

• General Description

The AGM1075MN 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

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM1075MN	AGM1075MN	SOP8	330mm	12mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	100	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(TA=25°C) (Note 1)	10	A
	Drain Current-Continuous(TA=100°C)	6.2	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	40	A
PD	Maximum Power Dissipation(TA=25°C)	2.45	w
	Maximum Power Dissipation(TA=100°C)	0.98	w
EAS	Avalanche energy (Note 3)	12	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	---	51	°C/W

Product Summary

BVDSS	RDSON	ID
100V	62mΩ	10A

SOP8 Pin Configuration

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	VGS=0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=100V,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	1.7	2.2	V
gFS	Forward Transconductance	VDS=5V, ID=3A	--	5	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=10A	--	62	80	mΩ
		VGS=4.5V, ID=3A	--	69	90	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	520	--	pF
Coss	Output Capacitance		--	40	--	pF
Crss	Reverse Transfer Capacitance		--	2.4	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V, RGEN=6Ω,ID=6A	--	16.2	--	nS
tr	Turn-on Rise Time		--	3.2	--	nS
td(off)	Turn-Off Delay Time		--	13	--	nS
tf	Turn-Off Fall Time		--	22	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=6A	--	6.0	--	nC
Qgs	Gate-Source Charge		--	1.1	--	nC
Qgd	Gate-Drain Charge		--	1.3	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	10	A
VSD	Forward on Voltage	VGS=0V,IS=10A	--	--	1.2	V
trr	Reverse Recovery Time	IF=10A , dI/dt=100A/μs , TJ=25°C	--	45	--	ns
Qrr	Reverse Recovery Charge		--	63	--	nc

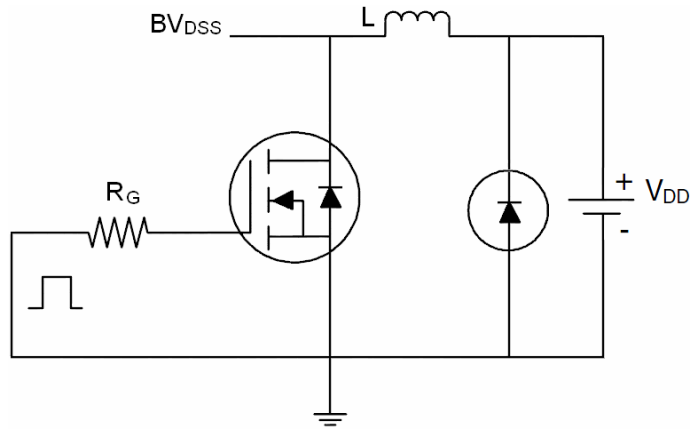
Notes 1.The maximum current rating is package limited.

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

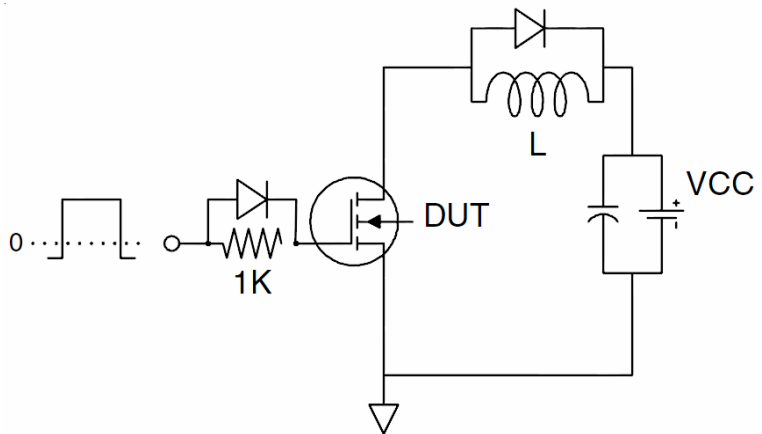
Notes 3.EAS condition: T_J=25°C,VDD=50V,Vgs=10V,ID=7A,L=0.5mH,RG=25ohm

Test Circuit

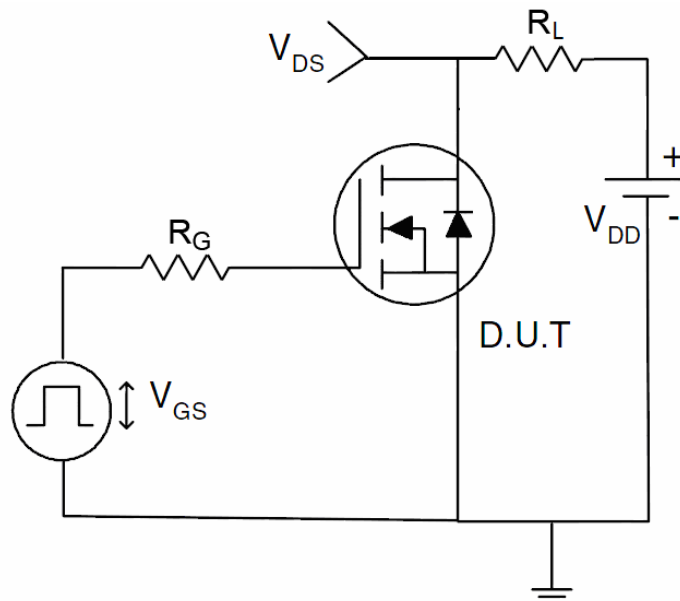
1) E_{AS} test circuit



2) Gate charge test circuit



3) Switch Time Test Circuit



Typical Electrical and Thermal Characteristics (curves)

Figure1. Source-Drain Diode Forward Voltage

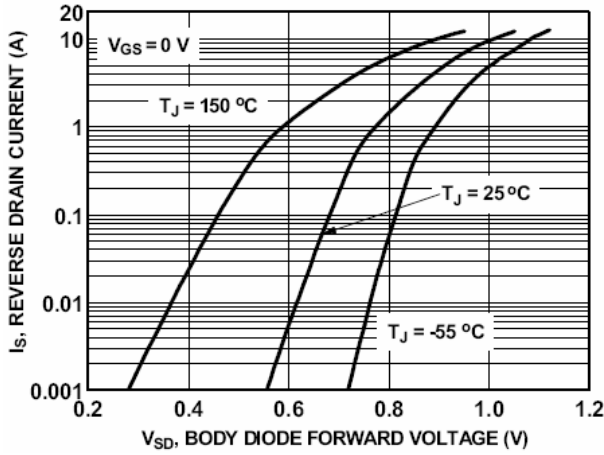


Figure2. Safe operating area

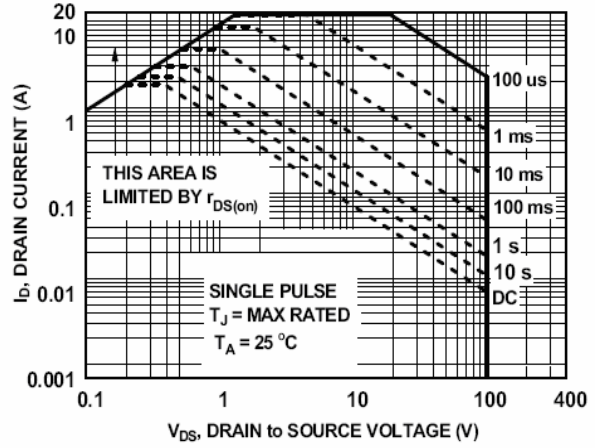


Figure3. Output characteristics

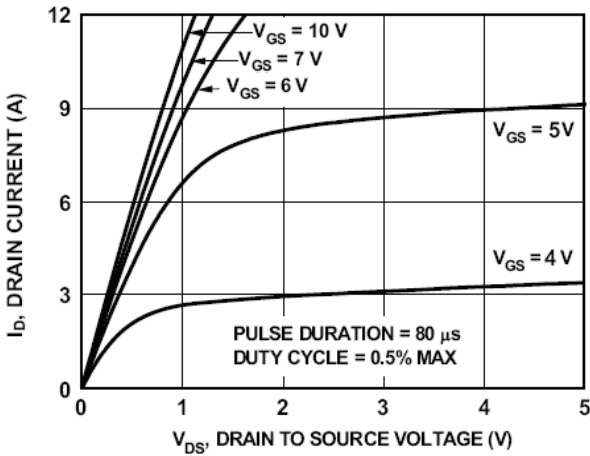


Figure4. Transfer characteristics

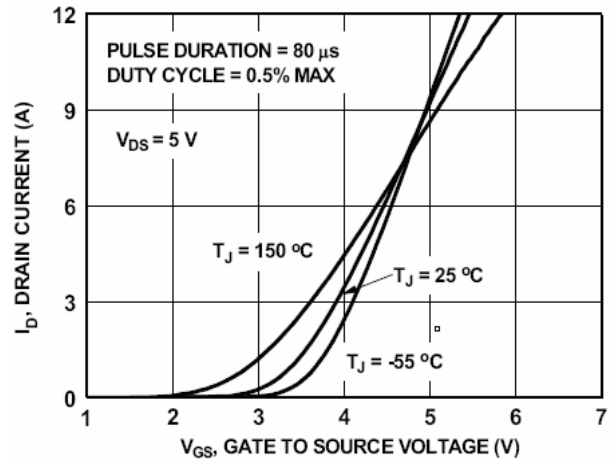


Figure5. Static drain-source on resistance

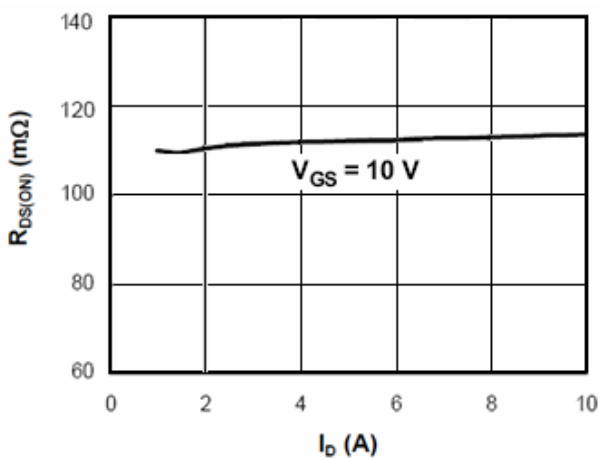


Figure6. $R_{DS(ON)}$ vs Junction Temperature

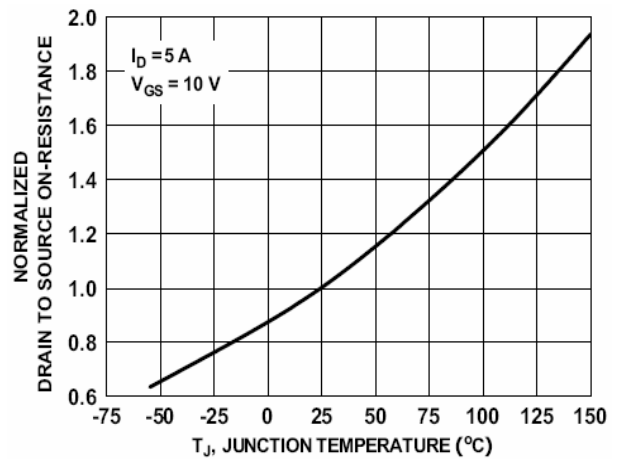


Figure7. BV_{DSS} vs Junction Temperature

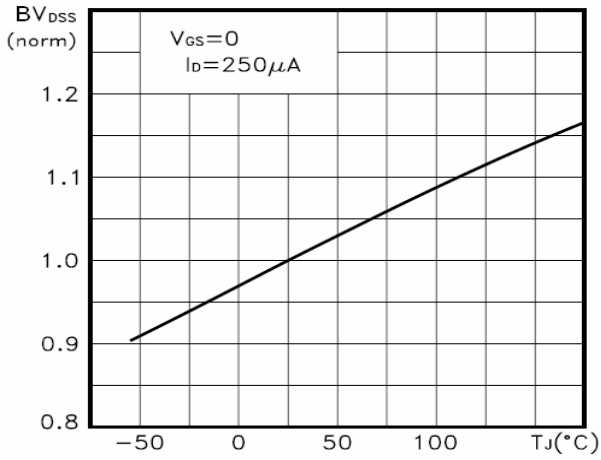


Figure8. $V_{GS(th)}$ vs Junction Temperature

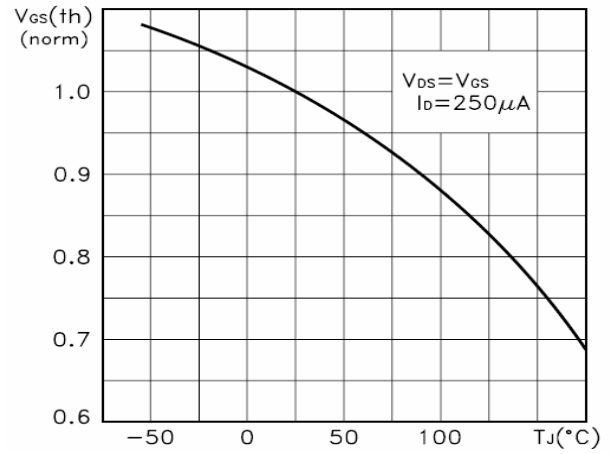


Figure9. Gate charge waveforms

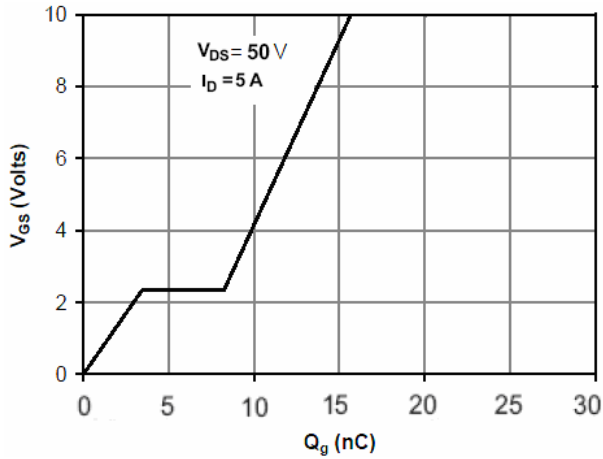


Figure10. Capacitance

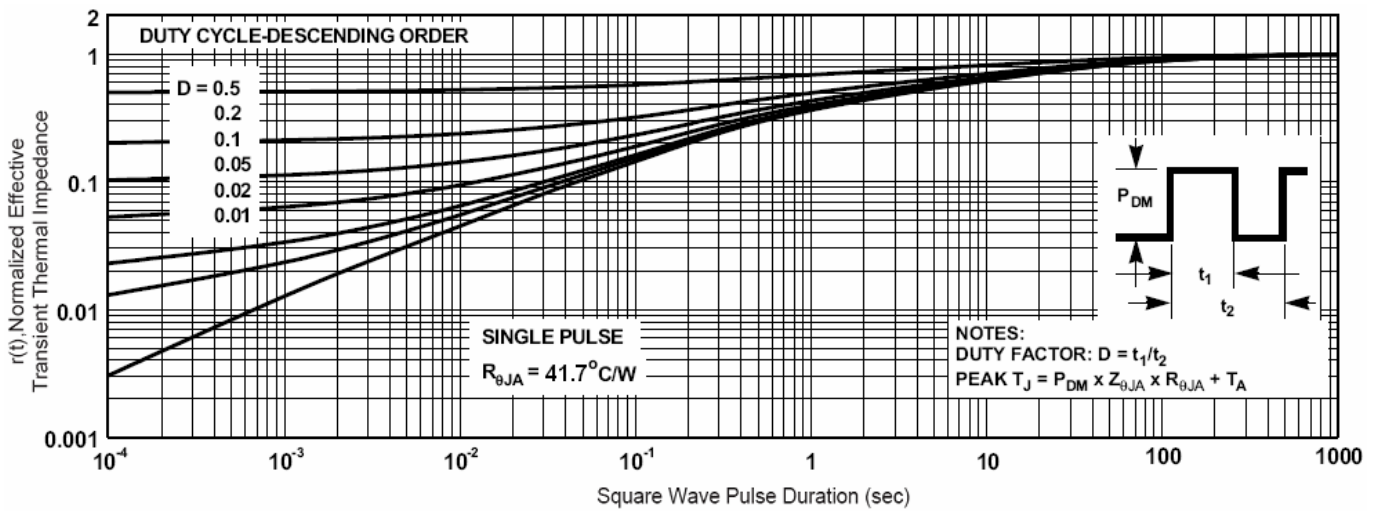
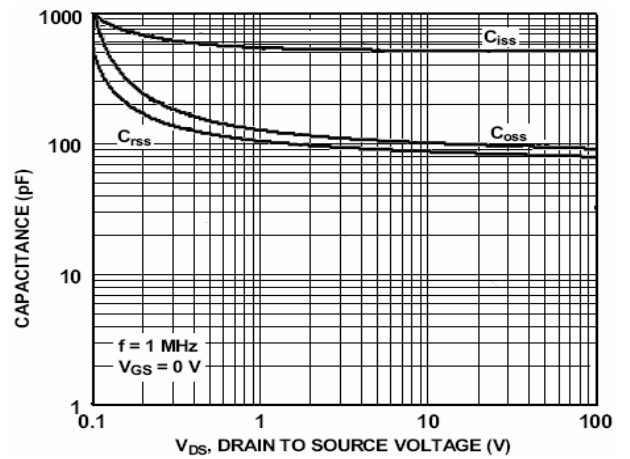


Figure11. Normalized Maximum Transient Thermal Impedance

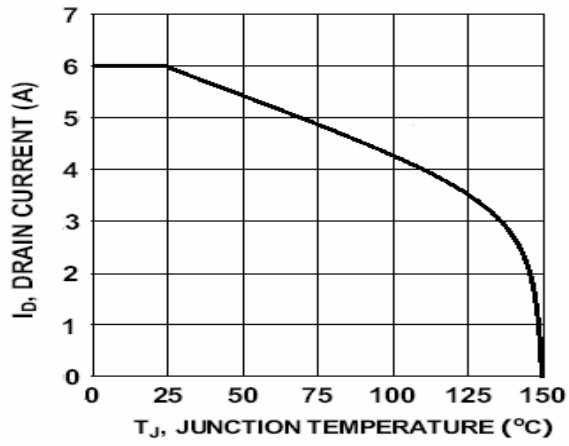
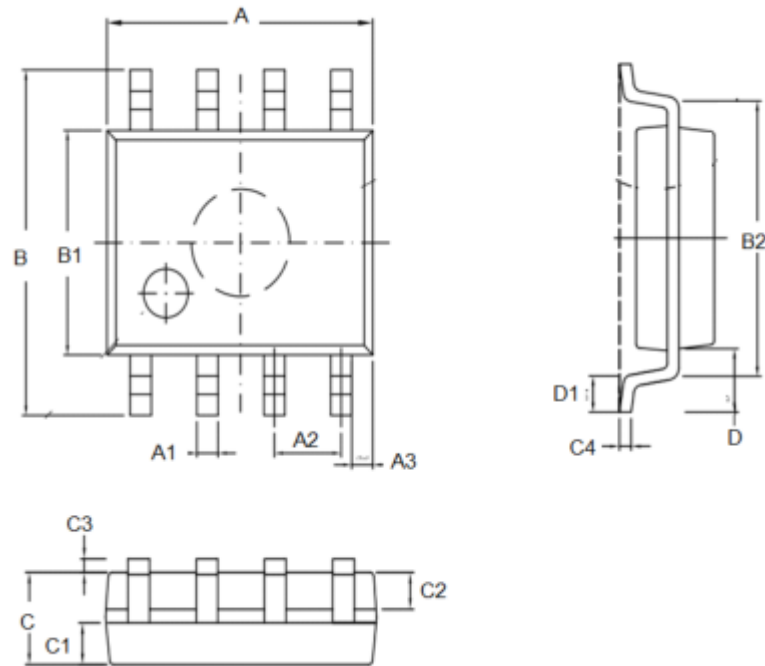


Figure12. I_D vs Junction Temperature

•Dimensions(SOP8)

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62




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