

### ● General Description

The AGM18N20H 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

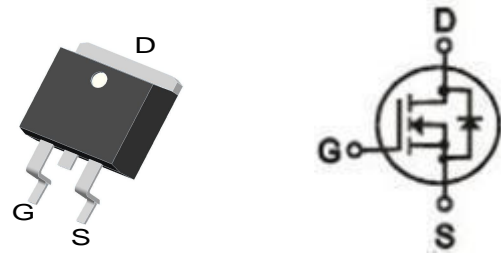
### ● Application

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

### Product Summary

BVDSS	RDS(ON)	ID
200V	120mΩ	18A

### TO-263 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM18N20H	AGM18N20H	TO-263	----	----	800

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	200	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	18	A
	Drain Current-Continuous(Tc=100°C)	--	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	72	A
PD	Maximum Power Dissipation(Tc=25°C)	158	w
	Maximum Power Dissipation(Tc=100°C)	63	w
EAS	Avalanche energy <b>(Note 3)</b>	224.5	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>	---	62.5	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	0.79	°C/W

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

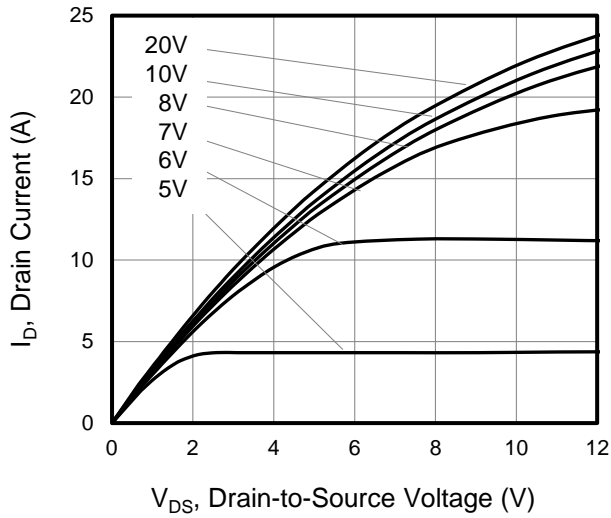
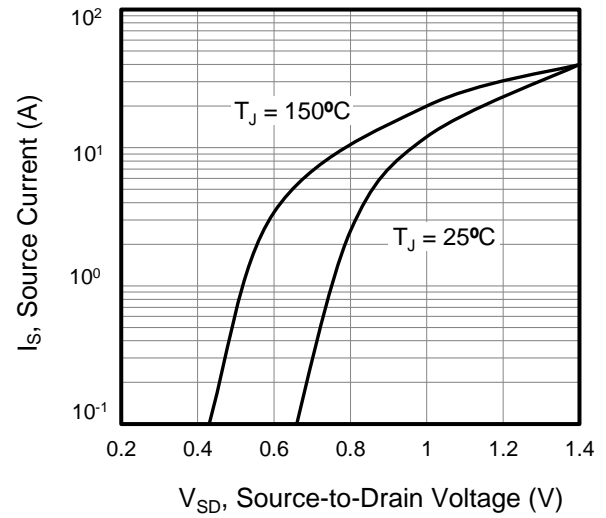
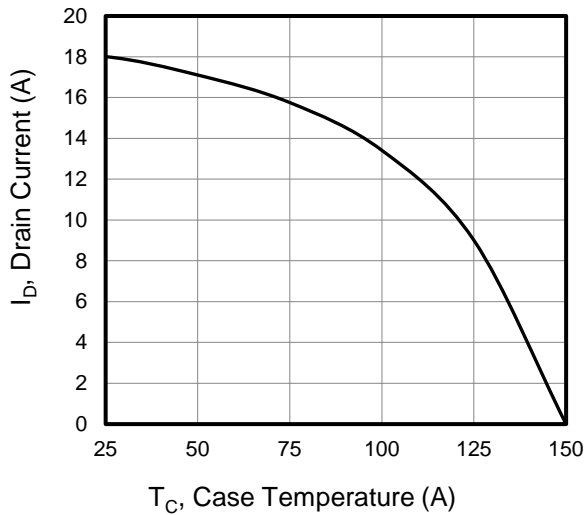
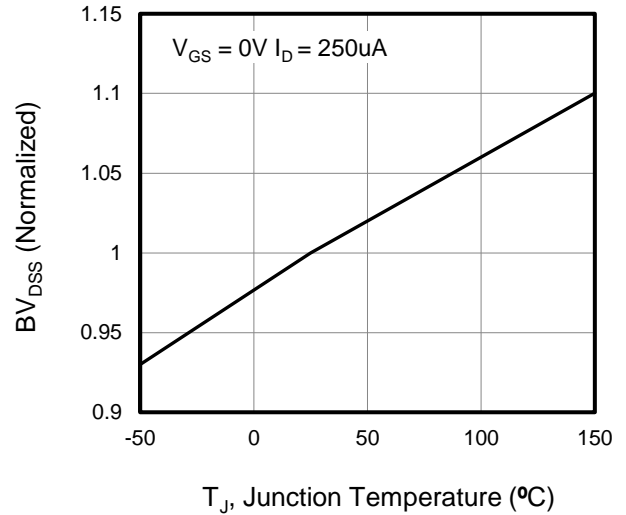
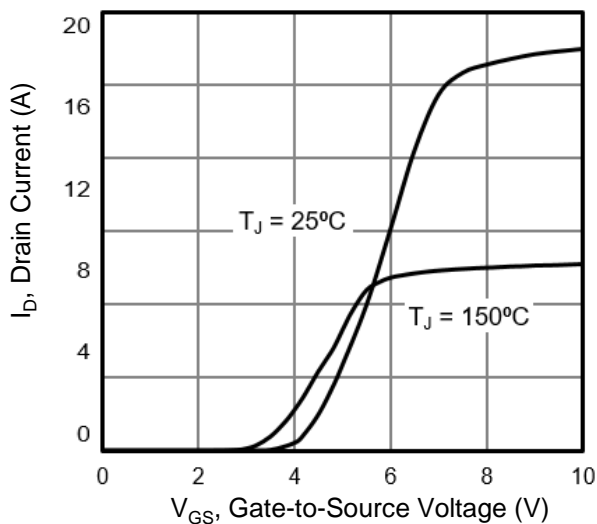
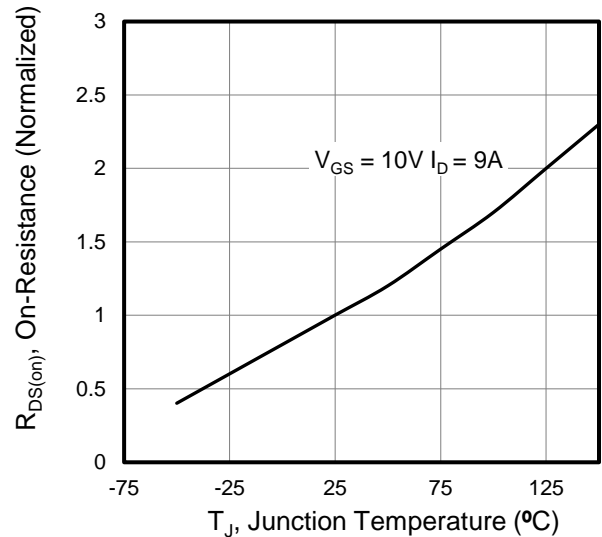
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	200	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=200V, VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2.0	--	4.0	V
gFS	Forward Transconductance	VDS=10V, ID=9A	--	--	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=9A	--	120	150	mΩ
		VGS=4.5V, ID=7A	--	--	--	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=25V, VGS=0V, F=1MHZ	--	882	--	pF
Coss	Output Capacitance		--	166	--	pF
Crss	Reverse Transfer Capacitance		--	91	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V, f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=25V, VDS=100V ID=18A, RGEN=25Ω	--	38.5	--	nS
tr	Turn-on Rise Time		--	47	--	nS
td(off)	Turn-Off Delay Time		--	245	--	nS
tf	Turn-Off Fall Time		--	70	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=160V, ID=18A	--	56	--	nC
Qgs	Gate-Source Charge		--	6.0	--	nC
Qgd	Gate-Drain Charge		--	30	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	18	A
VSD	Forward on Voltage	VGS=0V, IS=9A	--	--	1.4	V
trr	Reverse Recovery Time	IS=18A , di/dt=500A/μs , TJ=25°C	--	182	--	ns
Qrr	Reverse Recovery Charge		--	1.27	--	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**  $T_J = 25\text{ C}$ , unless otherwise noted

**Figure 1. Output Characteristics ( $T_J = 25^\circ\text{C}$ )**

**Figure 2. Body Diode Forward Voltage**

**Figure 3. Drain Current vs. Temperature**

**Figure 4.  $BV_{DSS}$  Variation vs. Temperature**

**Figure 5. Transfer Characteristics**

**Figure 6. On-Resistance vs. Temperature**


Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 7. Capacitance

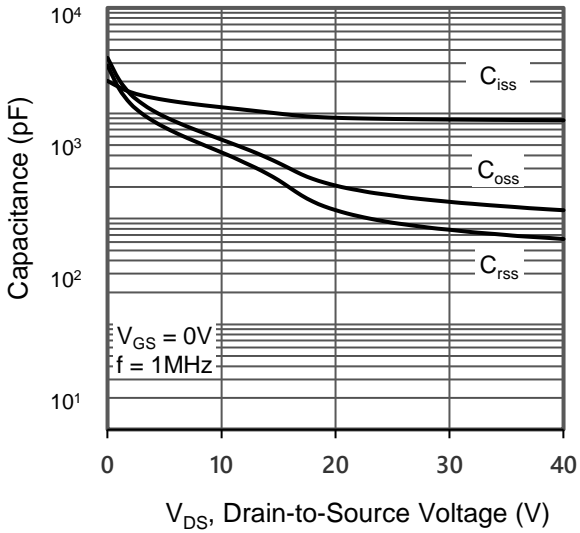


Figure 8. Gate Charge

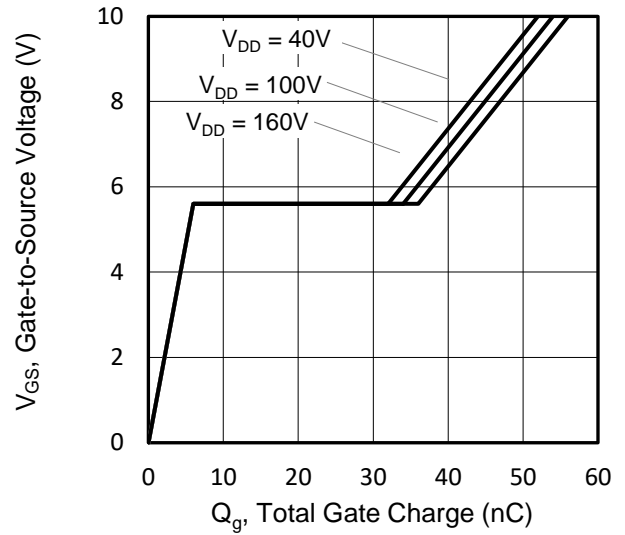
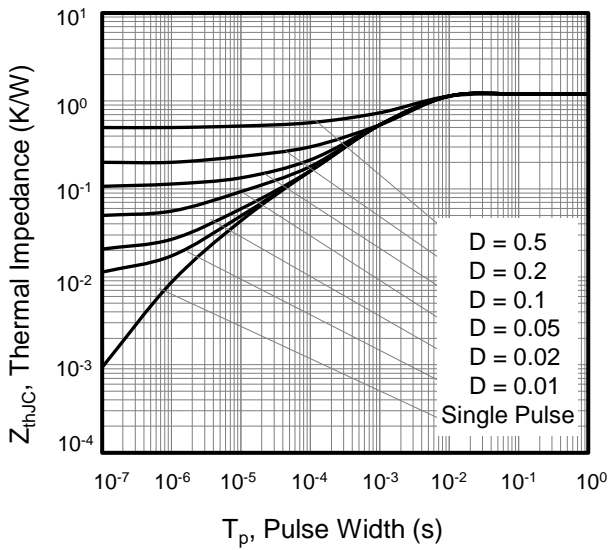
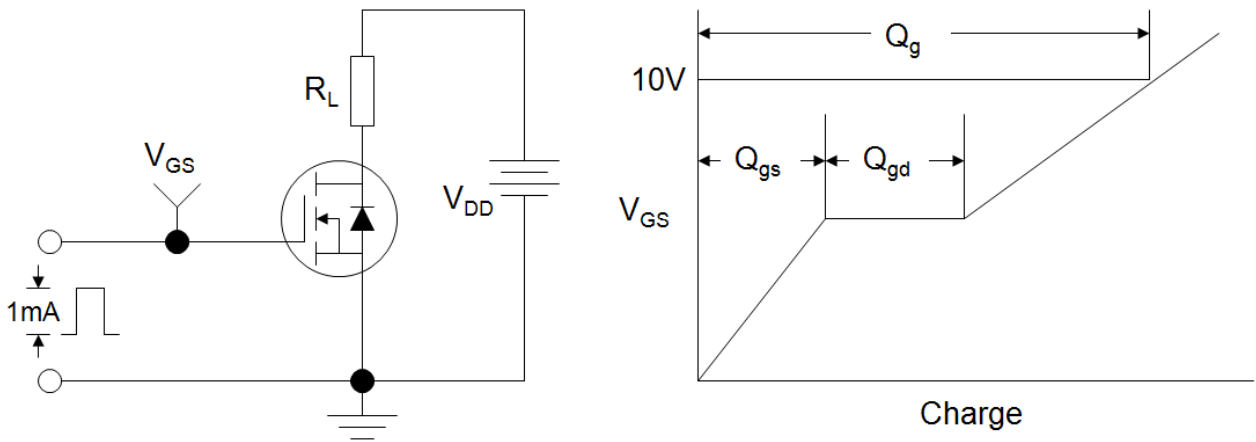
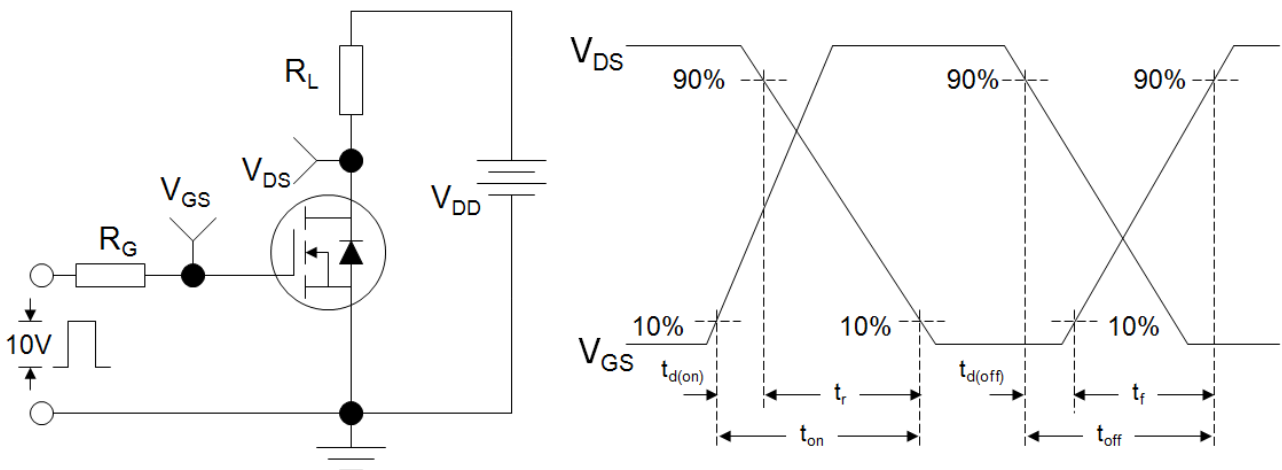
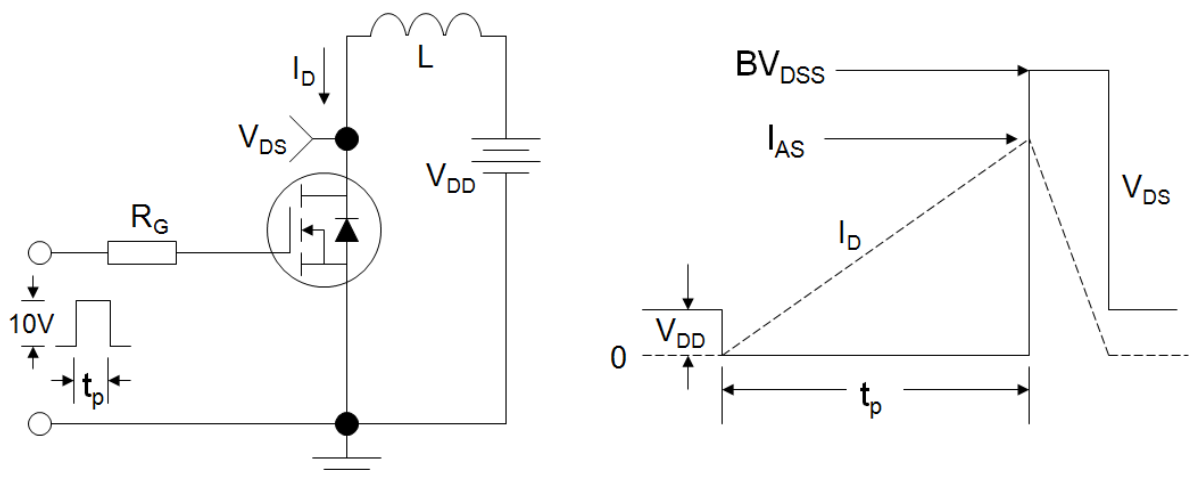


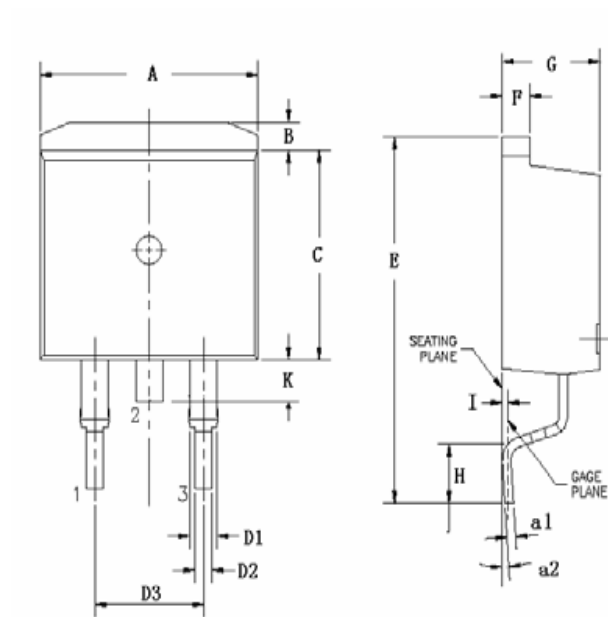
Figure 9. Transient Thermal Impedance



**Figure A: Gate Charge Test Circuit and Waveform**

**Figure B: Resistive Switching Test Circuit and Waveform**

**Figure C: Unclamped Inductive Switching Test Circuit and Waveform**


## TO-263 PACKAGE INFORMATION

Dimensions in mm unless otherwise specified



Symbol	Min	Nom	Max
A	9.66	9.97	10.28
B	1.02	1.17	1.32
C	8.59	9.00	9.40
D1	1.14	1.27	1.40
D2	0.70	0.83	0.95
D3		5.08	
E	15.09	15.24	15.39
F	1.15	1.28	1.40
G	4.30	4.50	4.70
H	2.29	2.54	2.79
I		0.25	
K	1.30	1.45	1.60
a1	0.45	0.55	0.65
a2(degree)	0°		8°


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