General Description

The AGM612MBP 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

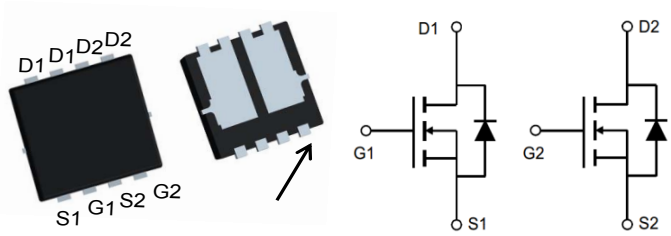
Application

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

Product Summary

BVDSS	RDSON	ID
60V	10.5mΩ	29A

PDFN3.3*3.3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM612MBP	AGM612MBP	PDFN3.3*3.3	----	----	5000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	60	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25℃) **(Note 1)**	29	A
	Drain Current-Continuous(Tc=100℃)	23	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	58	A
PD	Maximum Power Dissipation(Tc=25℃)	20.8	w
	Maximum Power Dissipation(Tc=100℃)	8.3	w
EAS	Avalanche energy **(Note 3)**	45	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]	--	62.5	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	6.0	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	60	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=48V,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	2.5	V
gFS	Forward Transconductance	VDS=5V,ID=20A	--	--	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=15A	--	10.5	15	mΩ
		VGS=4.5V, ID=10A	--	15.7	21	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=30V,VGS=0V, F=1MHZ	--	760	--	pF
Coss	Output Capacitance		--	272	--	pF
Crss	Reverse Transfer Capacitance		--	26	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=30V, ID=10A,RGEN=3.3Ω	--	5.8	--	nS
tr	Turn-on Rise Time		--	3.5	--	nS
td(off)	Turn-Off Delay Time		--	26	--	nS
tf	Turn-Off Fall Time		--	3.2	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=30V, ID=10A	--	8.7	--	nC
Qgs	Gate-Source Charge		--	3.1	--	nC
Qgd	Gate-Drain Charge		--	4.4	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	29	A
VSD	Forward on Voltage	VGS=0V,IS=10A	--	--	1.2	V
trr	Reverse Recovery Time	IF=10A , 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℃

Typical Characteristics

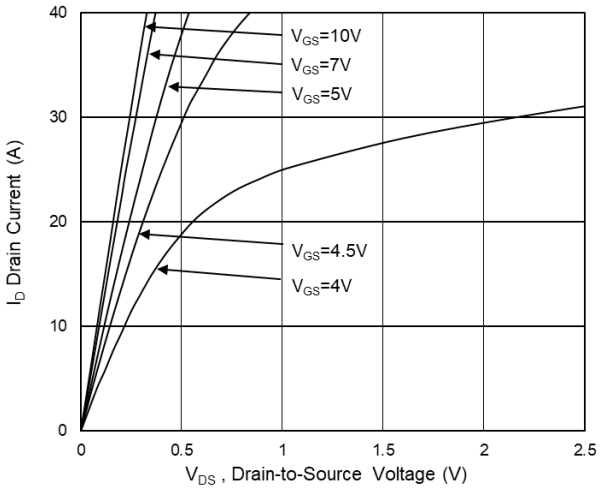


Fig.1 Typical Output Characteristics

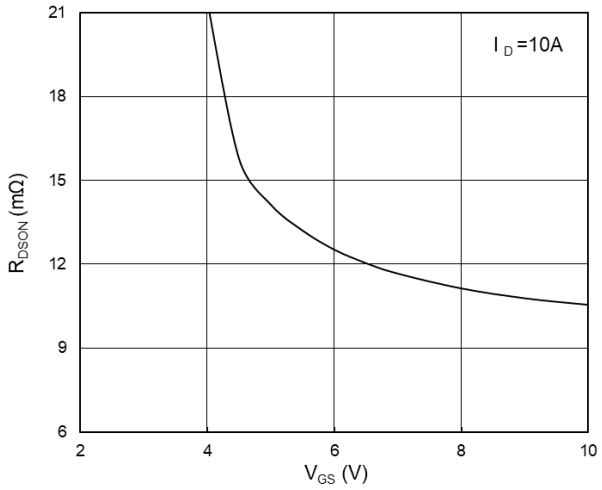


Fig.2 On-Resistance vs G-S Voltage

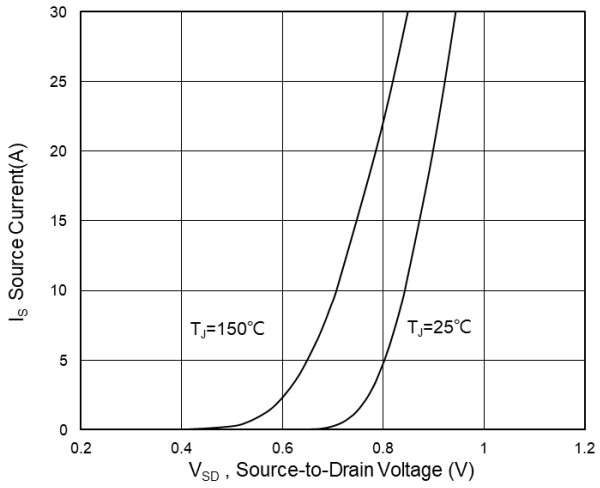


Fig.3 Source Drain Forward Characteristics

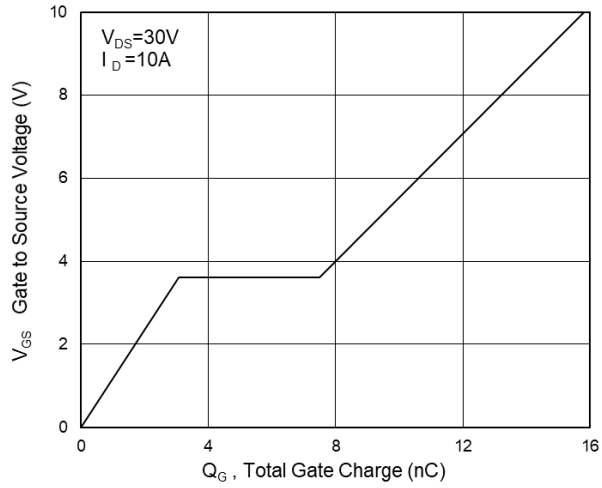


Fig.4 Gate-Charge Characteristics

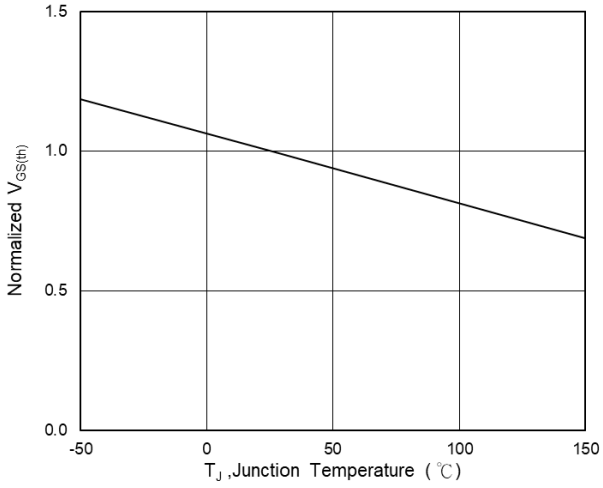


Fig.5 Normalized $V_{GS(th)}$ vs T_J

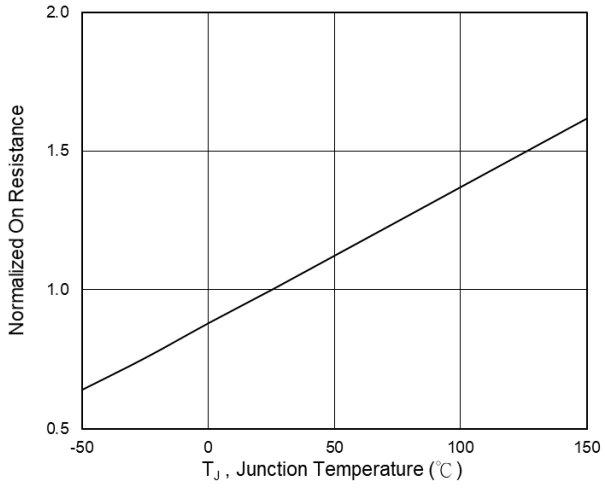


Fig.6 Normalized R_{DSON} vs T_J

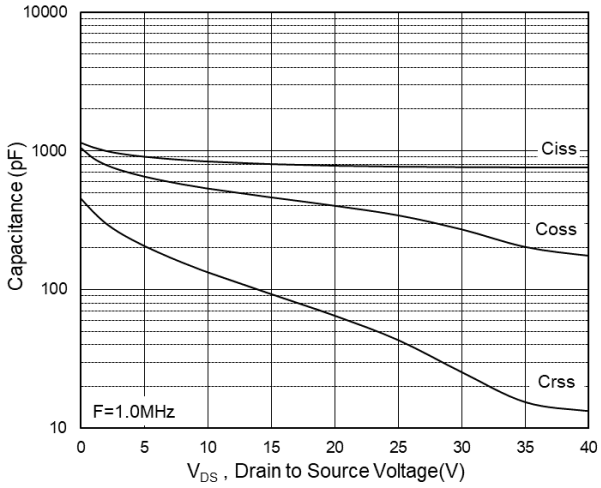


Fig.7 Capacitance

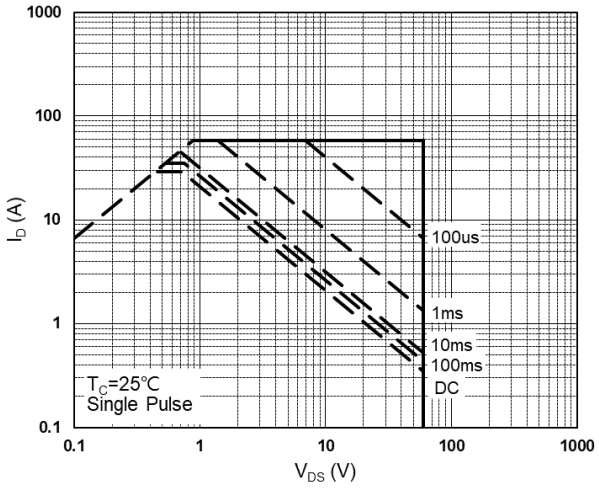


Fig.8 Safe Operating Area

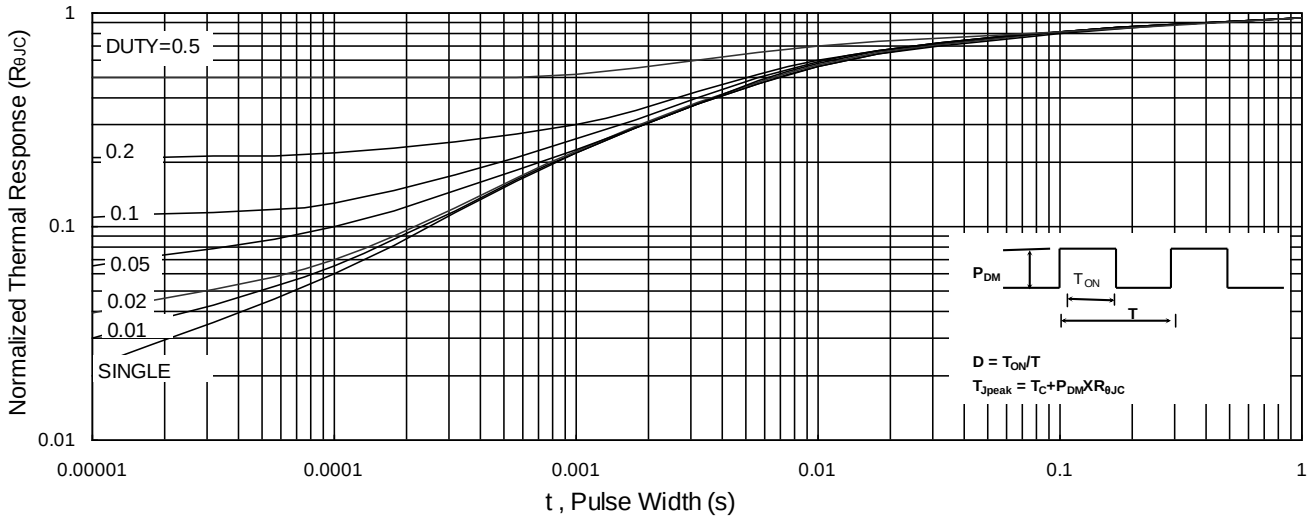


Fig.9 Normalized Maximum Transient Thermal Impedance

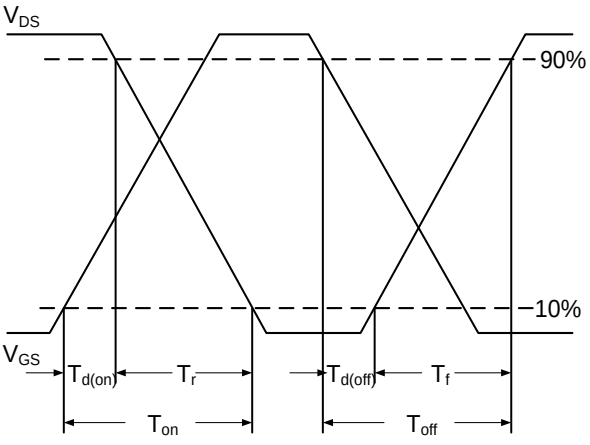


Fig.10 Switching Time Waveform

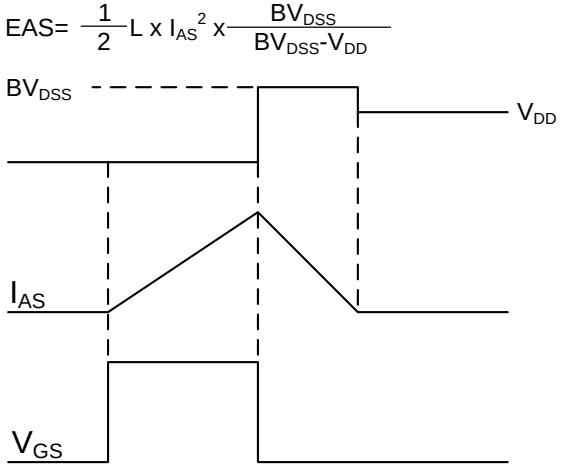
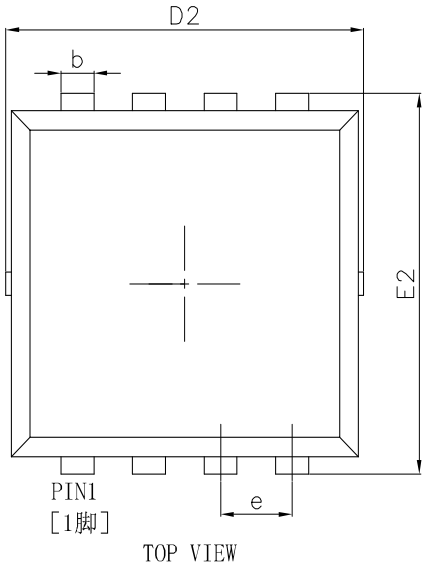
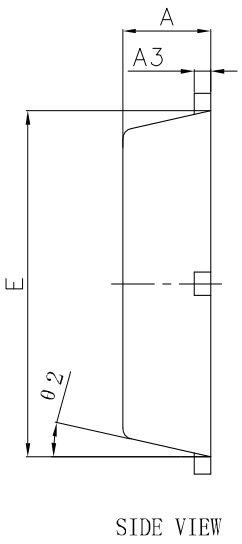
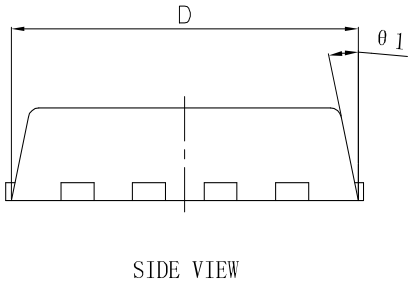


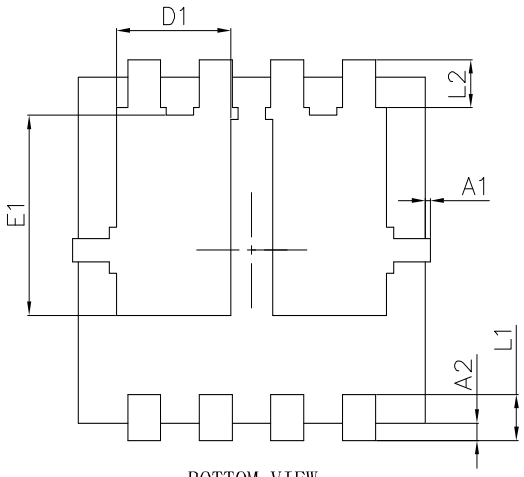
Fig.11 Unclamped Inductive Switching Waveform

●Dimensions（PDFN3.3×3.3）









SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.750	0.800	0.850
A1	0.000	0.050	0.100
A2	0.100	0.150	0.200
A3		0.152REF.	
D	3.050	3.150	3.250
D1	0.935	1.035	1.135
D2	3.200	3.300	3.400
E	2.900	3.000	3.100
E1	1.635	1.735	1.835
E2	3.150	3.250	3.350
b	0.200	0.300	0.400
e	0.625	0.650	0.675
L1	0.350	0.400	0.450
L2	0.365	0.415	0.465
θ1	10°	12°	14°
θ2	10°	12°	14°

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