

General Description

The AGM318MBQ 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

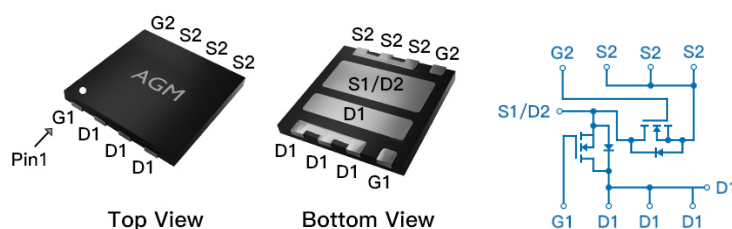
Application

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

Product Summary

BVDSS	RDSON	ID
30V	16mΩ	8A

WQFN3*3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM318MBQ	AGM318MBQ	WQFN3*3	330mm	12mm	5000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage ($V_{GS}=0V$)	30	V
V_{GS}	Gate-Source Voltage ($V_{DS}=0V$)	±20	V
I_D	Drain Current-Continuous($T_C=25^{\circ}C$) (Note 1)	8.0	A
	Drain Current-Continuous($T_C=100^{\circ}C$)	5.0	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	32	A
P_D	Total Power Dissipation($T_C=25^{\circ}C$)	35.7	W
	Total Power Dissipation($T_C=100^{\circ}C$)	14.7	W
EAS	Avalanche energy (Note 3)	36	mJ
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) ¹	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	---	3.4	°C/W

Table 3. N- Channel 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	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	1.5	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=5A	--	9	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=6A	--	16	24	mΩ
		VGS=4.5V, ID=5A	--	24	32	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=10V,VGS=0V, F=1MHZ	--	333	--	pF
Coss	Output Capacitance		--	94	--	pF
Crss	Reverse Transfer Capacitance		--	75	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=15V, RL=15Ω,RGEN=6Ω, ID=1A	--	7.4	--	nS
tr	Turn-on Rise Time		--	2.4	--	nS
td(off)	Turn-Off Delay Time		--	18.4	--	nS
tf	Turn-Off Fall Time		--	4.0	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=10V, ID=1A	--	8.6	--	nC
Qgs	Gate-Source Charge		--	2.1	--	nC
Qgd	Gate-Drain Charge		--	1.1	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	8.0	A
VSD	Forward on Voltage	VGS=0V,IS=6A	--	0.76	1.2	V
trr	Reverse Recovery Time	IF=6A , 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°C, VDD=20V, Vgs=10V, ID=12A, L=0.5mH, RG=25ohm

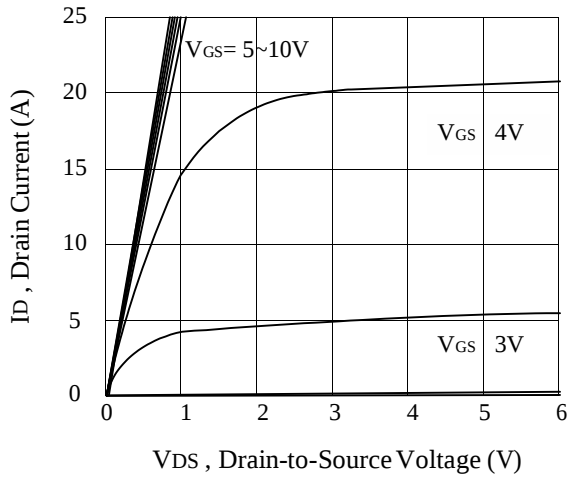


Figure 1. Output Characteristics

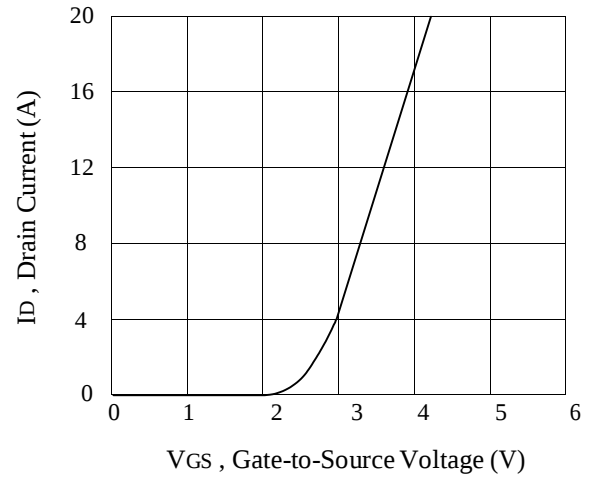


Figure 2. Transfer Characteristics

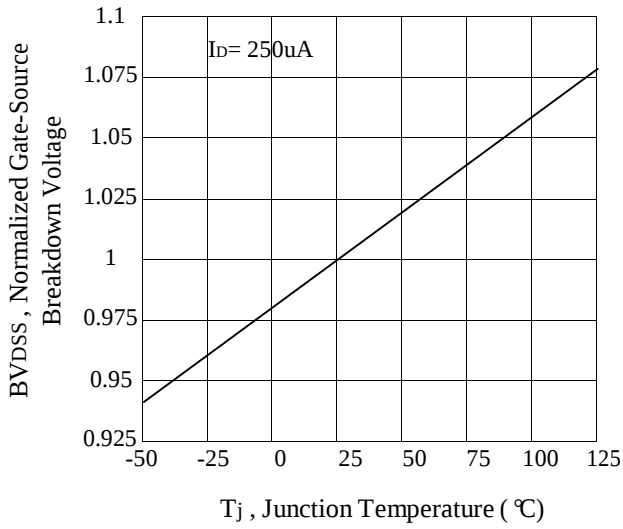


Figure 3. Breakdown Voltage Variation with Temperature

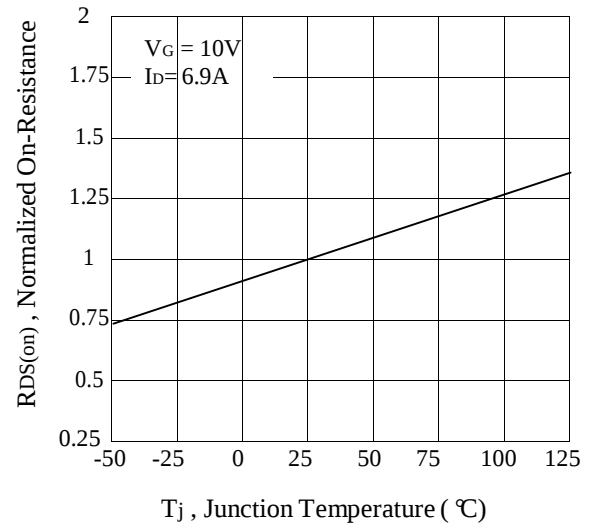


Figure 4. On-Resistance Variation with Temperature

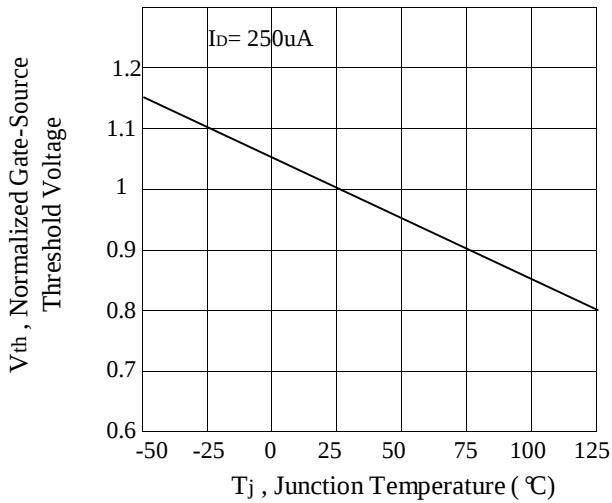


Figure 5. Gate Threshold Variation with Temperature

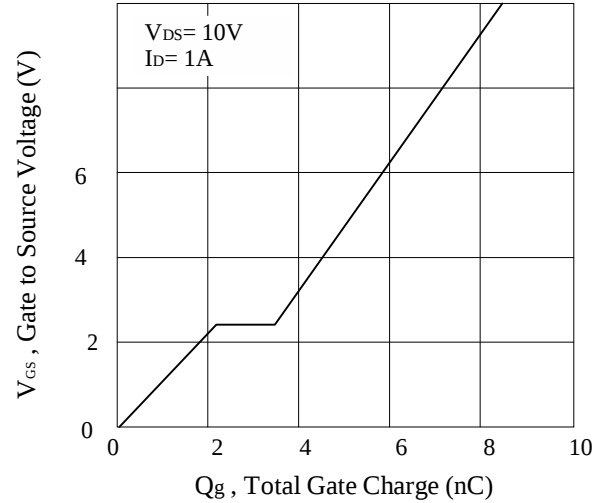


Figure 6. Gate Charge

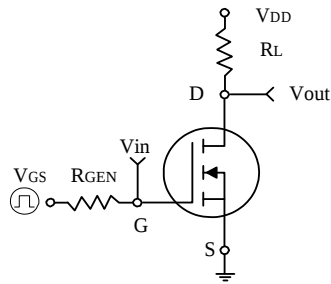
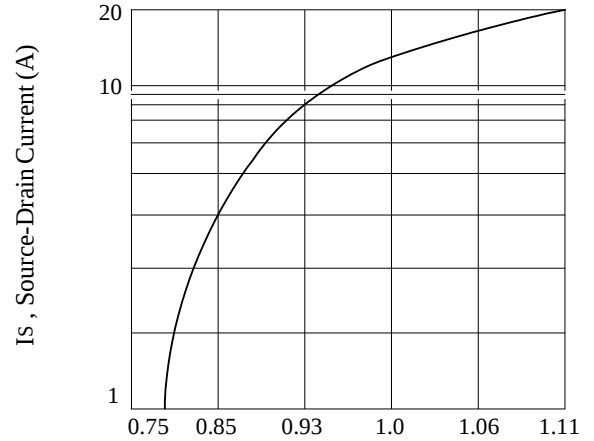
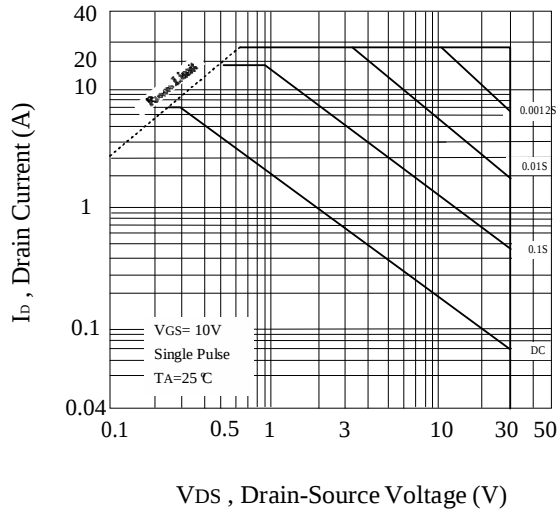


Figure 9. Switching Test Circuit and Switching Waveforms

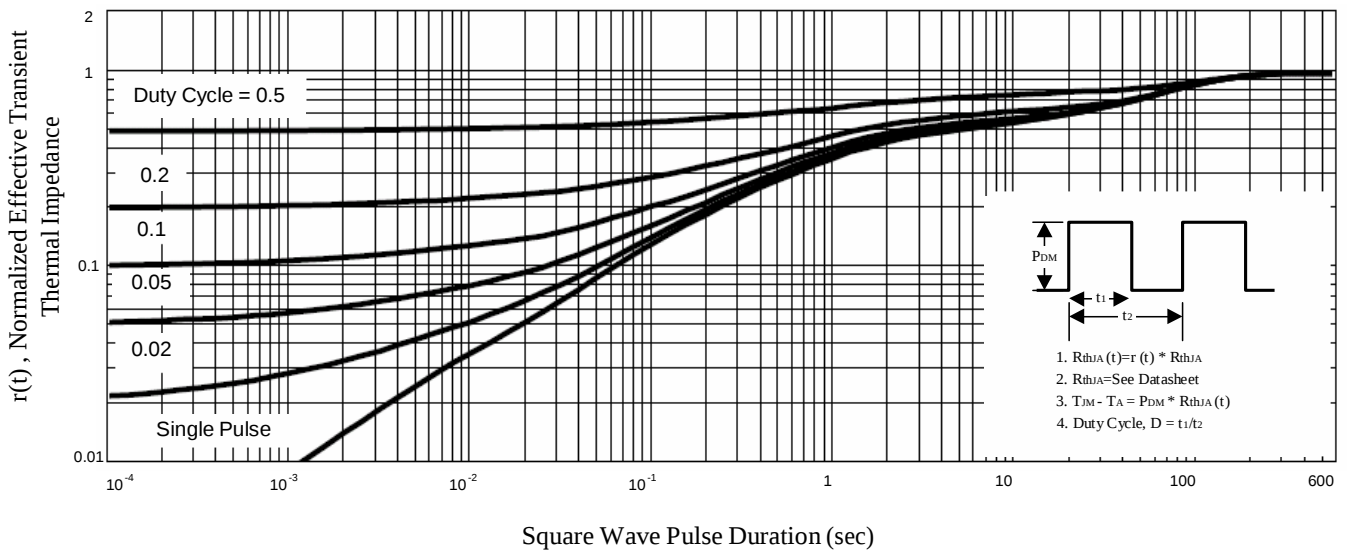
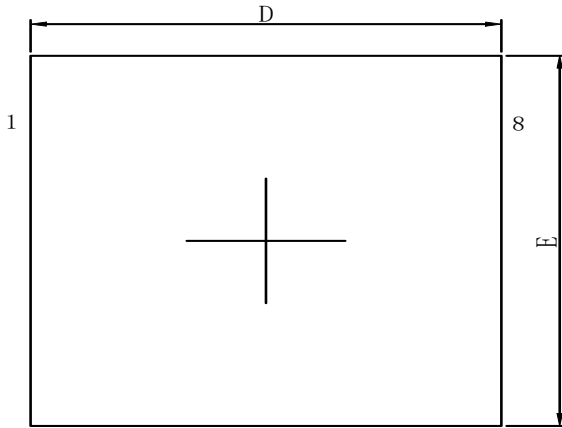
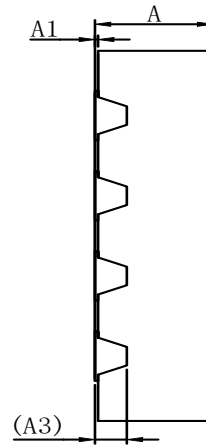


Figure 10. Normalized Thermal Transient Impedance Curve

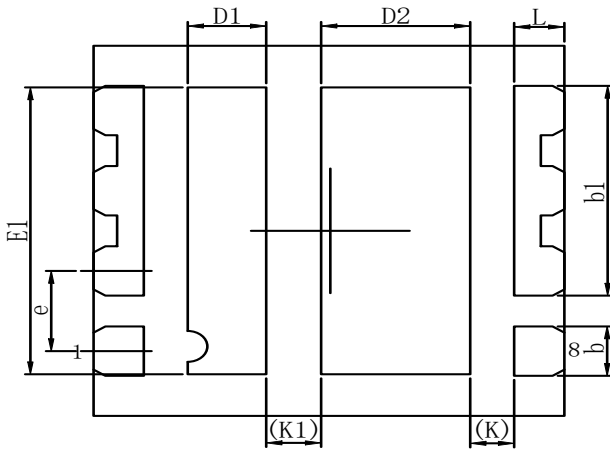
WQFN3*3Package Outline Data



TOP VIEW
[顶视图]



SIDE VIEW
[侧视图]

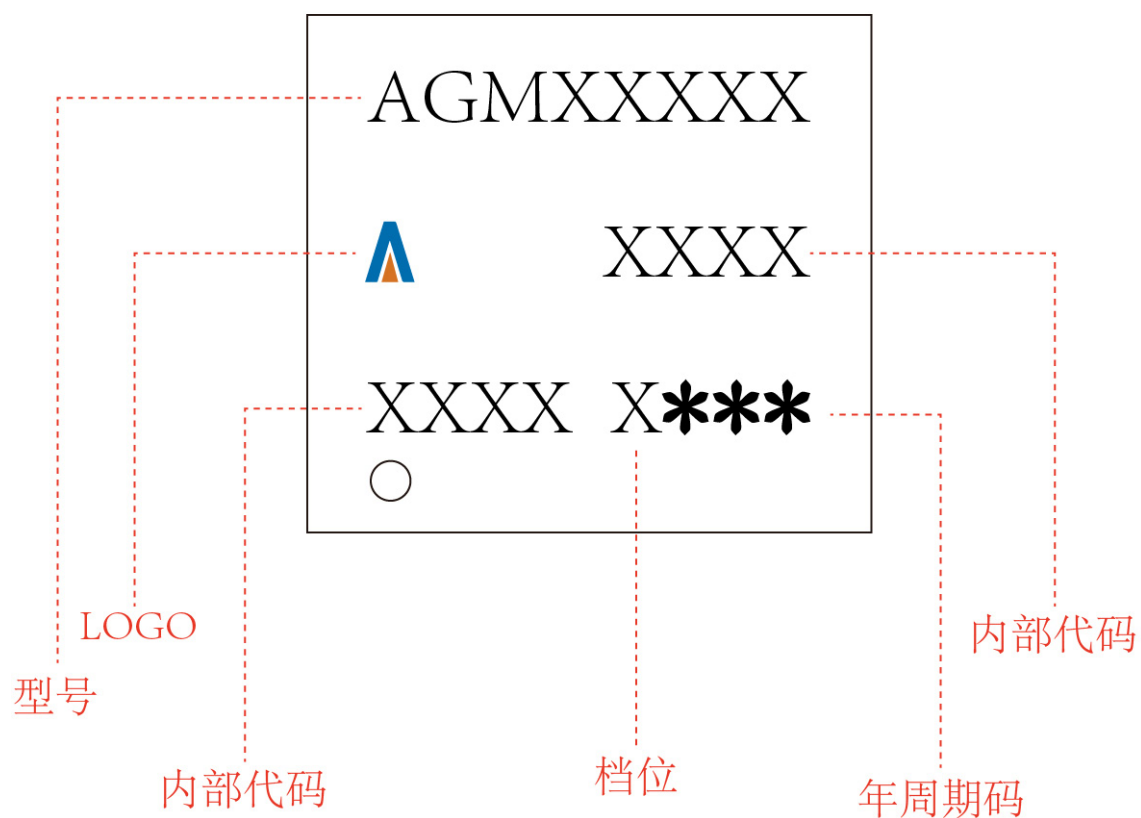


BOTTOM VIEW
[背视图]

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		

WQFN3*3

Marking Instructions:



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