

● General Description

The AGM40P100A 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

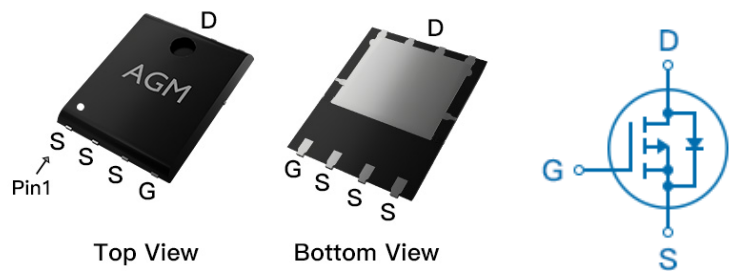
● Application

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

Product Summary

BVDSS	RDSON	ID
-40V	4.6mΩ	-130A

PDFN5*6 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM40P100A	AGM40P100A	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)	-130	A
	Drain Current-Continuous(Tc=100°C)	-89	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	-520	A
PD	Maximum Power Dissipation(Tc=25°C)	173	w
	Maximum Power Dissipation(Tc=100°C)	69	w
EAS	Avalanche energy (Note 3)	600	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 175	°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	---	0.86	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	V _{GS} =0V ID=-250μA	-40	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =-40V, V _{GS} =0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , ID=-250μA	-1.2	-1.6	-2.2	V
g _{FS}	Forward Transconductance	V _{DS} =-5V, ID=-5A	--	23	--	S
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, ID=-20A	--	4.6	6.5	mΩ
		V _{GS} =-4.5V, ID=-15A	--	6.0	8.6	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =0V, F=1MHZ	--	6628	--	pF
C _{oss}	Output Capacitance		--	520	--	pF
C _{rss}	Reverse Transfer Capacitance		--	350	--	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz	--	2.3	--	Ω
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =-10V, V _{DS} =-20V, ID=-12A, R _{GEN} =3Ω	--	41	--	nS
t _r	Turn-on Rise Time		--	12	--	nS
t _{d(off)}	Turn-Off Delay Time		--	308	--	nS
t _f	Turn-Off Fall Time		--	70	--	nS
Q _g	Total Gate Charge	V _{GS} =-10V, V _{DS} =-20V, ID=-12A	--	106	--	nC
Q _{gs}	Gate-Source Charge		--	13	--	nC
Q _{gd}	Gate-Drain Charge		--	24	--	nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)		--	--	-130	A
V _{SD}	Forward on Voltage	V _{GS} =0V, I _S =-20A	--	--	-1.2	V
t _{rr}	Reverse Recovery Time	I _{sd} =-20A , dl/dt=100A/μs , T _J =25°C	--	24	--	ns
Q _{rr}	Reverse Recovery Charge		--	140	--	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}=-20V, V_{gs}=-10V, I_D=-49A, L=0.5mH, R_G=25ohm

Typical Electrical And Thermal Characteristics (Curves)

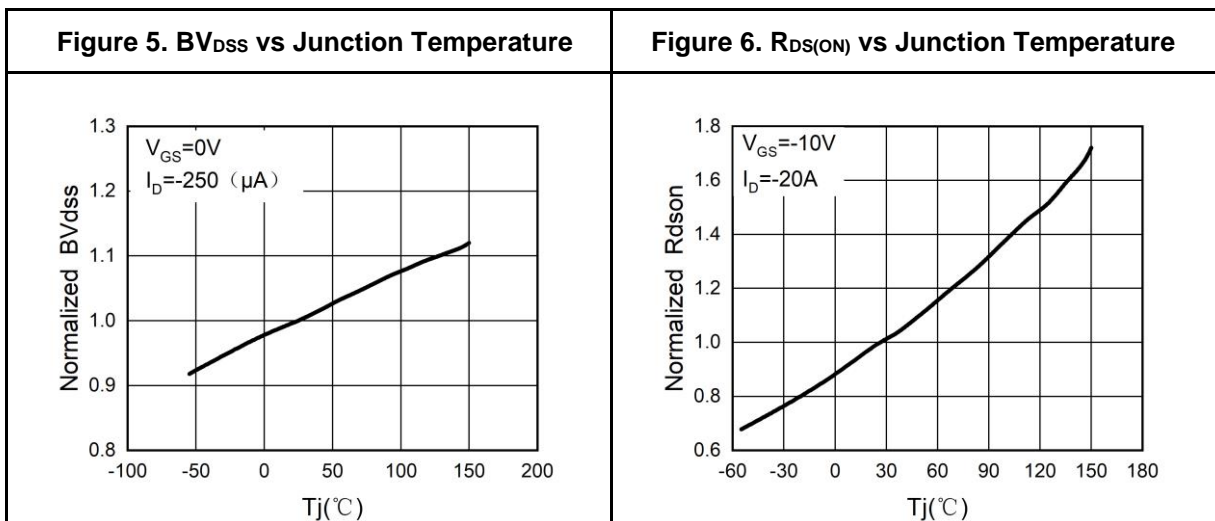
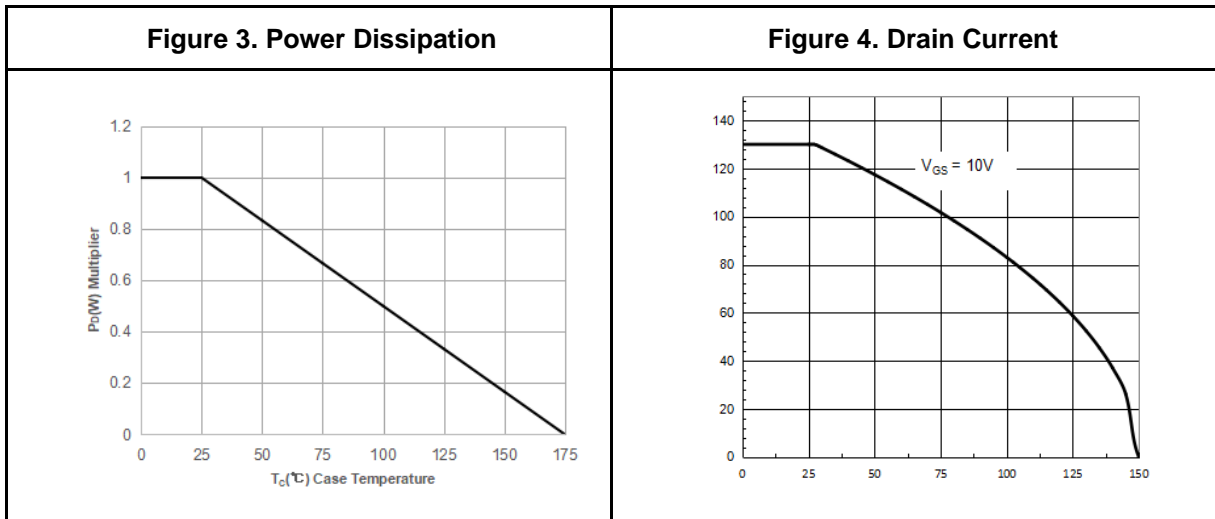
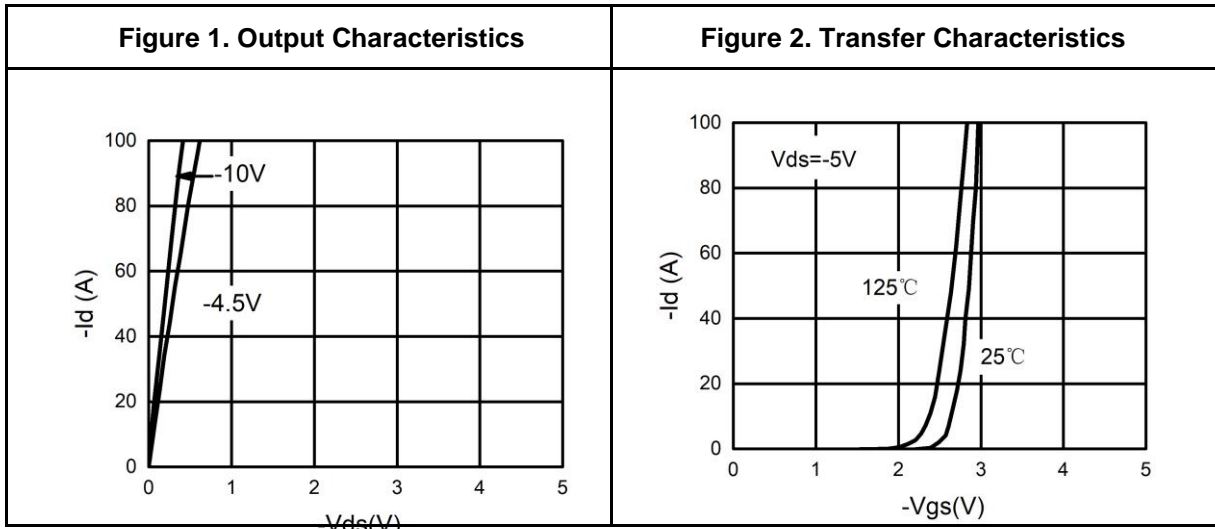
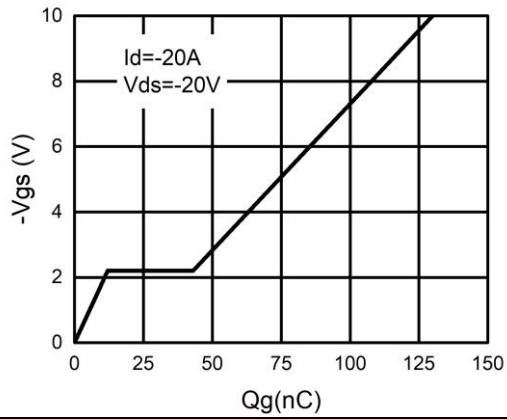
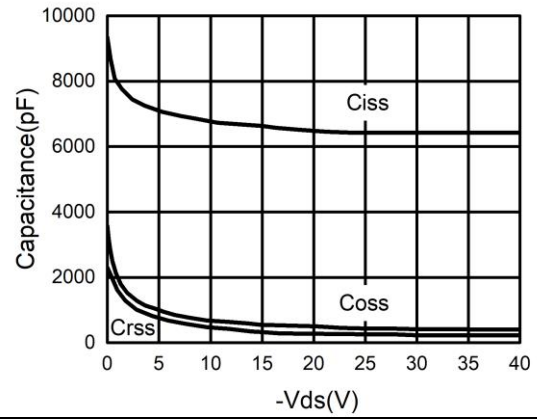
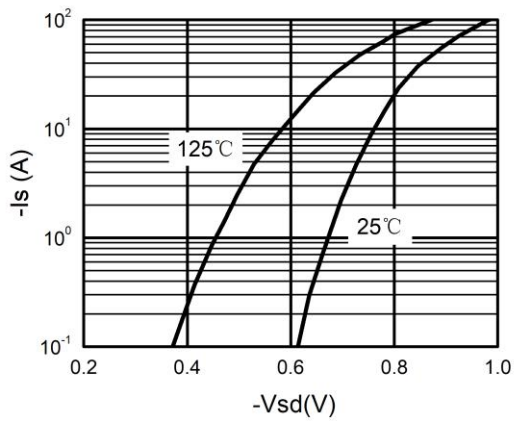
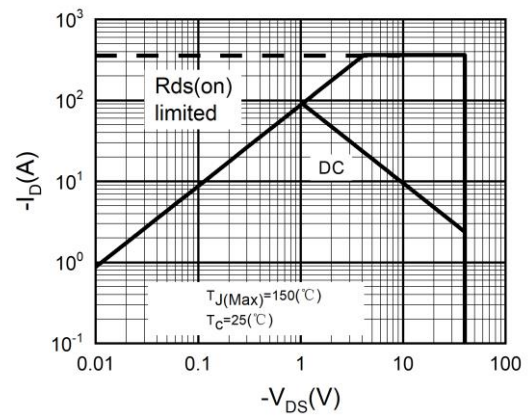
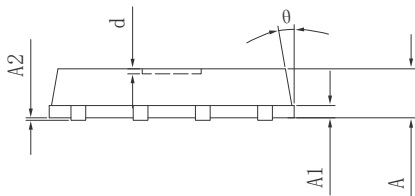
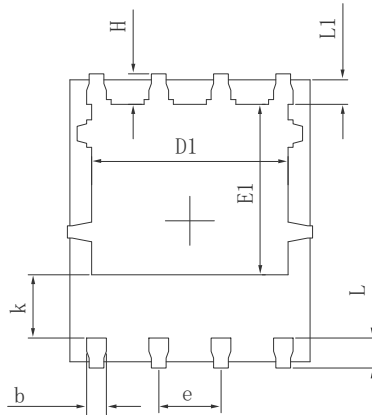
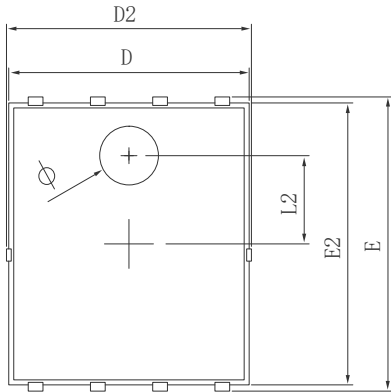
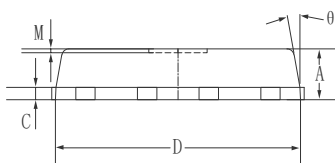
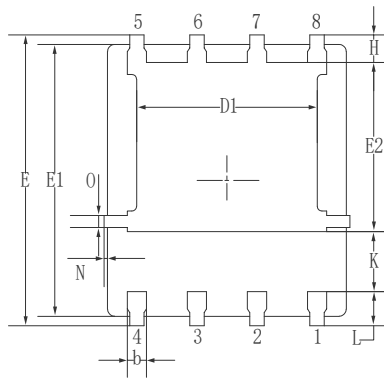
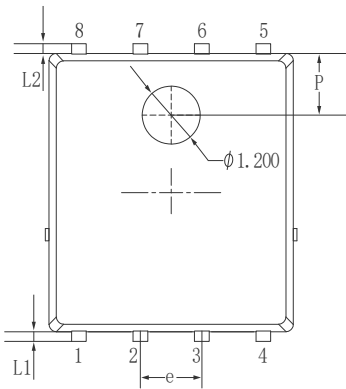


Figure 7. Gate Charge Waveforms

Figure 8. Capacitance

Figure 9. Body-Diode Characteristics

Figure 10. Maximum Safe Operating Area


●Dimensions (PDFN5*6)


SYMBOL	MILLIMETER		
	MIN.	TYP.	MAX.
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
theta	8°	10°	12°
phi	1.100	1.200	1.300
d			0.100

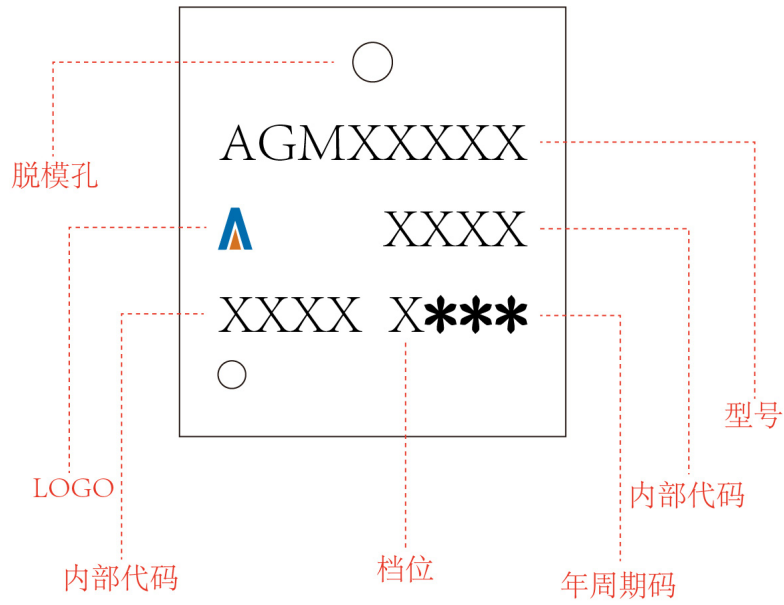


SYMBOL	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.20
D1	3.72	3.82	3.92
E	6.00	6.15	6.30
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.74	0.84
L1/L2	0.20 REF.		
theta	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
O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

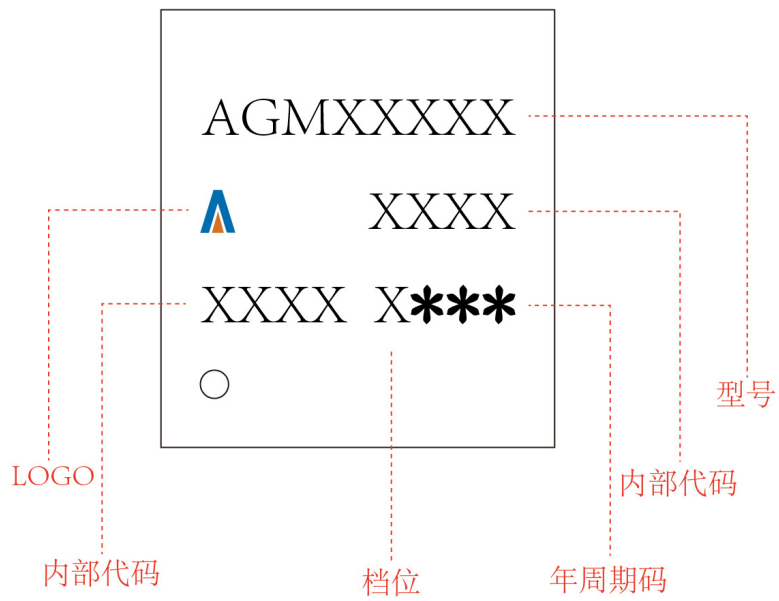
PDFN5*6

Marking Instructions:

Model1:



Model2:




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