General Description

The AGM3415E 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
- ESD (HBM)>2.0KV

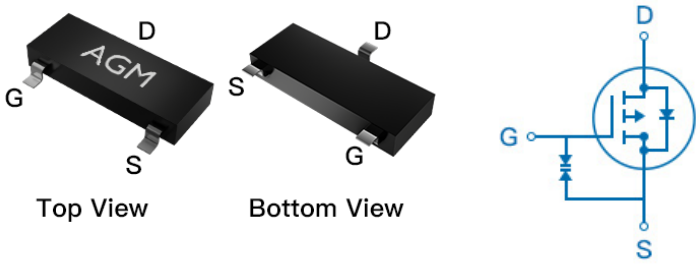
Application

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

Product Summary

BVDSS	RDSON	ID
-20V	28mΩ	-5.0A

SOT23-3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
3415	AGM3415E	SOT23-3	178mm	8mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-20	V
VGS	Gate-Source Voltage (VDS=0V)	±10	V
ID	Drain Current-Continuous(Ta=25℃) **(Note 1)**	-5.0	A
	Drain Current-Continuous(Ta=70℃)	-3.0	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	-18	A
PD	Maximum Power Dissipation(Ta=25℃)	1.25	w
EAS	Avalanche energy **(Note 3)**	42	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]	---	100	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-20V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±10V,VDS=0V	--	--	±8	μA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-0.4	-0.7	-1.0	V
gFS	Forward Transconductance	VDS=-5V,ID=-3A	--	5	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-4.5V, ID=-4.0A	--	28	35	mΩ
		VGS=-2.5V, ID=-3.0A	--	38	53	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-10V,VGS=0V, VDS=0V,f=1.0MHz	--	830	--	pF
Coss	Output Capacitance		--	132	--	pF
Crss	Reverse Transfer Capacitance		--	85	--	Ω
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V, VDS=-4.5V, ID=-3.3A,RG=1Ω	--	10	--	nS
tr	Turn-on Rise Time		--	32	--	nS
td(off)	Turn-Off Delay Time		--	50	--	nS
tf	Turn-Off Fall Time		--	51	--	nC
Qg	Total Gate Charge	VGS=-10V, VDS=-4.5V,ID=-2.0A	--	8.8	--	nC
Qgs	Gate-Source Charge		--	1.4	--	nC
Qgd	Gate-Drain Charge		--	1.9	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)	VGS=0V,IS=-4A	--	--	-5.0	V
VSD	Forward on Voltage	IF=-4A , dI/dt=100A/μs ,TJ=25℃	--	--	-1.2	V
trr	Reverse Recovery Time		--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	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℃,VDD=-15V,Vgs=-10V,ID=-13A, L=0.5mH,RG=25ohm

Typical Performance Characteristics

Figure1: Output Characteristics

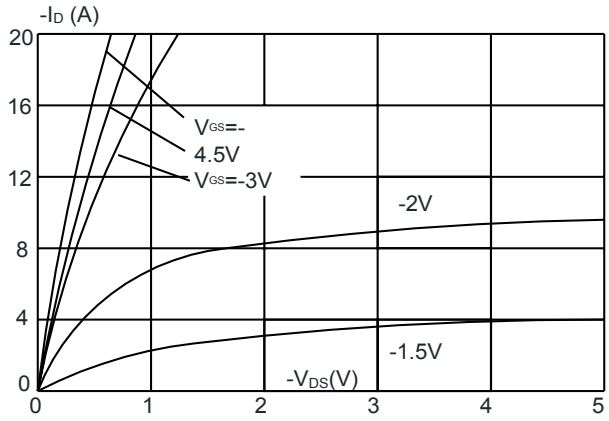


Figure 2: Typical Transfer Characteristics

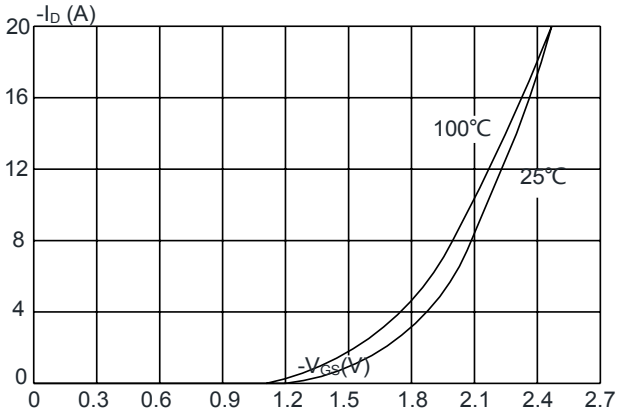


Figure 3: On-resistance vs. Drain Current

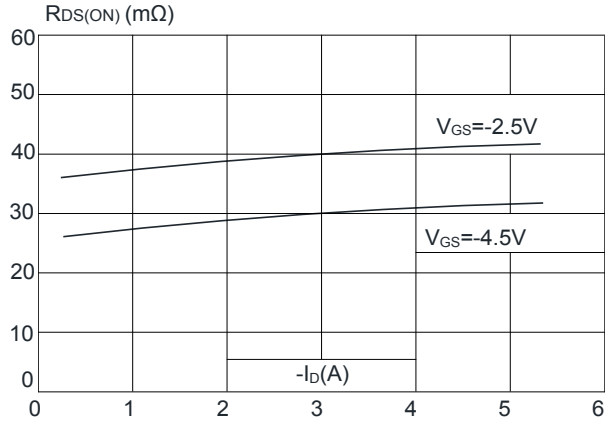


Figure 4: Body Diode Characteristics

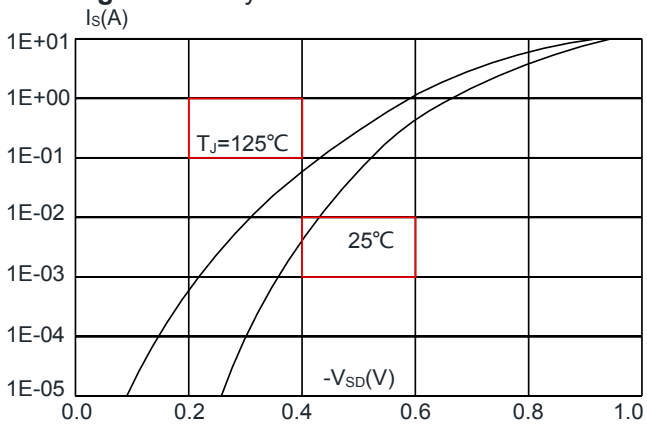


Figure 5: Gate Charge Characteristics

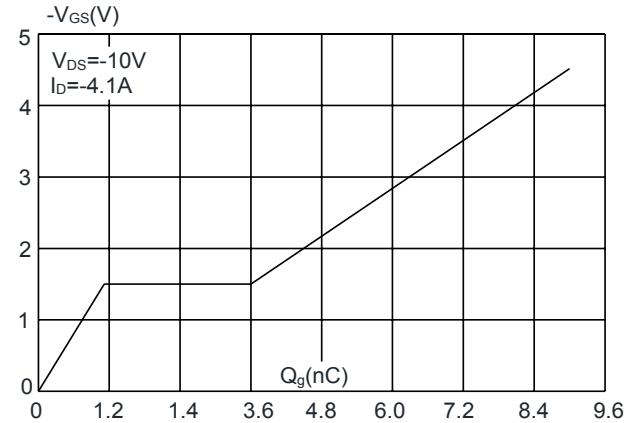


Figure 6: Capacitance Characteristics

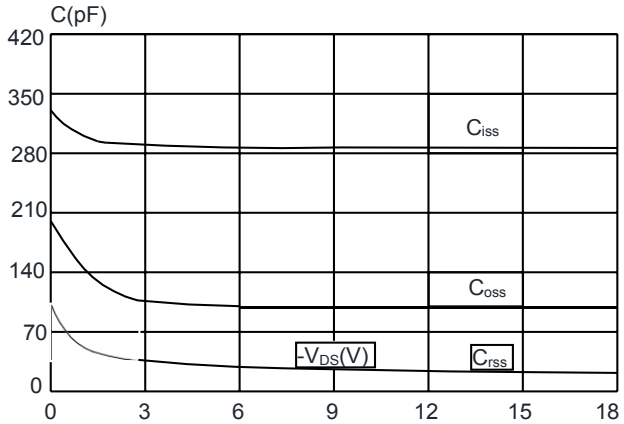


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

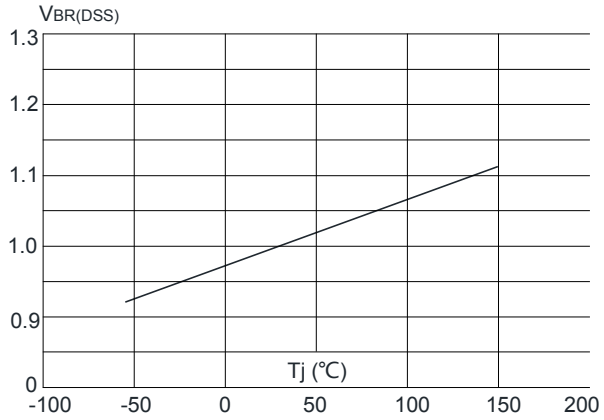


Figure 8: Normalized on Resistance vs. Junction Temperature

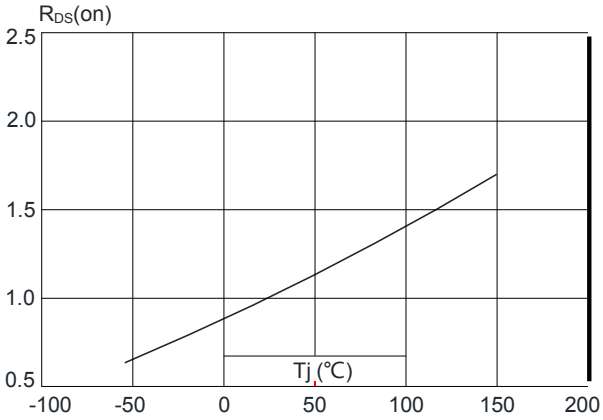


Figure 9: Maximum Safe Operating Area

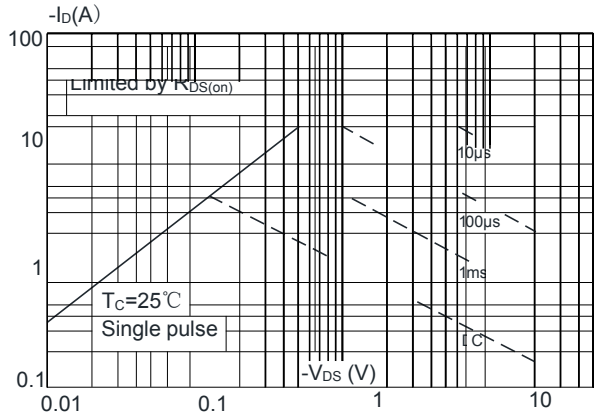


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

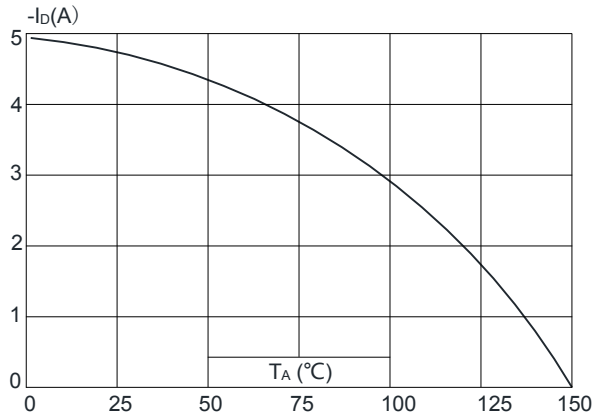
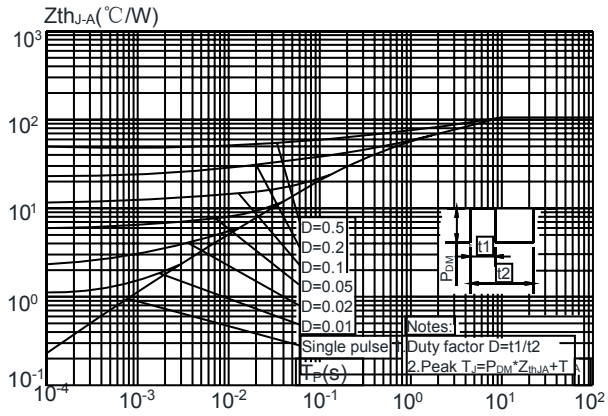
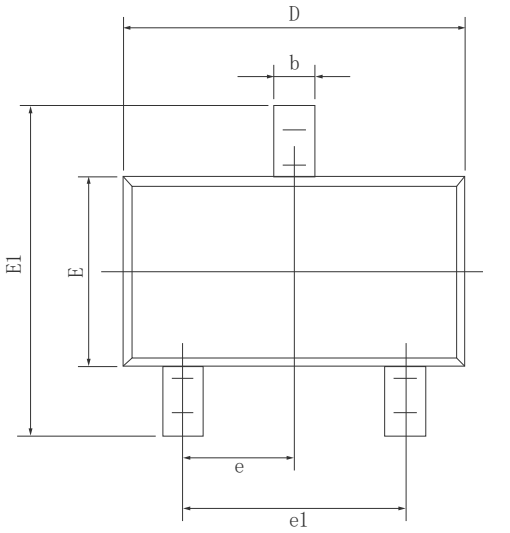
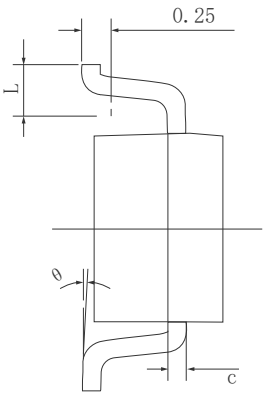


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

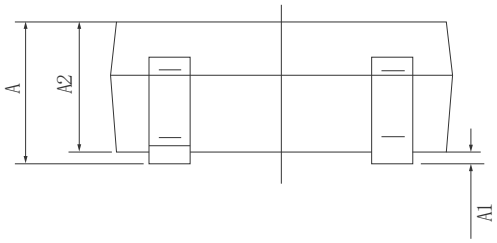


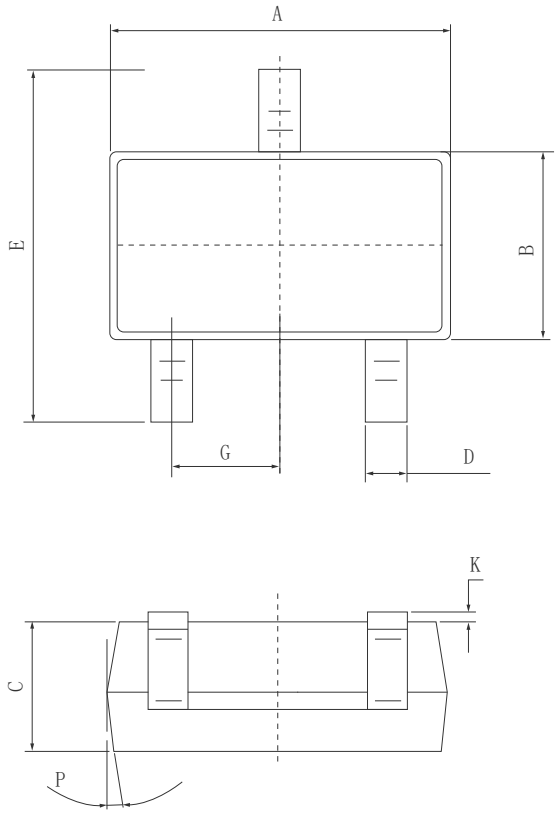
●Dimensions（SOT23-3）

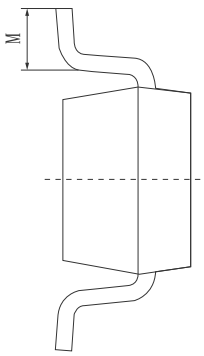




SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.25
A1	0.03	—	0.10
A2	1.05	1.10	1.15
b	0.30	0.35	0.40
c	0.13	—	0.17
D	2.87	2.92	2.97
E	1.55	1.60	1.65
E1	2.70	2.85	3.00
e	0.95 BSC.		
e1	1.80	—	2.00
L	0.35	0.45	0.55
θ	0°	—	8°



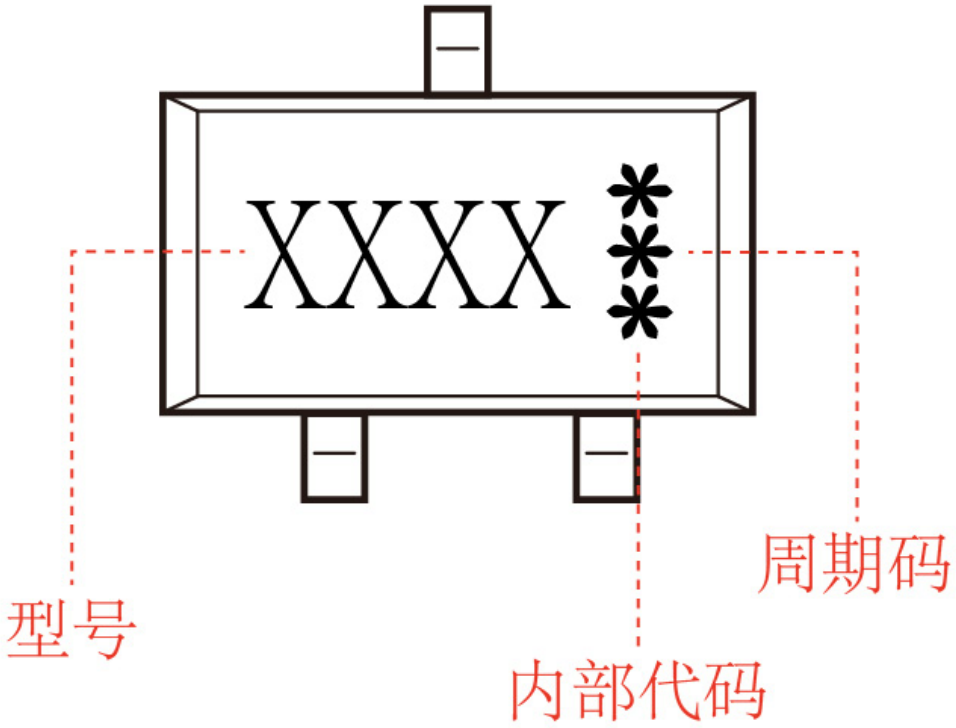




DIM	MILLIMETERS
A	2.82~3.02
B	1.60±0.10
C	1.10±0.05
D	0.40±0.10
E	2.65~2.95
G	0.95typ
K	0.00~0.10
M	0.20MIN
P	9±2°

SOT23-3

Marking Instructions:



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