

### ● General Description

The AGM25T16AT 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

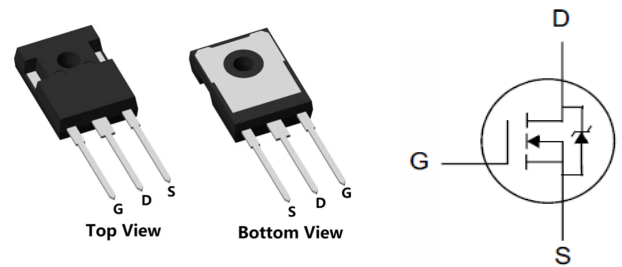
### ● Application

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

### Product Summary

BVDSS	RDSON	ID
250V	16mΩ	90A

### TO-247 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM25T16AT	AGM25T16AT	TO-247	---	---	450

**Table 1. Absolute Maximum Ratings (TC=25°C)**

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	250	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	90	A
	Drain Current-Continuous(Tc=100°C)	63.6	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	360	A
PD	Maximum Power Dissipation(Tc=25°C)	278	w
EAS	Avalanche energy <b>(Note 3)</b>	1700	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 175	°C

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	0.45	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	250	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=250V,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	--	4.5	V
gFS	Forward Transconductance	VDS=10V,ID=45A	70	--	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=45A	--	16	20	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=125V,VGS=0V, F=1MHZ	--	6595	--	pF
Coss	Output Capacitance		--	410	--	pF
Crss	Reverse Transfer Capacitance		--	11	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	3.3	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=10V,VDS=125V, ID=45A,RGEN=4.7Ω	--	9.5	--	nS
tr	Turn-on Rise Time		--	28	--	nS
td(off)	Turn-Off Delay Time		--	48	--	nS
tf	Turn-Off Fall Time		--	15	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=125V, ID=45A	--	94	--	nC
Qgs	Gate-Source Charge		--	40	--	nC
Qgd	Gate-Drain Charge		--	18	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	90	A
VSD	Forward on Voltage	VGS=0V,IS=90A	--	--	1.2	V
trr	Reverse Recovery Time	IF=45A ,dI/dt=100A/μs , TJ=25°C	--	204	--	ns
Qrr	Reverse Recovery Charge		--	1.81	--	nc

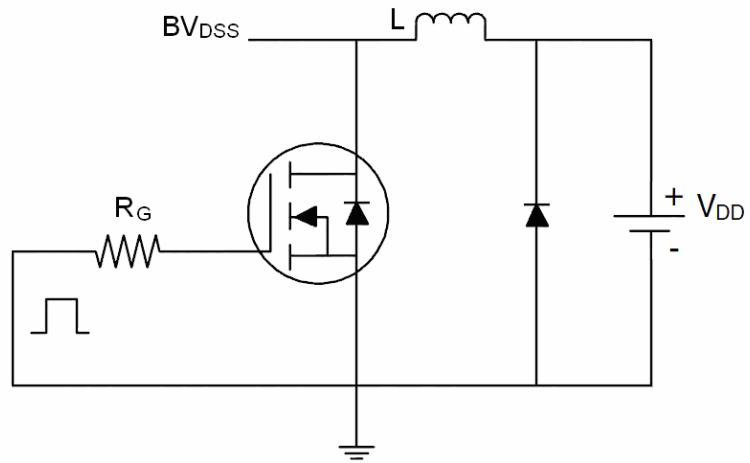
Notes 1.The maximum current rating is package limited.

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

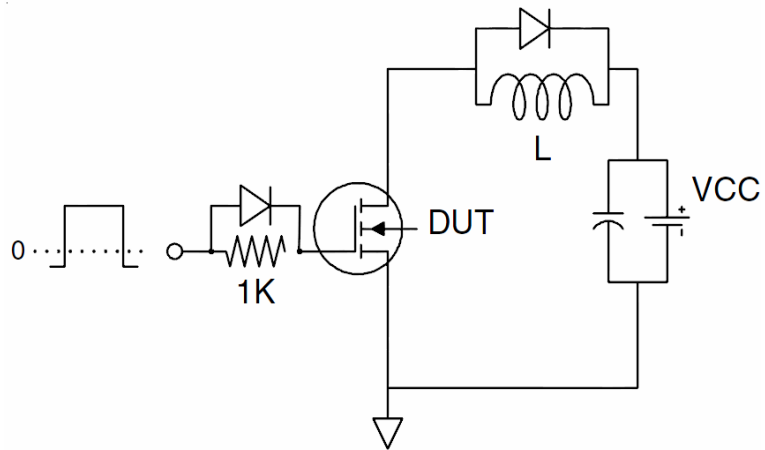
Notes 3.EAS condition: TJ=25°C

**Test Circuit**

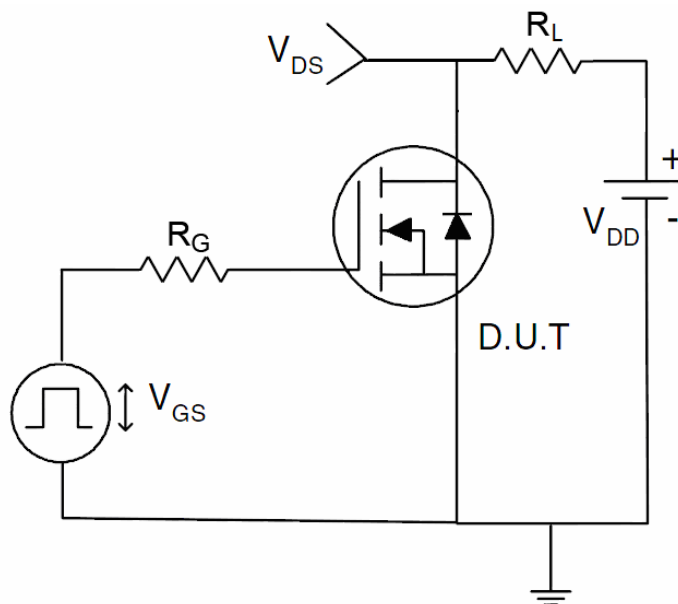
**1) E<sub>AS</sub> test Circuit**

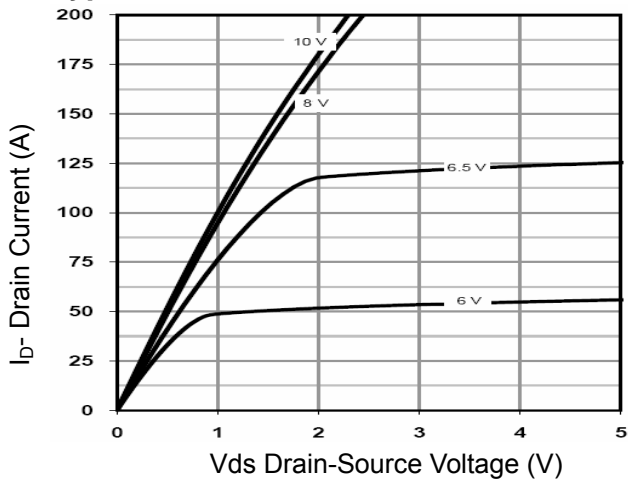
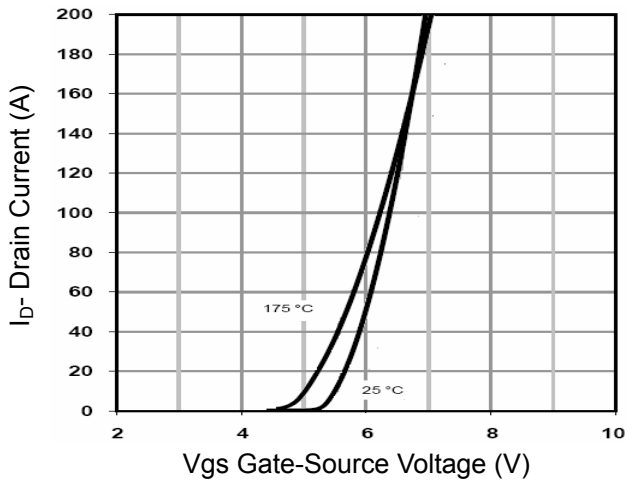
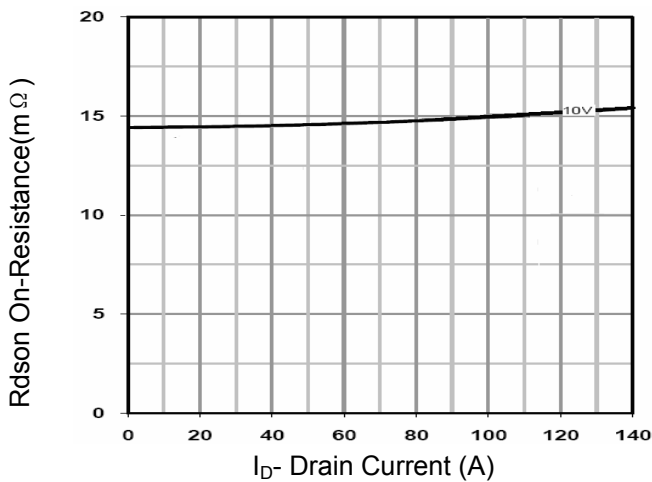
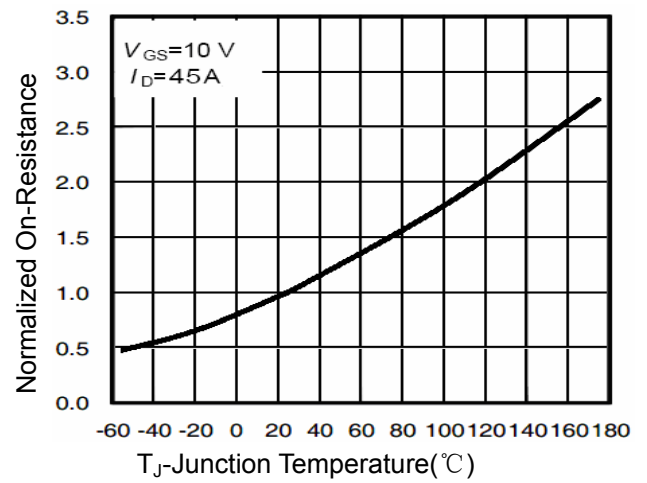
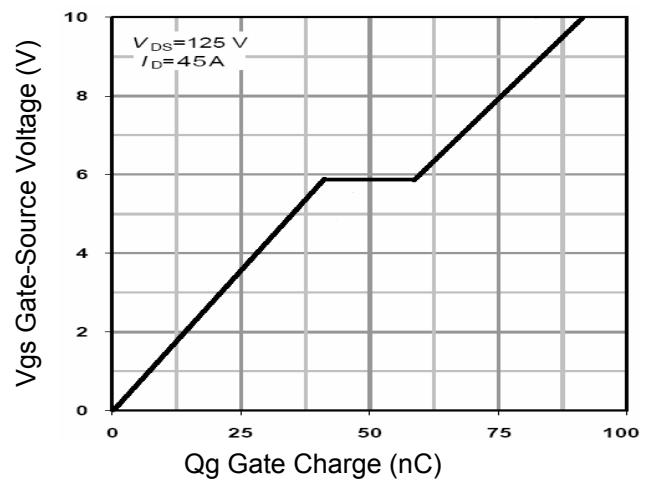
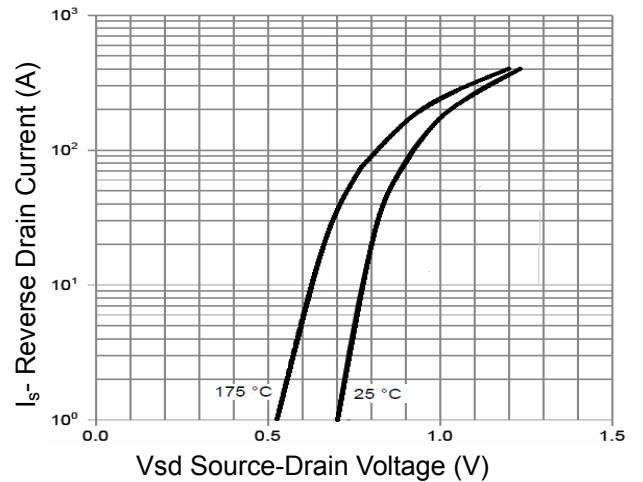


**2) Gate charge test Circuit**



**3) Switch Time Test Circuit**



**Typical Electrical and Thermal Characteristics**

**Figure 1 Output Characteristics**

**Figure 2 Transfer Characteristics**

**Figure 3 Rdson- Drain Current**

**Figure 4 Rdson-Junction Temperature**

**Figure 5 Gate Charge**

**Figure 6 Source- Drain Diode Forward**

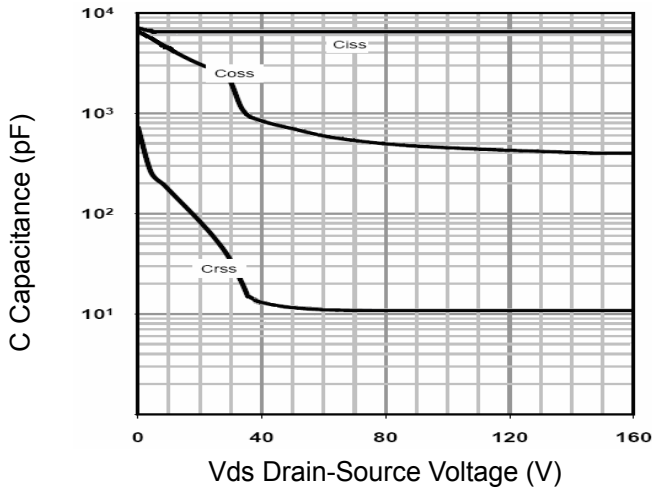


Figure 7 Capacitance vs Vds

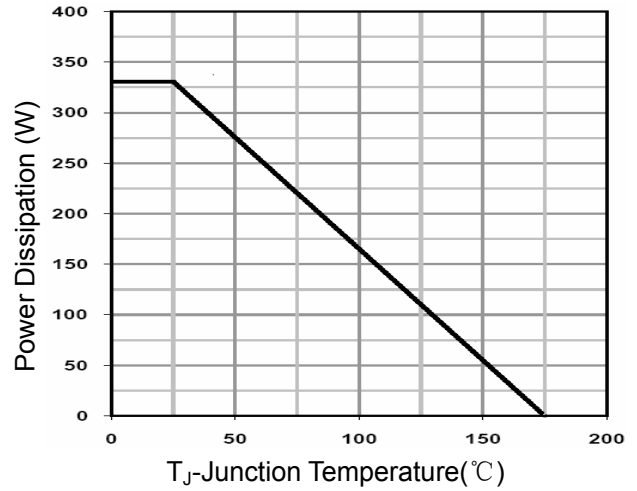


Figure 9 Power De-rating

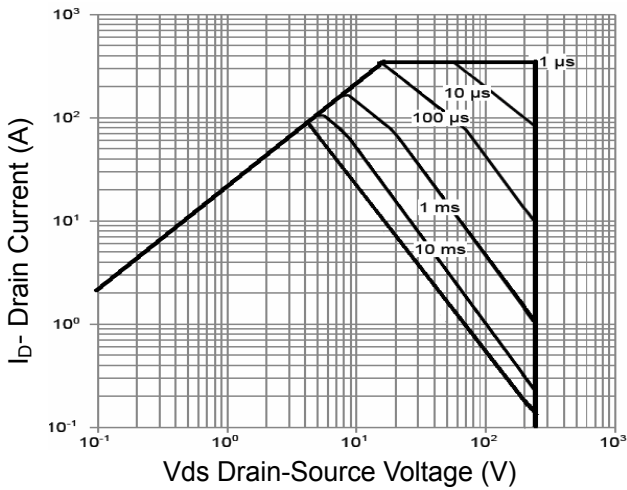


Figure 8 Safe Operation Area

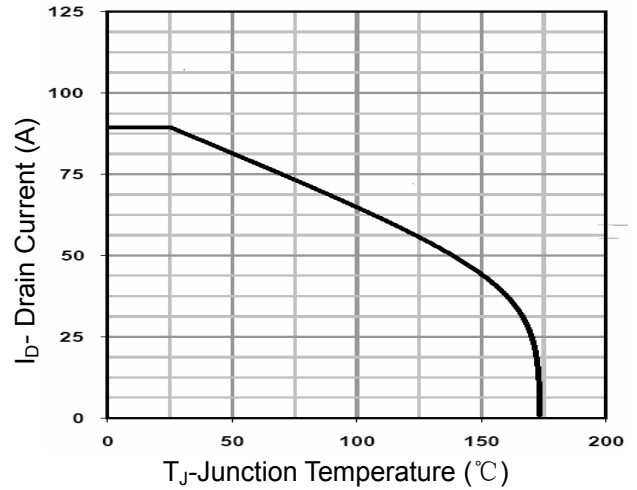


Figure 10 Current De-rating

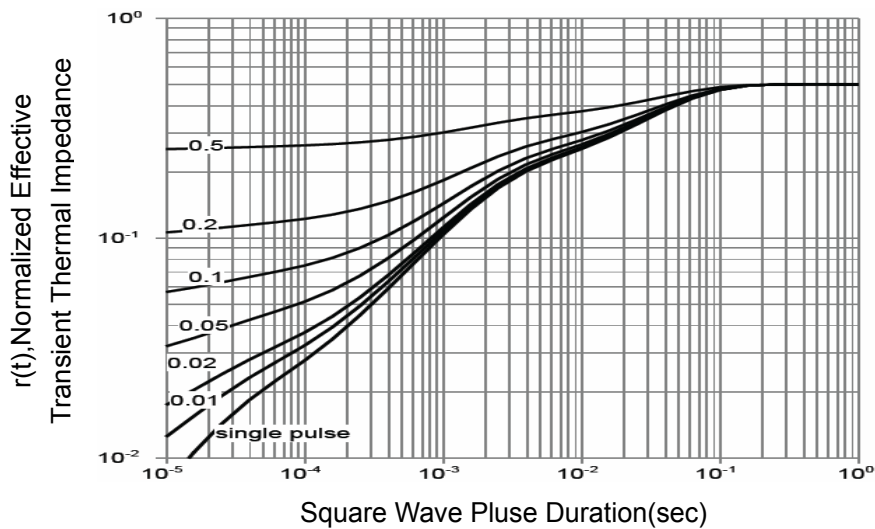
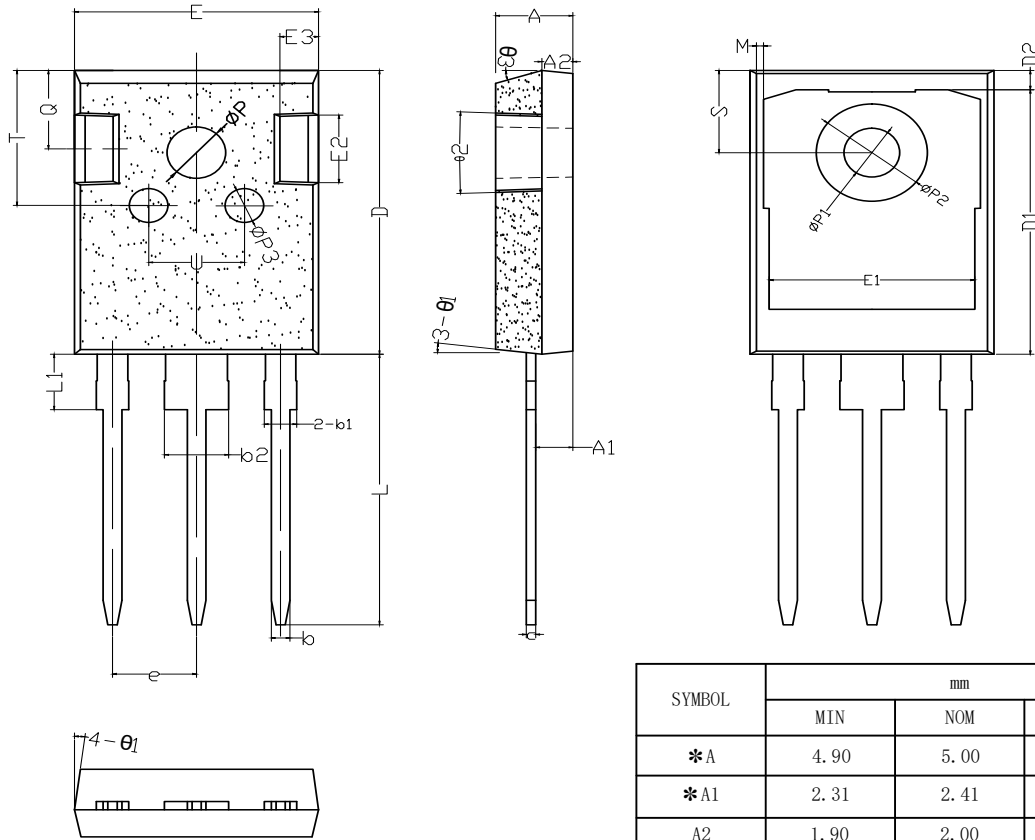


Figure 11 Normalized Maximum Transient Thermal Impedance

**TO-247 Package Information:**


SYMBOL	mm		
	MIN	NOM	MAX
*A	4.90	5.00	5.10
*A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
*b	1.15	1.20	1.25
*b1	1.95	2.10	2.25
*b2	2.95	3.10	3.25
*c	0.55	0.60	0.65
*D	20.90	21.00	21.10
D1	16.35	16.55	16.75
D2	1.05	1.20	1.35
*E	15.70	15.80	15.90
E1	13.10	13.25	13.40
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
*e	5.40	5.44	5.48
*L	19.80	19.92	20.10
*L1	-	-	4.30
* $\Phi P$	3.70	3.80	3.90
* $\Phi P1$	3.50	3.60	3.70
$\Phi P2$	7.00	7.20	7.40
$\Phi P3$	2.40	2.50	2.60
Q	5.60	5.80	6.00
*S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	6.20	6.40
$\theta1$	5°	7°	9°
$\theta2$	1°	3°	5°
$\theta3$	13°	15°	17°


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