General Description

The AGM306MBP 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

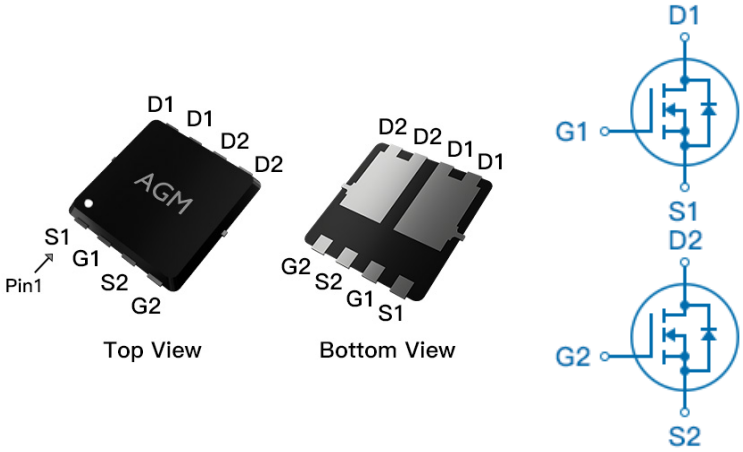
Application

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

Product Summary

BVDSS	RDSON	ID
30V	6.3mΩ	46A

PDFN3.3*3.3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM306MBP	AGM306MBP	PDFN3.3*3.3	330mm	12mm	5000

Table 1. Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	30	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25℃) **(Note 1)**	46	A
	Drain Current-Continuous(Tc=100℃)	29	A
IDM (pluse)	Drain Current-Pulsed **(Note 2)**	184	A
PD	Maximum Power Dissipation(Tc=25℃)	20	w
	Maximum Power Dissipation(Tc=100℃)	8.0	w
EAS	Avalanche energy **(Note 3)**	81	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	---	50	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	6.2	℃/W

Table 3. Electrical Characteristics (T_J=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=30V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.6	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=8A	--	15	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=12A	--	6.3	9.6	mΩ
		VGS=4.5V, ID=8A	--	9.5	12	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=15V,VGS=0V, F=1MHZ	--	1070	--	pF
Coss	Output Capacitance		--	163	--	pF
Crss	Reverse Transfer Capacitance		--	110	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.7	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=12V, RL=0.75Ω,RGEN=3.3Ω	--	4.5	--	nS
tr	Turn-on Rise Time		--	10.8	--	nS
td(off)	Turn-Off Delay Time		--	22.5	--	nS
tf	Turn-Off Fall Time		--	9.6	--	nS
Qg	Total Gate Charge	VGS=4.5V, VDS=20V, ID=12A	--	12.8	--	nC
Qgs	Gate-Source Charge		--	3.3	--	nC
Qgd	Gate-Drain Charge		--	6.5	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)	VG=VD=0V , Force Current	--	--	46	A
VSD	Forward on Voltage	VGS=0V,IS=12A	--	--	1.2	V
trr	Reverse Recovery Time	IF=12A , dI/dt=100A/μs , TJ=25℃	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	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℃,VDD=20V,Vgs=10V,ID=18A,L=0.5mH,RG=25ohm

Typical Characteristics

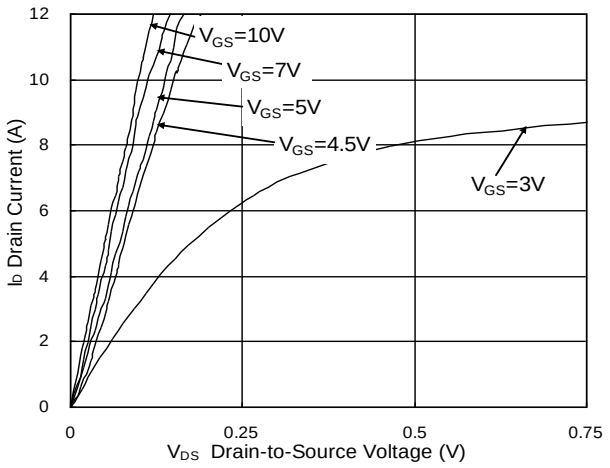


Fig.1 Typical Output Characteristics

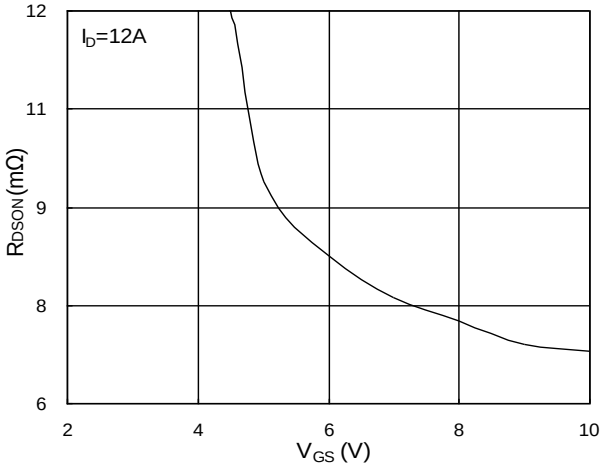


Fig.2 On-Resistance vs. Gate-Source

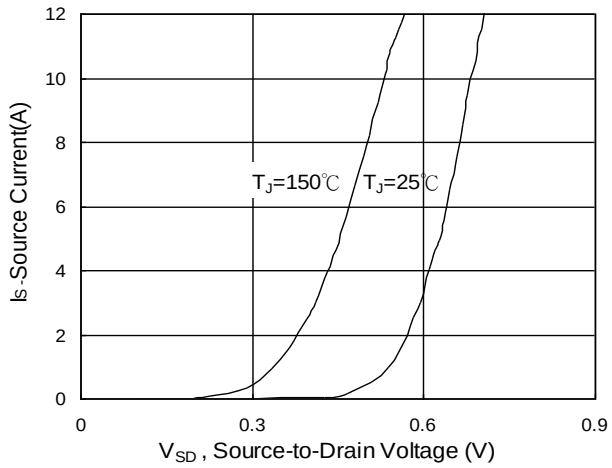


Fig.3 Forward Characteristics Of Reverse

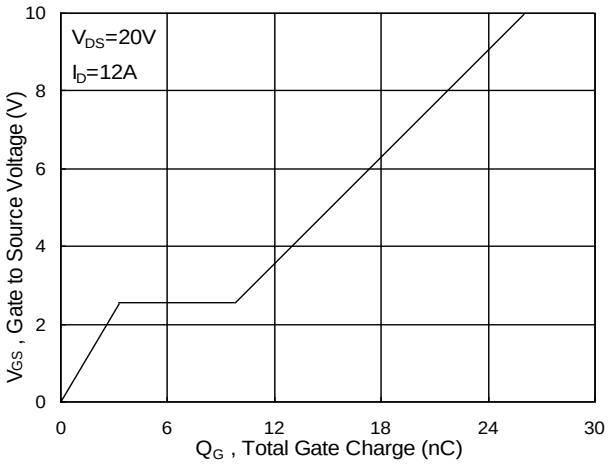


Fig.4 Gate-Charge Characteristics

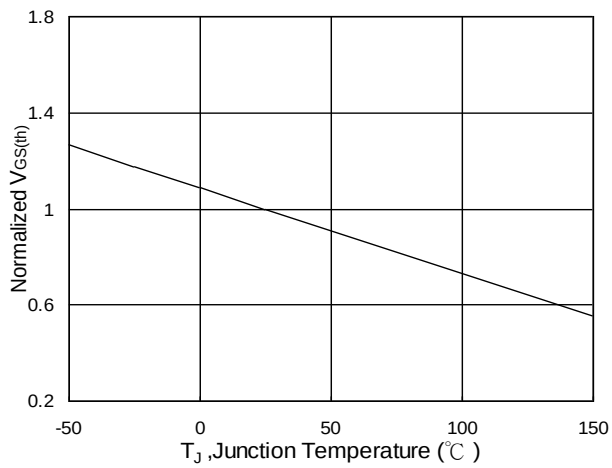


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

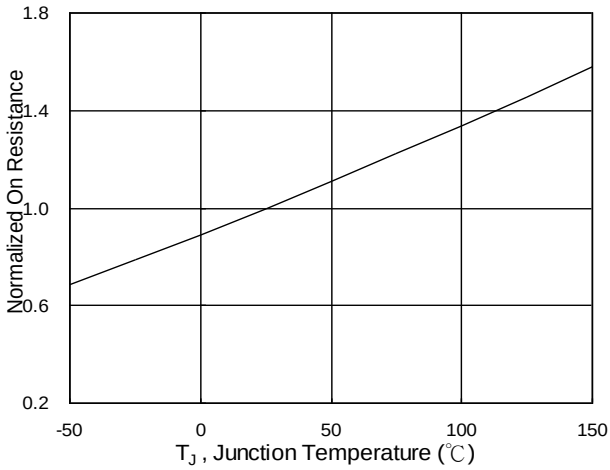


Fig.6 Normalized R_{DSON} vs. T_J

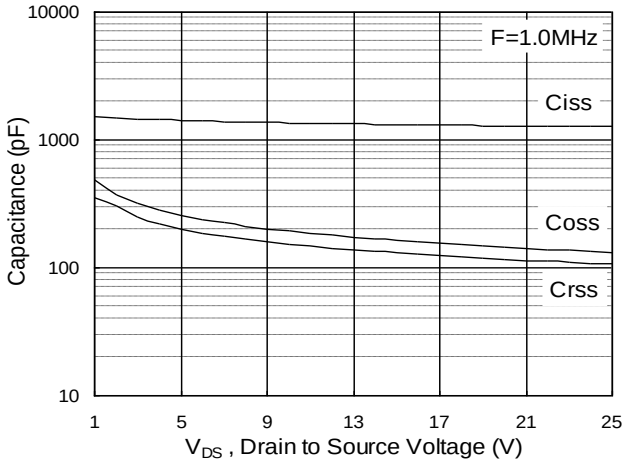


Fig.7 Capacitance

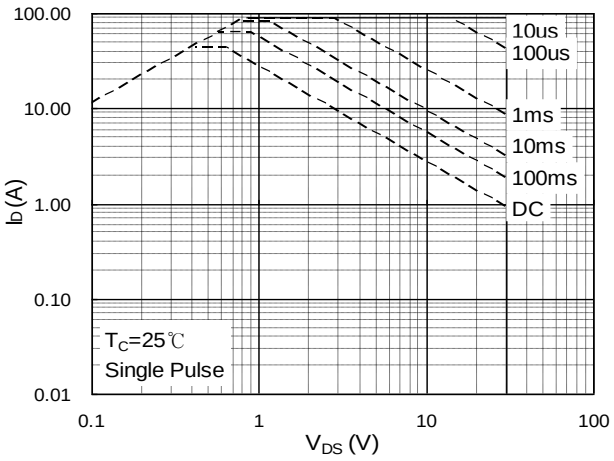


Fig.8 Safe Operating Area

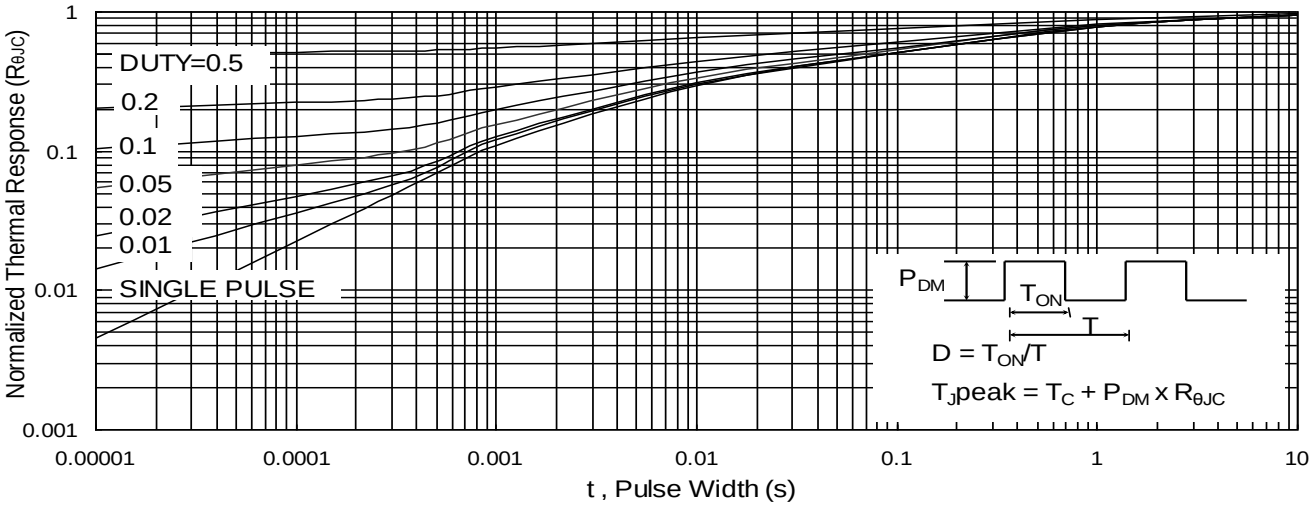


Fig.9 Normalized Maximum Transient Thermal Impedance

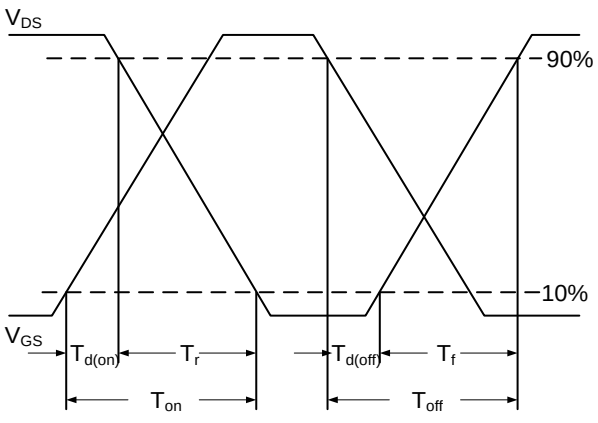


Fig.10 Switching Time Waveform

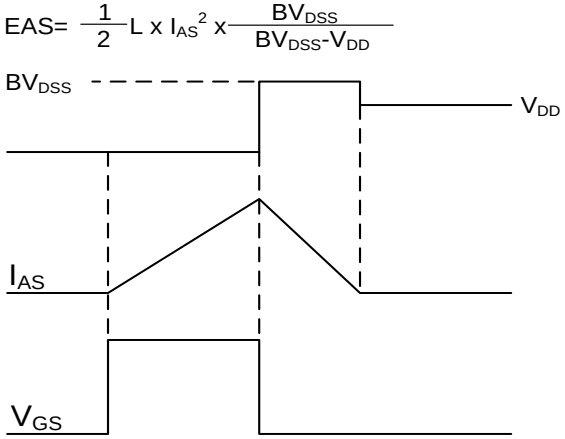
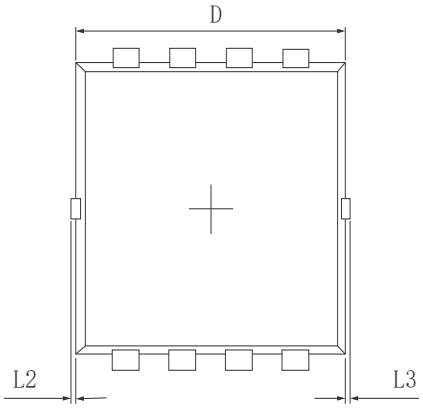
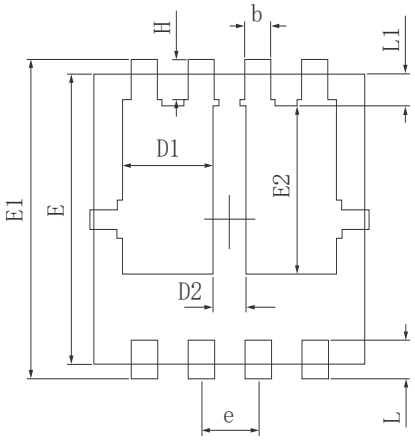
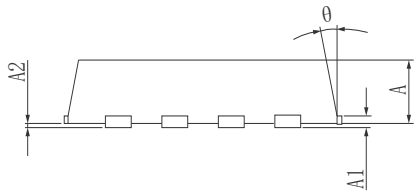


Fig.11 Unclamped Inductive Switching Waveform

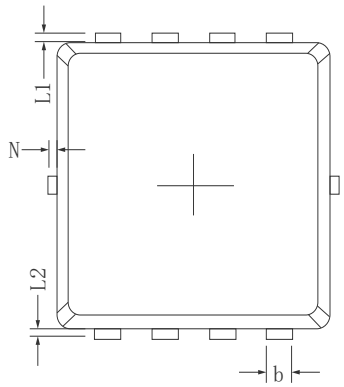
●Dimensions（PDFN3.3*3.3）

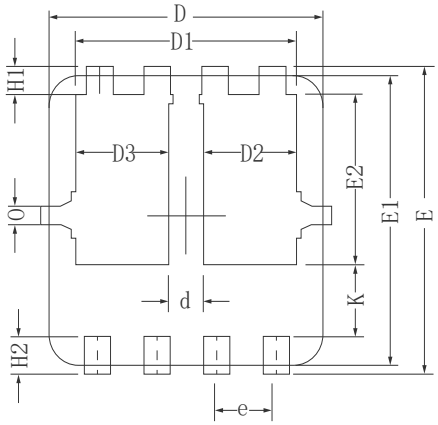


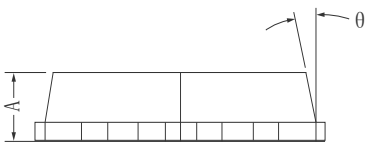


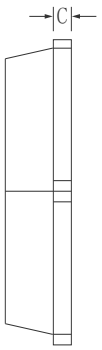


SYMBOL	MILLIMETER	
	MIN	MAX
A	0.700	0.900
A1	0.152REF.	
A2	0~0.05	
D	3.000	3.200
D1	0.935	1.135
D2	0.280	0.480
E	2.900	3.100
E1	3.150	3.450
E2	1.535	1.935
b	0.200	0.400
e	0.550	0.750
L	0.300	0.500
L1	0.180	0.480
L2	0~0.100	
L3	0~0.100	
H	0.315	0.515
θ	8°	12°





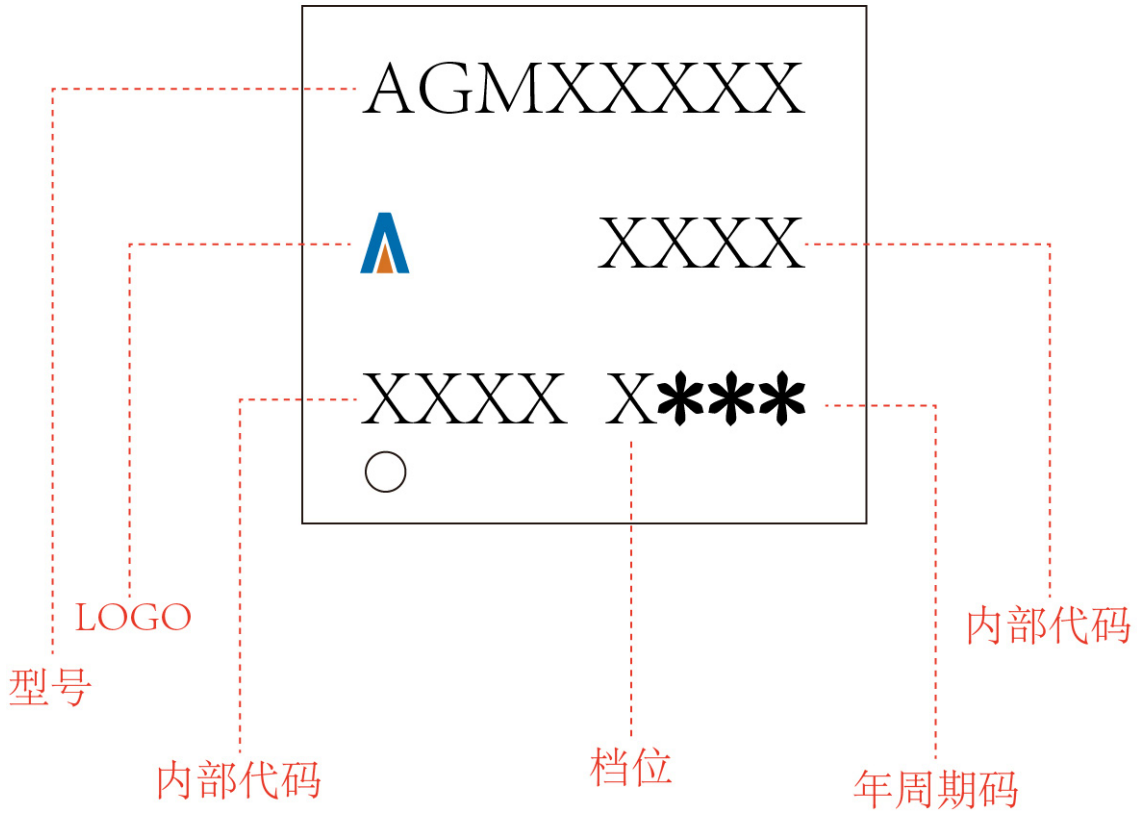




Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
D2/D3	1.00	1.05	1.10
d	0.30	0.40	0.50
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.72	1.82	1.92
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.67	0.77	0.87
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
O	0.2 REF.		

PDFN3.3*3.3

Marking Instructions:



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