

● General Description

The AGM206D 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

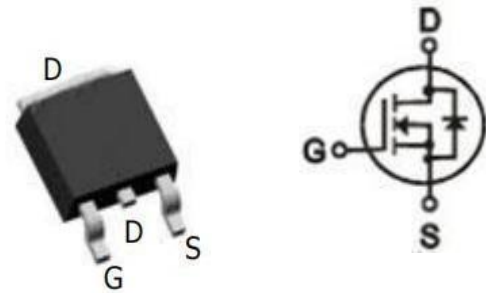
● Application

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

Product Summary

BVDSS	RDSON	ID
20V	3.5mΩ	85A

TO-252 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM206D	AGM206D	TO-252	-----	-----	2500

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	20	V
VGS	Gate-Source Voltage (VDS=0V)	±12	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	85	A
	Drain Current-Continuous(Tc=100°C)	59	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	300	A
PD	Maximum Power Dissipation(Tc=25°C)	72	w
	Maximum Power Dissipation(Tc=100°C)	29	w
EAS	Avalanche energy (Note 3)	340	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	---	--	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	1.72	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=20V,VGS=0V	--	--	1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.5	0.7	1.1	V
gFS	Forward Transconductance	VDS=5V,ID=15A	--	40	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=4.5V, ID=20A	--	3.5	4.8	mΩ
		VGS=2.5V, ID=15A	--	6.0	7.0	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=15V,VGS=0V, F=1MHZ	--	2800	--	pF
Coss	Output Capacitance		--	353	--	pF
Crss	Reverse Transfer Capacitance		--	265	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.1	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=4.5V,VDS=15V RL=0.75Ω,RGEN=3Ω	--	17	--	nS
tr	Turn-on Rise Time		--	49	--	nS
td(off)	Turn-Off Delay Time		--	74	--	nS
tf	Turn-Off Fall Time		--	26	--	nS
Qg	Total Gate Charge	VGS=4.5V, VDS=10V, ID=12A	--	32	--	nC
Qgs	Gate-Source Charge		--	3.0	--	nC
Qgd	Gate-Drain Charge		--	11	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	85	A
VSD	Forward on Voltage	VGS=0V,IS=20A	--	--	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , TJ=25°C	--	23	--	ns
Qrr	Reverse Recovery Charge		--	10	--	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 ELECTRICAL AND THERMAL CHARACTERISTICS (Curves)

Figure 1. Output Characteristics

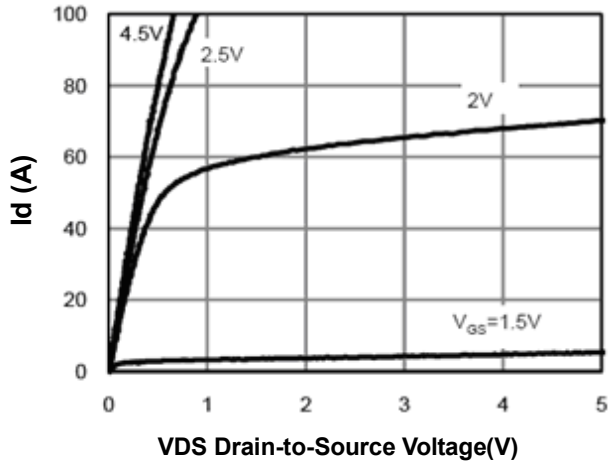


Figure 2. Transfer Characteristics

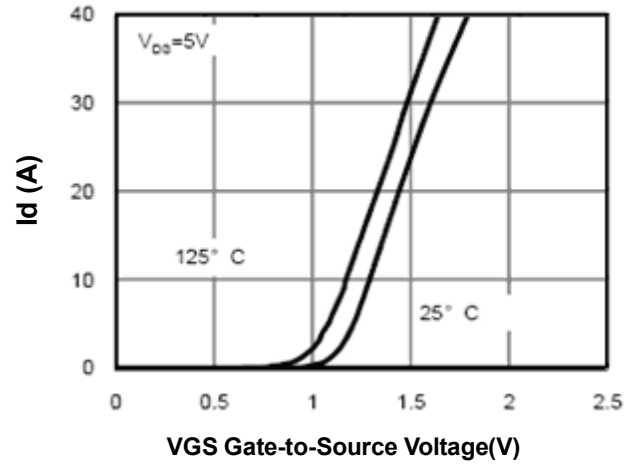
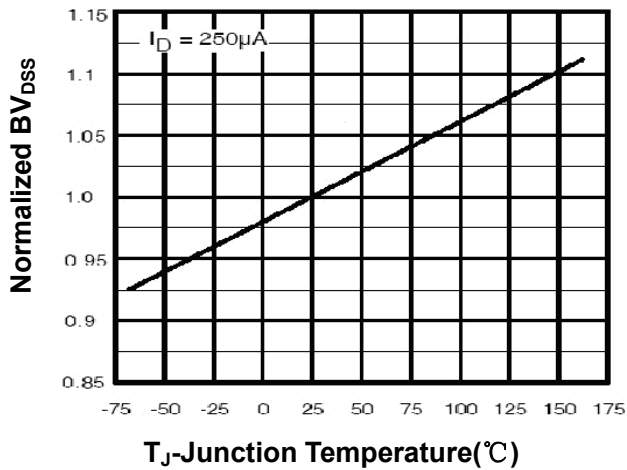

 Figure 3. Max BV_{DSS} vs Junction Temperature


Figure 4. Drain Current

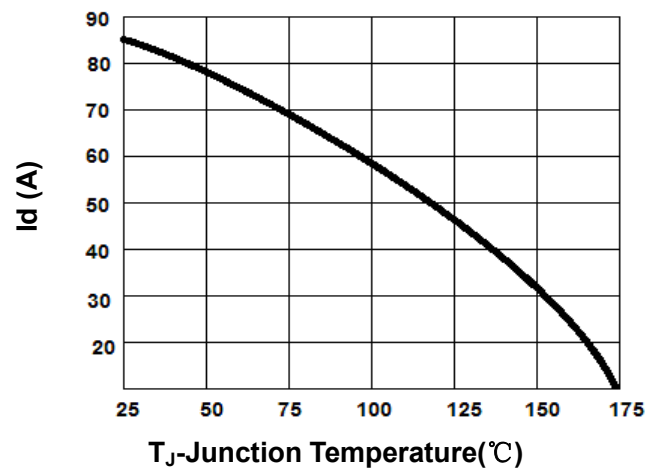
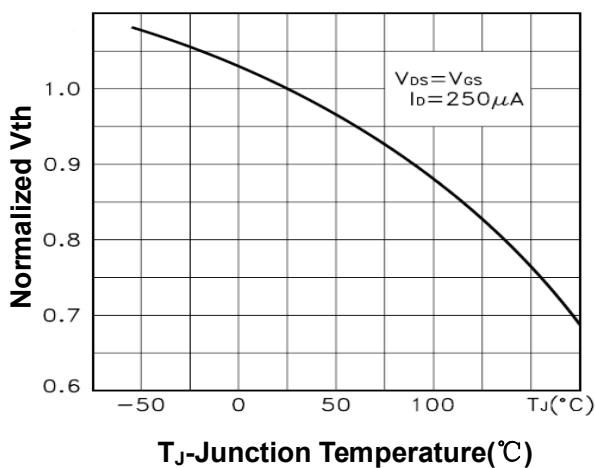
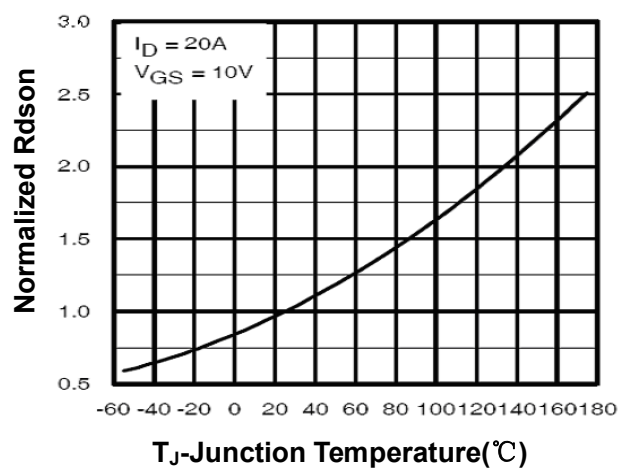

 Figure 5. $V_{GS(th)}$ vs Junction Temperature

 Figure 6. $R_{DS(on)}$ vs Junction Temperature


Figure 7. Gate Charge Waveforms

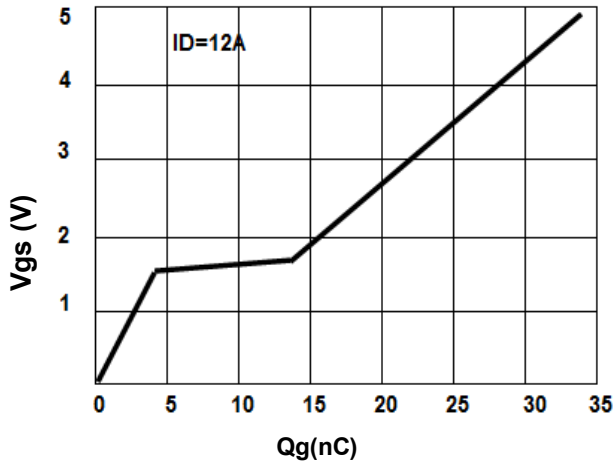


Figure 8. Capacitance

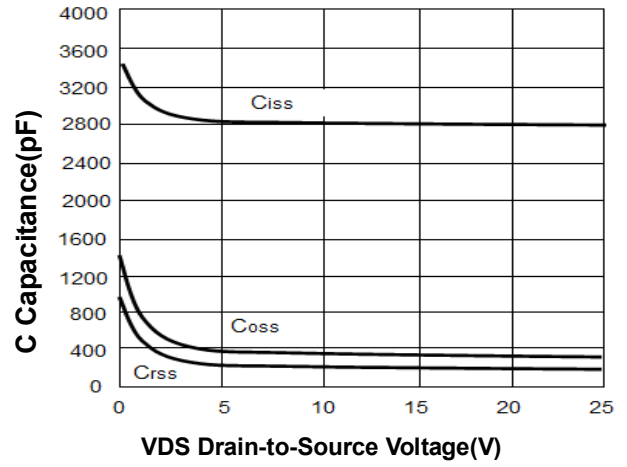


Figure 9. Body-Diode Characteristics

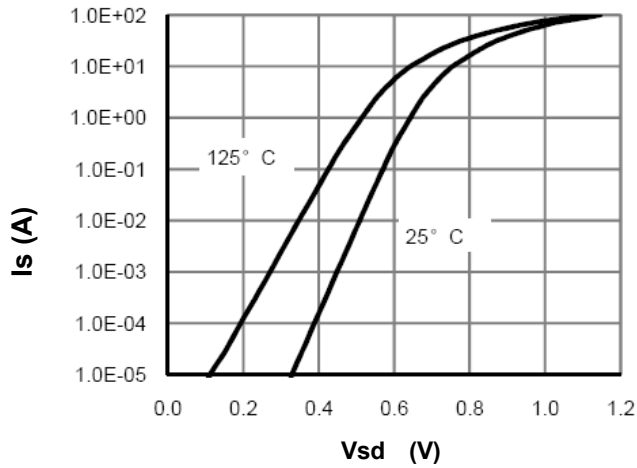


Figure 10. Maximum Safe Operating Area

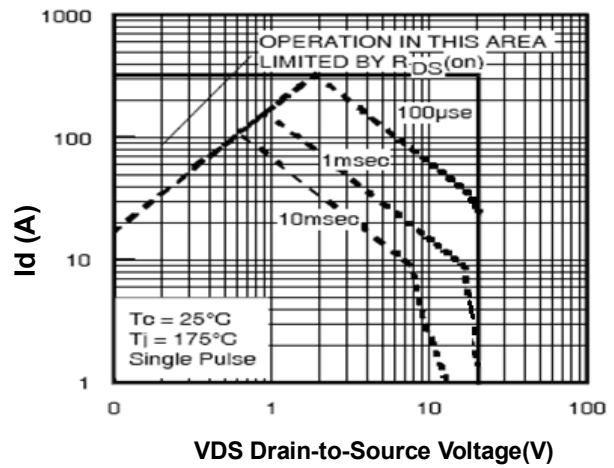
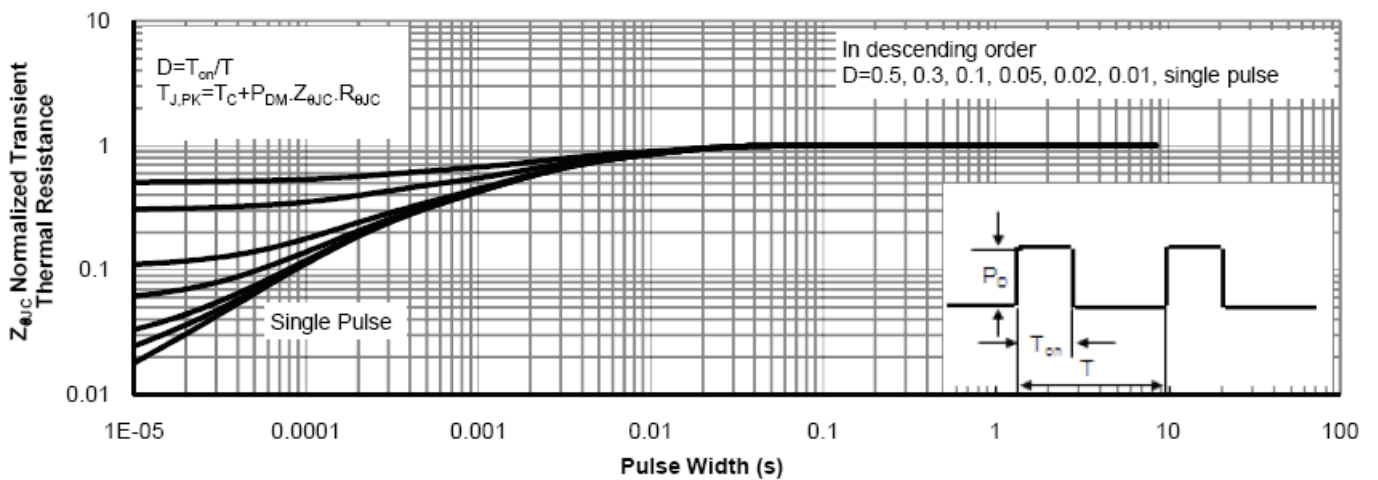
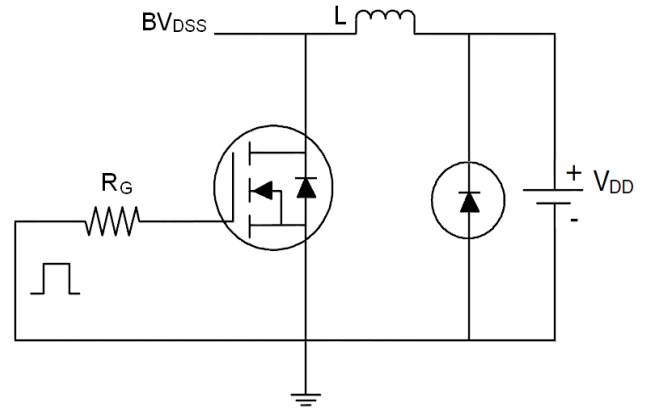
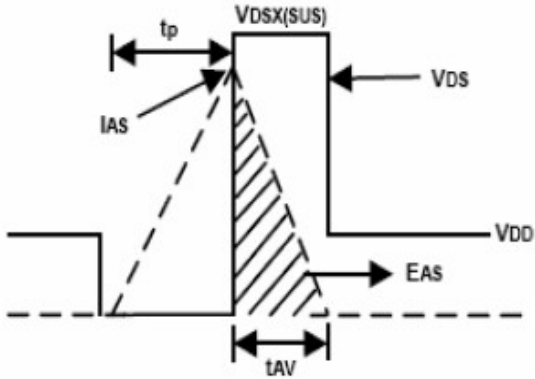


Figure 11. Normalized Maximum Transient Thermal Impedance

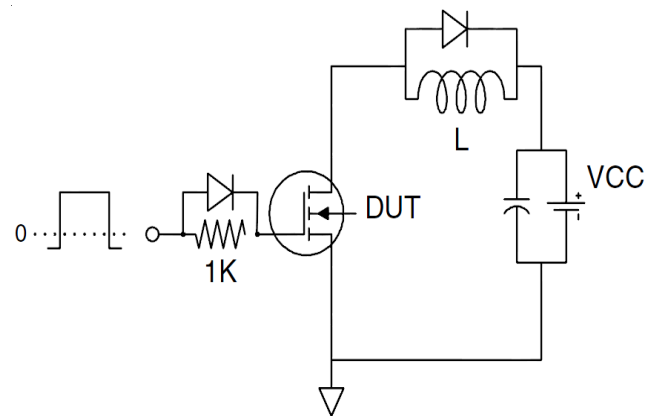
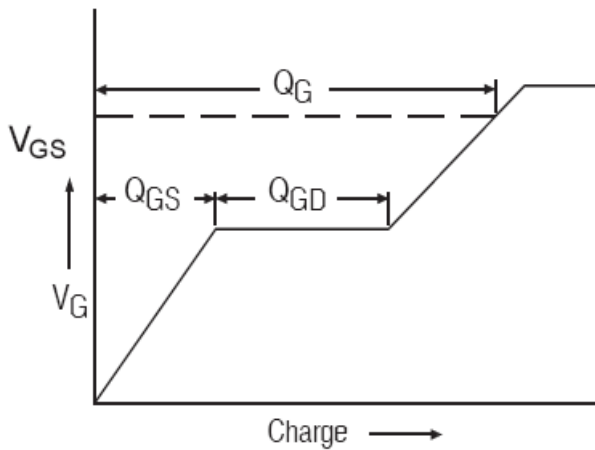


Test Circuit

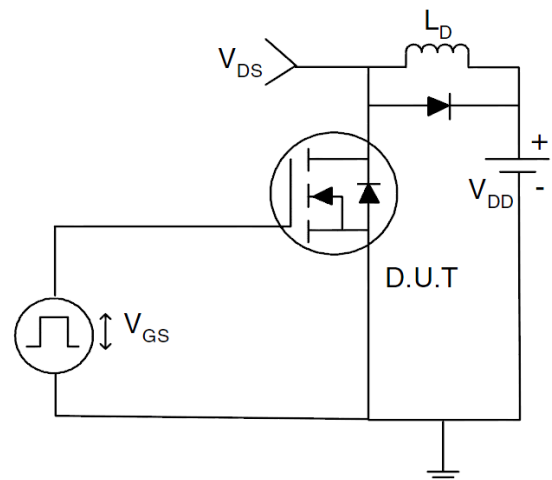
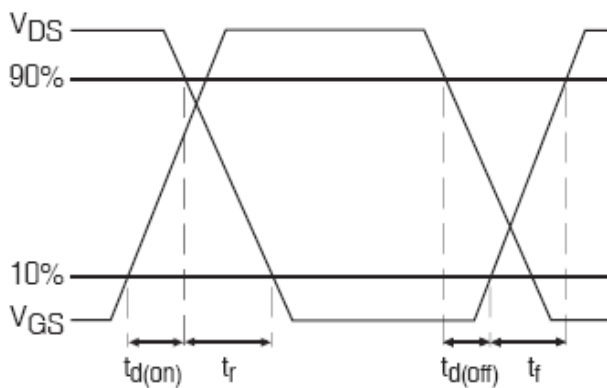
1) E_{AS} Test Circuits



2) Gate Charge Test Circuit:

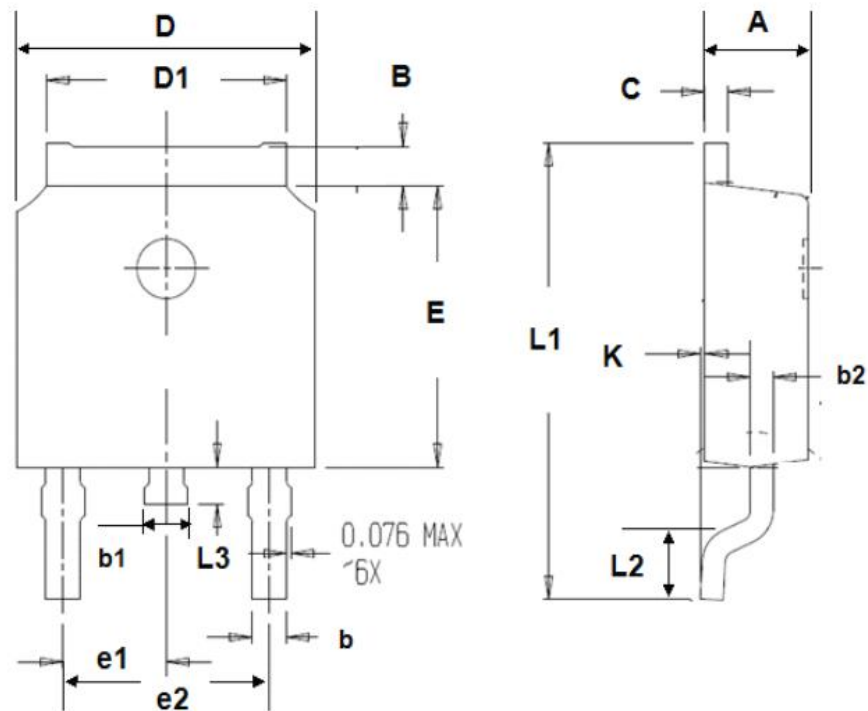


3) Switch Time Test Circuit:



• Dimensions

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.80	b1	0.50	0.90
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			




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