General Description

The AGMH022N10H 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 test
- 100% DVDS tested

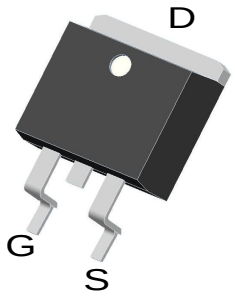
Application

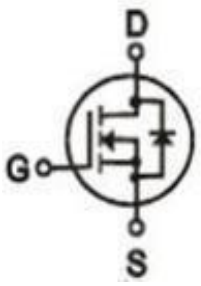
- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

Product Summary

BVDSS	RDSON	ID
100V	2.2mΩ	220A

TO-263 Pin Configuration





Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGMH022N10H	AGMH022N10H	TO-263	330mm	25mm	800

Table 1. Absolute Maximum Ratings (TC=25℃)

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℃) **(Note 1)**	220	A
	Drain Current-Continuous(Tc=100℃)	132	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	880	A
PD	Maximum Power Dissipation(Tc=25℃)	300	w
	Maximum Power Dissipation(Tc=100℃)	150	w
EAS	Avalanche energy **(Note 3)**	1800	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 175	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJC	Thermal Resistance Junction-Case[1]	---	0.5	℃/W

Table 3. Electrical Characteristics (TC=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	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	2.5	3.5	4.5	V
gFS	Forward Transconductance	VDS=5V,ID=10A	--	36	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=50A	--	2.2	2.7	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	11500	--	pF
Coss	Output Capacitance		--	1480	--	pF
Crss	Reverse Transfer Capacitance		--	75	--	pF
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V, ID=100A,RGEN=1.6Ω	--	25	--	nS
tr	Turn-on Rise Time		--	75	--	nS
td(off)	Turn-Off Delay Time		--	89	--	nS
tf	Turn-Off Fall Time		--	29	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=100A	--	158	--	nC
Qgs	Gate-Source Charge		--	52	--	nC
Qgd	Gate-Drain Charge		--	29	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	220	A
VSD	Forward on Voltage	VGS=0V,IS=20A	--	--	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , TJ=25℃	--	75	--	ns
Qrr	Reverse Recovery Charge		--	185	--	nc

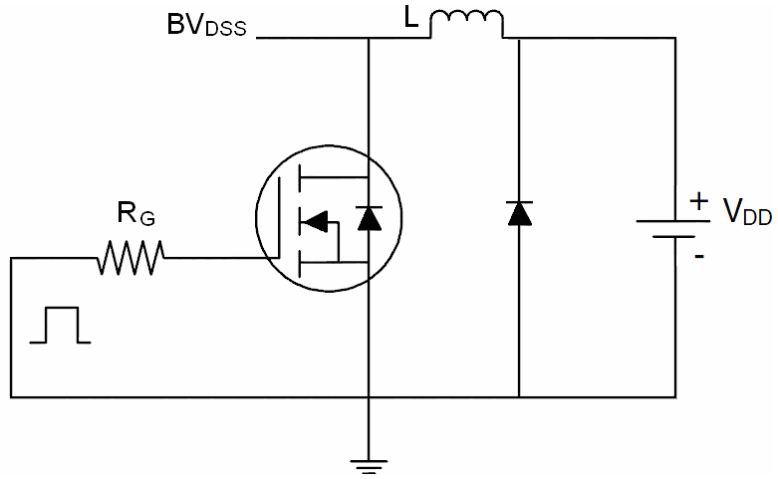
Notes 1.The maximum current rating is package limited.

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

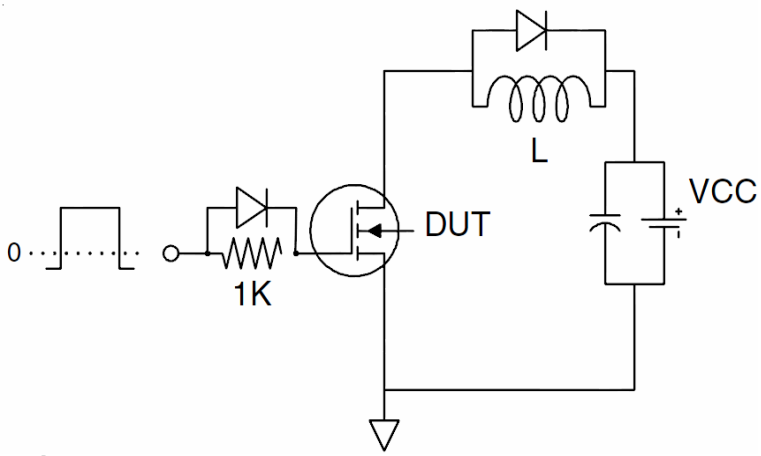
Notes 3.EAS condition: TJ=25℃

Test Circuit

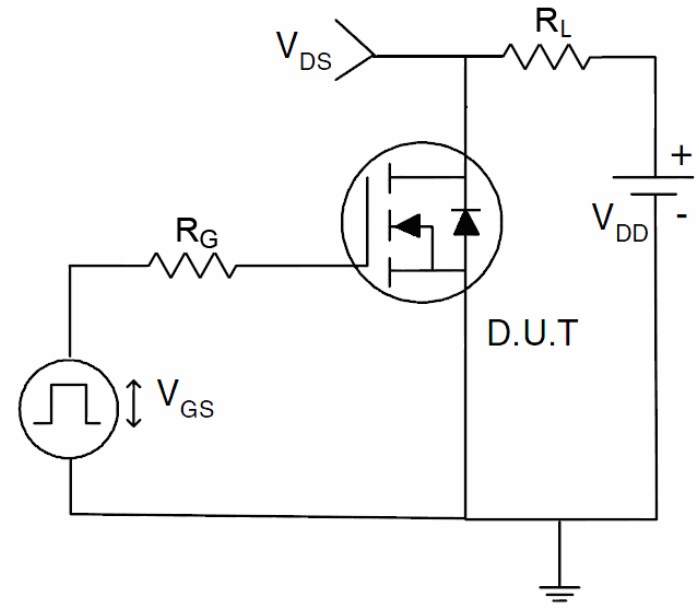
1) E_{AS} test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



Typical Electrical and Thermal Characteristics

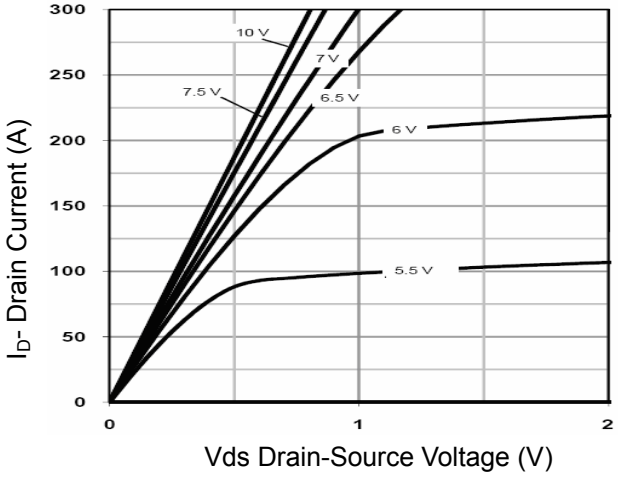


Figure 1 Output Characteristics

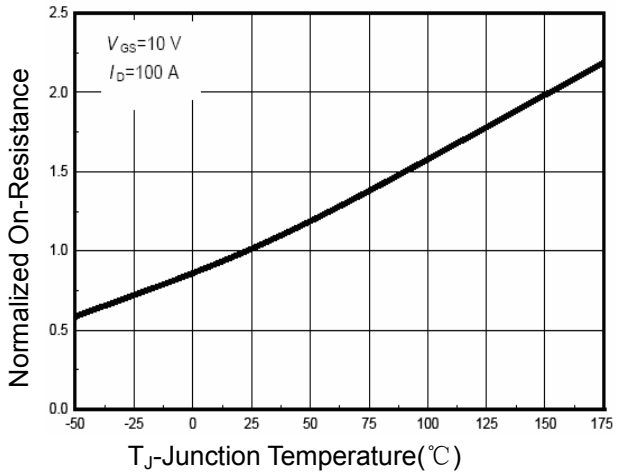


Figure 4 Rdson-Junction Temperature

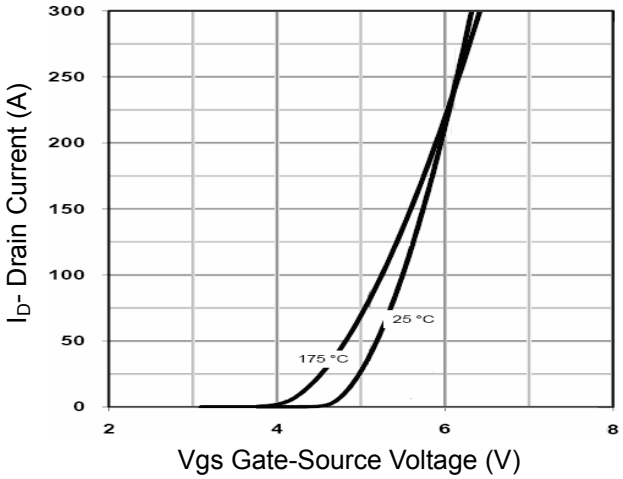


Figure 2 Transfer Characteristics

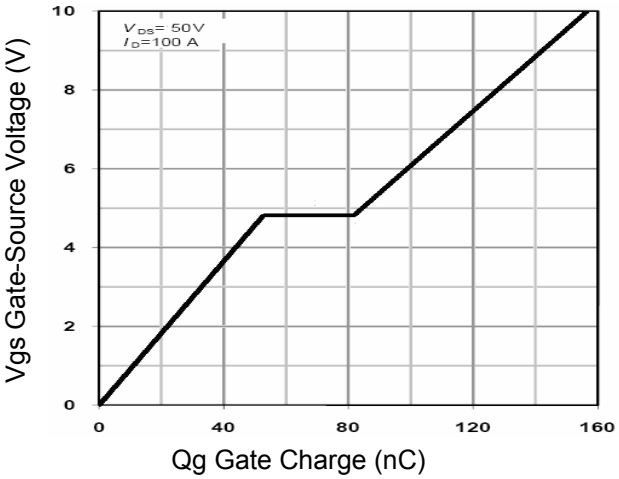


Figure 5 Gate Charge

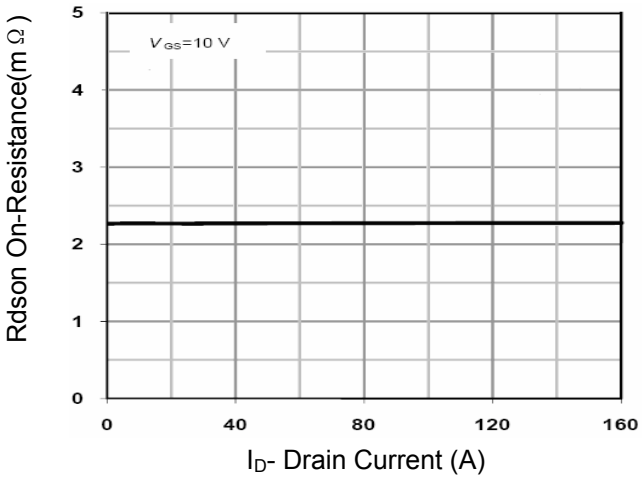


Figure 3 Rdson- Drain Current

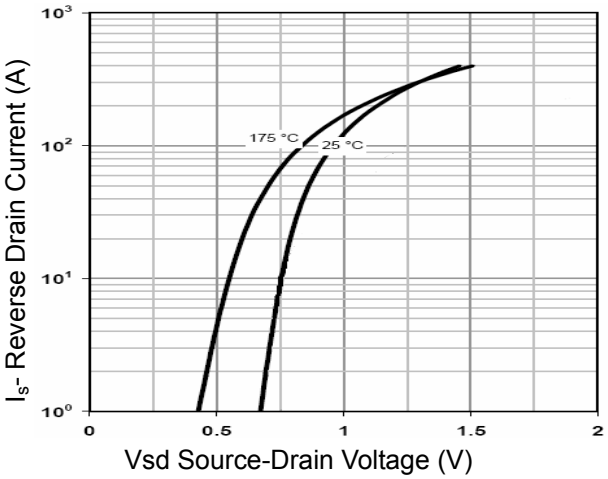


Figure 6 Source- Drain Diode Forward

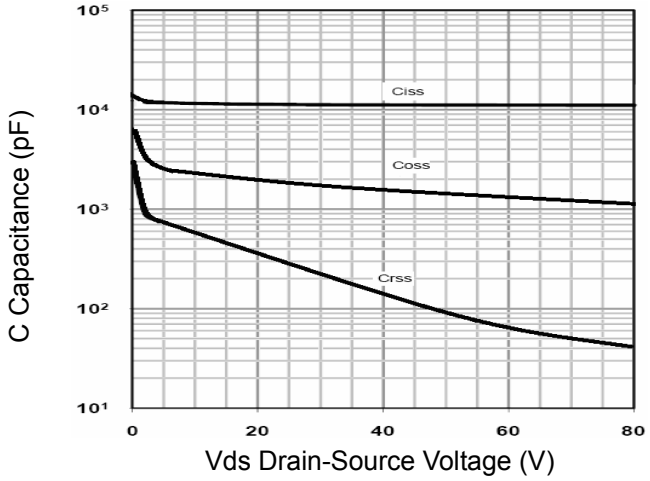


Figure 7 Capacitance vs Vds

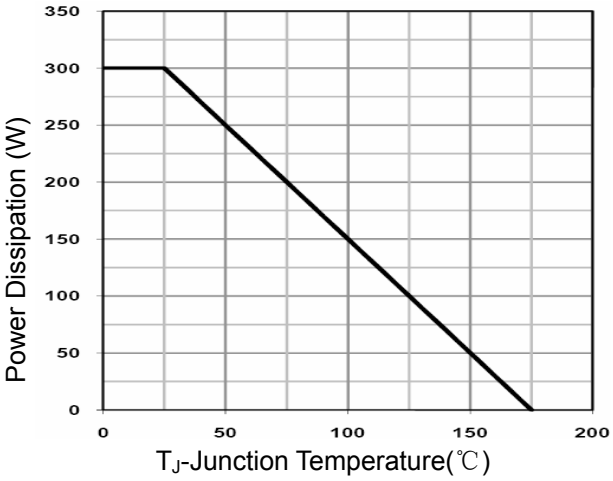


Figure 9 Power De-rating

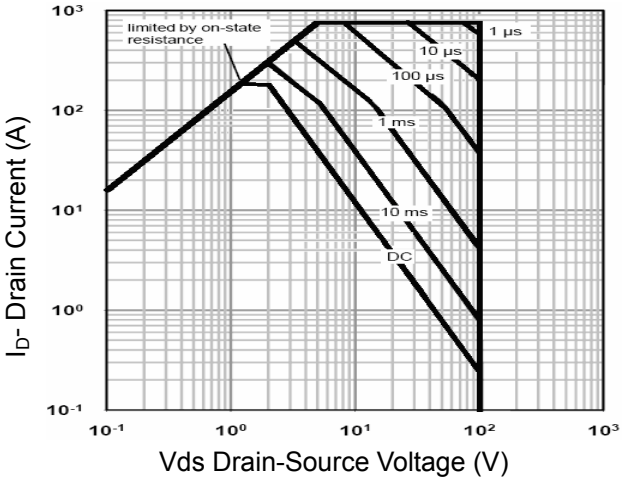


Figure 8 Safe Operation Area

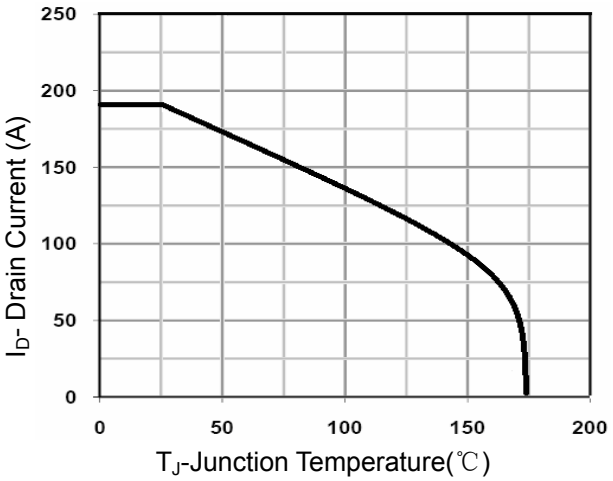


Figure 10 Current De-rating

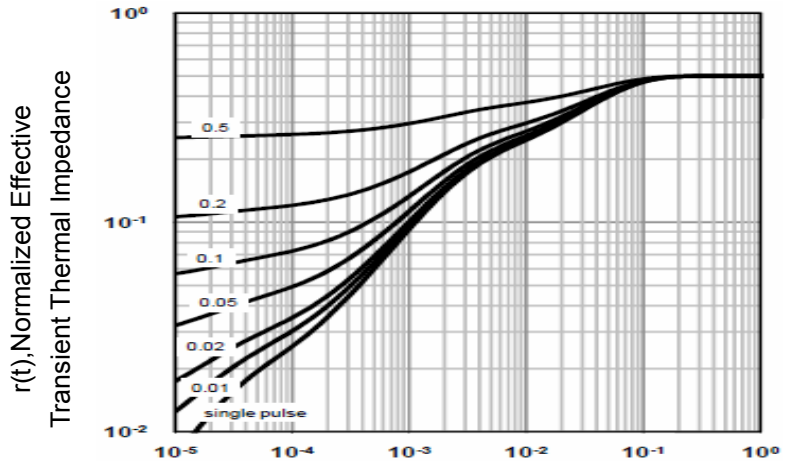
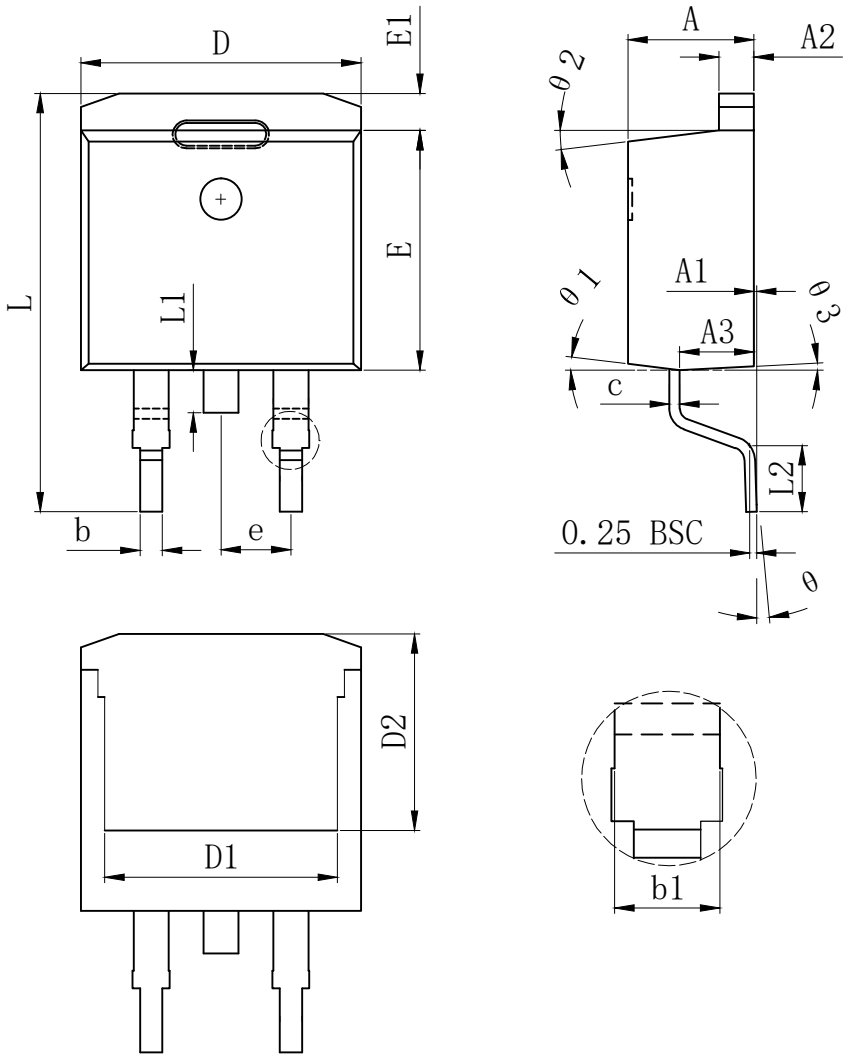


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-263 PACKAGE INFORMATION



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
θ	0°		9°
θ1	7° TYP		
θ2	7° TYP		
θ3	3° TYP		

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