

● General Description

The AGM306MBQ 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

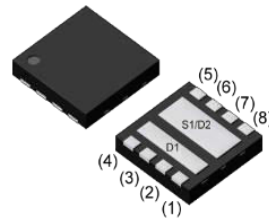
● Application

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

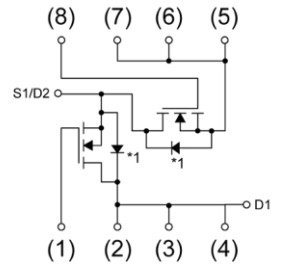
Product Summary

BVDSS	RDSON	ID
30V	6.0mΩ	46A

WQFN3.3*3.3 Pin Configuration



- (1) Tr1 Gate
 - (2) Tr1 Drain
 - (3) Tr1 Drain
 - (4) Tr1 Drain
 - (5) Tr2 Source
 - (6) Tr2 Source
 - (7) Tr2 Source
 - (8) Tr2 Gate
- *1 Body Diode



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM306MBQ	AGM306MBQ	WQFN3.3*3.3	330mm	12mm	5000

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

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°C) (Note 1)	46	A
	Drain Current-Continuous(Tc=100°C)	29	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	184	A
PD	Maximum Power Dissipation(Tc=25°C)	20	w
	Maximum Power Dissipation(Tc=100°C)	8.0	w
EAS	Avalanche energy (Note 3)	67	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	---	63	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	6.2	°C/W

Table 3. Electrical Characteristics (T_J=25°C 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	1.4	2.1	V
gFS	Forward Transconductance	VDS=5V,ID=8A	--	18	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=12A	--	6.0	7.8	mΩ
		VGS=4.5V, ID=8A	--	8.0	11	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 ,	--	--	--	ns
Qrr	Reverse Recovery Charge	TJ=25°C	--	--	--	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

Typical Characteristics

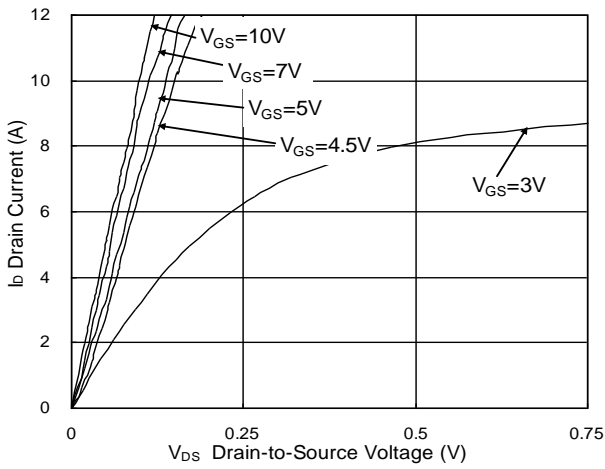


Fig.1 Typical Output Characteristics

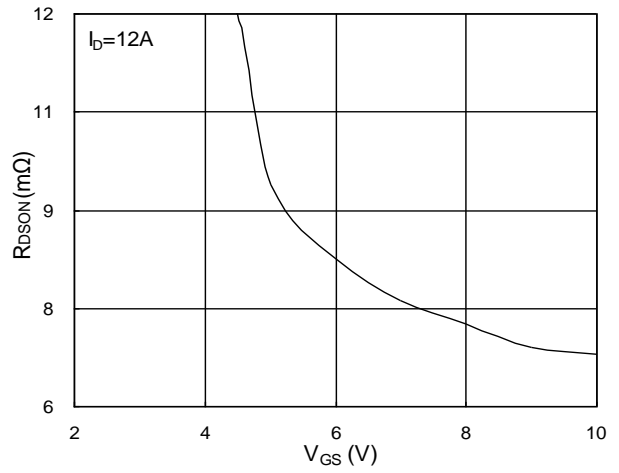


Fig.2 On-Resistance vs. Gate-Source

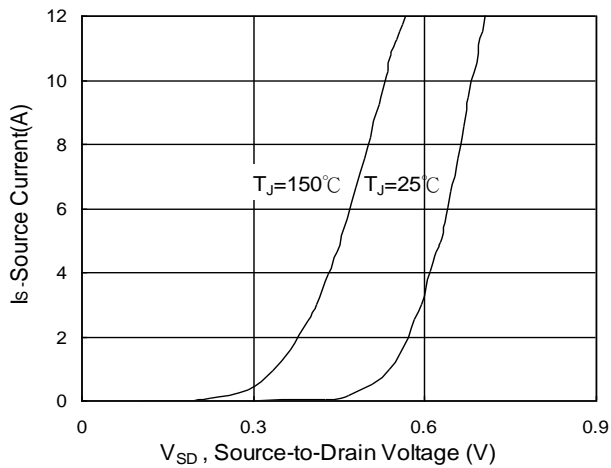


Fig.3 Forward Characteristics Of Reverse

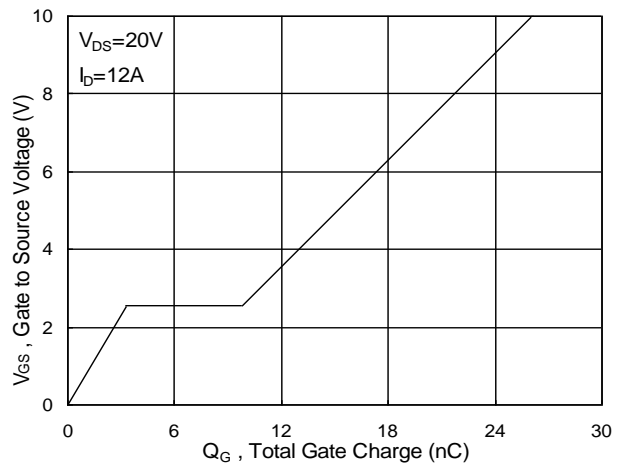


Fig.4 Gate-Charge Characteristics

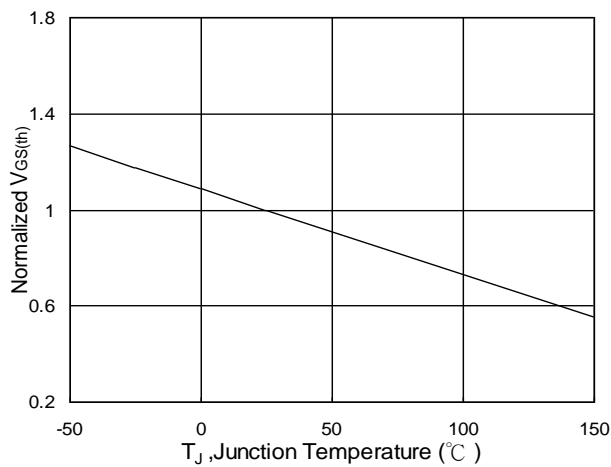


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

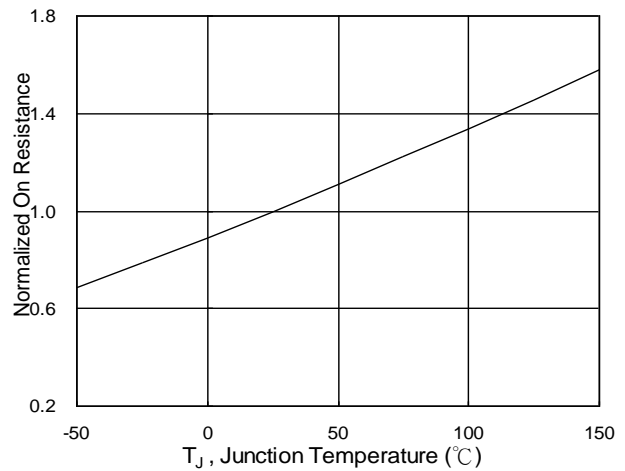


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

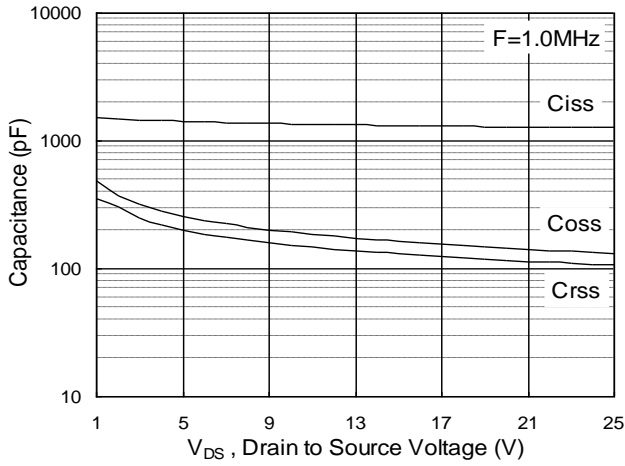


Fig.7 Capacitance

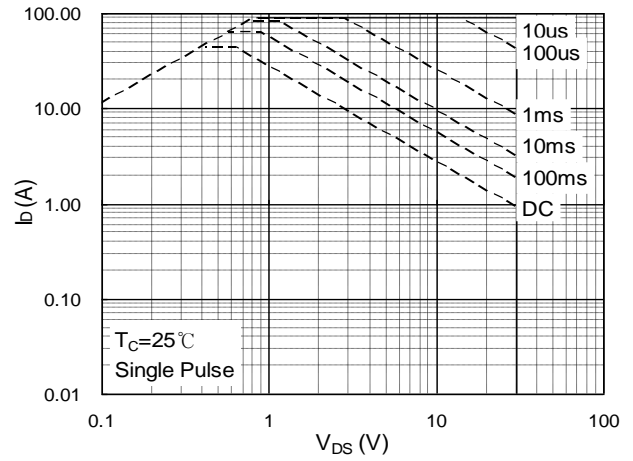


Fig.8 Safe Operating Area

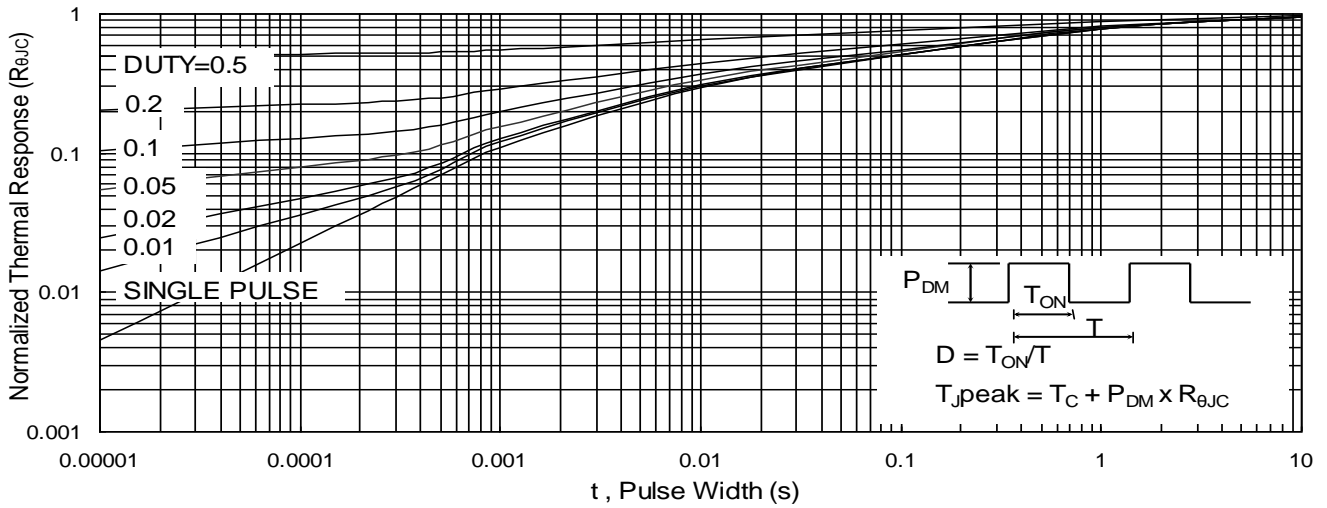


Fig.9 Normalized Maximum Transient Thermal Impedance

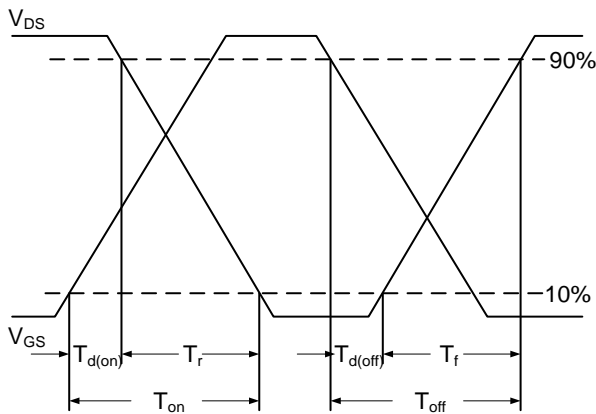


Fig.10 Switching Time Waveform

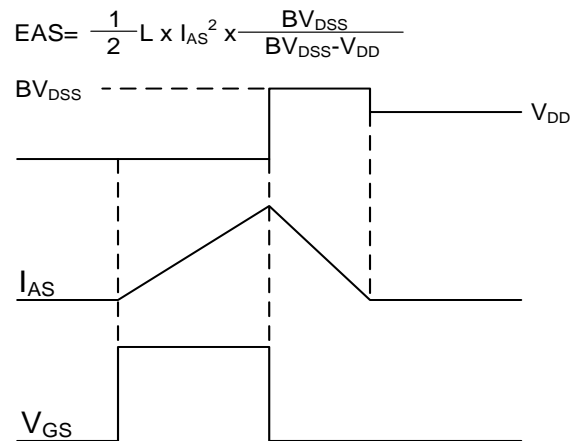
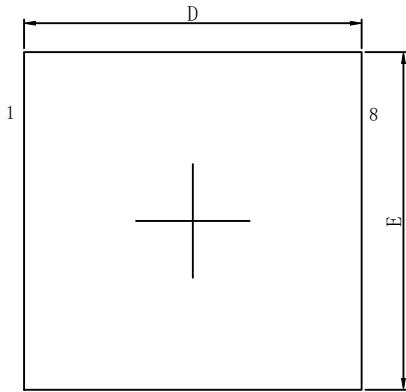
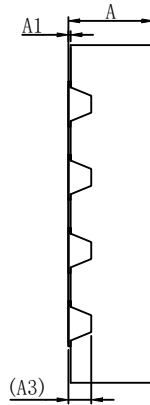
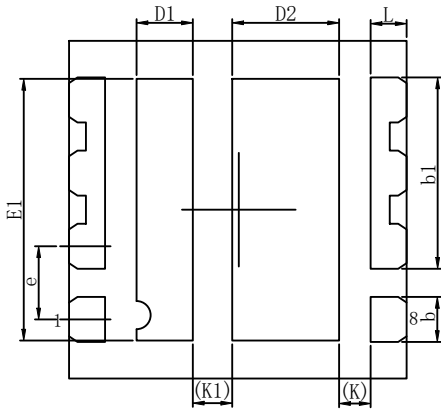


Fig.11 Unclamped Inductive Switching Waveform

•Dimensions (WQFN3*3)

 TOP VIEW
 [顶视图]

 SIDE VIEW
 [侧视图]

 BOTTOM VIEW
 [背视图]

SYMBOL	MIN	NOM	MAX
A	0.700	0.750	0.800
A1	0.000	0.020	0.050
A3	0.203 REF		
b	0.350	0.400	0.450
b1	1.600	1.700	1.800
D	2.900	3.000	3.100
E	2.900	3.000	3.100
e	0.650 BSC		
D1	0.400	0.500	0.600
D2	0.850	0.950	1.050
E1	2.225	2.325	2.425
L	0.220	0.320	0.420
K	0.280 REF		
K1	0.350 REF		


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