

● General Description

The AGM40P75A 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

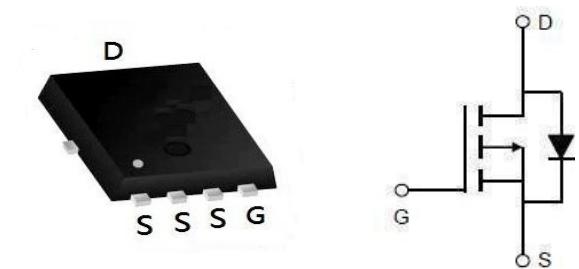
● Application

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

Product Summary

BVDSS	RDS(ON)	ID
-40V	7.0mΩ	-70A

PDFN5*6 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM40P75A	AGM40P75A	PDFN5*6	----	----	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)	-70	A
	Drain Current-Continuous(Tc=100°C)	-56	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-280	A
PD	Maximum Power Dissipation(Tc=25°C)	113	w
	Maximum Power Dissipation(Tc=100°C)	45	w
EAS	Avalanche energy (Note 3)	500	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	---	1.1	°C/W

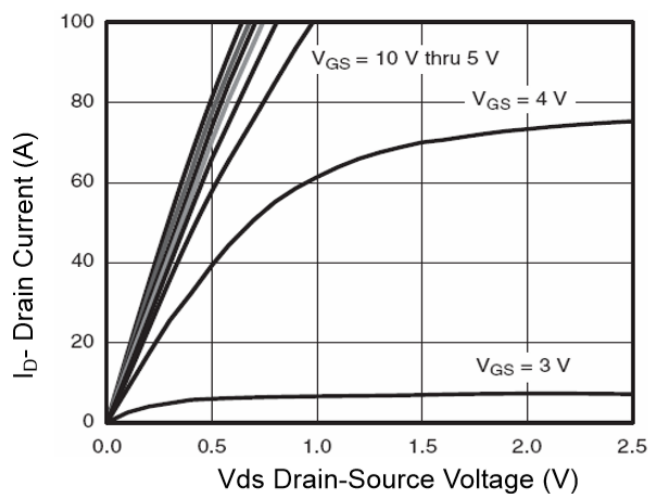
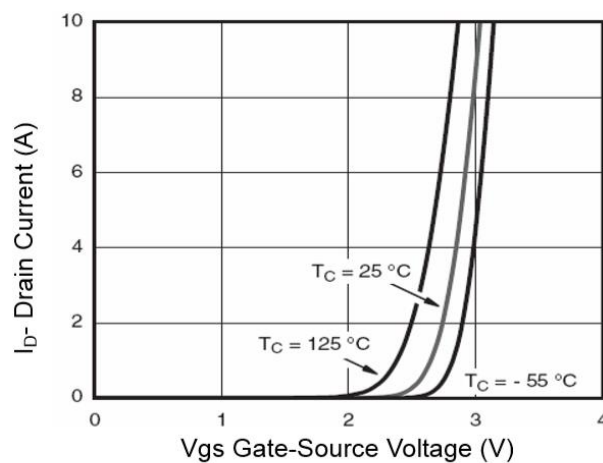
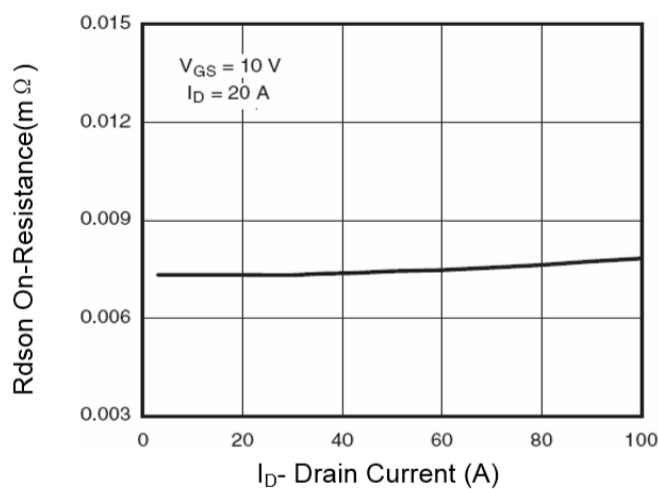
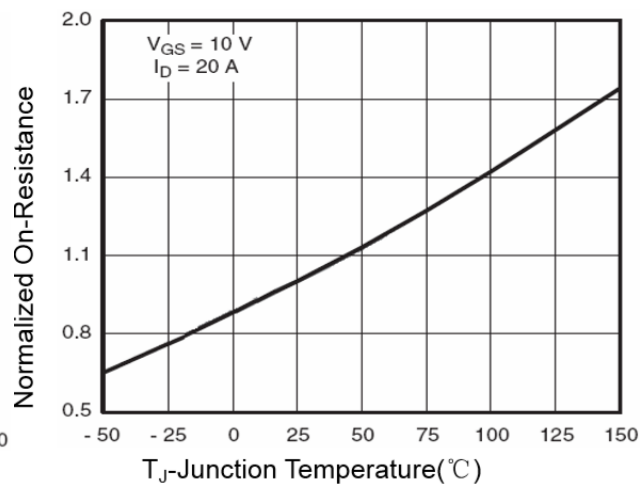
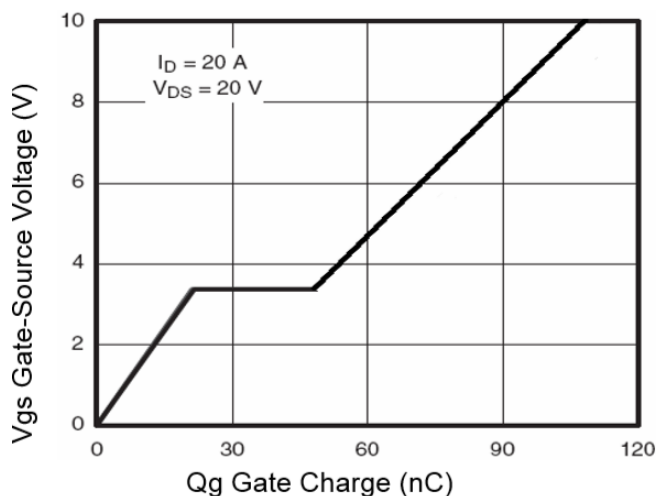
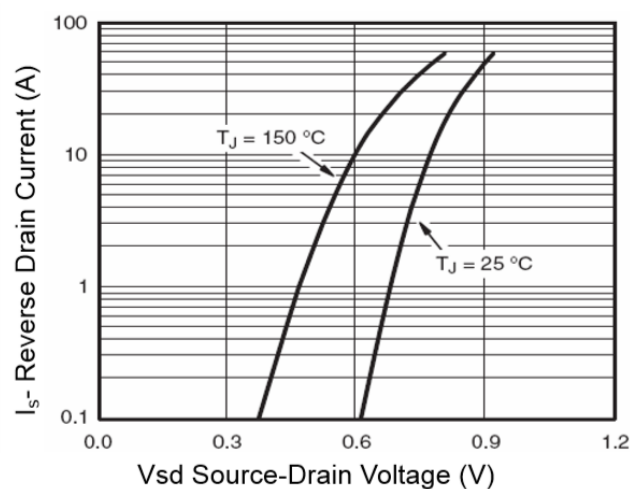
Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

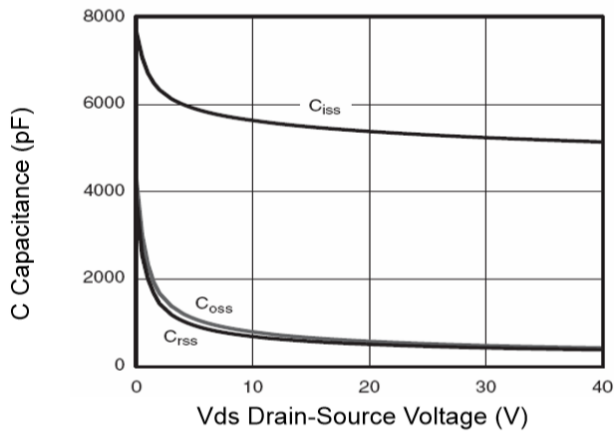
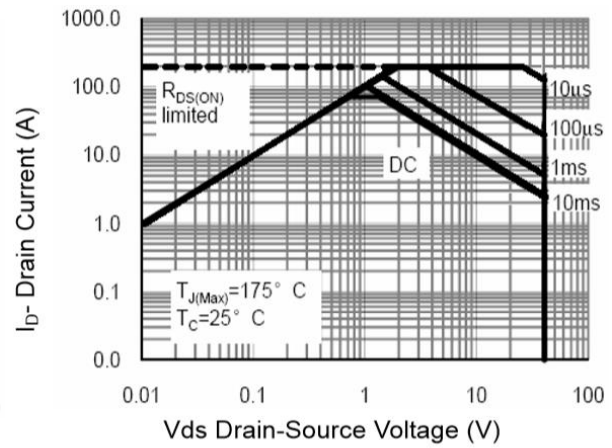
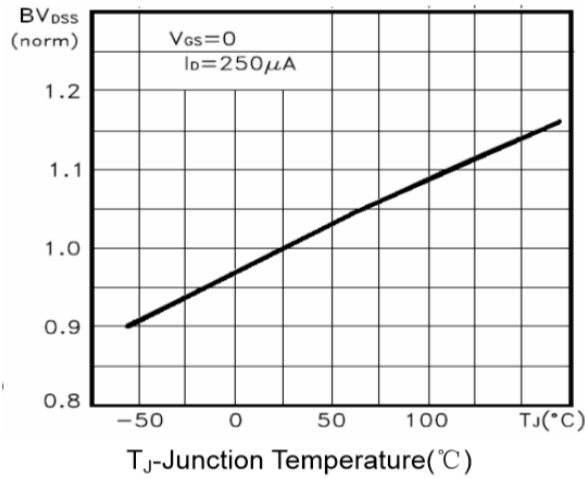
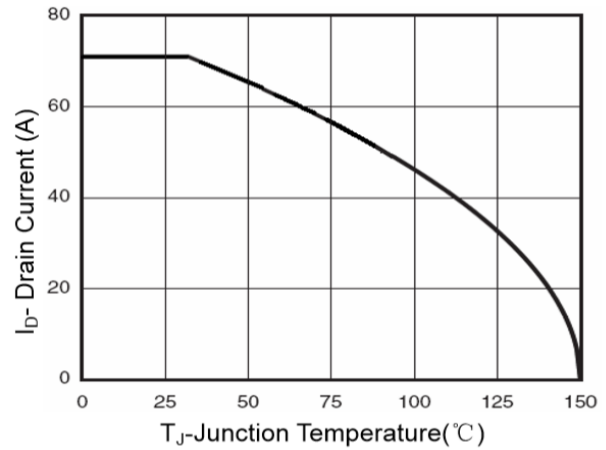
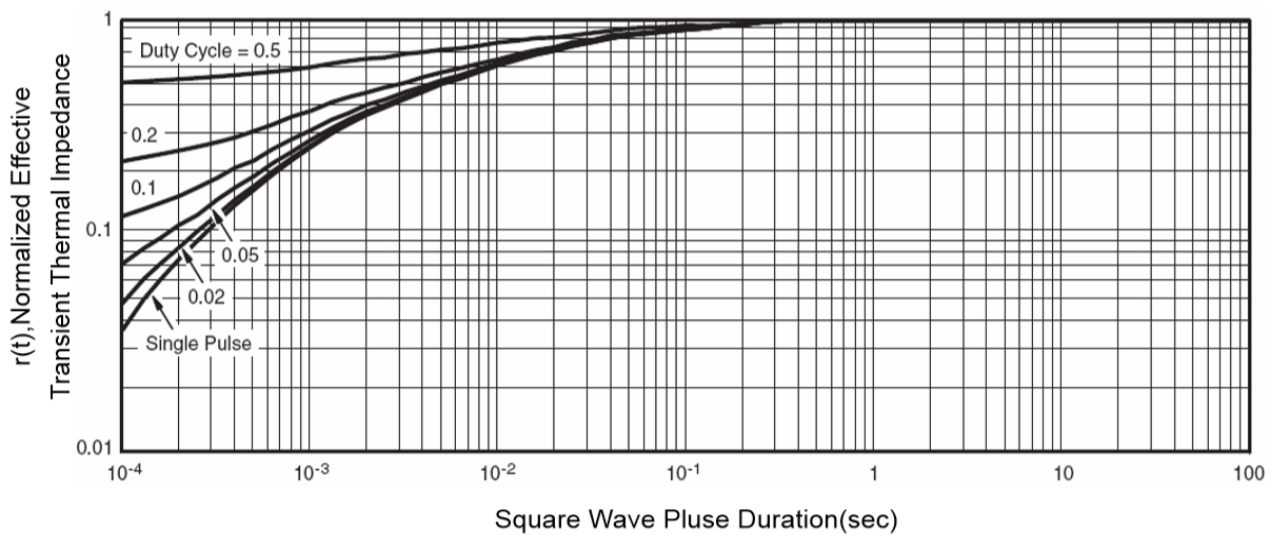
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-40	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-40V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.2	-1.6	-2.3	V
gFS	Forward Transconductance	VDS=-15V,ID=-12A	20	--	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-12A	--	7.0	10	mΩ
		VGS=-4.5V, ID=-12A	--	10	15	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-20V,VGS=0V, F=1MHZ	--	6500	--	pF
Coss	Output Capacitance		--	790	--	pF
Crss	Reverse Transfer Capacitance		--	605	--	pF
Rg	Gate resistance	f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-20V, ID=-12A,RGEN=3Ω	--	18	--	nS
tr	Turn-on Rise Time		--	31	--	nS
td(off)	Turn-Off Delay Time		--	70	--	nS
tf	Turn-Off Fall Time		--	40	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-20V, ID=-12A	--	150	--	nC
Qgs	Gate-Source Charge		--	33	--	nC
Qgd	Gate-Drain Charge		--	27	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-70	A
VSD	Forward on Voltage	VGS=0V,IS=-12A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-12A ,	--	--	--	ns
Qrr	Reverse Recovery Charge	dI/dt=100A/μs , TJ=25℃	--	--	--	nc

Notes 1.The maximum current rating is package limited.

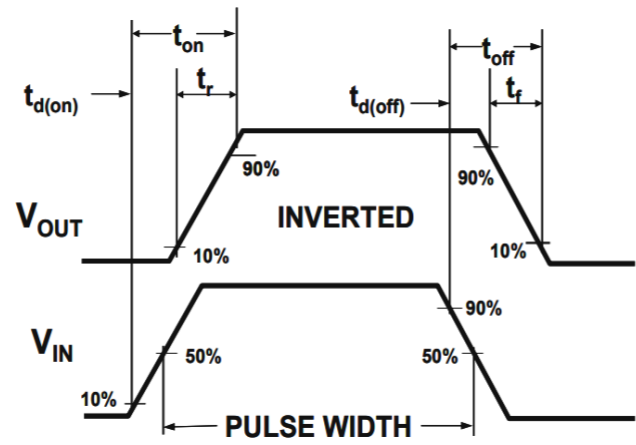
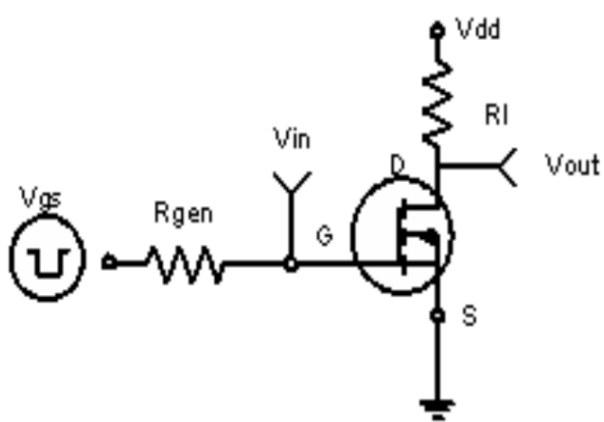
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25°C

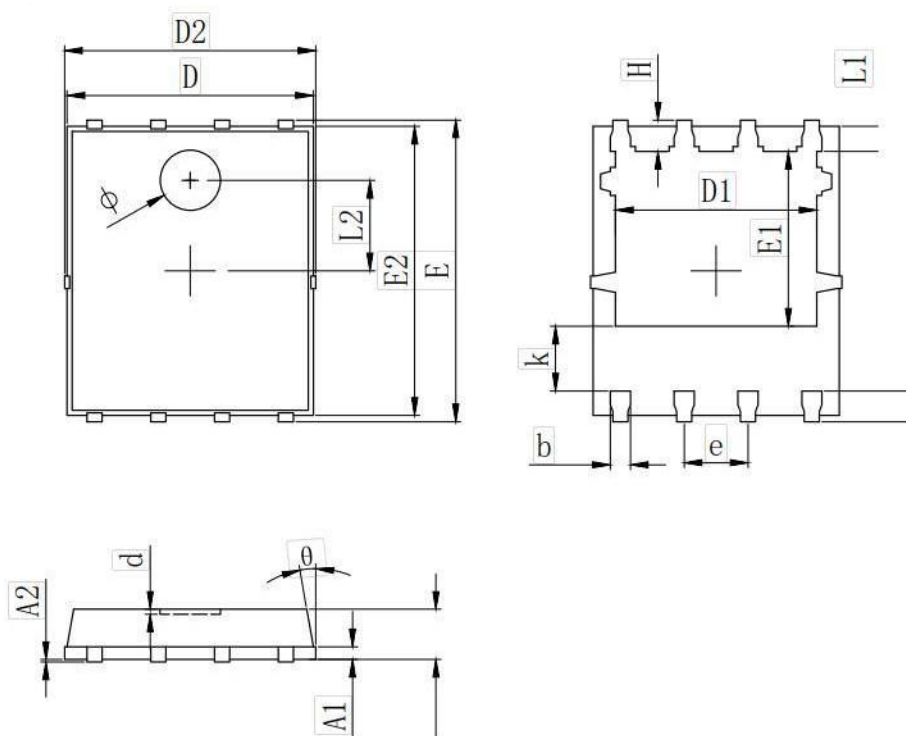

Figure 1 Output Characteristics

Figure 2 Transfer Characteristics

Figure 3 $R_{DS(on)}$ - Drain Current

Figure 4 $R_{DS(on)}$ -Junction Temperature

Figure 5 Gate Charge

Figure 6 Source- Drain Diode Forward


Figure 7 Capacitance vs Vds

Figure 8 Safe Operation Area

Figure 9 BV_{DS} vs Junction Temperature

Figure 10 I_D Current Derating vs Junction Temperature

Figure 11 Normalized Maximum Transient Thermal Impedance

Characteristics Curve:



•Dimensions (DFN5×6)



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
θ	8°	10°	12°
∅	1.100	1.200	1.300
d			0.100

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