Silicon Carbide (SiC) MOSFET use a completely new technology that provide superior switching performance and higher reliability compared to Silicon. In addition, the low ON resistance and compact chip size ensure low capacitance and gate charge. Consequently, system benefits include highest efficiency, faster operating frequency, increased power density, reduced EMI, and reduced system size.

Features

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low RDS(on)
- Simple to drive with Standard Gate Drive
- 100% avalanche tested
- Maximum junction temperature of 175°C
- ROHS Compliant



Application

- EV Charging
- DC-AC Inverters
- High Voltage DC/DC Converters
- Switch Mode Power Supplies
- Power Factor Correction Modules
- Motor Drives

Part Number	Die Size
AMG100N1700MB	5.179×5.179

Absolute Maximum Ratings(Tc=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	1700	V
I_D	Drain Current(continuous)at Tc=25℃	100	A
I_{DM}	Drain Current (pulsed)	238	A
V_{GS}	Gate-Source Voltage	-8/+19	V
T_J, Tstg	Junction and Storage Temperature Range	-55 to +175	℃

Electrical Characteristics(T_J = 25℃ unless otherwise specified)

Typical Performance-Static

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-source Breakdown Voltage	I_D=250uA,V_{GS}=0V	1700			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =1700V, V_{GS} =0V, T_J=25°C			100	uA
I_{GSS+}	Gate-body Leakage Current	V_{GS}=19V,V_{DS}=0V			100	nA
I_{GSS-}	Gate-body Leakage Current	V_{GS}=-8V,V_{DS}=0V			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= $V_{GS,}$ I_D=25mA	1.8	3	4	V
$R_{DS(on)}$	Static Drain-source On Resistance	V_{GS}=15V, I_D=75A		22	29	mΩ
R_G	Gate Resistance	V_{GS}=0V,f=1MHz		3		Ω

Typical Performance-Dynamic

C_{iss}	Input Capacitance	V_{DS}=1200V,f=1000KH_Z,V_{GS}=0V		6500		pF
C_{oss}	Output Capacitance			195		pF
C_{rss}	Reverse Transfer Capacitance			16		pF
Q_g	Total Gate Charge	V_{DS}=1200V, I_D=50A,V_{GS}=-4~15V		255		nC
Q_{gs}	Gate-source Charge			73		nC
Q_{gd}	Gate-Drain Charge			62		nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=1200V,ID=50A, V_{GS}=-4V~15V, R_G=0Ω,		181		ns
t_r	Rise Time			29		ns
$t_{d(off)}$	Turn-off Delay Time			85		ns
t_f	Fall Time			25		ns

Typical Performance-Reverse Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_{FSD}	Forward Voltage	V_{GS}=0V,I_F=37.5A,T_J=25°C	3		6	V
		V_{GS}=0V,I_F=37.5A,T_J=150°C	3		6	V
t_{rr}	Reverse Recovery Time	V_{GS}=0 V, I_F=30 A, V_R=1200 V, d*i*/d*t*= 100 A/μs		99		ns
Q_{rr}	Reverse Recovery Charge			810		nC
I_{rrm}	Peak Reverse Recovery Current			21		A

Mechanical Parameters

Parameter	Typical Value	Unit
Die Dimensions(L×W) without scribe line	5.099×5.099	mm
Gate Pad Dimensions(L×W)	1.19×0.598	mm
Source Pad Metal Dimensions (LxW)	4.480*4.480	mm
Scribe Line	80	um
Die Thickness	175±25	um
Top Side Source metallization (Al)	4	um
Top Side Gate metallization (Al)	4	um
Bottom Drain metallization (Ti/Ni/Ag)	0.2/0.3/2	um

Chip Dimensions