

### • General Description

The AGM150P10S 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 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM150P10S	AGM150P10S	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(Tc=25°C) <b>(Note 1)</b>	-12	A
	Drain Current-Continuous(Tc=100°C)	-8.0	A
IDM (pluse)	Drain Current-Pulsed <b>(Note 2)</b>	-48	A
PD	Maximum Power Dissipation(Tc=25°C)	69	w
	Maximum Power Dissipation(Tc=100°C)	27.8	w
EAS	Avalanche energy <b>(Note 3)</b>	64	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>	---	75	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	1.8	°C/W

### Product Summary

BVDSS	RDSON	ID
-100V	112mΩ	-12A

### SOP8 Pin Configuration

**Table 3. Electrical Characteristics (T<sub>J</sub>=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=-100V,VGS=0V	--	--	-1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.2	--	-2.2	V
gFS	Forward Transconductance	VDS=-5V,ID=-3A	--	9.0	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-5A	--	112	150	mΩ
		VGS=-4.5V, ID=-3A	--	128	165	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-50V,VGS=0V F=1MHZ	--	700	--	pF
Coss	Output Capacitance		--	56	--	pF
Crss	Reverse Transfer Capacitance		--	8.6	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.2	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-50V, ID=-5A,RGEN=5Ω	--	5.9	--	nS
tr	Turn-on Rise Time		--	3.7	--	nS
td(off)	Turn-Off Delay Time		--	39.5	--	nS
tf	Turn-Off Fall Time		--	25	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-50V, ID=-5A	--	13	--	nC
Qgs	Gate-Source Charge		--	2.0	--	nC
Qgd	Gate-Drain Charge		--	2.3	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-12	A
VSD	Forward on Voltage	VGS=0V,IS=-5A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-5A , di/dt=100A/μs , TJ=25°C	--	21	--	ns
Qrr	Reverse Recovery Charge		--	23	--	nc

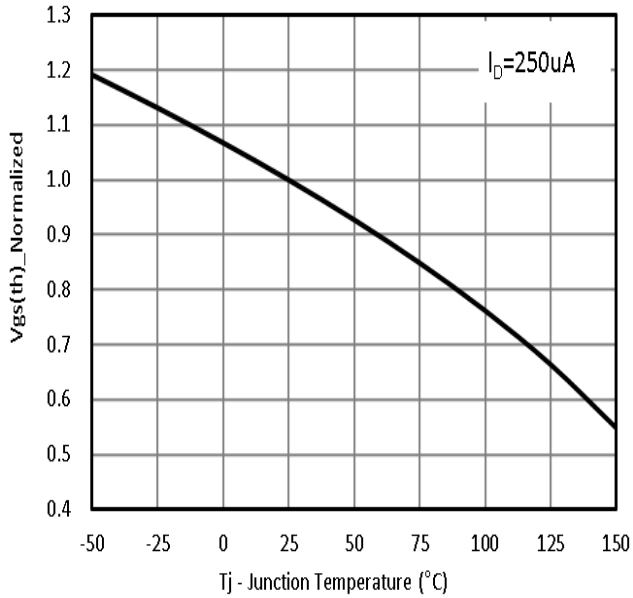
Notes 1.The maximum current rating is package limited.

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

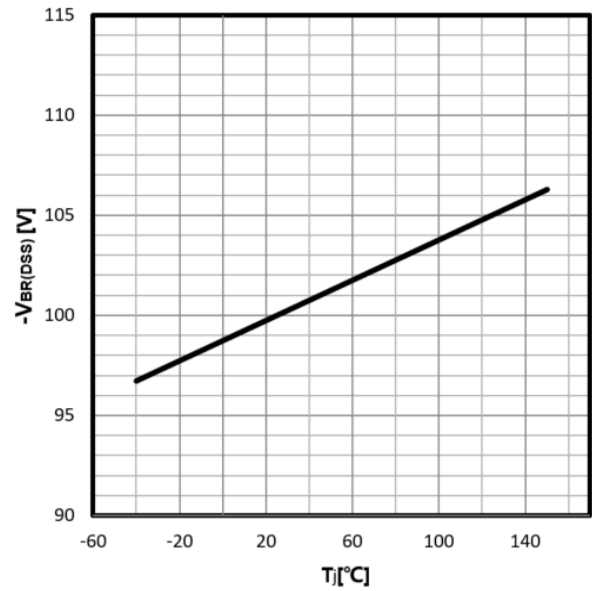
Notes 3.EAS condition: T<sub>J</sub>=25°C,VDD=-50V,Vgs=-10V, ID=-16A,L=0.5mH,RG=25ohm

**Gate Threshold Voltage**

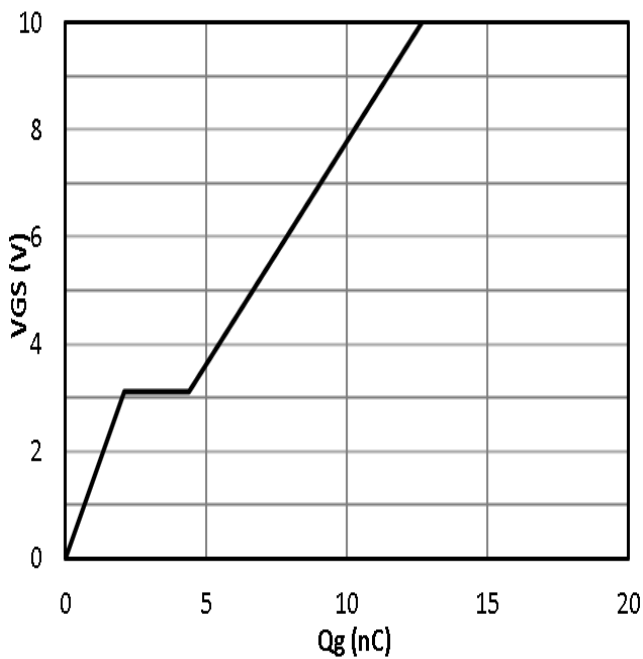
$$-V_{TH} = f(T_j); I_D = -250\mu A$$


**Drain-source breakdown voltage**

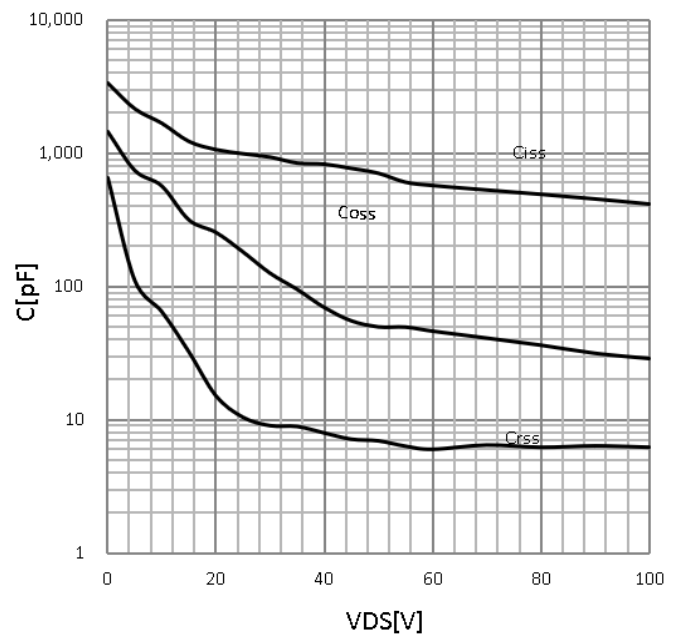
$$-V_{BR(DSS)} = f(T_j); I_D = -250\mu A$$


**Typ. gate charge**

$$-V_{GS} = f(Q_g); I_D = -5A$$

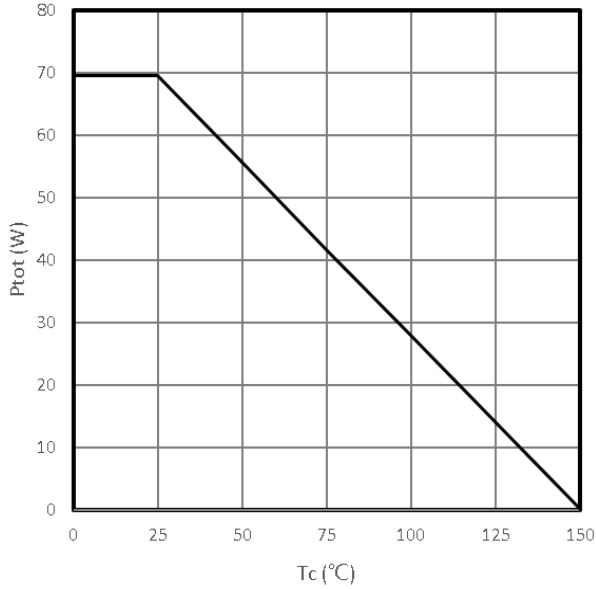

**Typ. capacitances**

$$C = f(-V_{DS}); V_{GS} = 0V; f = 1MHz$$

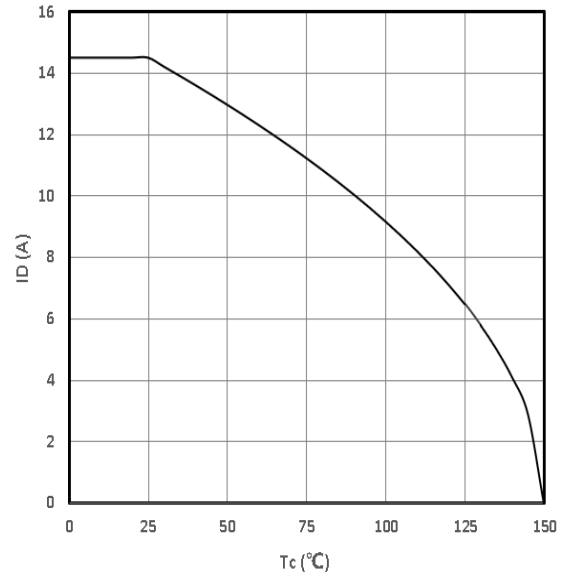


**Power Dissipation**

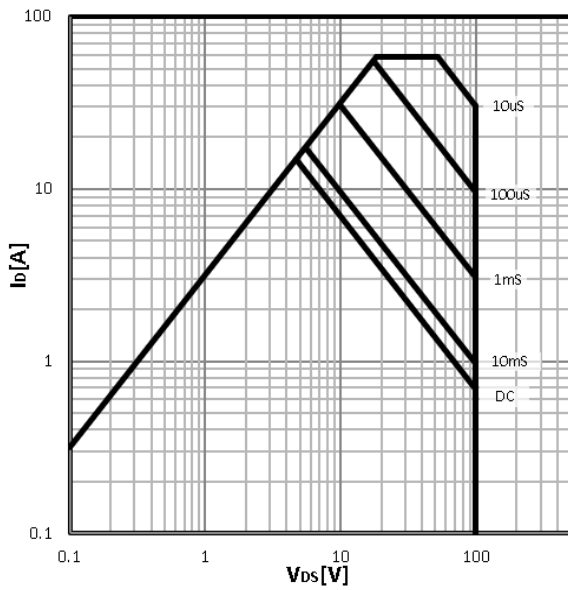
$$P_{tot}=f(T_c)$$


**Maximum Drain Current**

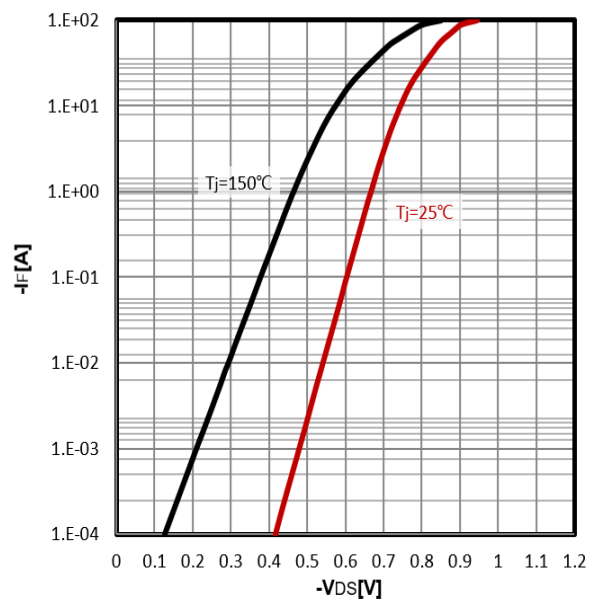
$$-I_D=f(T_c)$$


**Safe operating area**

$$-I_D=f(-V_{DS})$$

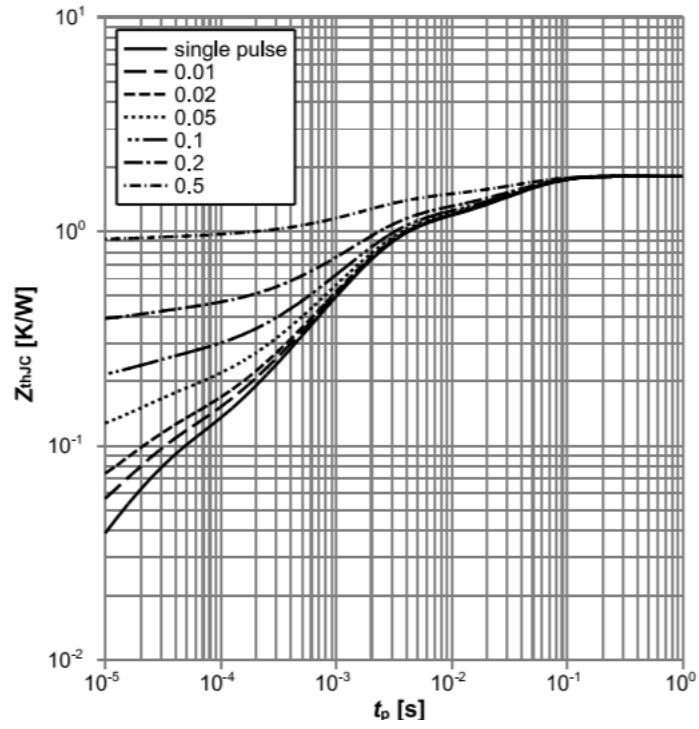

**Body Diode Forward Voltage Variation**

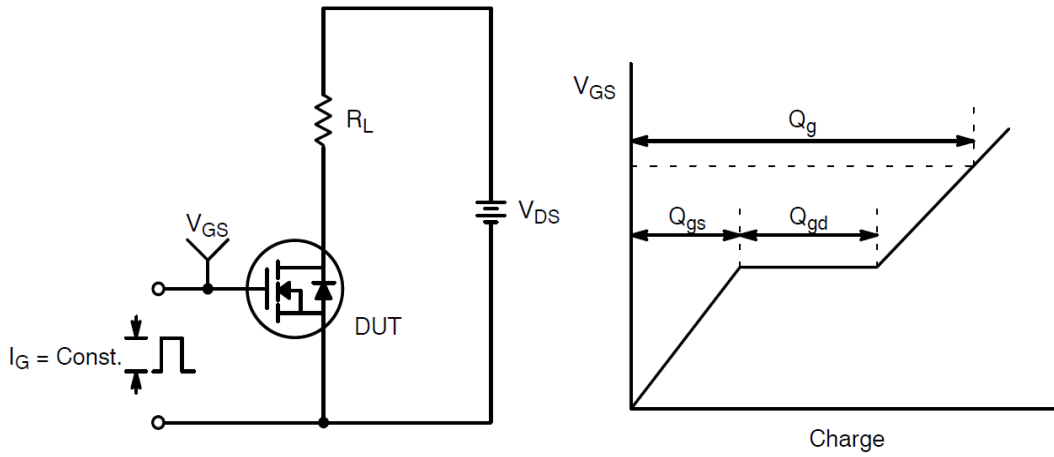
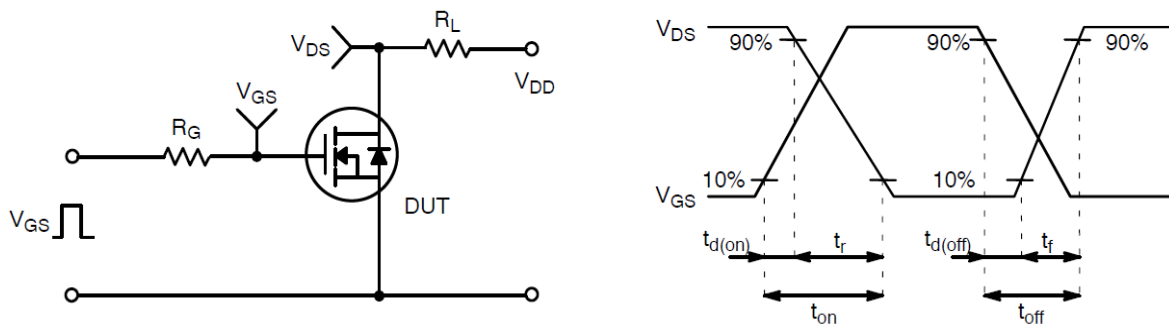
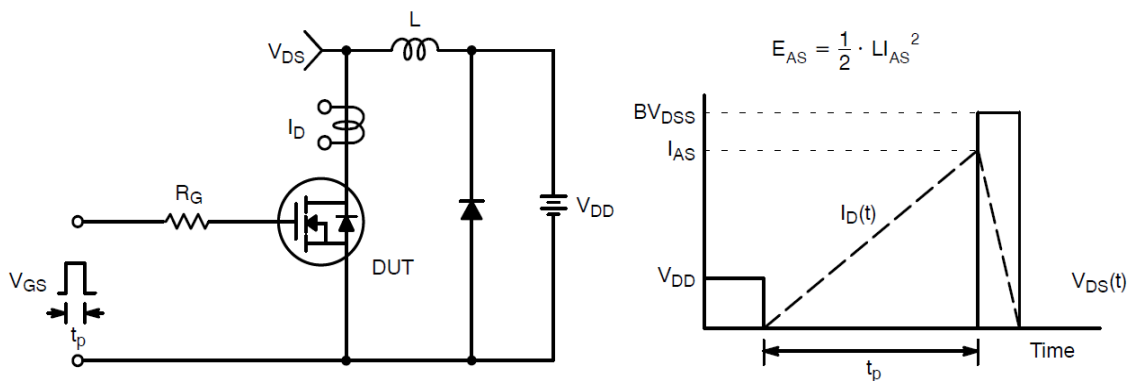
$$-I_F=f(-V_{DS})$$



Max. transient thermal impedance

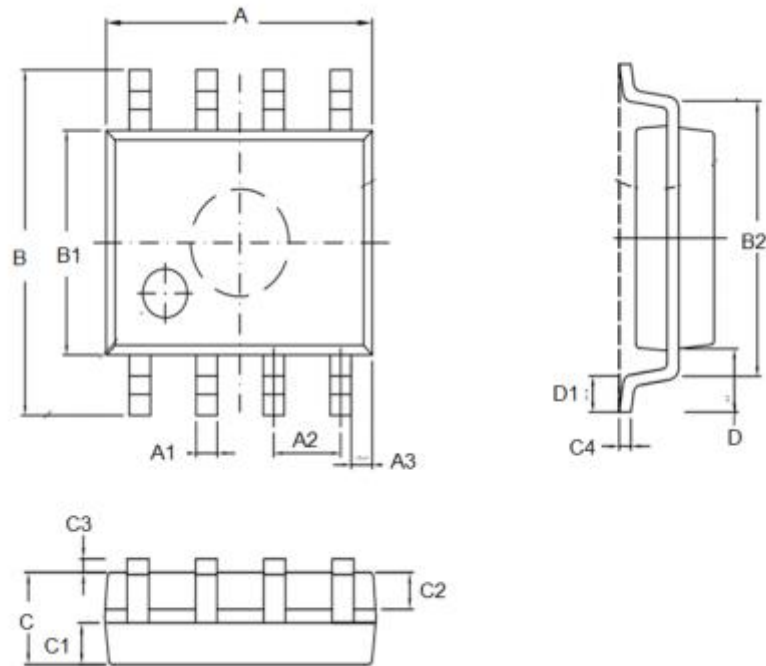
$$Z_{thJC} = f(t_p)$$



**Test Circuit and Waveform:**

**Gate Charge Test Circuit & Waveform**

**Resistive Switching Test Circuit & Waveforms**

**Unclamped Inductive Switching Test Circuit & Waveforms**

**•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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