General Description

The AGM307MBP 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

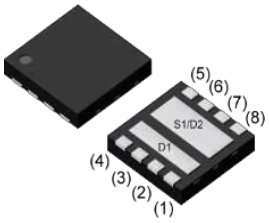
Application

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

Product Summary

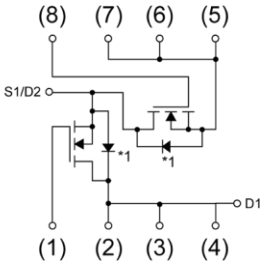
BVDSS	RDSON	ID
30V	7.0mΩ	28A

WQFN3*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
AGM307MBP	AGM307MBP	WQFN3.0x3.0	----	----	5000

Table 1. Absolute Maximum Ratings (Tc=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)**	28	A
	Drain Current-Continuous(Tc=100℃)	17	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	40	A
PD	Maximum Power Dissipation(Tc=25℃)	24	w
	Maximum Power Dissipation(Tc=100℃)	9.5	w
EAS	Avalanche energy **(Note 3)**	33	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]	---	--	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	5.26	℃/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	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	2.5	V
gFS	Forward Transconductance	VDS=10V,ID=15A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	7.0	9.5	mΩ
		VGS=4.5V, ID=10A	--	12	16	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=15V,VGS=0V, F=1MHZ	--	830	--	pF
Coss	Output Capacitance		--	142	--	pF
Crss	Reverse Transfer Capacitance		--	119	--	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=2A,RGEN=3Ω	--	6.0	--	nS
tr	Turn-on Rise Time		--	5.0	--	nS
td(off)	Turn-Off Delay Time		--	25	--	nS
tf	Turn-Off Fall Time		--	7.0	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=15V, ID=20A	--	19	--	nC
Qgs	Gate-Source Charge		--	6.3	--	nC
Qgd	Gate-Drain Charge		--	4.5	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	25	A
VSD	Forward on Voltage	VGS=0V,Is=30A	--	--	1.2	V
trr	Reverse Recovery Time	IF=30A , dI/dt=100A/μs , TJ=25℃	--	7.0	--	ns
Qrr	Reverse Recovery Charge		--	6.3	--	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 Performance Characteristics

Figure1: Output Characteristics

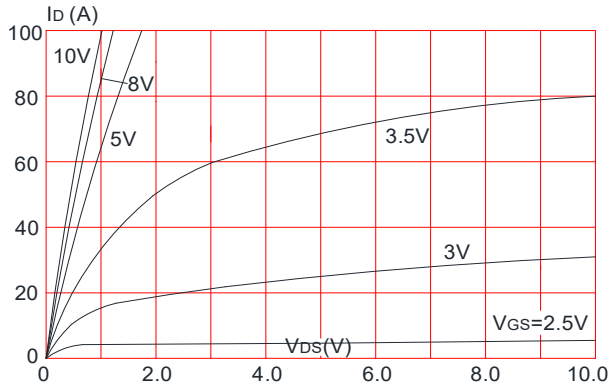


Figure 2: Typical Transfer Characteristics

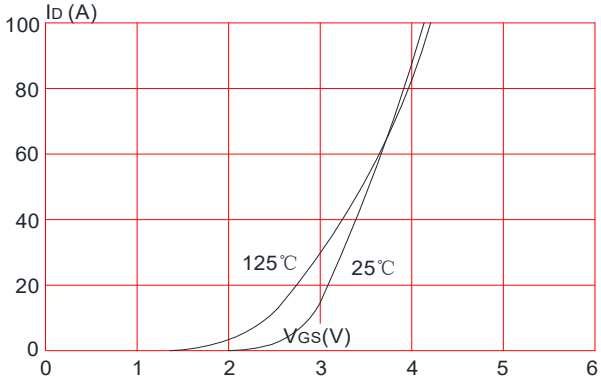


Figure 3: On-resistance vs. Drain Current

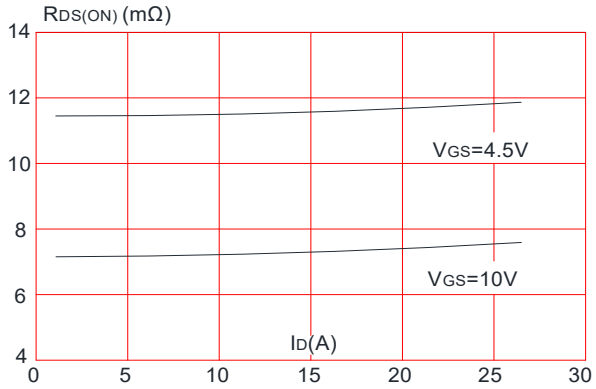


Figure 4: Body Diode Characteristics

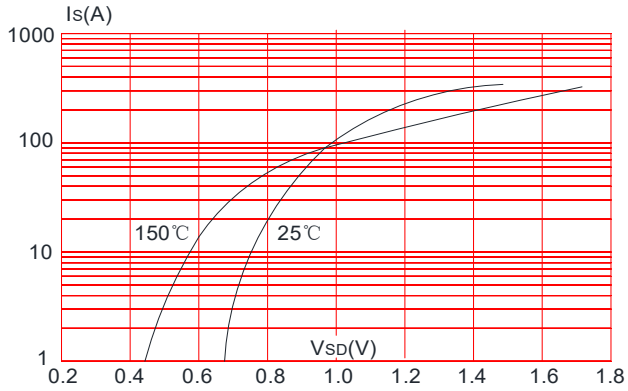


Figure 5: Gate Charge Characteristics

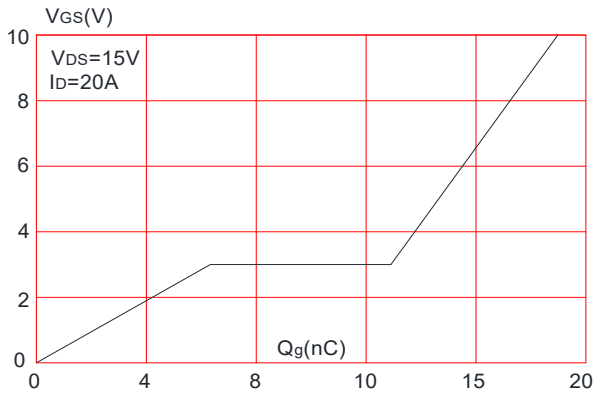


Figure 6: Capacitance Characteristics

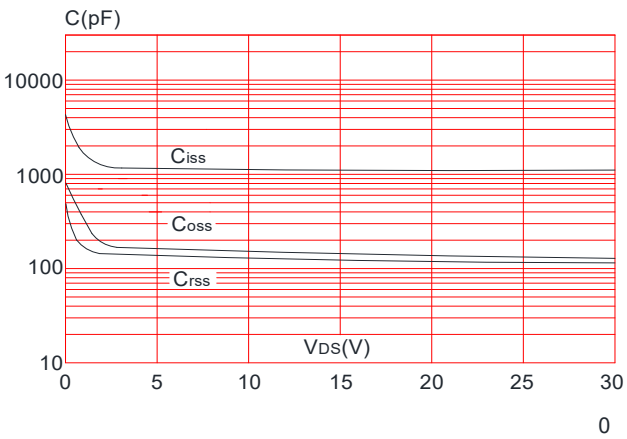


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Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

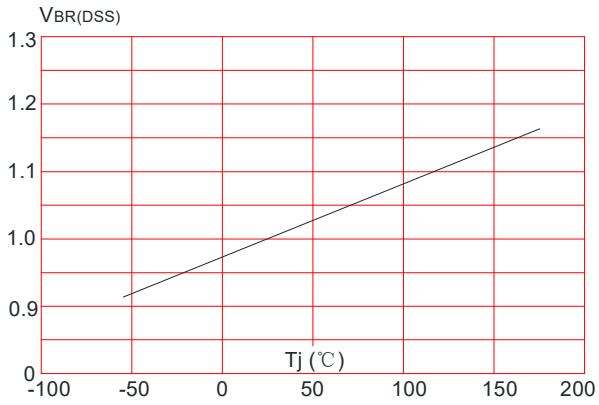


Figure 8: Normalized on Resistance vs. Junction Temperature

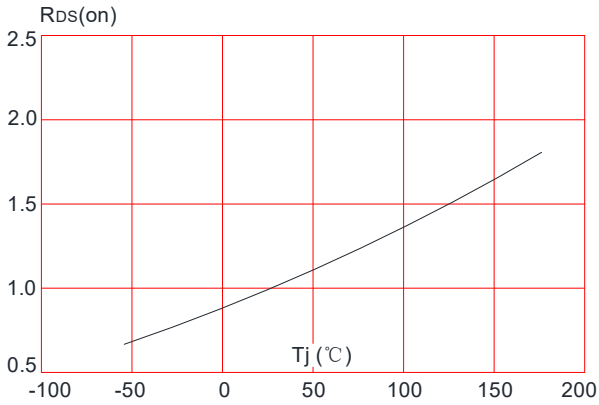


Figure 9: Maximum Safe Operating Area

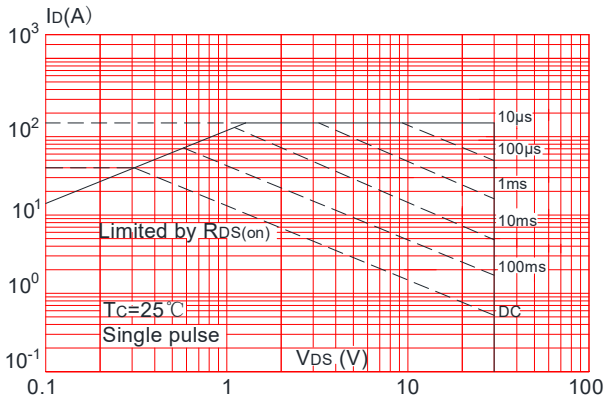
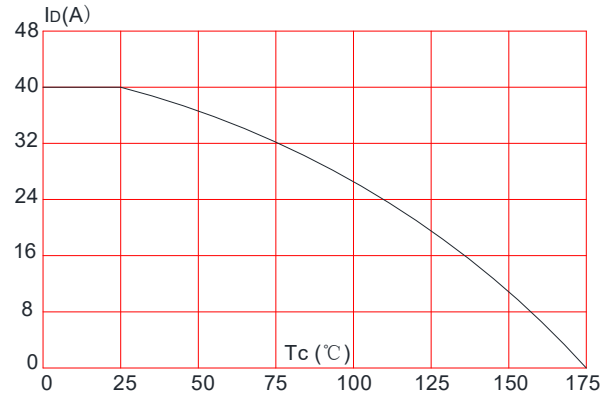
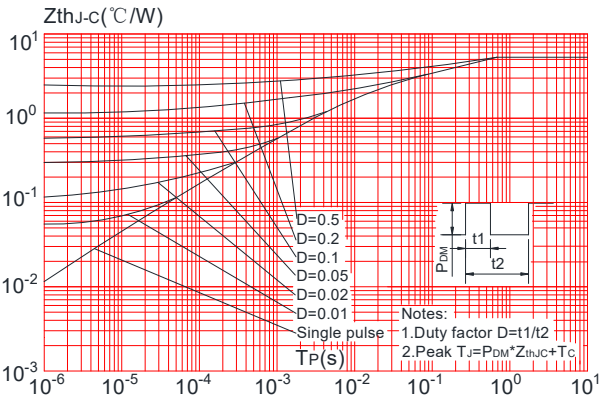


Figure 10: Maximum Continuous Drain Current vs. Case Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

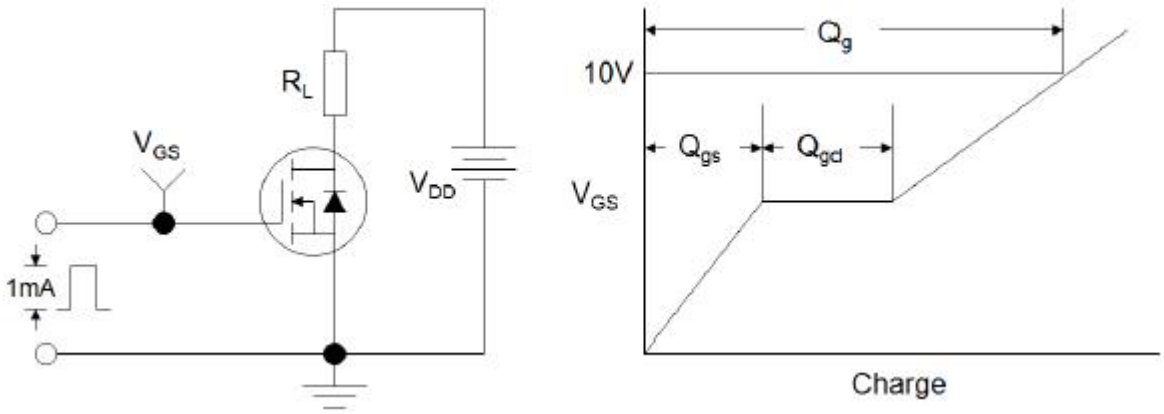


Figure1:Gate Charge Test Circuit & Waveform

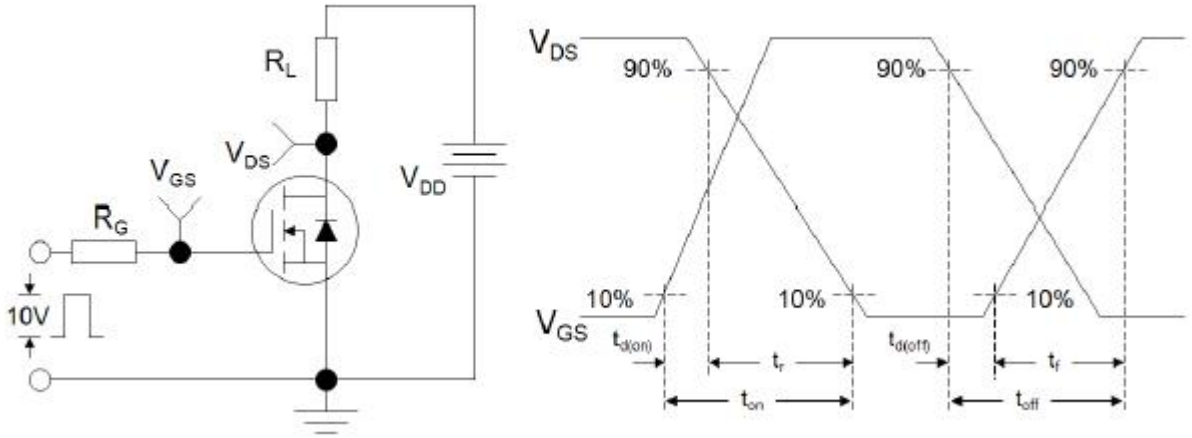


Figure 2: Resistive Switching Test Circuit & Waveforms

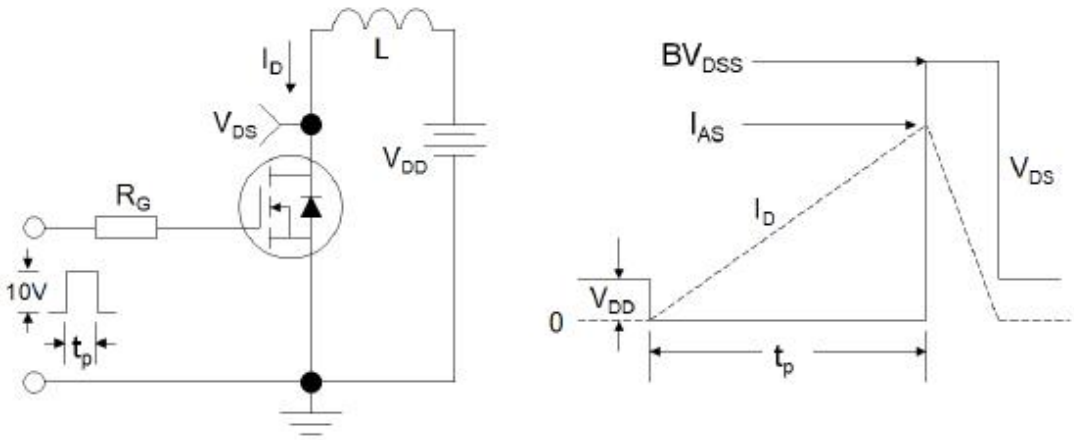
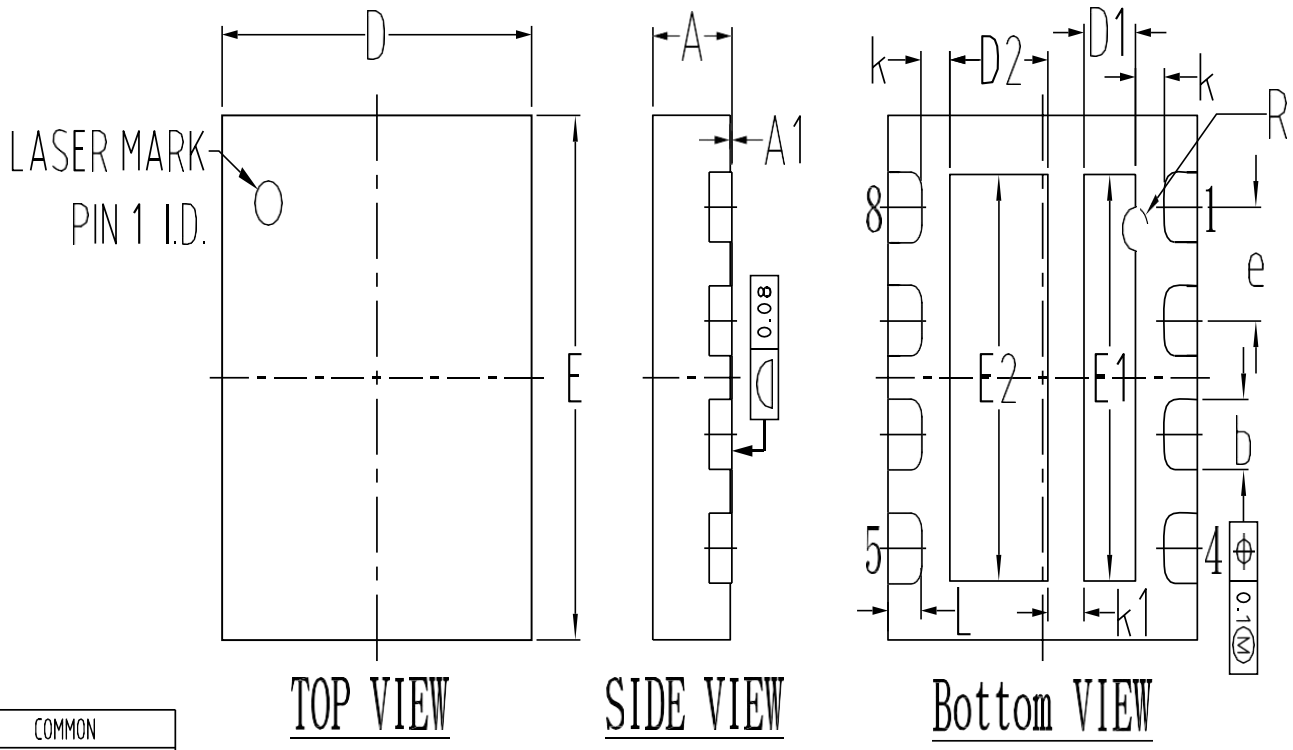
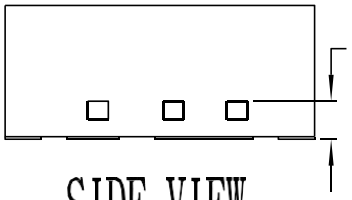


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



SYMBOL	COMMON DIMENSIONS MILLIMETER		
	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	0.00	/	0.05
b	0.35	0.40	0.45
D	2.90	3.00	3.10
D1	0.40	0.50	0.60
D2	0.85	0.95	1.05
E	2.90	3.00	3.10
E1	2.20	2.325	2.45
E2	2.20	2.325	2.45
e	0.55	0.65	0.75
k	0.15	0.28	0.35
k1	0.25	0.35	0.45
L	0.27	/	0.40
R	0.125 REF		



SIDE VIEW

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This document is the second version issued on May 10, 2022. This document replaces andReplace all previously provided information.