

• General Description

The AGM40P25A 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	RDS(ON)	ID
-40V	32mΩ	-19A

PDFN5*6 Pin Configuration

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM40P25A	AGM40P25A	PDFN5*6	330mm	12mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-40	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	-19	A
	Drain Current-Continuous(Tc=100°C)	-13	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-76	A
PD	Maximum Power Dissipation(Tc=25°C)	34	w
	Maximum Power Dissipation(Tc=100°C)	14	w
EAS	Avalanche energy (Note 3)	64	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	---	20	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	3.7	°C/W

Table 2. P-Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

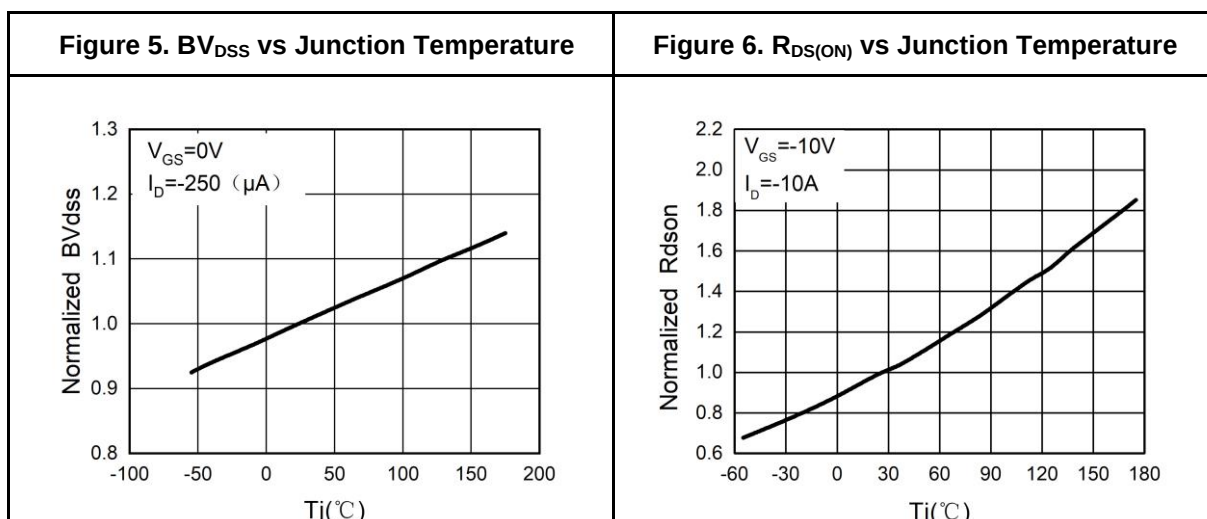
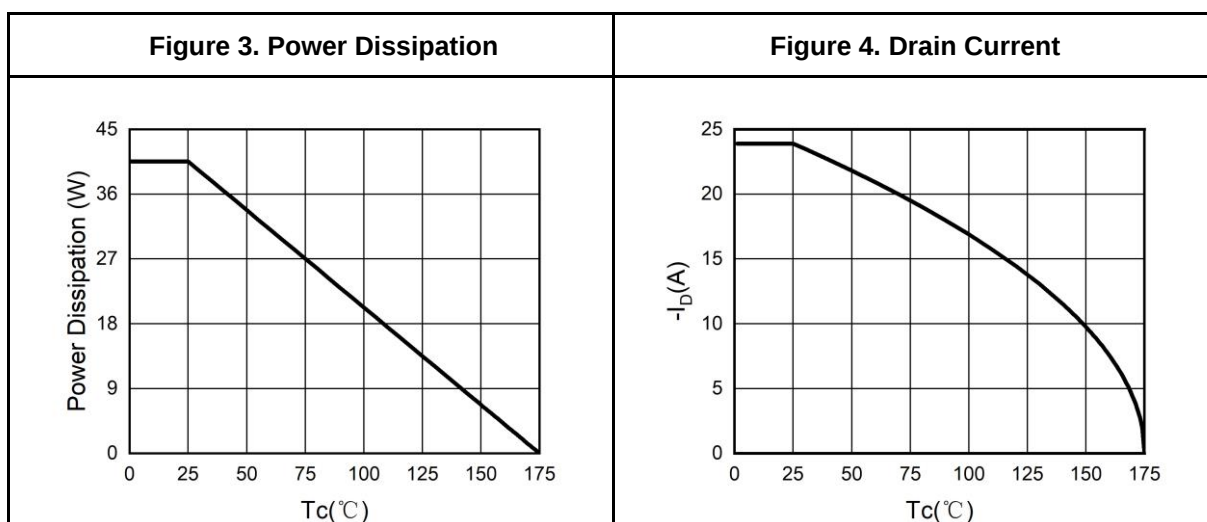
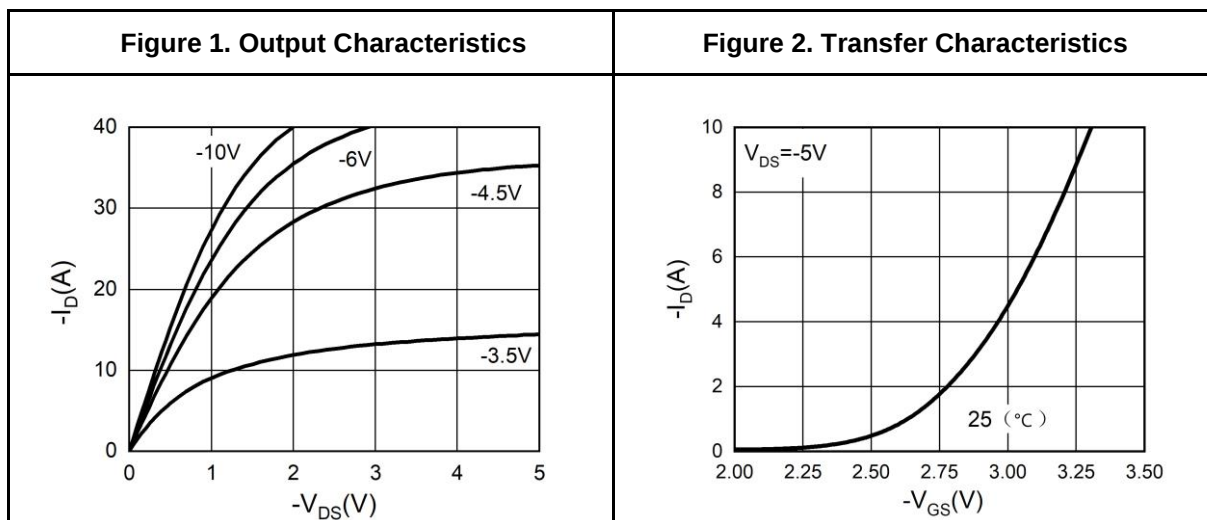
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-40	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-40V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.2	--	-2.2	V
gFS	Forward Transconductance	VDS=-5V,ID=-5A	--	11	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-10A	--	32	36	mΩ
		VGS=-4.5V, ID=-5A	--	42	47	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-20V,VGS=0V, F=1MHZ	--	1021	--	pF
Coss	Output Capacitance		--	63.6	--	pF
Crss	Reverse Transfer Capacitance		--	48.6	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	4.7	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-20V, RL=2Ω, RGEN=3Ω	--	13	--	nS
tr	Turn-on Rise Time		--	16	--	nS
td(off)	Turn-Off Delay Time		--	180	--	nS
tf	Turn-Off Fall Time		--	86	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-20V, ID=-10A	--	19.3	--	nC
Qgs	Gate-Source Charge		--	2.5	--	nC
Qgd	Gate-Drain Charge		--	5.5	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-19	A
VSD	Forward on Voltage	VGS=0V,IS=-10A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-10A , dI/dt=100A/μs , TJ=25℃	--	34	--	ns
Qrr	Reverse Recovery Charge		--	35	--	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: T_J=25°C, V_{DD}=-25V, V_{gs}=-10V, I_D=-16A, L=0.5mH, R_G=25ohm

Typical Electrical And Thermal Characteristics (Curves)



Typical Electrical And Thermal Characteristics (Curves)

Figure 7. Gate Charge Waveforms

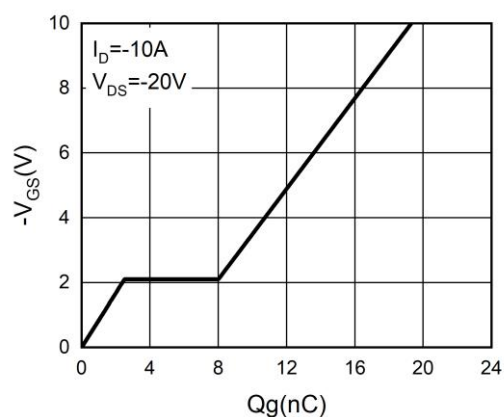


Figure 8. Capacitance

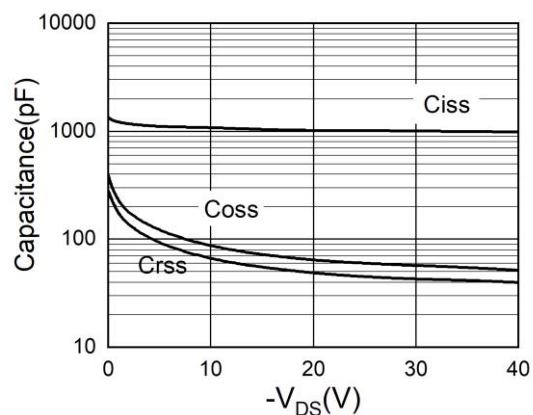


Figure 9. Body-Diode Characteristics

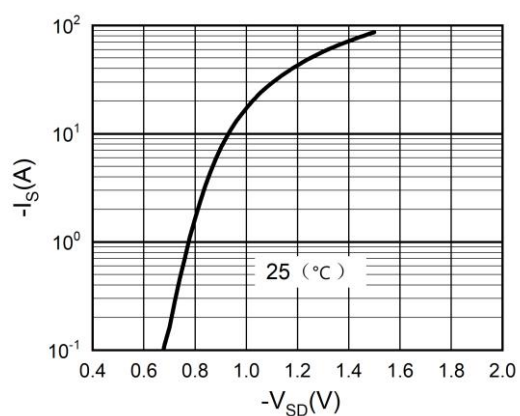
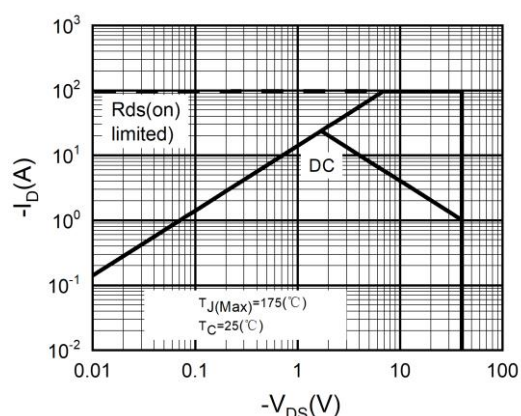


Figure 10. Maximum Safe Operating Area



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.20
D1	3.72	3.82	3.92
E	6.00	6.15	6.30
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.74	0.84
L1/L2	0.20 REF.		
θ	8°	10°	12°
M	0.08 REF.		
N	0	—	0.15
O	0.25 REF.		
P	1.28 REF.		

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