● General Description

The AGM40P55AP 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

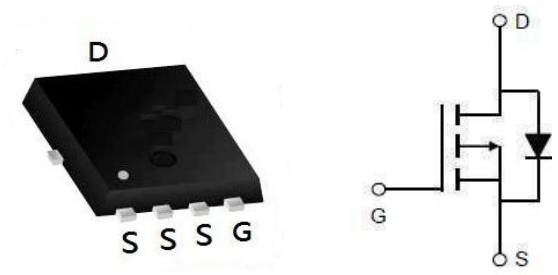
● Application

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

Product Summary

BVDSS	RDSON	ID
-40V	8.9mΩ	-50A

PDFN3*3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM40P55AP	AGM40P55AP	PDFN3*3	----	----	5000

Table 1. Absolute Maximum Ratings (TA=25℃)

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℃) **(Note 1)**	-50	A
	Drain Current-Continuous(Tc=100℃)	-31	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	-200	A
PD	Maximum Power Dissipation(Tc=25℃)	55	w
	Maximum Power Dissipation(Tc=100℃)	22	w
EAS	Avalanche energy **(Note 3)**	80	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	---	61	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	2.27	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	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
$V_{GS(th)}$	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.0	-1.6	-2.5	V
gFS	Forward Transconductance	VDS=5V,ID=-12A	--	--	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-16A	--	8.9	13	mΩ
		VGS=-4.5V, ID=-12A	--	14.2	20	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-20V,VGS=0V, F=1MHZ	--	3050	--	pF
Coss	Output Capacitance		--	282	--	pF
Crss	Reverse Transfer Capacitance		--	230	--	pF
Rg	Gate resistance	f=1.0MHz	--	9	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-15V, ID=-16A,RGEN=3Ω	--	38	--	nS
tr	Turn-on Rise Time		--	31	--	nS
td(off)	Turn-Off Delay Time		--	90	--	nS
tf	Turn-Off Fall Time		--	9.2	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-20V, ID=-16A	--	28	--	nC
Qgs	Gate-Source Charge		--	8	--	nC
Qgd	Gate-Drain Charge		--	8.5	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-50	A
VSD	Forward on Voltage	VGS=0V,IS=-16A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-16A , dI/dt=100A/μs , TJ=25℃	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	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℃

Typical Characteristics

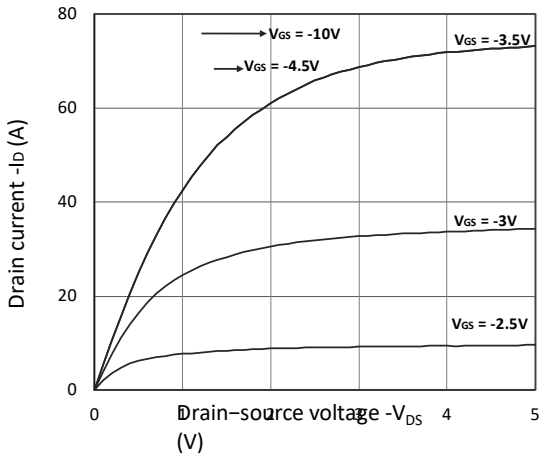


Figure 1. Output Characteristics

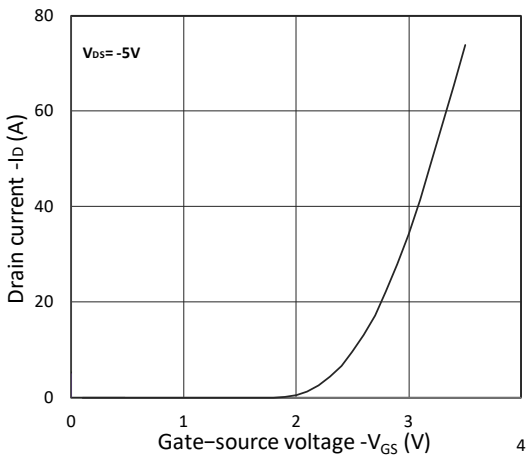


Figure 2. Transfer Characteristics

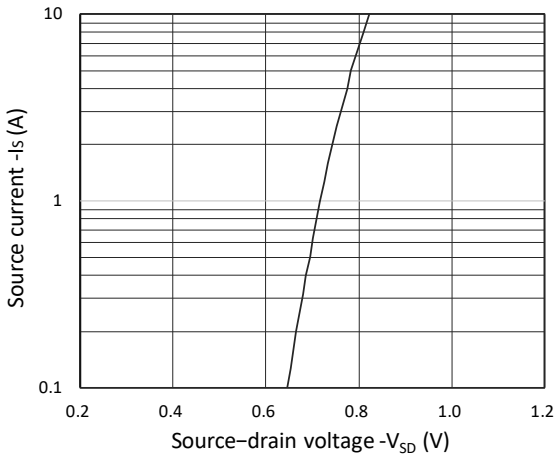


Figure 3. Forward Characteristics of Reverse

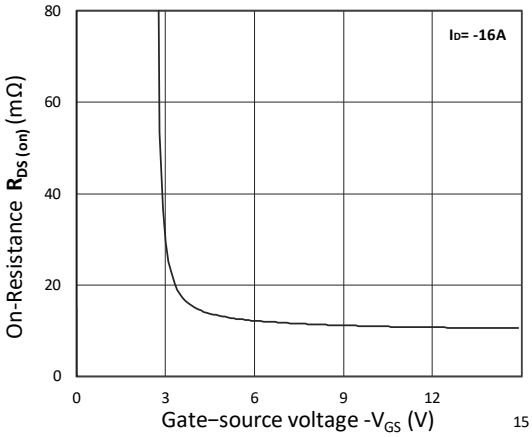


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

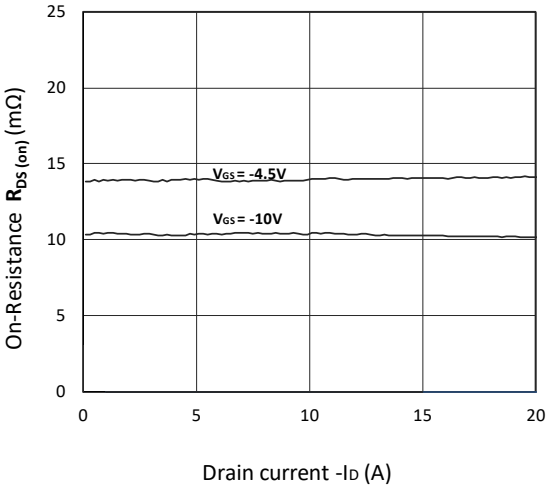


Figure 5. $R_{DS(ON)}$ vs. I_D

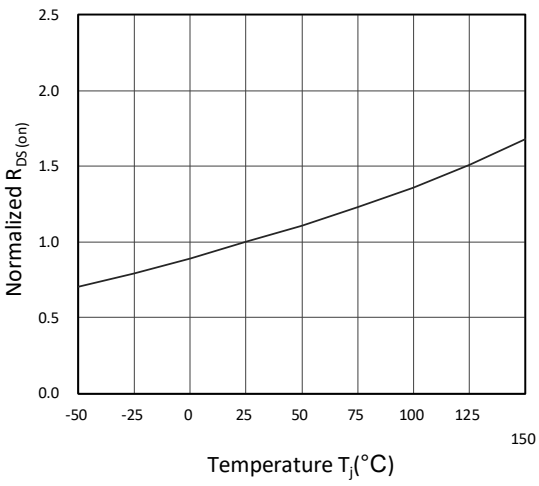


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

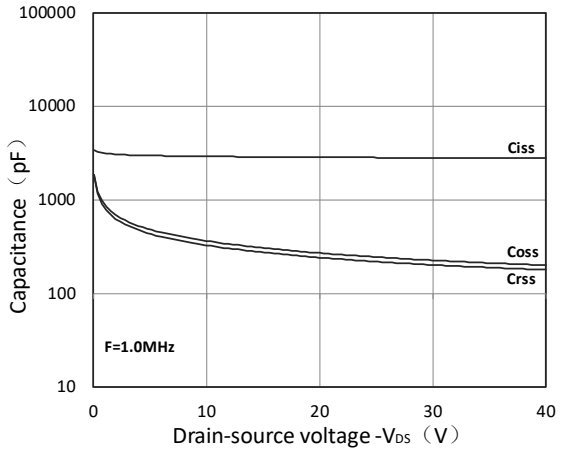


Figure 7. Capacitance Characteristics

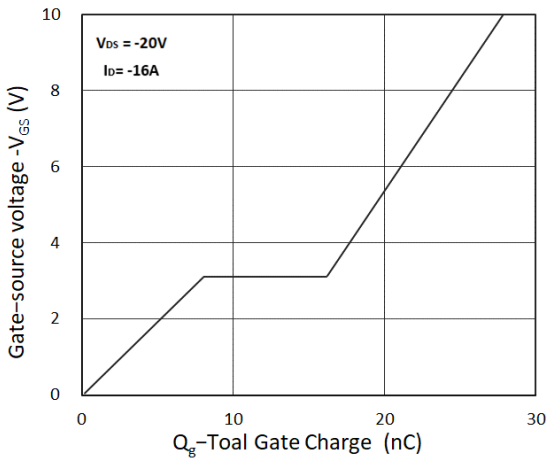


Figure 8. Gate Charge Characteristics

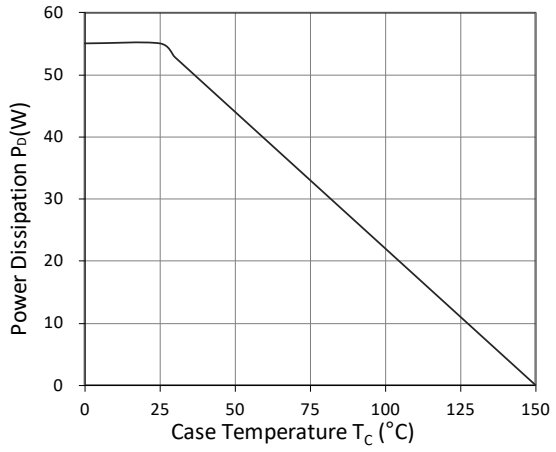


Figure 9. Power Dissipation

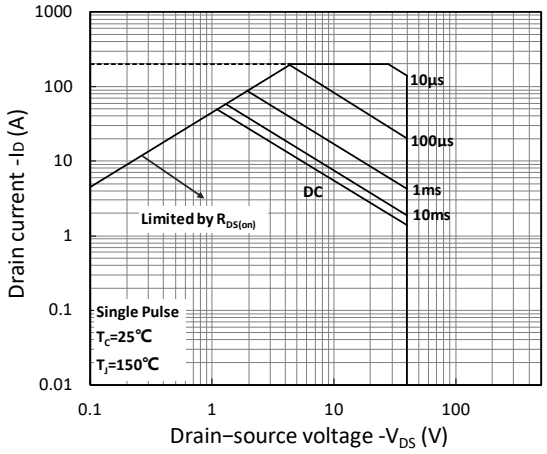


Figure10. Safe Operating Area

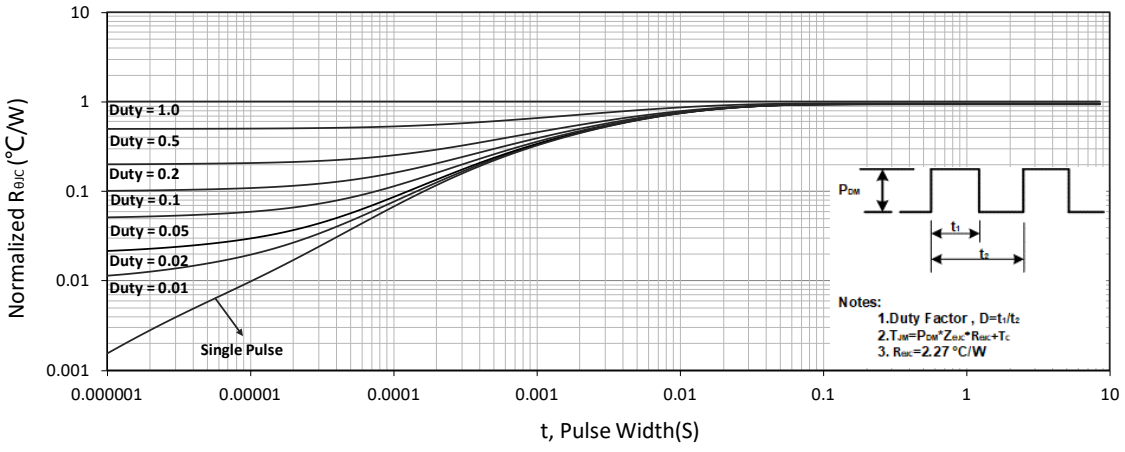
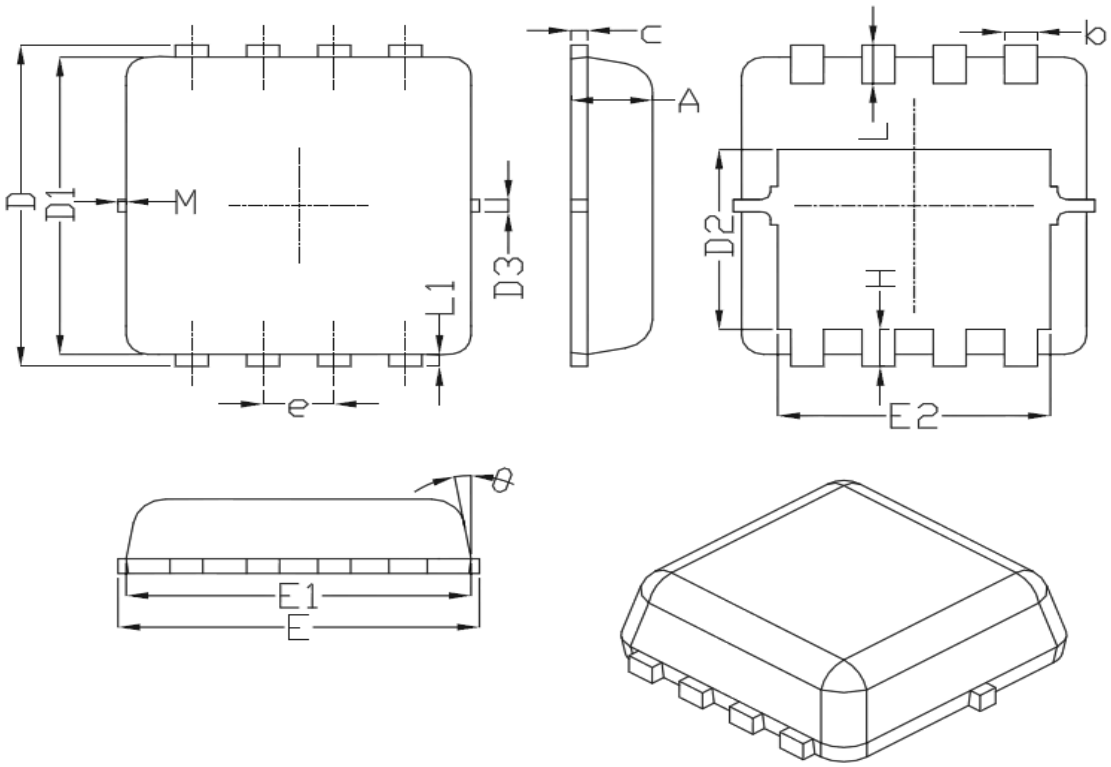


Figure 11. Normalized Maximum Transient Thermal Impedance

PDFN3333 Package Outline Data



DIMENSIONS (unit : mm)

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.70	0.75	0.80	**b**	0.25	0.30	0.35
C	0.10	0.15	0.25	**D**	3.25	3.35	3.45
D1	3.00	3.10	3.20	**D2**	1.78	1.88	1.98
D3	--	0.13	--	**E**	3.20	3.30	3.40
E1	3.00	3.15	3.20	**E2**	2.39	2.49	2.59
e	0.65BSC			**H**	0.30	0.39	0.50
L	0.30	0.40	0.50	**L1**	--	0.13	--
θ	--	10°	12°	**M**	*	*	0.15
*Not specified							

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