

### ● General Description

The AGM10N15D 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

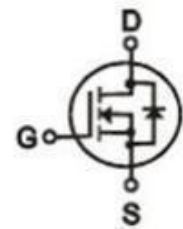
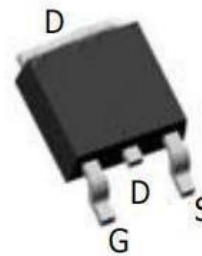
### ● Application

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

### Product Summary

BVDSS	RDS(ON)	ID
150V	196mΩ	8.6A

### TO-252 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM10N15D	AGM10N15D	TO-252	330mm	16mm	2500

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	150	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	8.6	A
	Drain Current-Continuous(Tc=100°C)	5.4	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	35	A
PD	Maximum Power Dissipation(Tc=25°C)	39	w
	Maximum Power Dissipation(Tc=100°C)	15.5	w
EAS	Avalanche energy <b>(Note 3)</b>	1.25	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>	---	65	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	3.2	°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	150	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=150V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.5	2.0	2.5	V
gFS	Forward Transconductance	VDS=5V,ID=3A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=4A	--	196	230	mΩ
		VGS=4.5V, ID=3A	--	198	230	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=75V,VGS=0V, F=1MHZ	--	450	--	pF
Coss	Output Capacitance		--	23	--	pF
Crss	Reverse Transfer Capacitance		--	14	--	pF
Rg	Gate resistance	f=1.0MHz	--	1.5	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=10V,VDS=75V, ID=1A,RGEN=6Ω	--	8.2	--	nS
tr	Turn-on Rise Time		--	10.2	--	nS
td(off)	Turn-Off Delay Time		--	20.5	--	nS
tf	Turn-Off Fall Time		--	15.3	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=75V, ID=1.5A	--	8.2	--	nC
Qgs	Gate-Source Charge		--	1.5	--	nC
Qgd	Gate-Drain Charge		--	2.2	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	8.6	A
VSD	Forward on Voltage	VGS=0V,IS=4A	--	--	1.2	V
trr	Reverse Recovery Time	Isd=1A , dI/dt=100A/μs , TJ=25°C	--	--	--	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°C

## Typical Characteristics

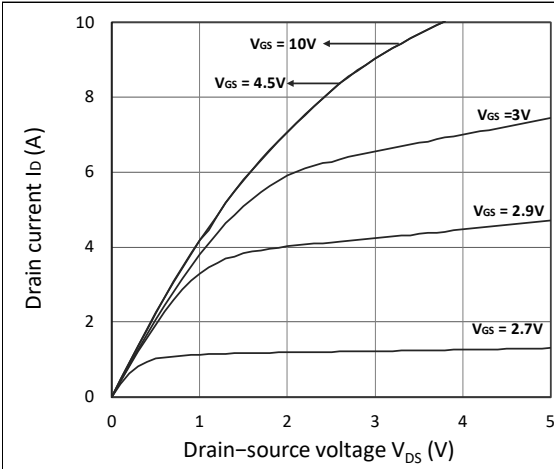


Figure 1. Output Characteristics

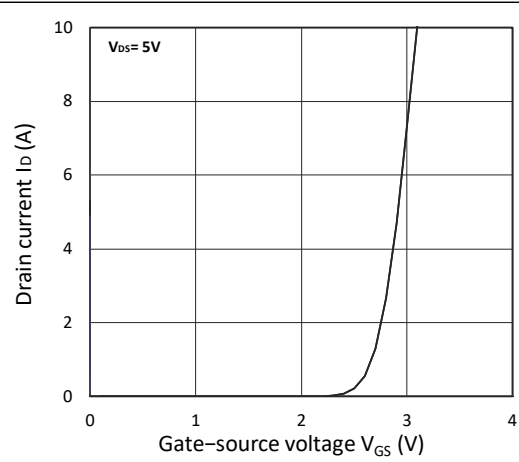


Figure 2. Transfer Characteristics

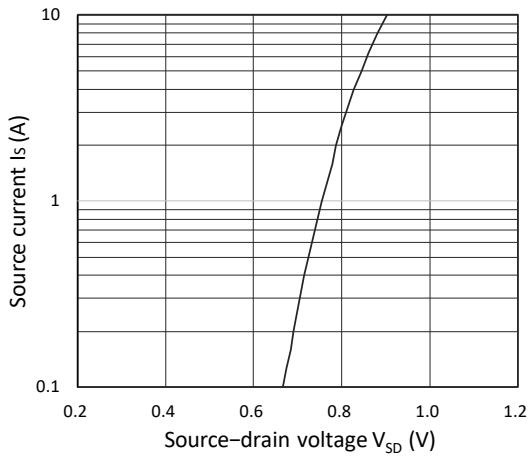
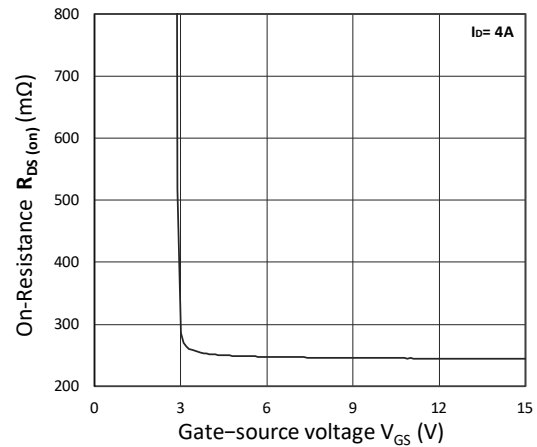
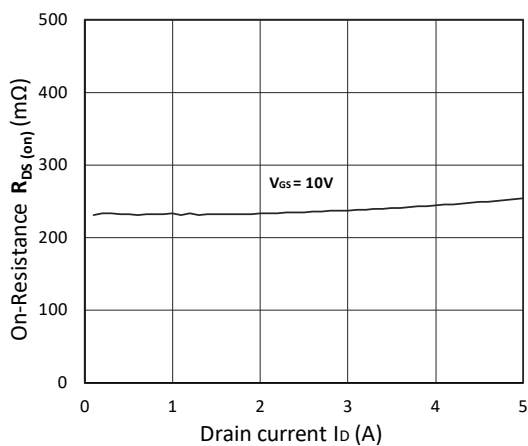
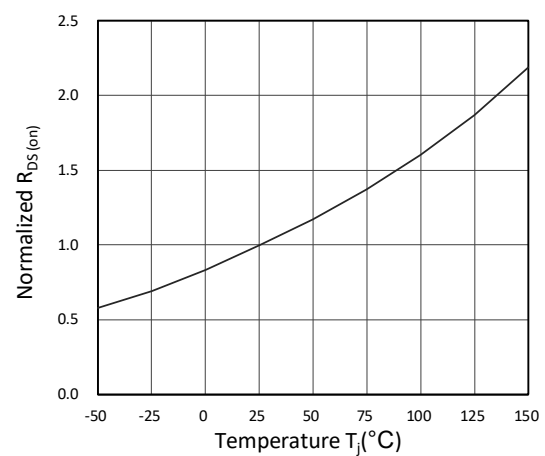


Figure 3. Forward Characteristics of Reverse


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

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

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

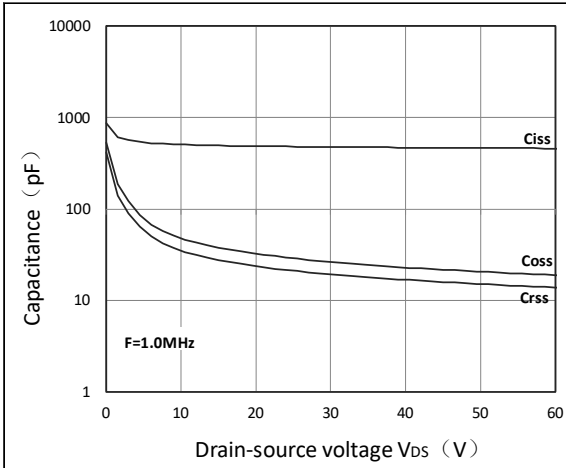


Figure 7. Capacitance Characteristics

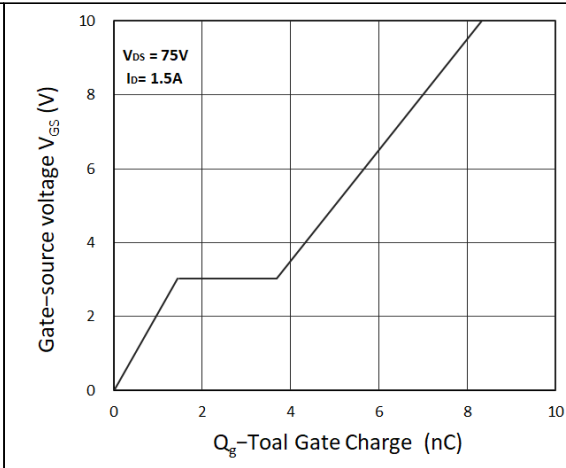


Figure 8. Gate Charge Characteristics

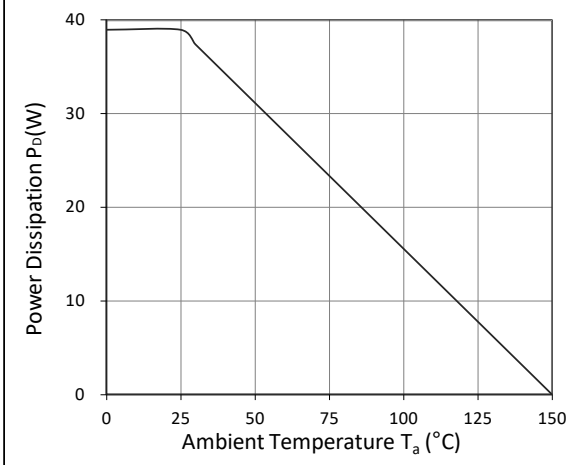


Figure 9. Power Dissipation

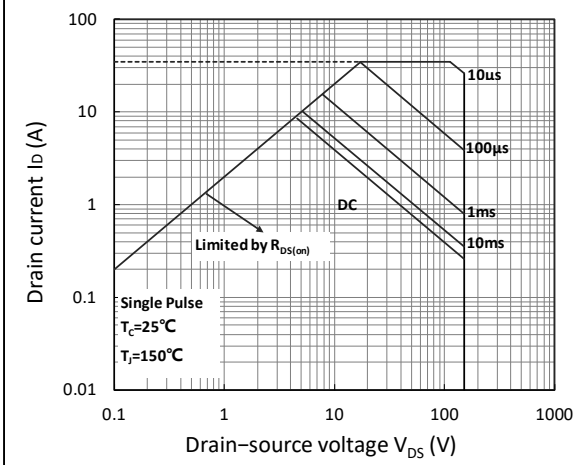


Figure 10. Safe Operating Area

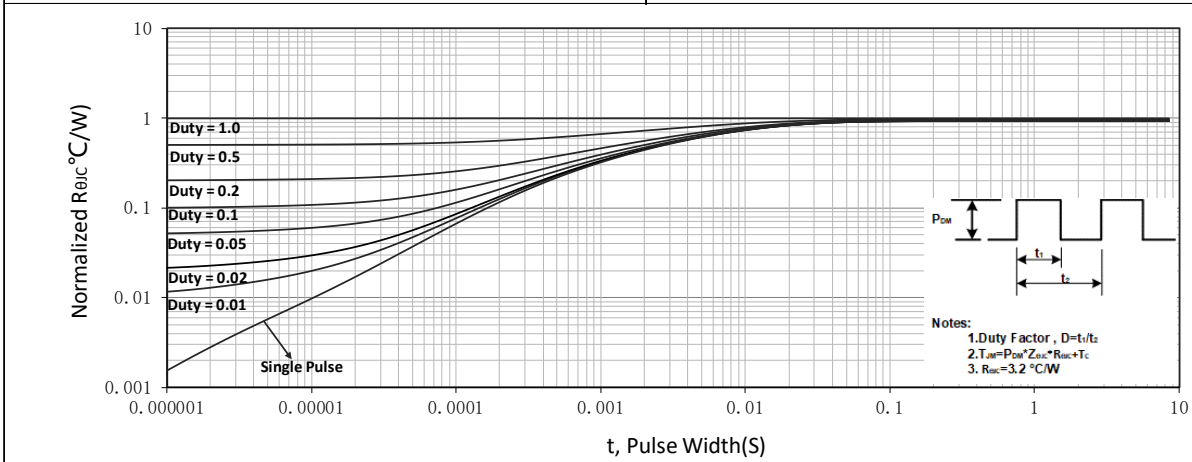
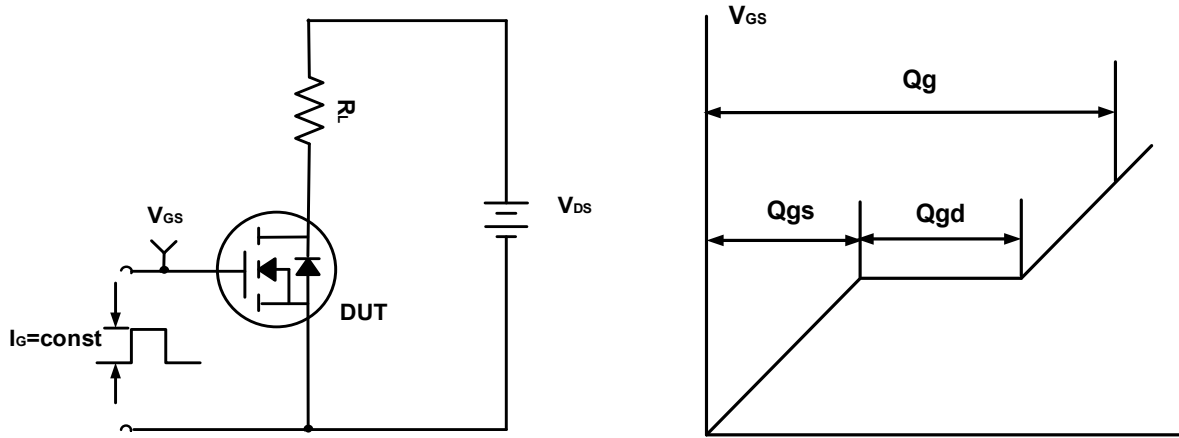
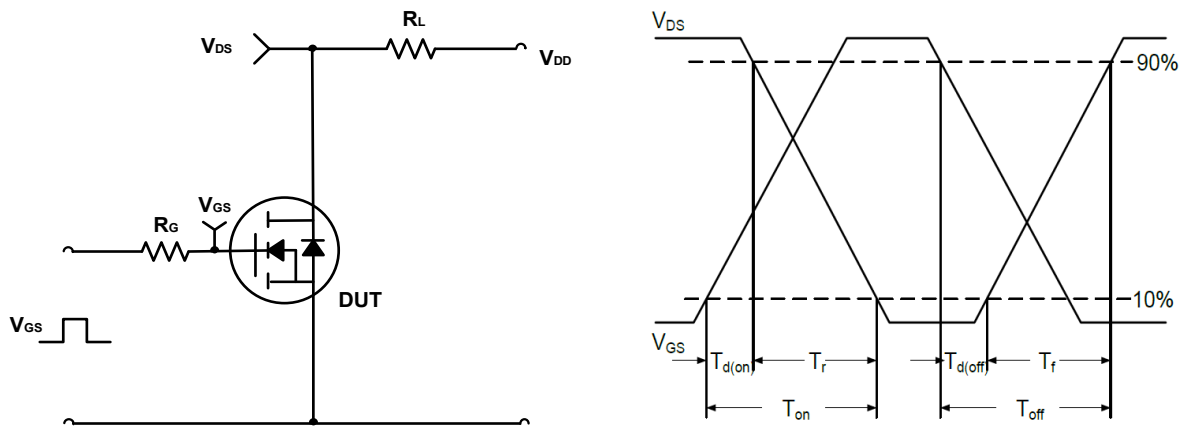
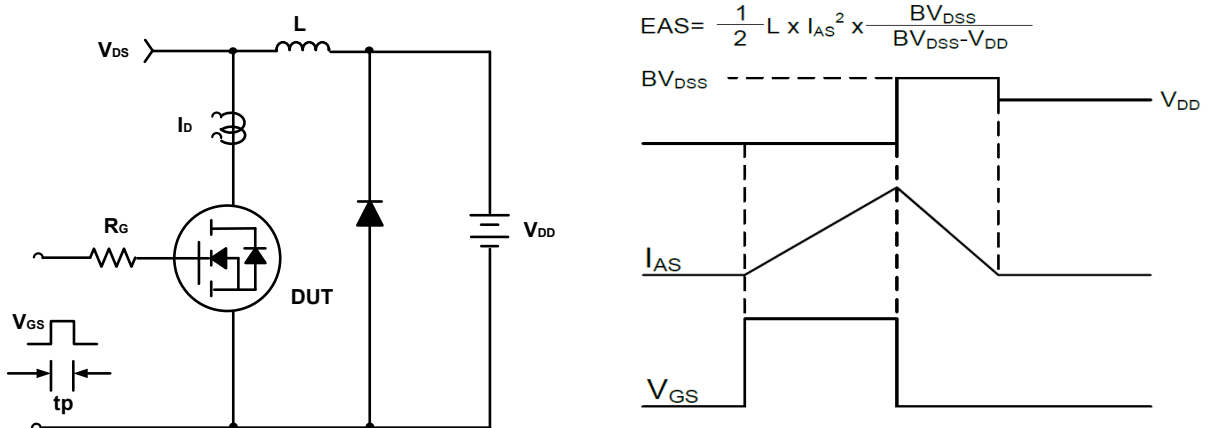
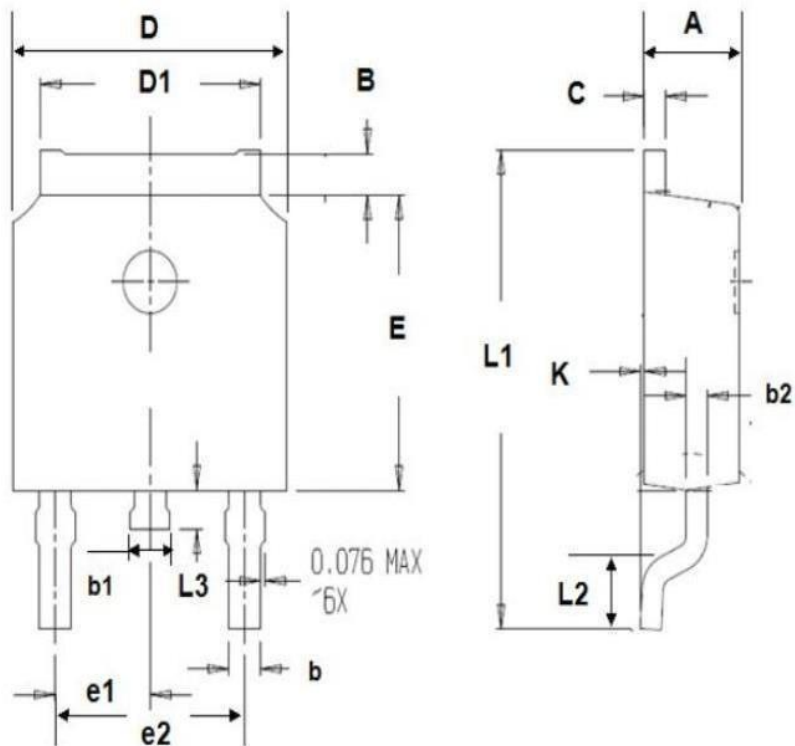


Figure 11. Normalized Maximum Transient Thermal Impedance

**Test Circuit**

**Figure A. Gate Charge Test Circuit & Waveforms**

**Figure B. Switching Test Circuit & Waveforms**

**Figure C. Unclamped Inductive Switching Circuit & Waveforms**

**•Dimensions**

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.80	b1	0.50	0.90
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			




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