

### ● General Description

The AGM1503EL 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 tested
- 100% DVDS tested

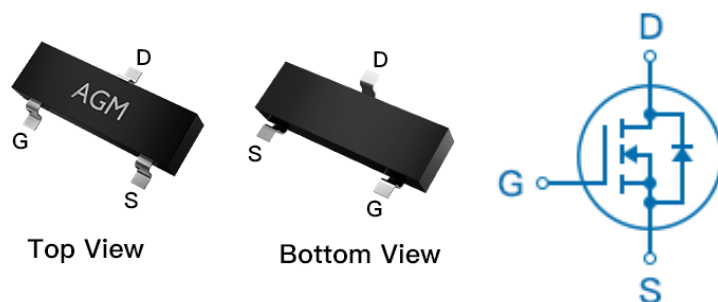
### ● Application

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

### Product Summary

BVDSS	RDSON	ID
150V	350mΩ	3.0A

### SOT-23 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
1503	AGM1503EL	SOT-23	178mm	8mm	3000

**Table 1. Absolute Maximum Ratings (TA=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(TA=25°C) <b>(Note 1)</b>	3.0	A
	Drain Current-Continuous(TA=100°C)	2.0	A
IDM (pluse)	Drain Current-Pulsed <b>(Note 2)</b>	12	A
PD	Maximum Power Dissipation(TA=25°C)	1.7	w
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>	---	74	°C/W

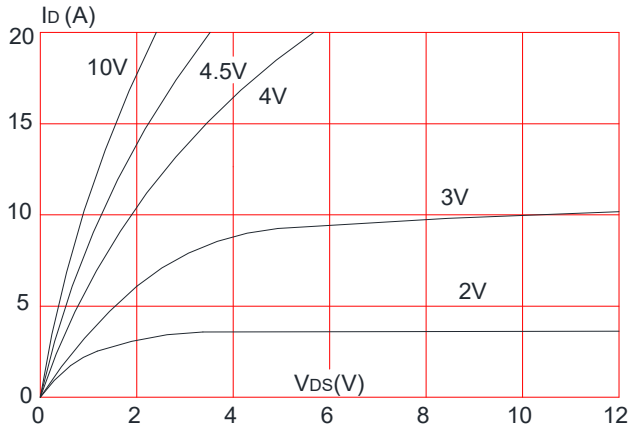
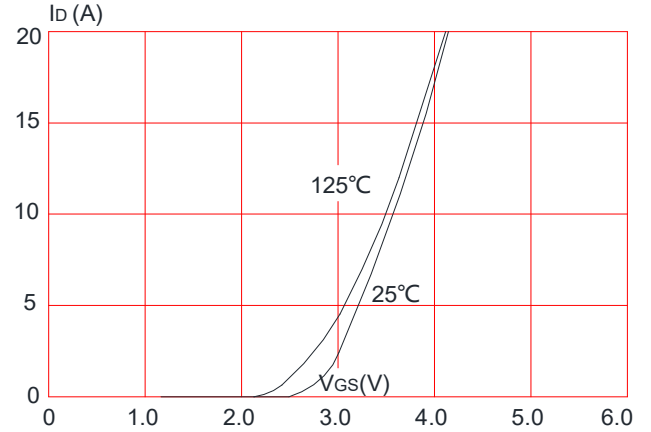
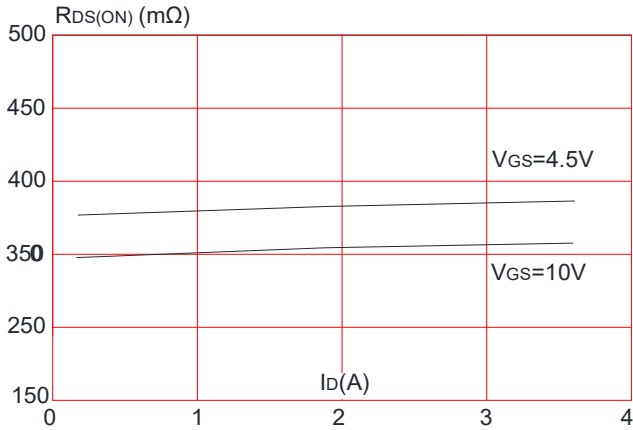
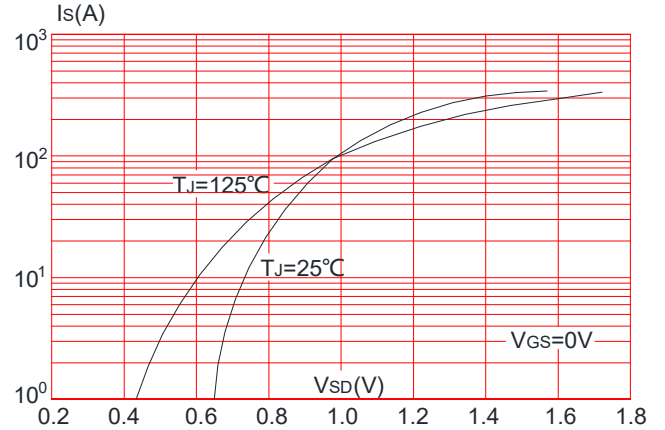
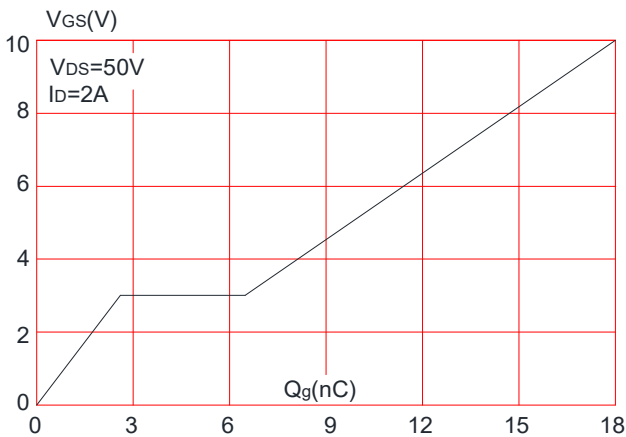
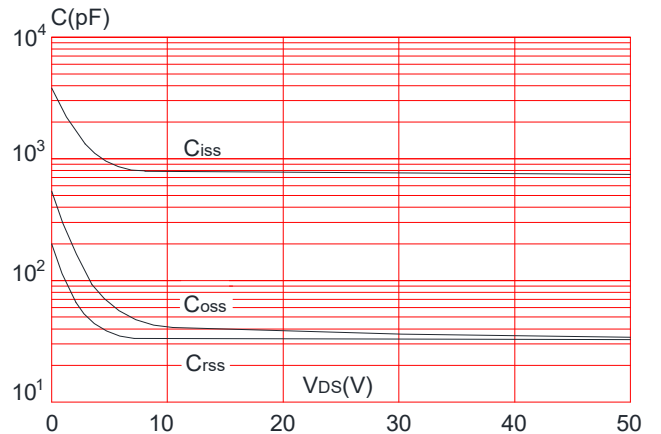
**Table 3. Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

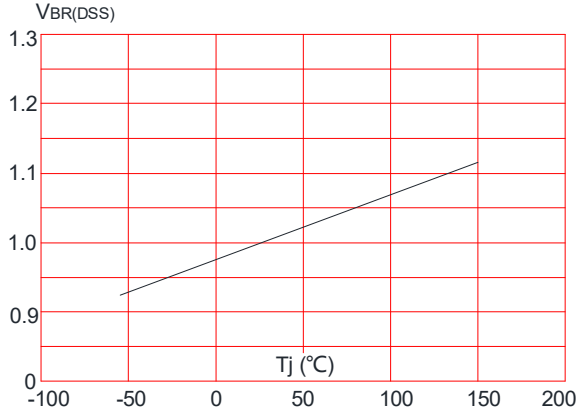
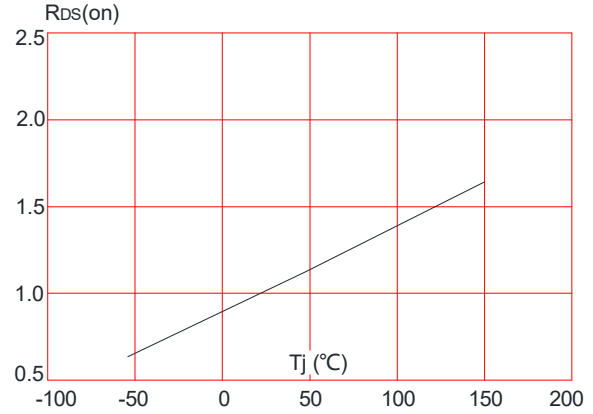
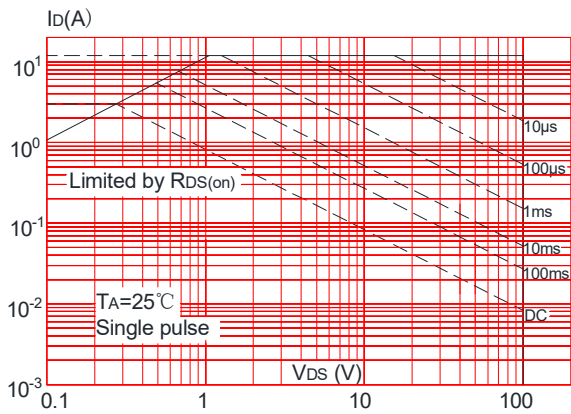
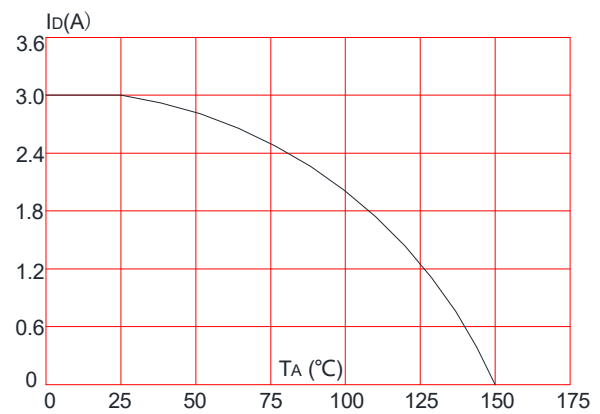
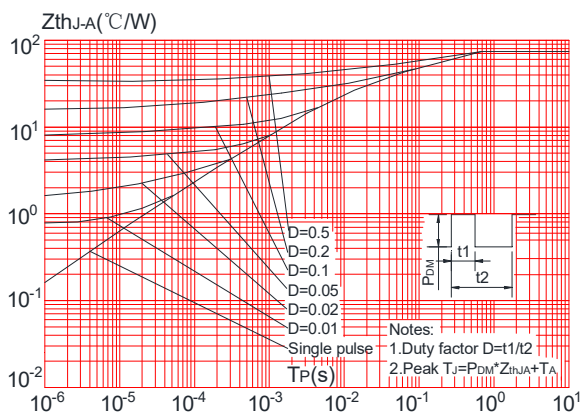
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V ID=250μA	150	--	--	V
IDSS	Zero Gate Voltage Drain Current	V <sub>DS</sub> =150V, V <sub>GS</sub> =0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , ID=250μA	1.2	2.0	2.2	V
gFS	Forward Transconductance	V <sub>DS</sub> =5V, ID=3A	--	--	--	S
RDS(on)	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, ID=3A	--	350	380	mΩ
		V <sub>GS</sub> =4.5V, ID=2A	--	420	450	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, F=1MHZ	--	265	--	pF
Coss	Output Capacitance		--	35	--	pF
Crss	Reverse Transfer Capacitance		--	30	--	pF
Rg	Gate resistance	f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, ID=3A, RGEN=1.8Ω	--	7.5	--	nS
tr	Turn-on Rise Time		--	6.0	--	nS
td(off)	Turn-Off Delay Time		--	21	--	nS
tf	Turn-Off Fall Time		--	9.0	--	nS
Qg	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, ID=2A	--	18	--	nC
Qgs	Gate-Source Charge		--	2.5	--	nC
Qgd	Gate-Drain Charge		--	4.0	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	3.0	A
VSD	Forward on Voltage	V <sub>GS</sub> =0V, IS=3A	--	--	1.2	V
trr	Reverse Recovery Time	Isd=3A , di/dt=100A/μs , T <sub>J</sub> =25°C	--	21	--	ns
Qrr	Reverse Recovery Charge		--	22	--	nc

Notes 1.The maximum current rating is package limited.

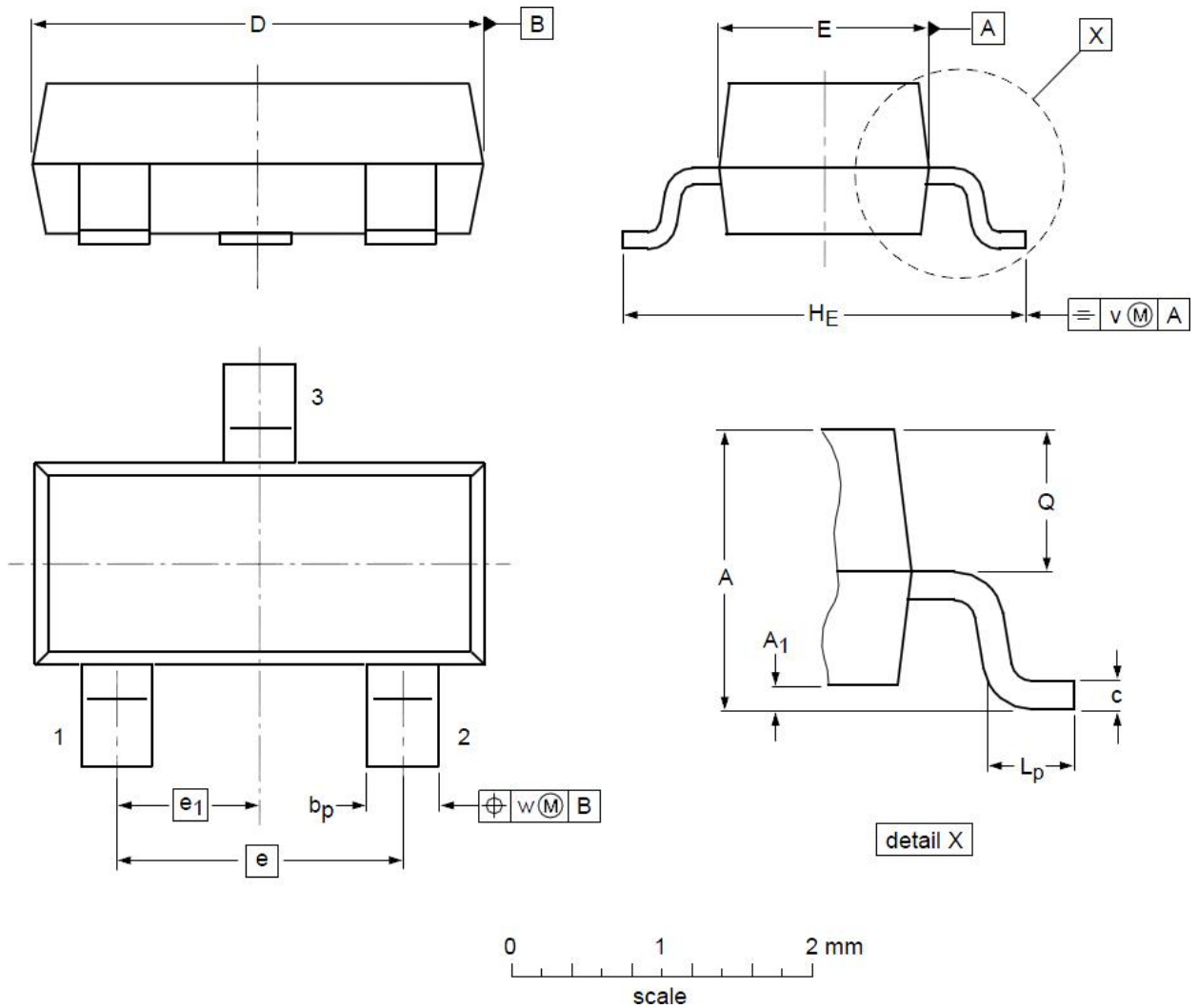
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: T<sub>J</sub>=25°C

**Figure 1: Output Characteristics**

**Figure 2: Typical Transfer Characteristics**

**Figure 3: On-resistance vs. Drain Current**

**Figure 4: Body Diode Characteristics**

**Figure 5: Gate Charge Characteristics**

**Figure 6: Capacitance Characteristics**


**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**

**Figure 8: Normalized on Resistance vs. Junction Temperature**

**Figure 9: Maximum Safe Operating Area**

**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**

**Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient**


## Package Mechanical Data SOT-23



### DIMENSIONS ( unit : mm )

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.90	1.01	1.15	A <sub>1</sub>	0.01	0.05	0.10
b <sub>p</sub>	0.30	0.42	0.50	c	0.08	0.13	0.15
D	2.80	2.92	3.00	E	1.20	1.33	1.40
e	--	1.90	--	e <sub>1</sub>	--	0.95	--
H <sub>E</sub>	2.25	2.40	2.55	L <sub>p</sub>	0.30	0.42	0.50
Q	0.45	0.49	0.55	v	--	0.20	--
w	--	0.10	--				


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