

General Description

The AGM40P100H 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

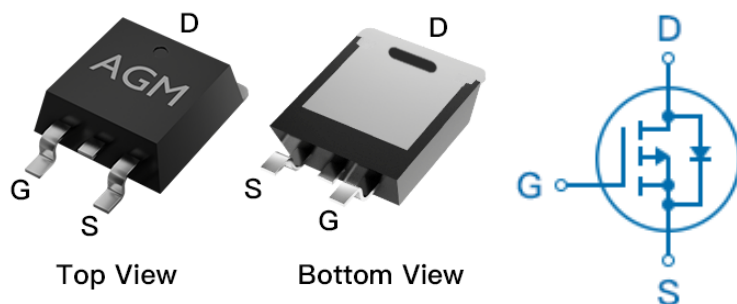
Application

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

Product Summary

BVDSS	RDSON	ID
-40V	4.6mΩ	-140A

TO-263 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM40P100H	AGM40P100H	TO-263	330mm	25mm	800

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)	-140	A
	Drain Current-Continuous(Tc=100°C)	-93	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	-560	A
PD	Maximum Power Dissipation(Tc=25°C)	200	w
	Maximum Power Dissipation(Tc=100°C)	100	w
EAS	Avalanche energy (Note 3)	420	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	---	40	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	0.92	°C/W

Table 3. Electrical Characteristics (TJ=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	-1.6	-2.2	V
gFS	Forward Transconductance	VDS=-5V,ID=-5A	--	15	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-20A	--	4.6	6.5	mΩ
		VGS=-4.5V, ID=-15A	--	6.0	8.6	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-20V,VGS=0V, F=1MHZ	--	6550	--	pF
Coss	Output Capacitance		--	515	--	pF
Crss	Reverse Transfer Capacitance		--	520	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	2.5	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-20V, ID=-12A,RGEN=3Ω	--	41	--	nS
tr	Turn-on Rise Time		--	12	--	nS
td(off)	Turn-Off Delay Time		--	308	--	nS
tf	Turn-Off Fall Time		--	70	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-20V, ID=-12A	--	106	--	nC
Qgs	Gate-Source Charge		--	13	--	nC
Qgd	Gate-Drain Charge		--	24	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-140	A
VSD	Forward on Voltage	VGS=0V,IS=-20A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-20A ,	--	24	--	ns
Qrr	Reverse Recovery Charge	dI/dt=100A/μs , TJ=25℃	--	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: TJ=25°C,VDD=-20V,Vgs=-10V,ID=-41A,L=0.5mH,RG=25ohm

Typical Electrical And Thermal Characteristics (Curves)

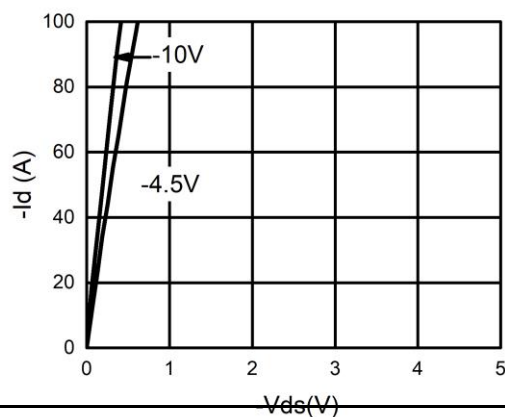
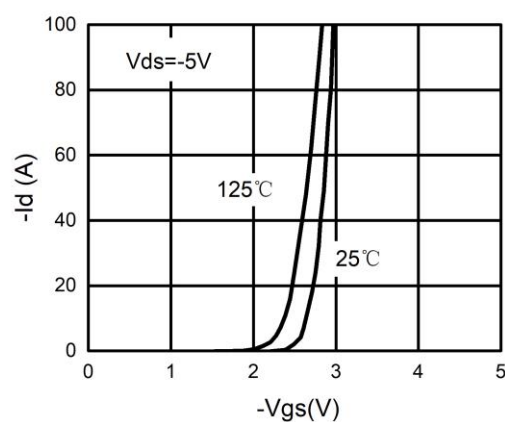
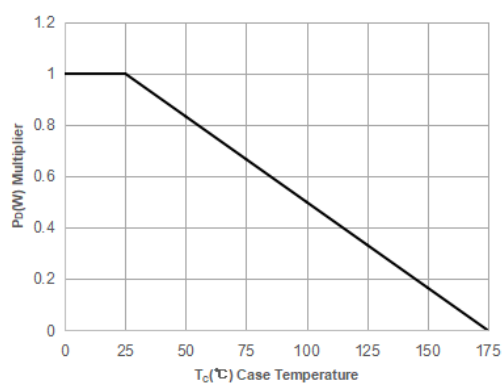
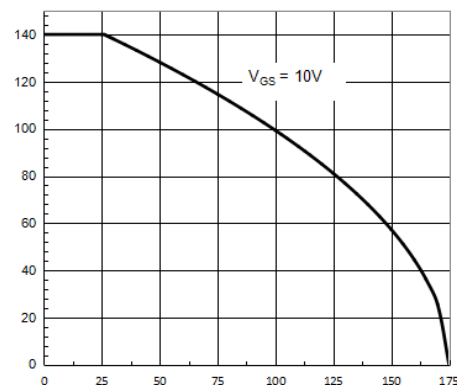
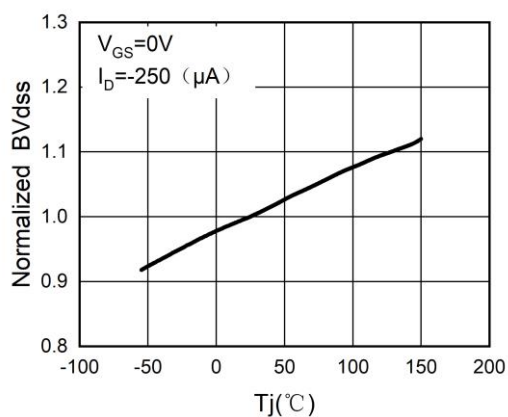
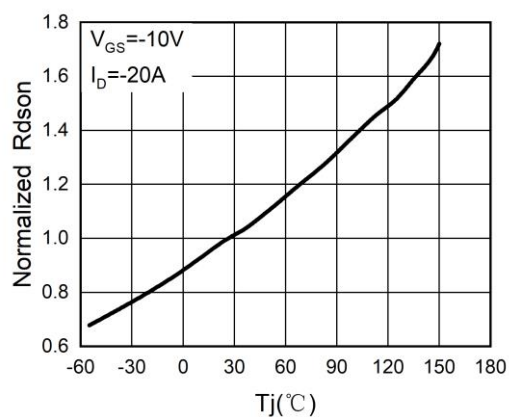
Figure 1. Output Characteristics

Figure 2. Transfer Characteristics

Figure 3. Power Dissipation

Figure 4. Drain Current

Figure 5. BV_{DSS} vs Junction Temperature

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


Figure 7. Gate Charge Waveforms

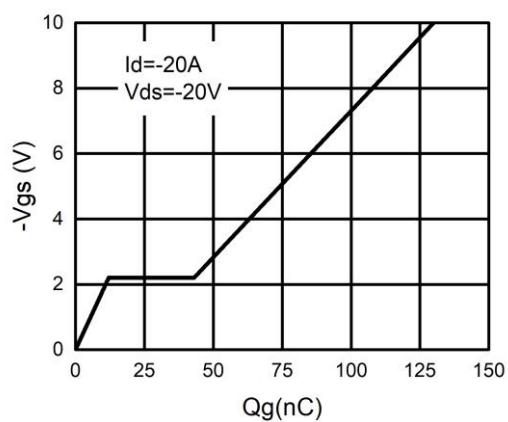


Figure 8. Capacitance

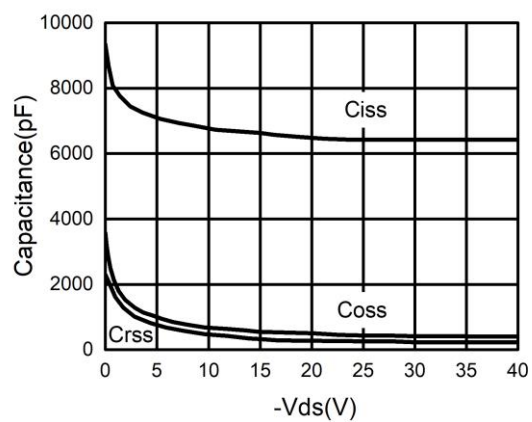


Figure 9. Body-Diode Characteristics

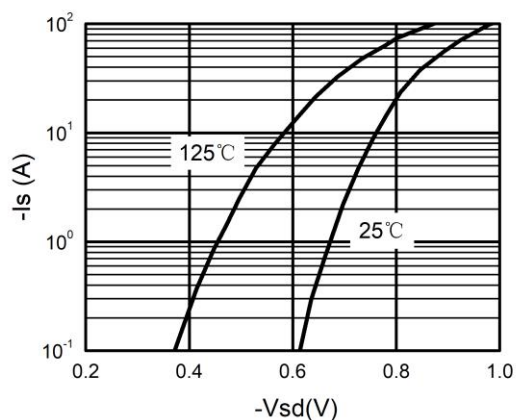
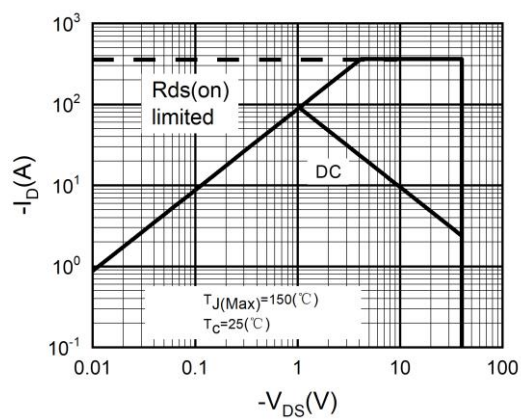
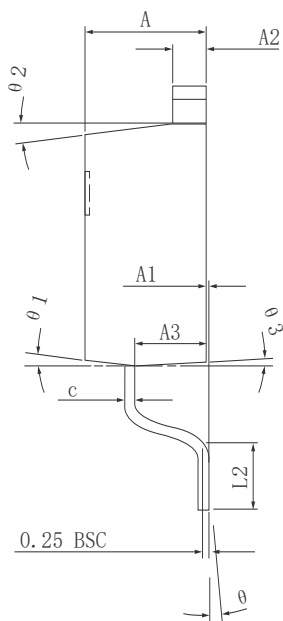
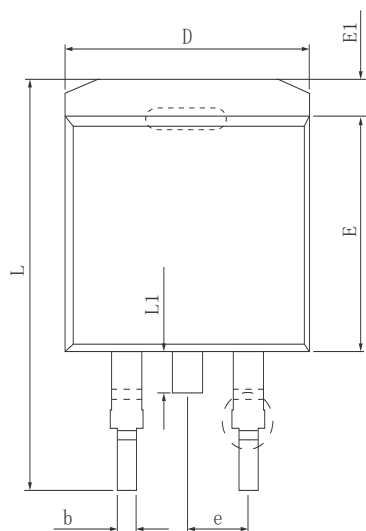


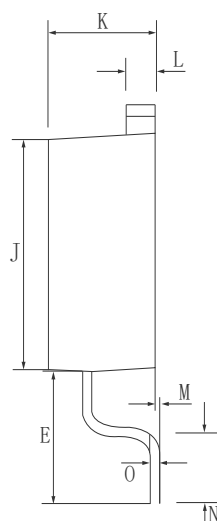
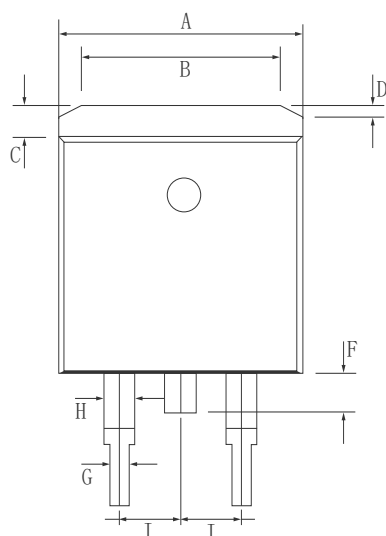
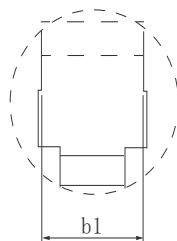
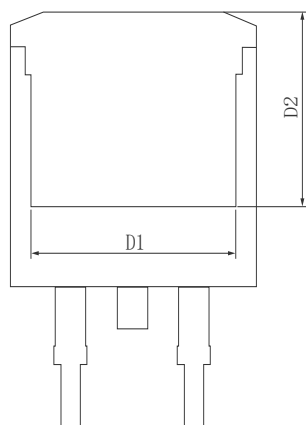
Figure 10. Maximum Safe Operating Area



Dimensions (TO-263)



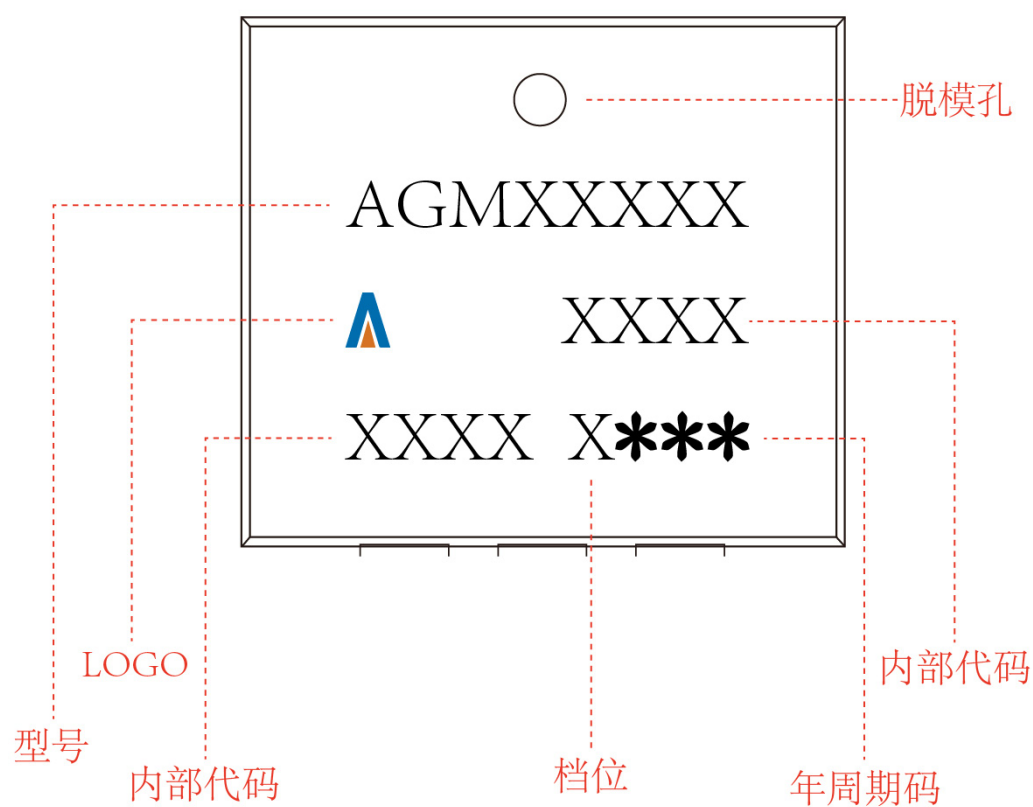
SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
θ	0°		9°
$\theta 1$	7° TYP		
$\theta 2$	7° TYP		
$\theta 3$	3° TYP		



Dim.	Min.	Max.
A	9.8	10.2
B	6.1	6.7
C	1.1	1.4
D	0.5	1.0
E	4.6	5.0
F	1.4	1.6
G	0.7	0.9
H	1.17	1.37
I	Typ2.54	
J	9	9.2
K	4.3	4.7
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.45	0.55
All Dimensions in millimeter		

TO-263

Marking Instructions:



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