

General Description

The AGM206MDP combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

This device is ideal for load switch and battery protection applications.

Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Avalanche tested
- 100% DVDS tested

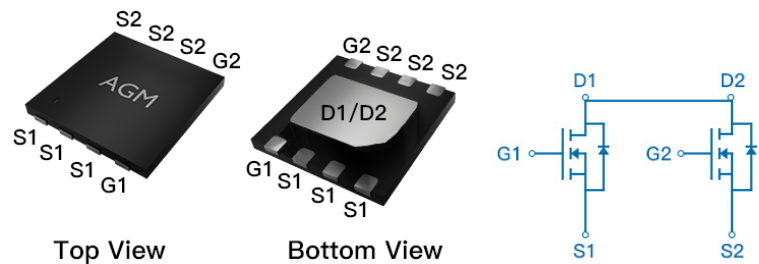
Application

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

Product Summary

BVDSS	RDSON	ID
20V	4.5mΩ	60A

DFN3*3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM206MDP	AGM206MDP	DFN3*3	330mm	12mm	5000

Table 1. Absolute Maximum Ratings (TA=25°C)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	20	V
VGS	Gate-Source Voltage (VDS=0V)	±12	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	60	A
	Drain Current-Continuous(Tc=100°C)	41	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	240	A
PD	Maximum Power Dissipation(Tc=25°C)	31	w
	Maximum Power Dissipation(Tc=100°C)	12.5	w
EAS	Avalanche energy (Note 3)	90	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) ¹	---	50	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	4.0	°C/W

Table 3. Electrical Characteristics (TJ=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=20V,VGS=0V	--	--	1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.5	0.7	1.0	V
gFS	Forward Transconductance	VDS=5V,ID=10A	--	20	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=4.5V, ID=15A	--	4.5	7.0	mΩ
		VGS=2.5V, ID=10A	--	5.0	8.0	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=10V,VGS=0V, F=1MHZ	--	2246	--	pF
Coss	Output Capacitance		--	200	--	pF
Crss	Reverse Transfer Capacitance		--	130	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=4.5V,VDS=10V RL=0.5Ω,RGEN=3Ω	--	13	--	nS
tr	Turn-on Rise Time		--	32	--	nS
td(off)	Turn-Off Delay Time		--	47	--	nS
tf	Turn-Off Fall Time		--	94	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=25V, ID=4.5A	--	23	--	nC
Qgs	Gate-Source Charge		--	8.7	--	nC
Qgd	Gate-Drain Charge		--	0.67	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	60	A
VSD	Forward on Voltage	VGS=0V,IS=15A	--	--	1.2	V
trr	Reverse Recovery Time	IF=15A , dI/dt=100A/μs , TJ=25℃	--	11	--	ns
Qrr	Reverse Recovery Charge		--	2.5	--	nc

Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25°C,VDD=15V,VGS=5V,ID=19A,L=0.5mH,RG=25ohm

Typical Electrical And Thermal Characteristics (Curves)

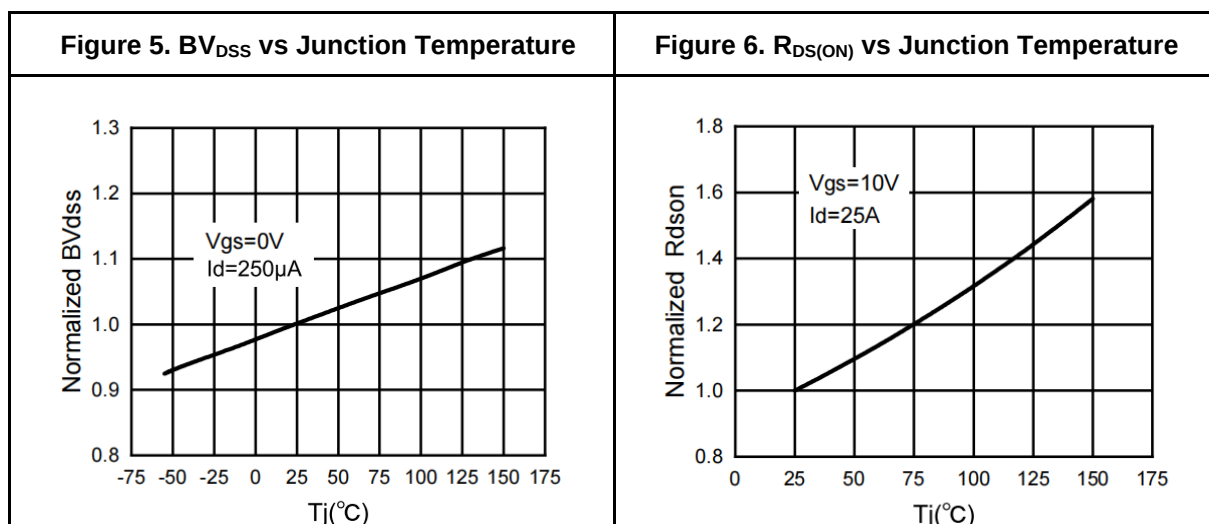
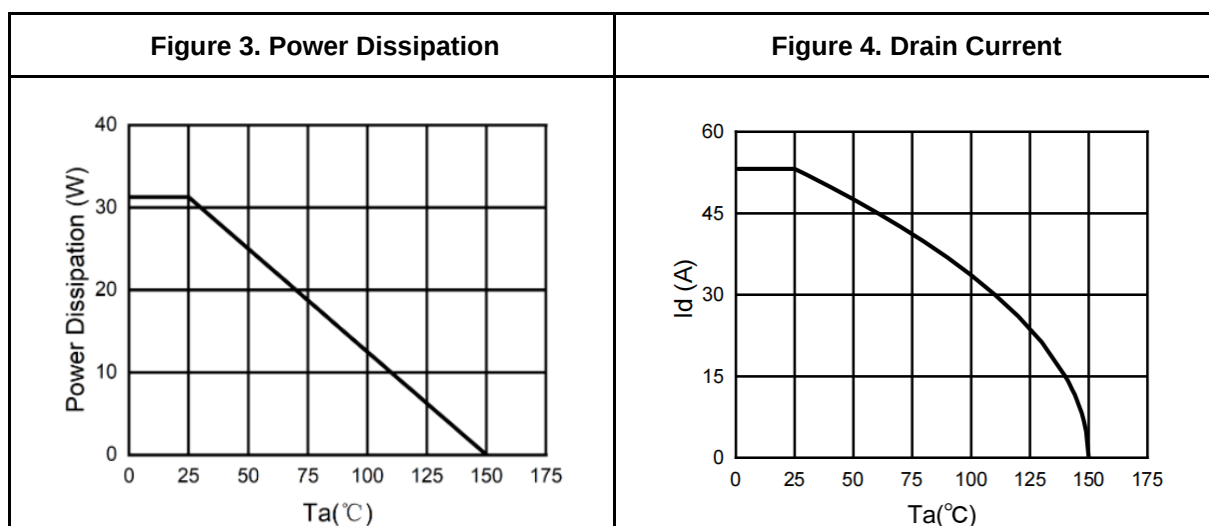
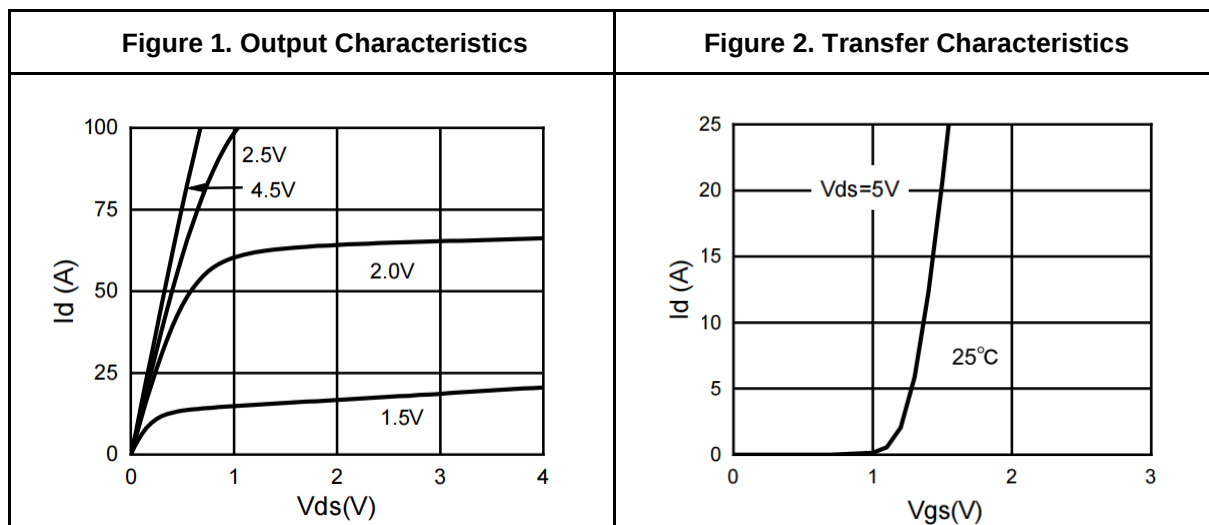


Figure 7. Gate Charge Waveforms

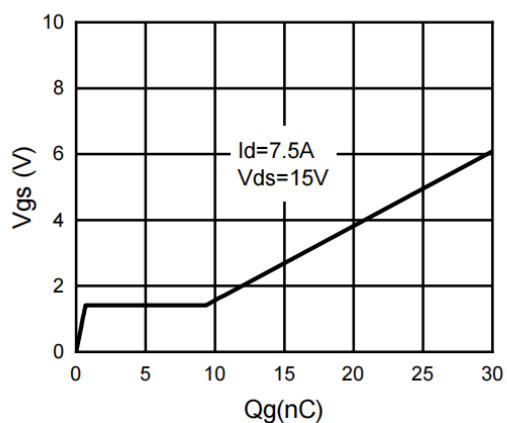


Figure 8. Capacitance

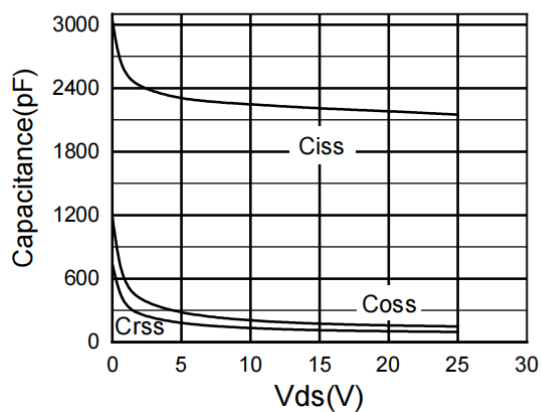


Figure 9. Body-Diode Characteristics

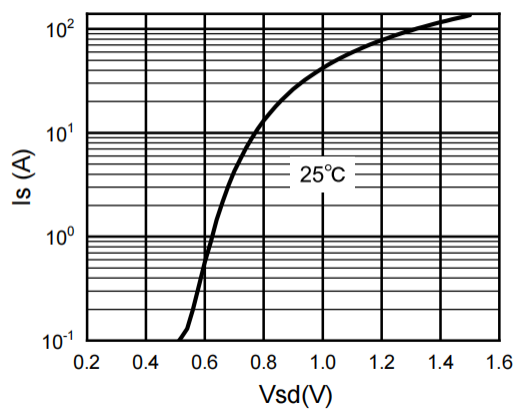
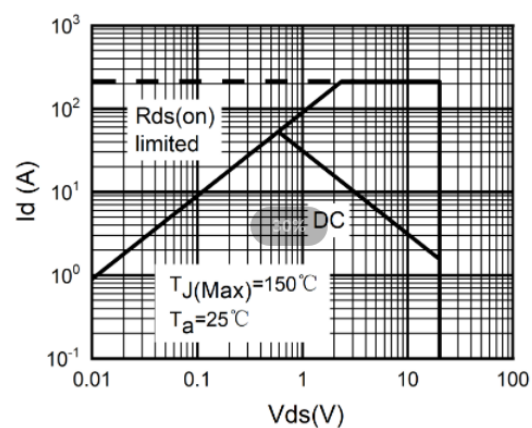
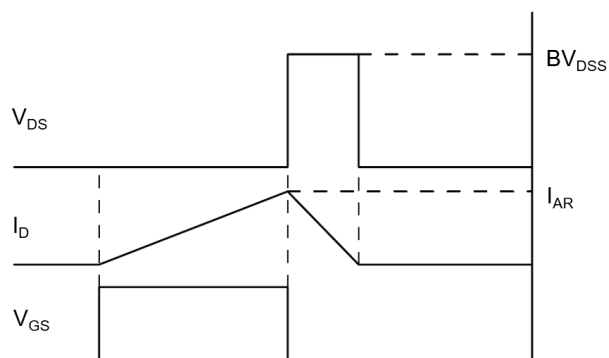
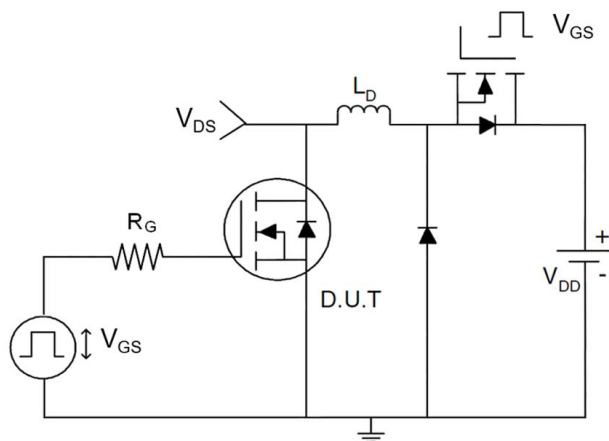


Figure 10. Maximum Safe Operating Area

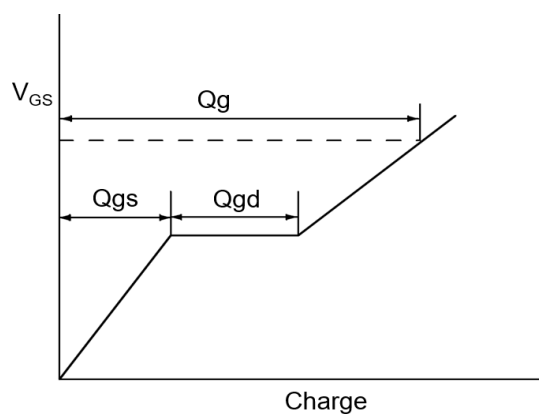
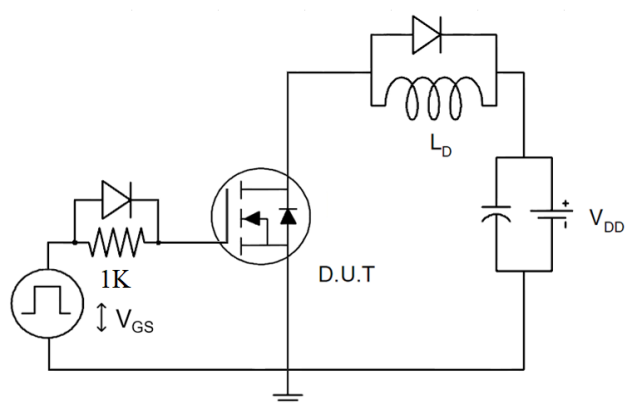


Test Circuit

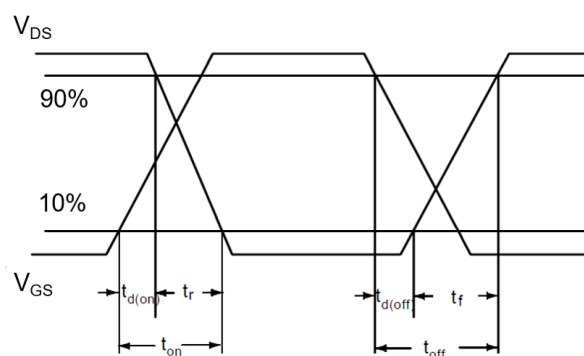
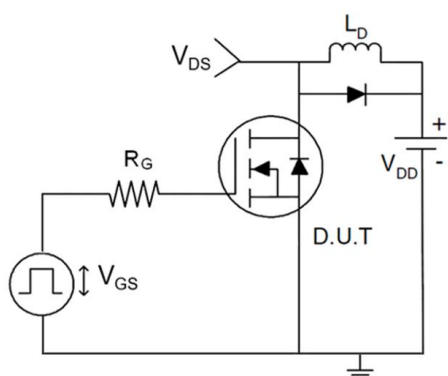
1) E_{AS} Test Circuits



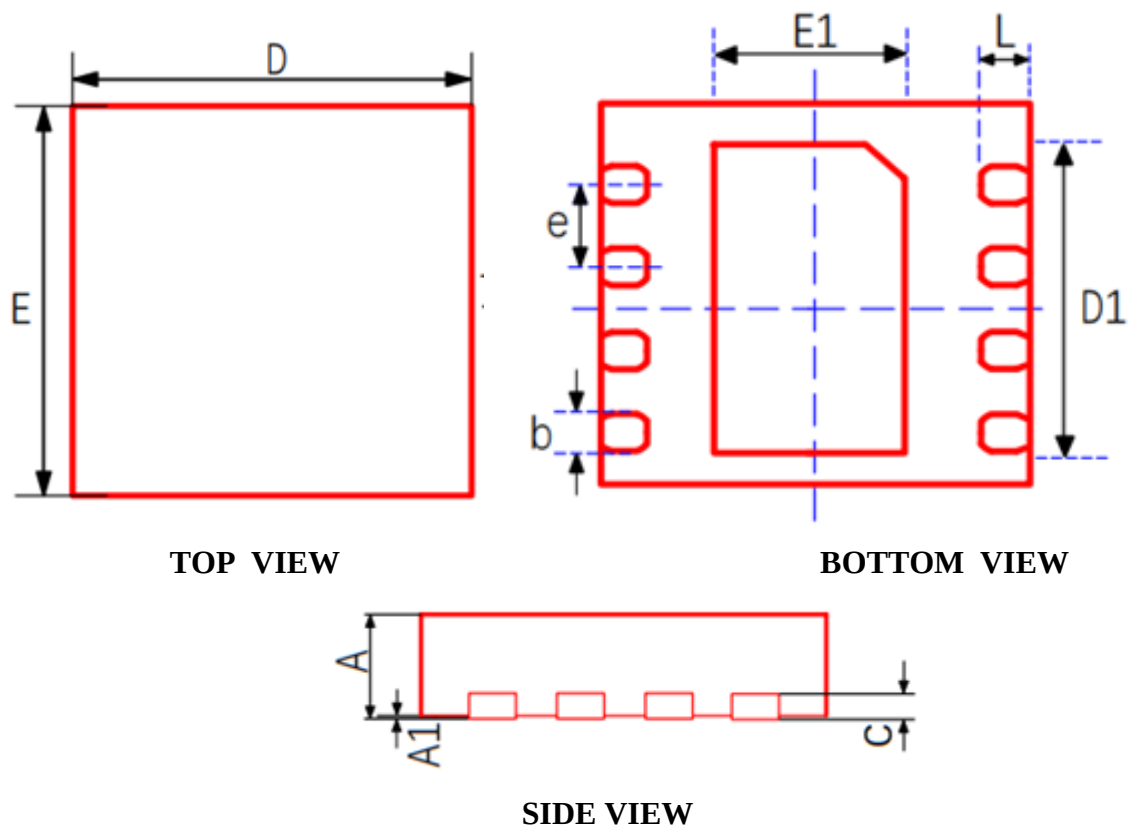
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



DFN3*3 Package Outline Data



Symbol	Dimensions In Millimeters		
	Min	Nom	Max
D	2.90	3.00	3.10
E	2.90	3.00	3.10
D1	2.25	2.30	2.35
E1	1.45	1.50	1.55
b	0.25	0.30	0.35
L	0.25	0.30	0.35
e	0.65BSC		
A	0.70	0.75	0.80
c	0.203BSC		
A1	0	0.02	0.05

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