

**• General Description**

The AGM303A 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**

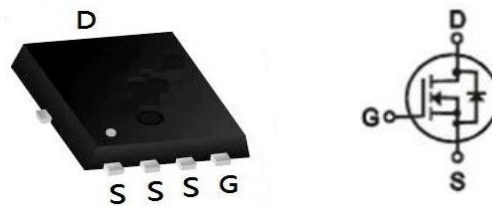
- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

**• Application**

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

**Product Summary**

BVDSS	RDSON	ID
30V	2.7mΩ	110A

**PRPAK5X6 Pin Configuration**

**Package Marking and Ordering Information**

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM303A	AGM303A	DFN5*6	---mm	-----mm	3000

**Table 1. Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ )**

Symbol	Parameter	Value	Unit
$V_{DS}$	Drain-Source Voltage ( $V_{GS}=0V$ )	30	V
$V_{GS}$	Gate-Source Voltage ( $V_{DS}=0V$ )	$\pm 20$	V
$I_D$	Drain Current-Continuous( $T_c=25^\circ\text{C}$ ) (Note 1)	110	A
	Drain Current-Continuous( $T_c=100^\circ\text{C}$ )	75	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	400	A
$P_D$	Maximum Power Dissipation( $T_c=25^\circ\text{C}$ )	70	W
	Maximum Power Dissipation( $T_c=100^\circ\text{C}$ )	2.8	W
EAS	Avalanche energy (Note 3)	343	mJ
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 175	$^\circ\text{C}$

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	45	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-Case <sup>1</sup>	---	1.8	$^\circ\text{C/W}$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V			1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.6	2.5	v
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =25V, I <sub>D</sub> =10A		30		S
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =20A		2.7	3.6	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =15A		4.1	5.3	mΩ
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, F=1MHZ		2800		pF
C <sub>oss</sub>	Output Capacitance			340		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			280		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1.0MHz		1.7		Ω
<b>Switching Times</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =15V, R <sub>L</sub> =0.75Ω, R <sub>GEN</sub> =3.3Ω		13.9		nS
t <sub>r</sub>	Turn-on Rise Time			5.7		nS
t <sub>d(off)</sub>	Turn-Off Delay Time			20		nS
t <sub>f</sub>	Turn-Off Fall Time			11		nS
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =25V, I <sub>D</sub> =12A		27		nC
Q <sub>gs</sub>	Gate-Source Charge			8		nC
Q <sub>gd</sub>	Gate-Drain Charge			13		nC
<b>Source-Drain Diode Characteristics</b>						
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current			110	A
V <sub>SD</sub>	Forward on Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =20A			1.0	V

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, V<sub>DD</sub>=15V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω

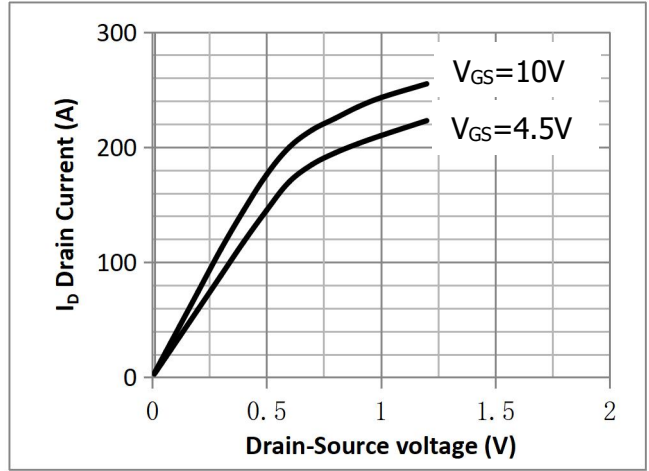
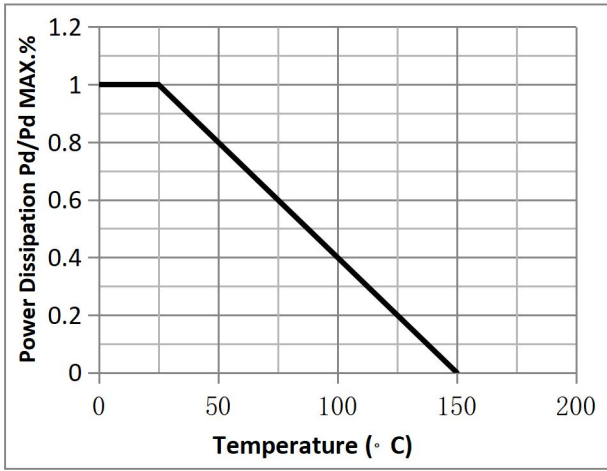


Fig.3 Threshold Voltage V.S Junction Temperature

Fig.4 Resistance V.S Drain Current

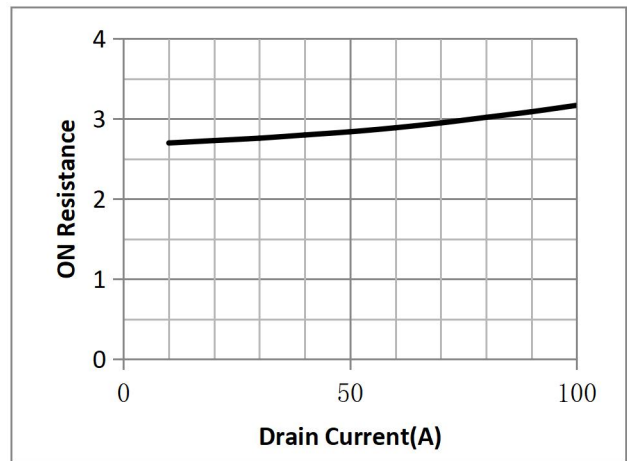
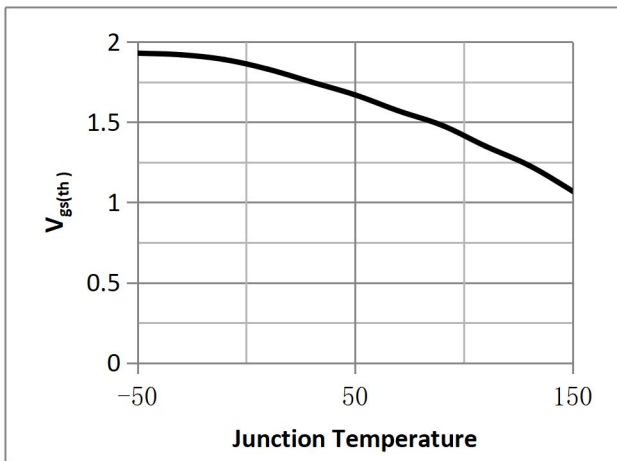
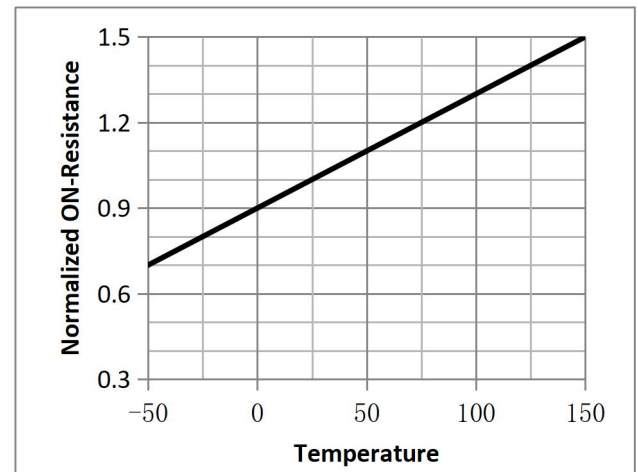
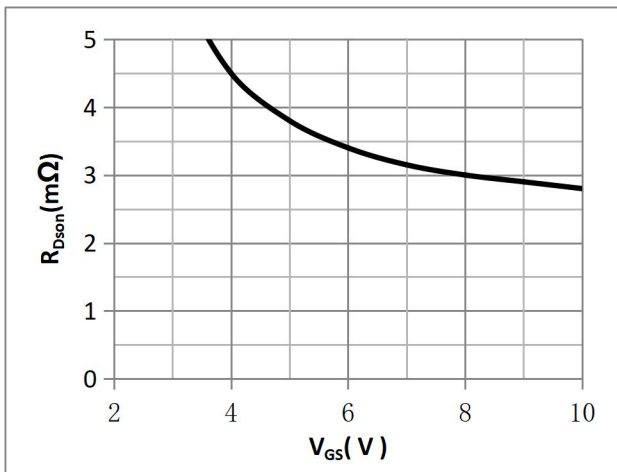


Fig.5 On-Resistance VS Gate Source Voltage

Fig.6 On-Resistance V.S Junction Temperature



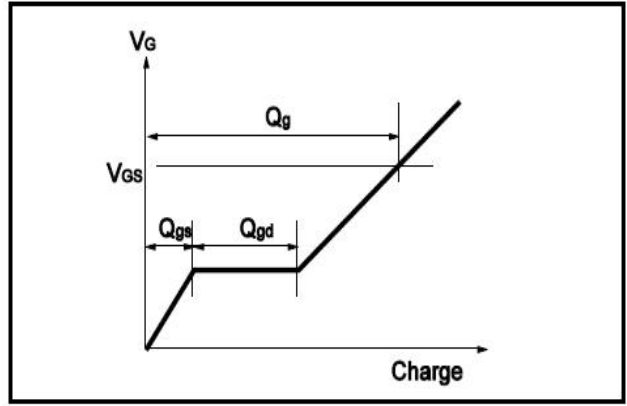
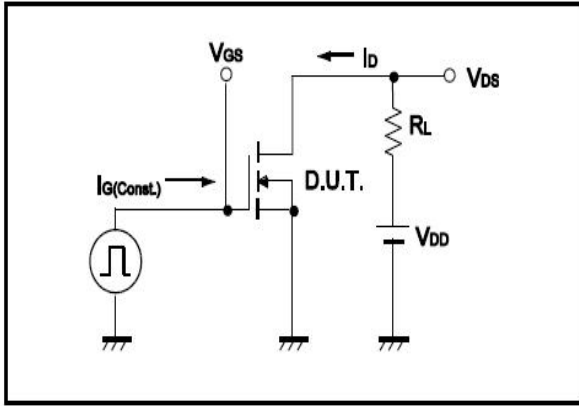


Fig.9 Switching Time Measurement Circuit

Fig.10 Gate Charge Waveform

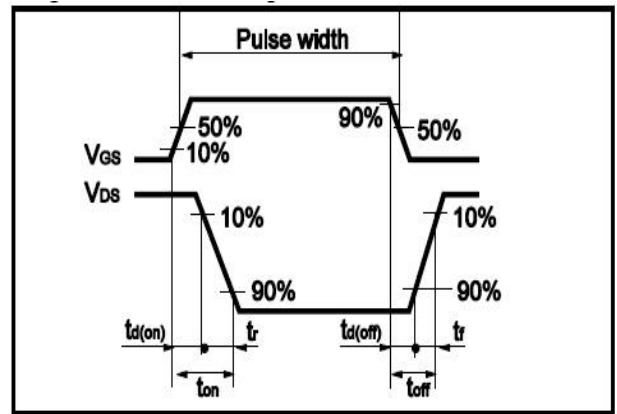
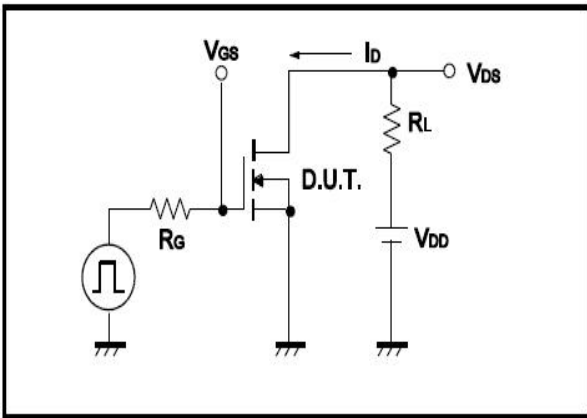
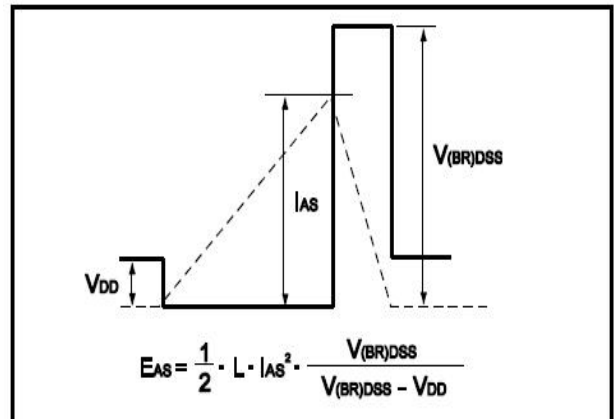
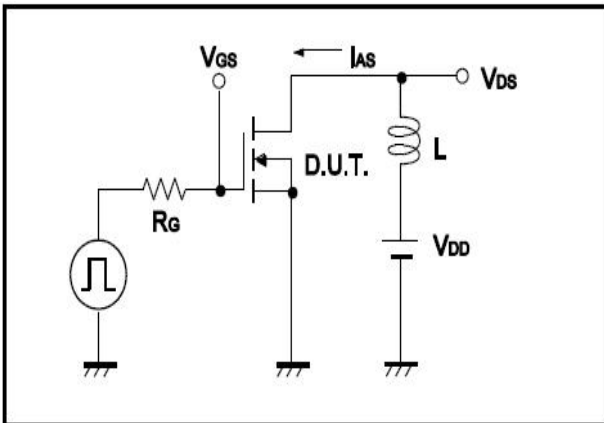
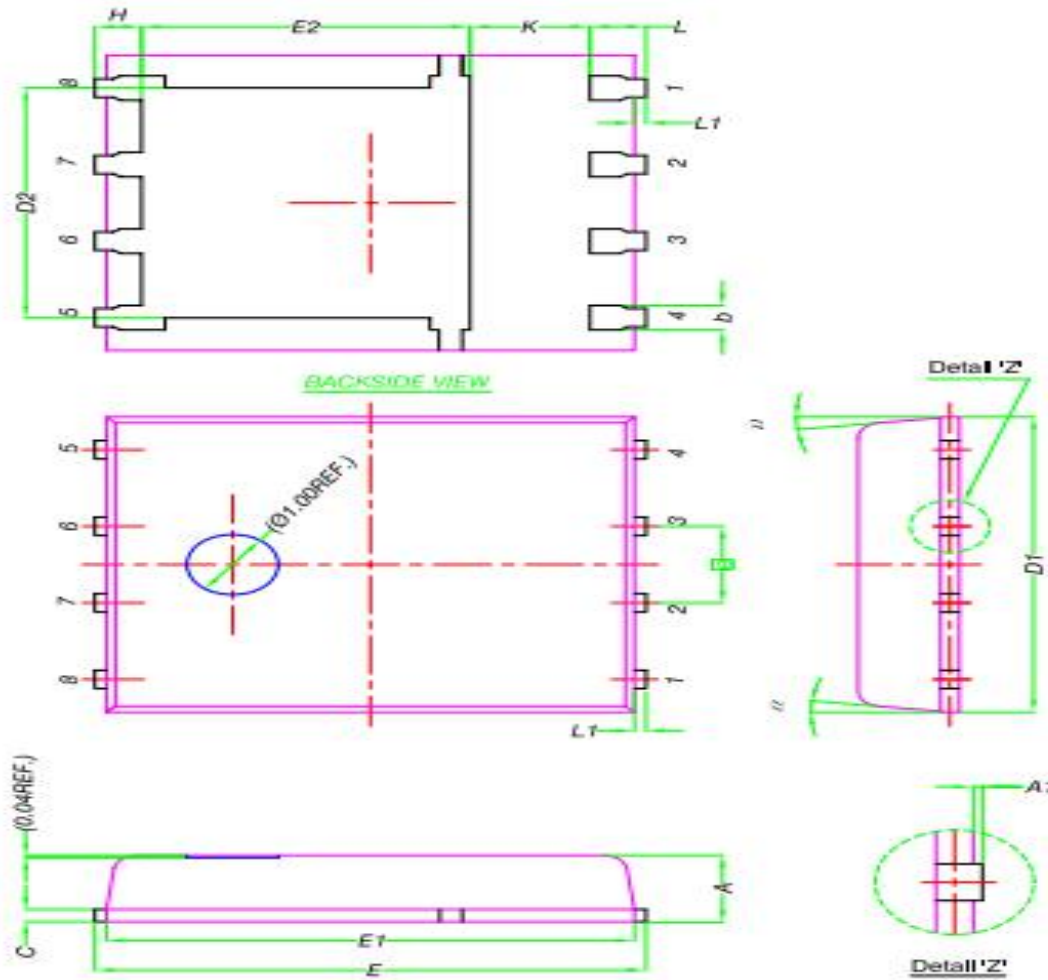


Fig.11 Avalanche Measurement Circuit

Fig.12 Avalanche Waveform



**•Dimensions (DFN5×6)**


DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
e	0°	-	12°


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