General Description

The AGM55N15D 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

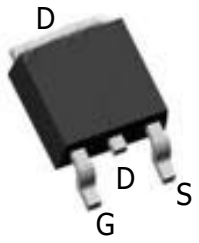
Application

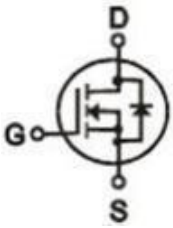
- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

Product Summary

BVDSS	RDSON	ID
150V	48mΩ	23A

TO-252 Pin Configuration





Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM55N15D	AGM55N15D	TO-252	----	----	2500

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

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℃) **(Note 1)**	23	A
	Drain Current-Continuous(Tc=100℃)	12	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	48	A
PD	Maximum Power Dissipation(Tc=25℃)	50	w
	Maximum Power Dissipation(Tc=100℃)	20	w
EAS	Avalanche energy **(Note 3)**	20	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	--	60	℃/W
RθJC	Thermal Resistance Junction-Case[1]	--	2.5	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	150	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=120V,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	3.0	4.2	V
gFS	Forward Transconductance	VDS=5V,ID=9A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=9A	--	48	63	mΩ
		VGS=4.5V, ID=9A	--	--	--	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=75V,VGS=0V, F=1MHZ	--	300	--	pF
Coss	Output Capacitance		--	71	--	pF
Crss	Reverse Transfer Capacitance		--	3.6	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.6	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=75V, RL=8Ω,RGEN=6Ω	--	4.3	--	nS
tr	Turn-on Rise Time		--	3.5	--	nS
td(off)	Turn-Off Delay Time		--	7.6	--	nS
tf	Turn-Off Fall Time		--	3.5	--	nS
Qg	Total Gate Charge	VGS=0V, VDS=75V, ID=9A	--	3.6	--	nC
Qgs	Gate-Source Charge		--	1.6	--	nC
Qgd	Gate-Drain Charge		--	1.9	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)	TC=25℃	--	--	23	A
VSD	Forward on Voltage	VGS=0V,IS=9A	--	0.73	1.0	V
trr	Reverse Recovery Time	IF=9A , dI/dt=100A/μs , TJ=25℃	--	75	--	ns
Qrr	Reverse Recovery Charge		--	98	--	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

Typical Electrical & Thermal Characteristics

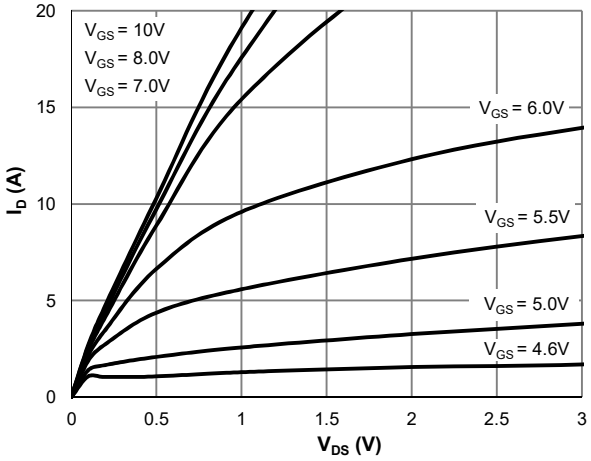


Figure 1: Saturation Characteristics

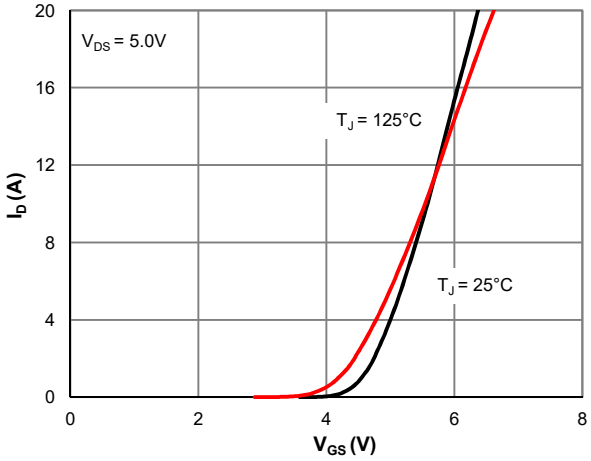


Figure 2: Transfer Characteristics

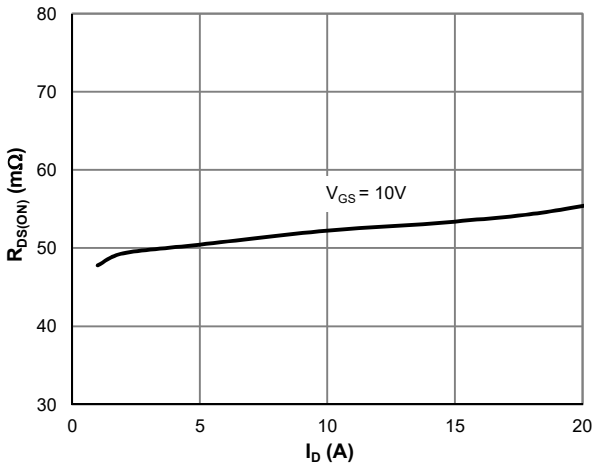


Figure 3: $R_{DS(ON)}$ vs. Drain Current

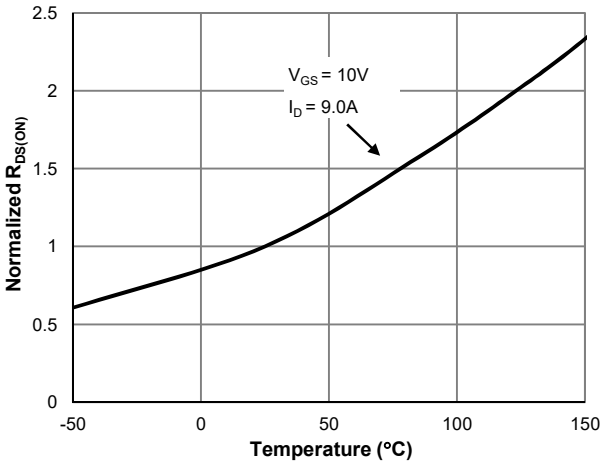


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

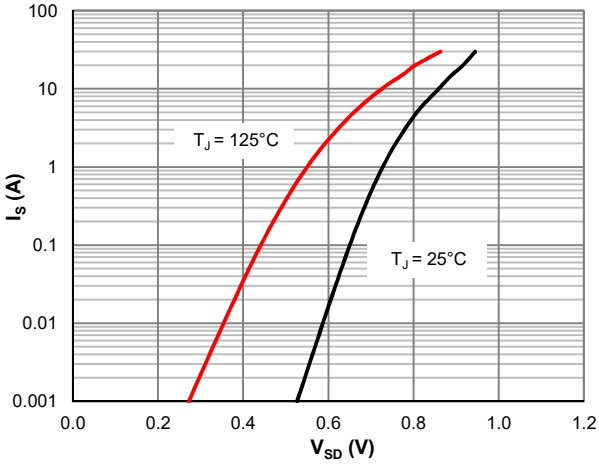


Figure 5: Body-Diode Characteristics

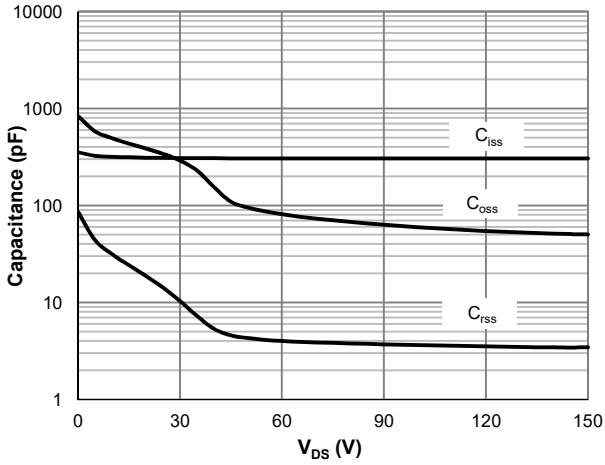


Figure 6: Capacitance Characteristics

Typical Electrical & Thermal Characteristics

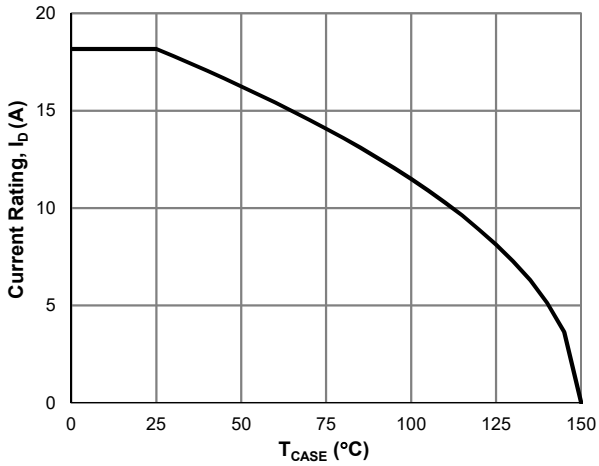


Figure 7: Current De-rating

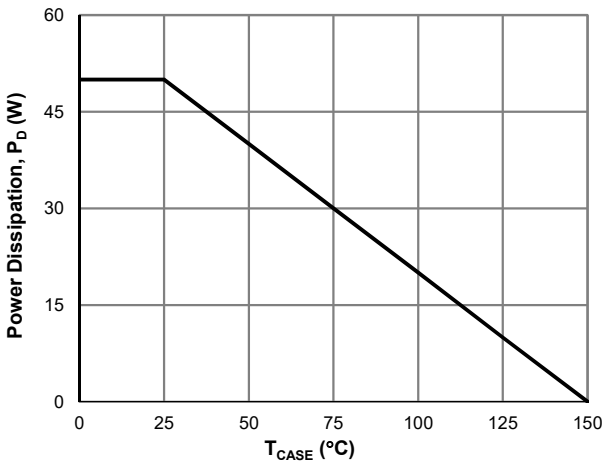


Figure 8: Power De-rating

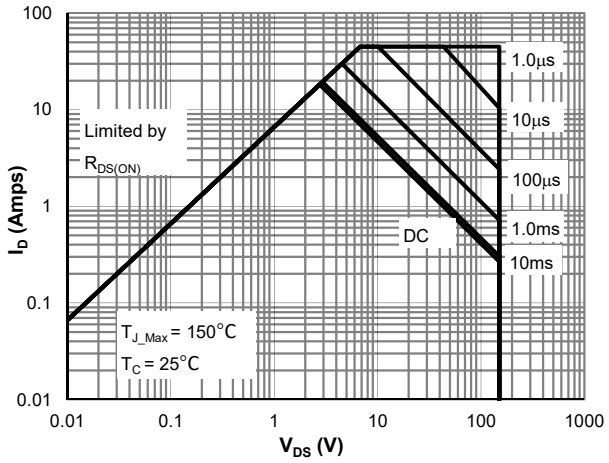


Figure 9: Maximum Safe Operating Area

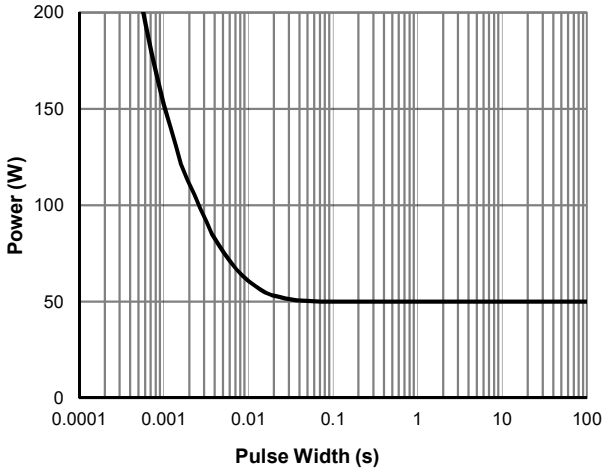


Figure 10: Single Pulse Power Rating, Junction-to-Case

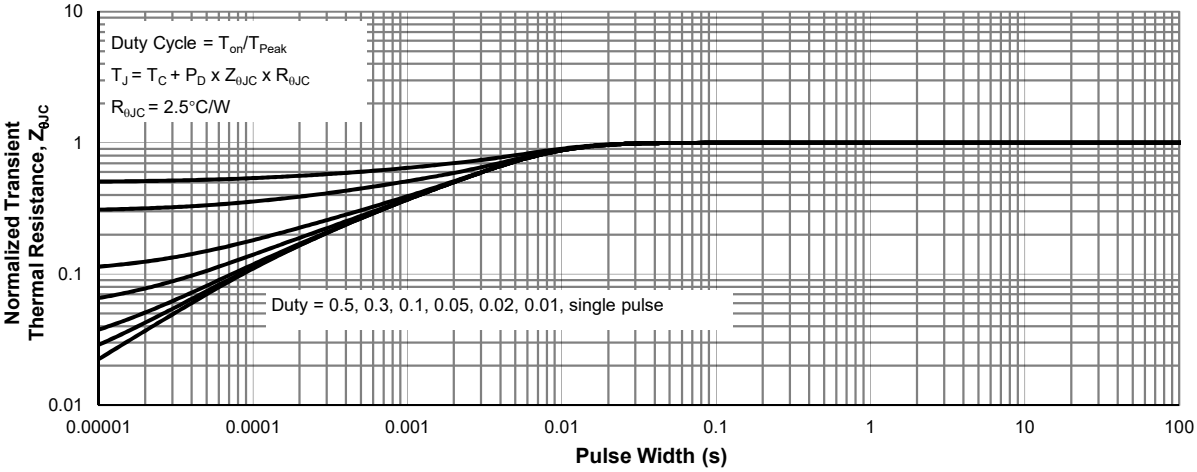
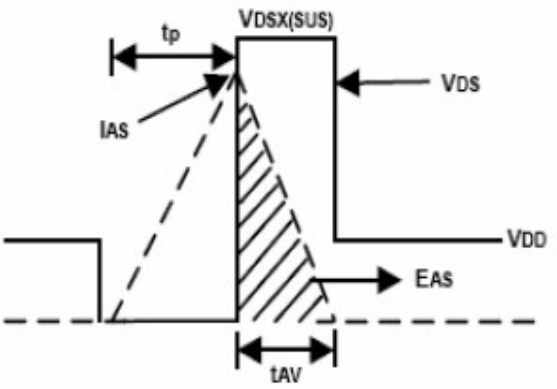
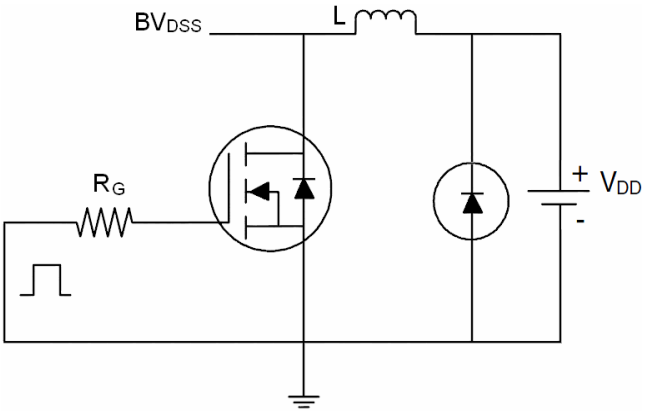


Figure 11: Normalized Maximum Transient Thermal Impedance

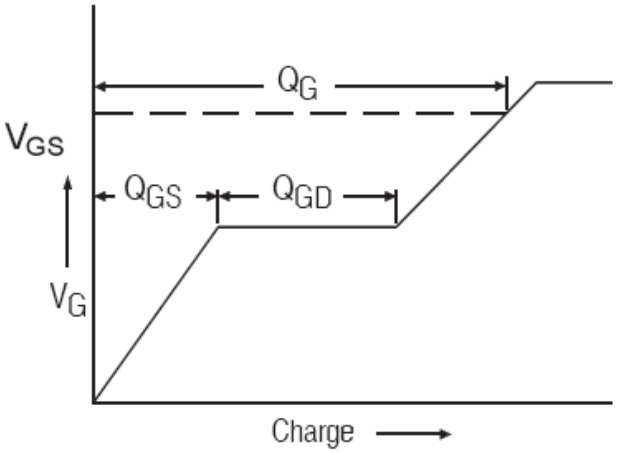
Test Circuit

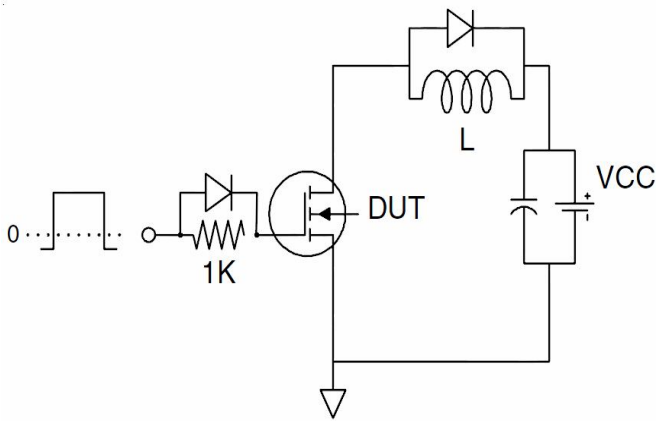
1) E_{AS} Test Circuits



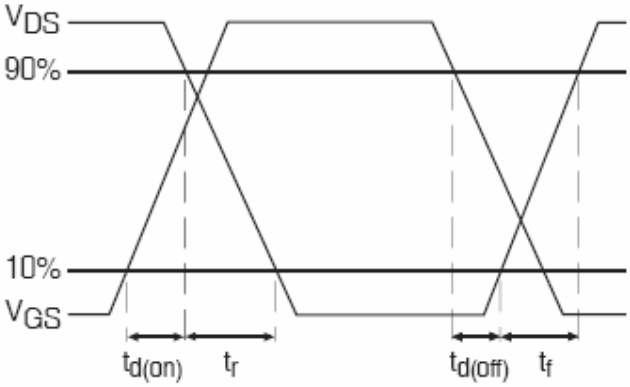


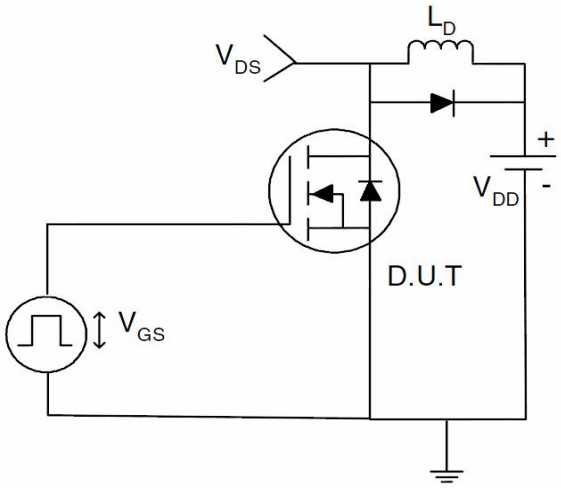
2) Gate Charge Test Circuit:





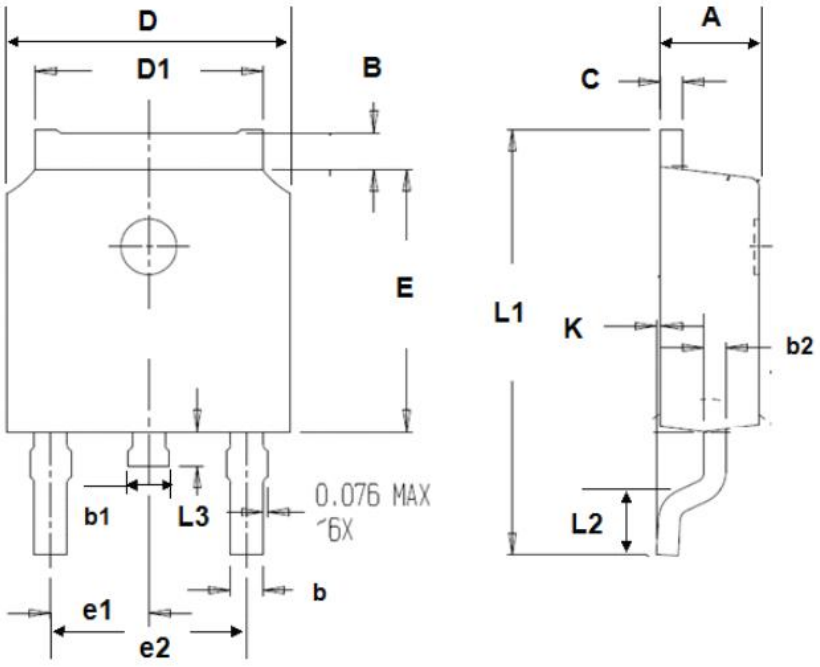
3) Switch Time Test Circuit:





●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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