

### ● General Description

The AGM1810S 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

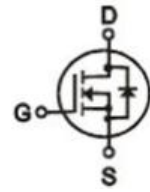
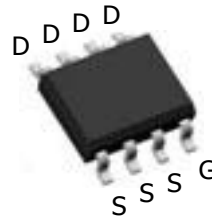
### ● Application

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

### Product Summary

BVDSS	RDSON	ID
100V	8.5mΩ	16A

### SOP8 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM1810S	AGM1810S	SOP8	----	----	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) <b>(Note 1)</b>	16	A
	Drain Current-Continuous(TA=100°C)	10	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	46	A
PD	Maximum Power Dissipation(TA=25°C)	2.5	w
	Maximum Power Dissipation(TA=100°C)	1.0	w
EAS	Avalanche energy <b>(Note 3)</b>	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) <sup>1</sup>	--	50	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=80V,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	2.5	V
gFS	Forward Transconductance	VDS=10V,ID=2A	--	18	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	8.5	12	mΩ
		VGS=4.5V, ID=15A	--	10.5	15	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	1398	--	pF
Coss	Output Capacitance		--	205	--	pF
Crss	Reverse Transfer Capacitance		--	8	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.1	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V, ID=10A,RGEN=6Ω	--	13.9	--	nS
tr	Turn-on Rise Time		--	20	--	nS
td(off)	Turn-Off Delay Time		--	42	--	nS
tf	Turn-Off Fall Time		--	30	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=12A	--	26	--	nC
Qgs	Gate-Source Charge		--	6.5	--	nC
Qgd	Gate-Drain Charge		--	5.3	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	16	A
VSD	Forward on Voltage	VGS=0V,IS=12A	--	--	1.0	V
trr	Reverse Recovery Time	IF=12A , dI/dt=100A/μs , TJ=25°C	--	155	--	ns
Qrr	Reverse Recovery Charge		--	230	--	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

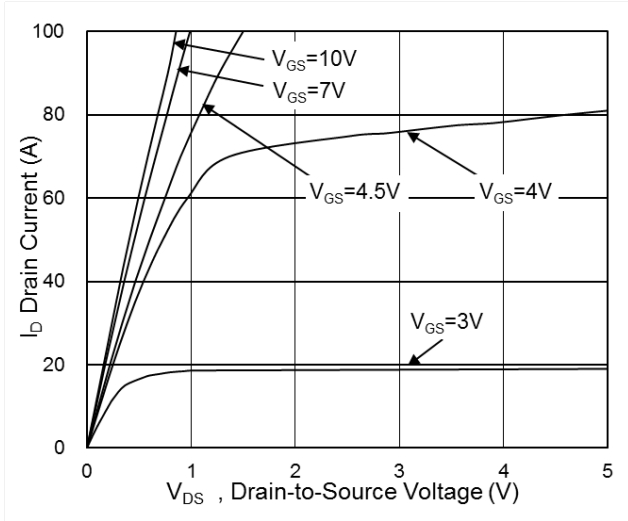


Fig.1 Typical Output Characteristics

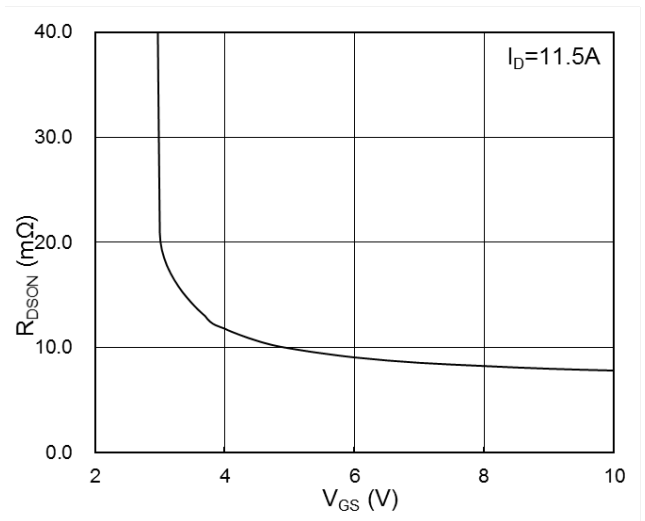


Fig.2 On-Resistance vs. G-S Voltage

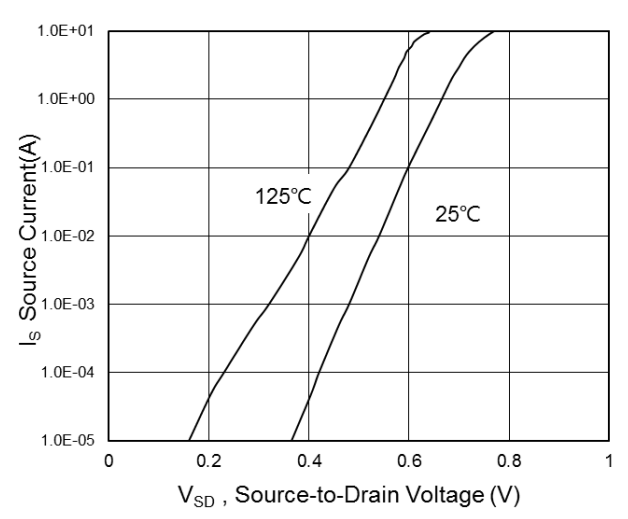


Fig.3 Source-Drain Forward Characteristics

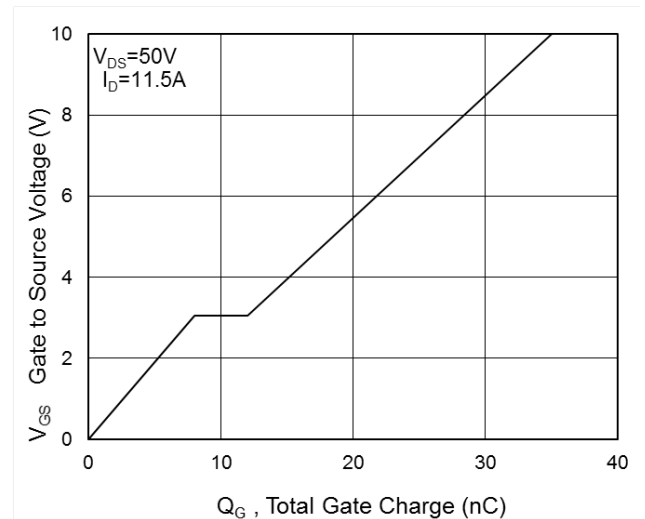


Fig.4 Gate-Charge Characteristics

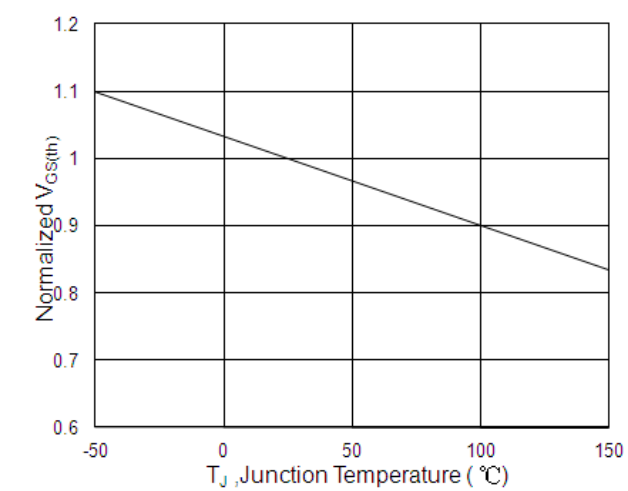


Fig.5 Normalized  $V_{GS(th)}$  vs.  $T_J$

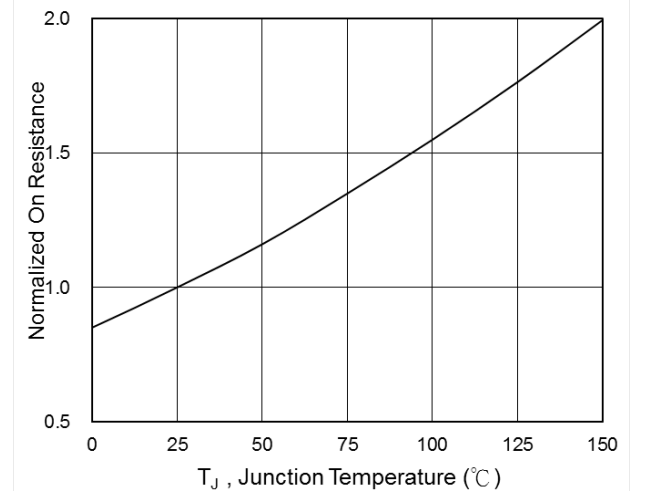


Fig.6 Normalized  $R_{DSON}$  vs.  $T_J$

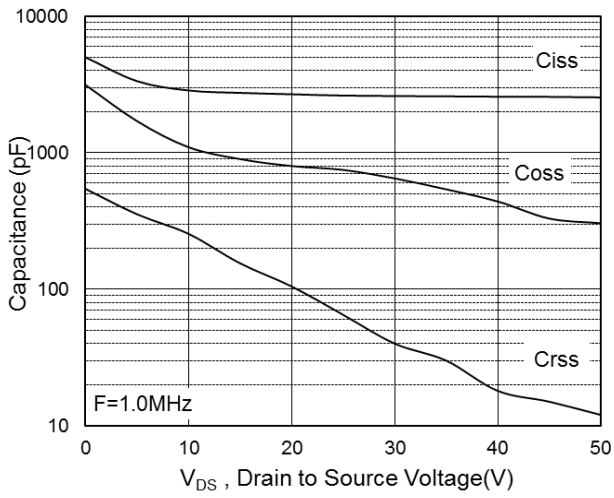


Fig.7 Capacitance

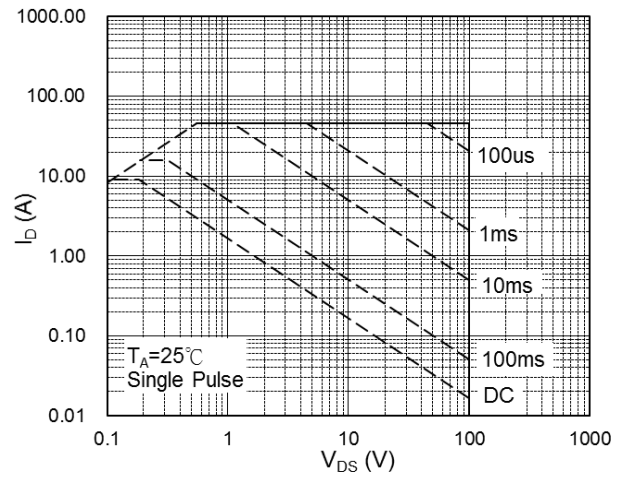


Fig.8 Safe Operating Area

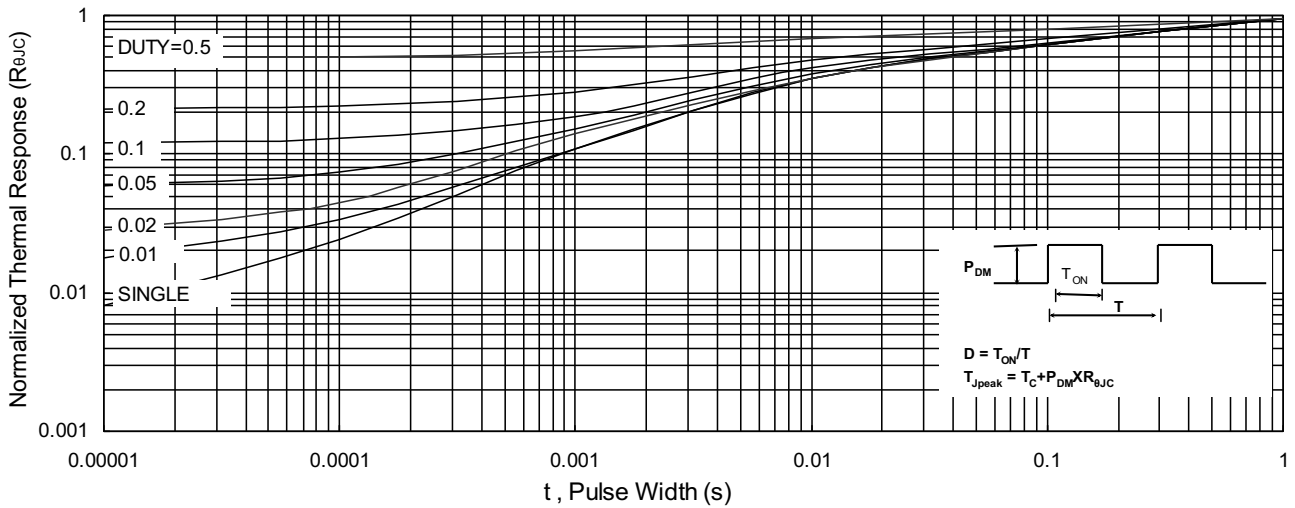


Fig.9 Normalized Maximum Transient Thermal Impedance

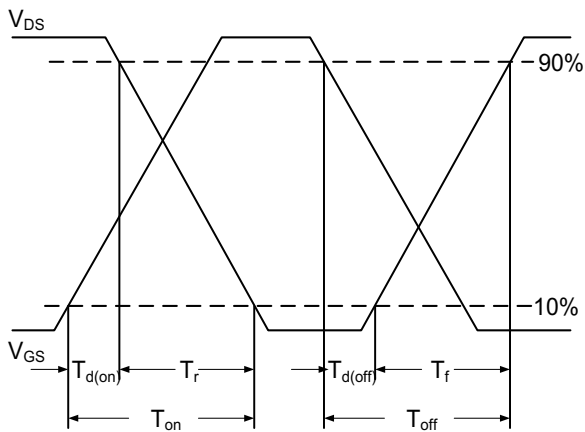


Fig.10 Switching Time Waveform

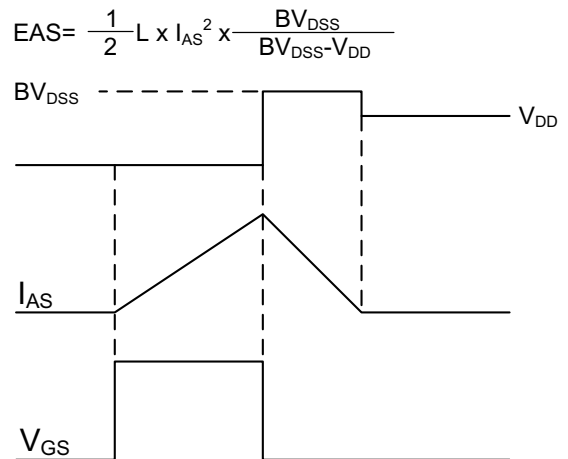
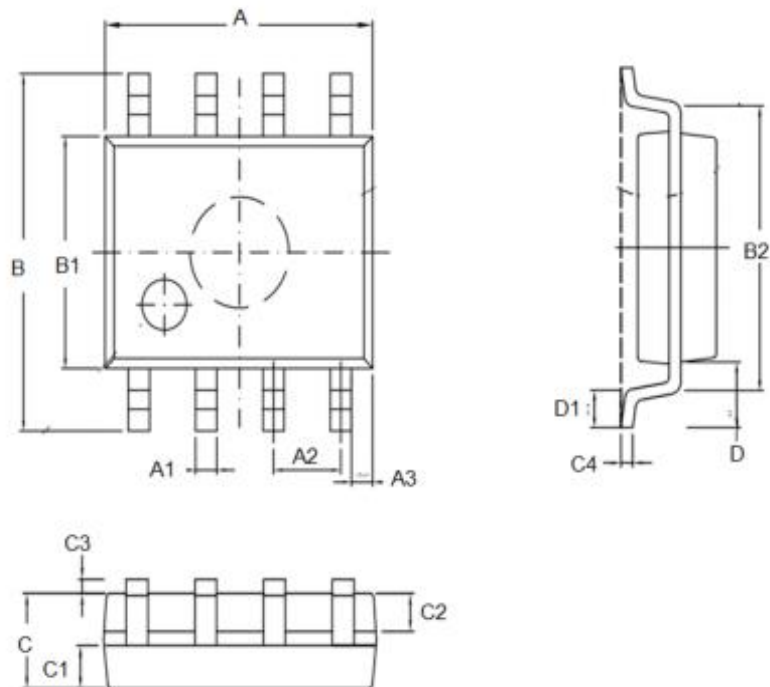


Fig.11 Unclamped Inductive Switching Waveform

**•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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