

General Description

The AGM045P10D 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

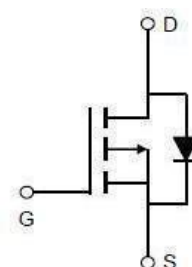
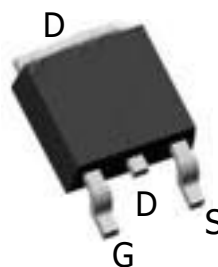
Application

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

Product Summary

BVDSS	RDS(ON)	ID
-100V	46mΩ	-38A

TO-252 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM045P10D	AGM045P10D	TO-252	----	----	2500

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-100	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	-38	A
	Drain Current-Continuous(Tc=100°C)	-27	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-152	A
PD	Maximum Power Dissipation(Tc=25°C)	107	w
	Maximum Power Dissipation(Tc=100°C)	53	w
EAS	Avalanche energy (Note 3)	361	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 175	°C

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) ¹	---	--	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	1.4	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-100	-127	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-100V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.0	-1.8	-2.5	V
gFS	Forward Transconductance	VDS=5V,ID=-15A	--	50	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-15A	--	46	57.5	mΩ
		VGS=-4.5V, ID=-10A	--	48	63	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-25V,VGS=0V, F=1MHZ	--	8056	--	pF
Coss	Output Capacitance		--	195	--	pF
Crss	Reverse Transfer Capacitance		--	70	--	pF
Rg	Gate resistance	f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-50V, RL=3.3Ω,RGEN=9.1Ω	--	13	--	nS
tr	Turn-on Rise Time		--	64	--	nS
td(off)	Turn-Off Delay Time		--	36	--	nS
tf	Turn-Off Fall Time		--	85	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-50V, ID=-10A	--	147	--	nC
Qgs	Gate-Source Charge		--	17	--	nC
Qgd	Gate-Drain Charge		--	31	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-38	A
VSD	Forward on Voltage	VGS=0V,IS=-15A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-15A ,	--	72	--	ns
Qrr	Reverse Recovery Charge	dI/dt=100A/μs , TJ=25℃	--	120	--	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

Typical Electrical And Thermal Characteristics (Curves)

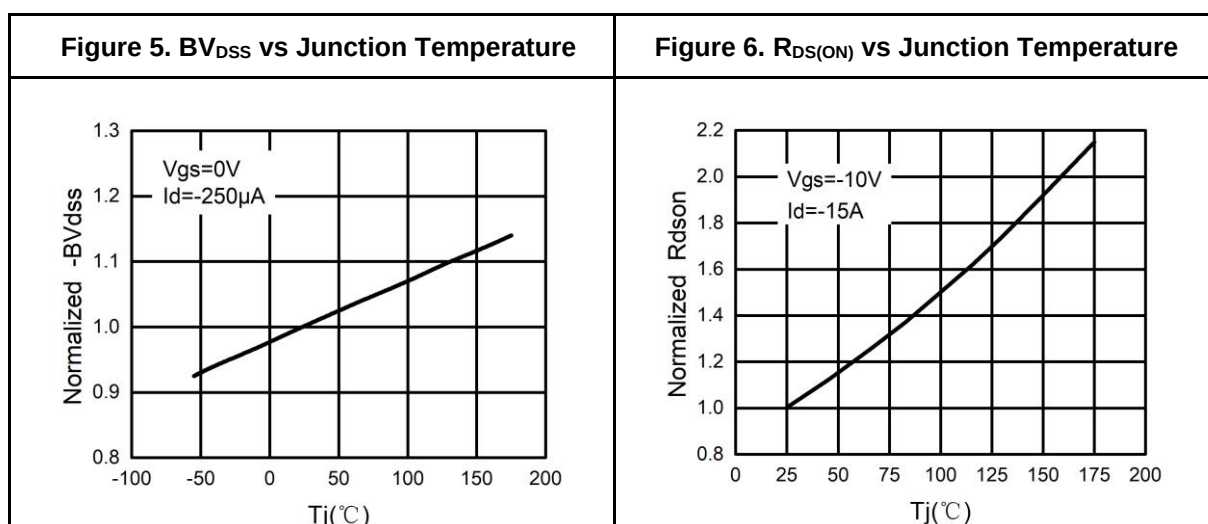
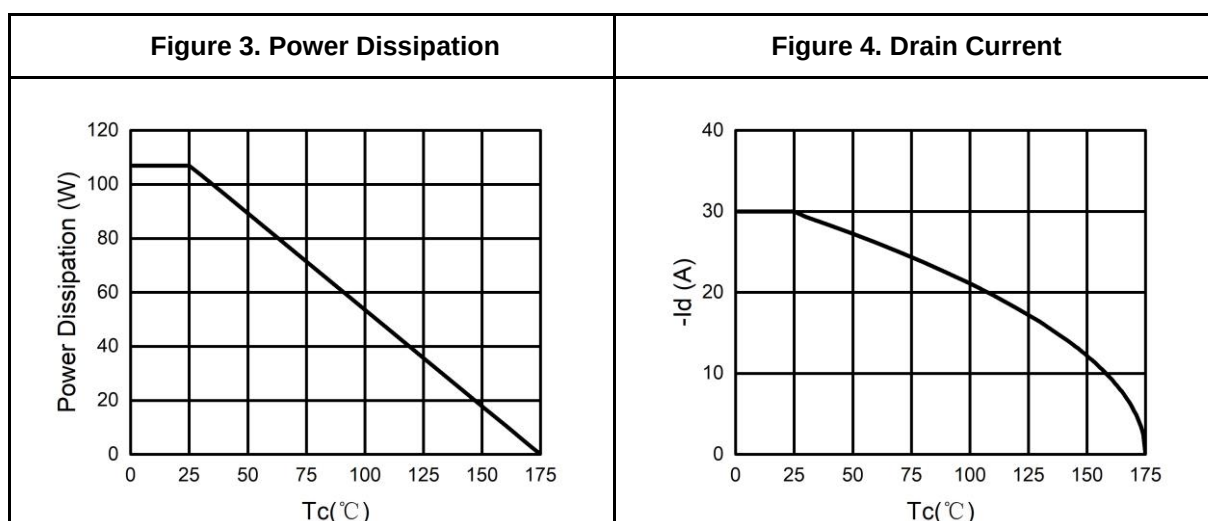
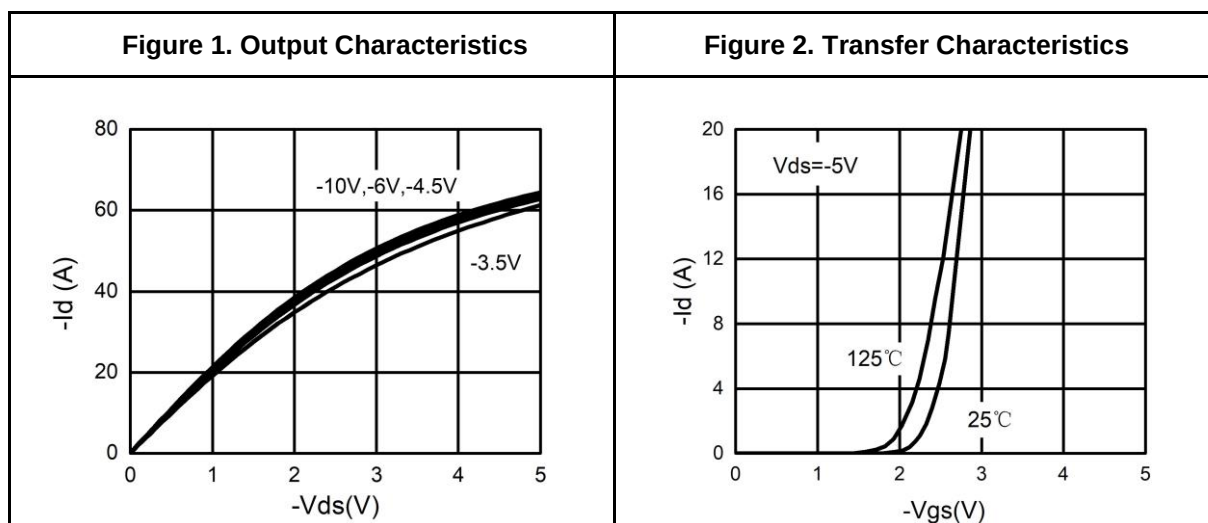


Figure 7. Gate Charge Waveforms

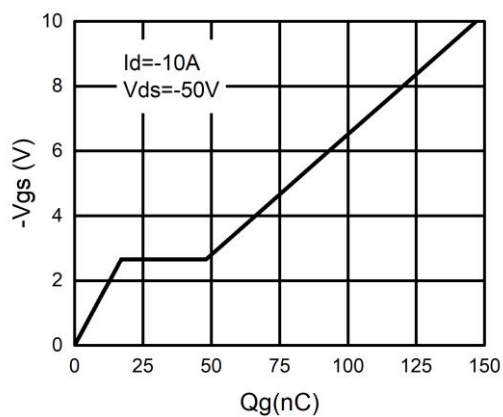


Figure 8. Capacitance

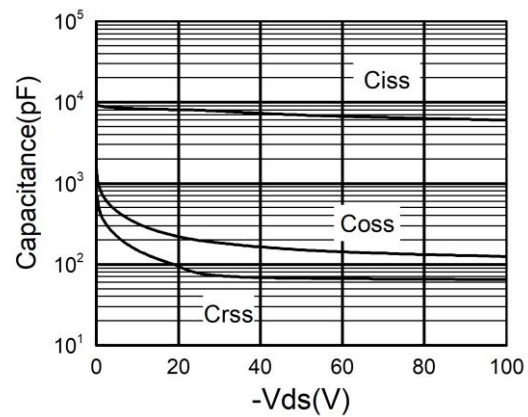


Figure 9. Body-Diode Characteristics

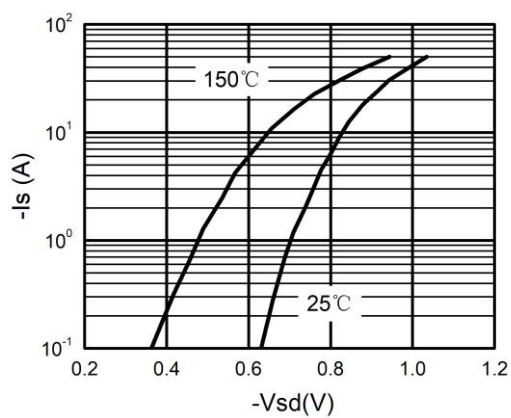
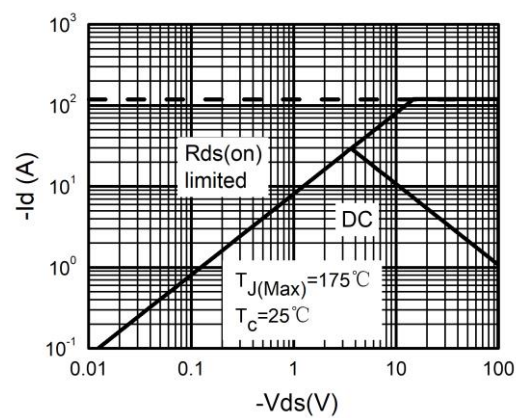
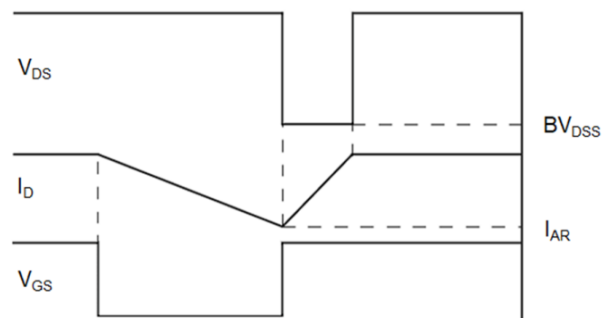
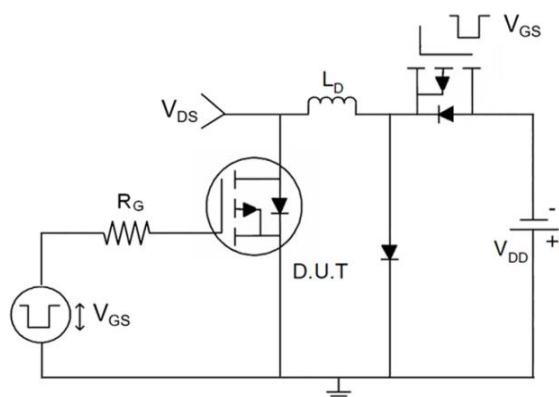


Figure 10. Maximum Safe Operating Area

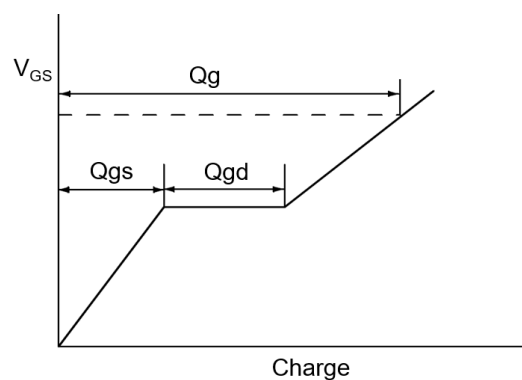
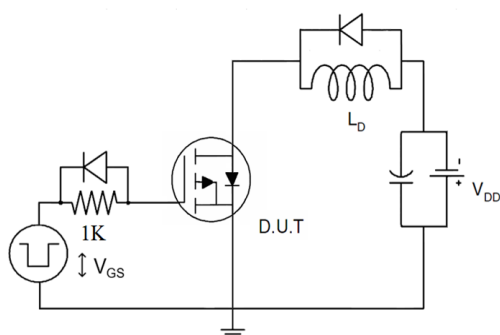


Test Circuit

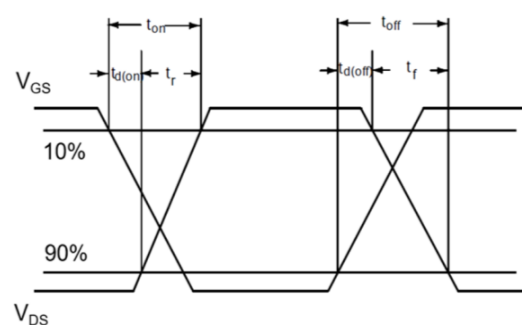
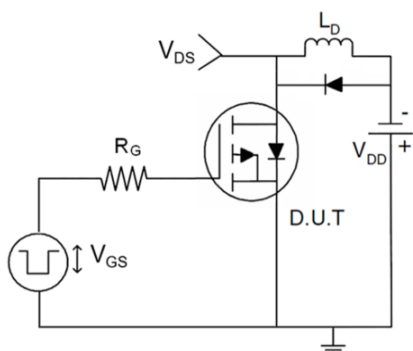
1) E_{AS} Test Circuits

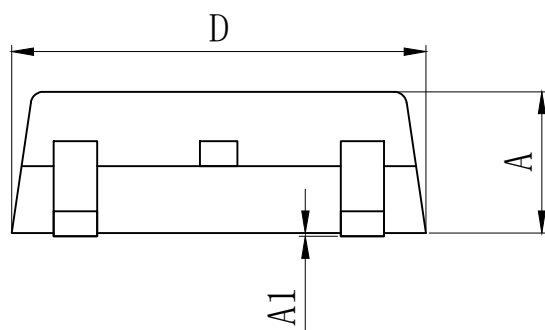
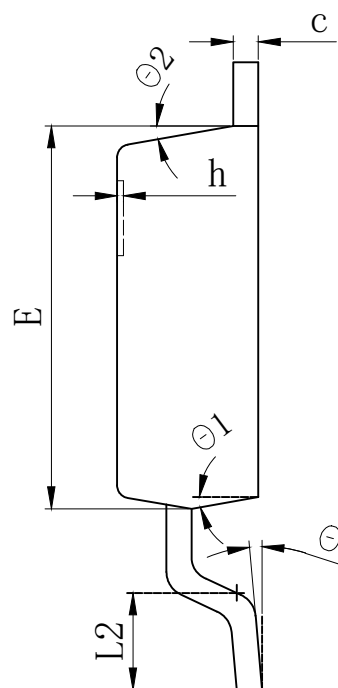
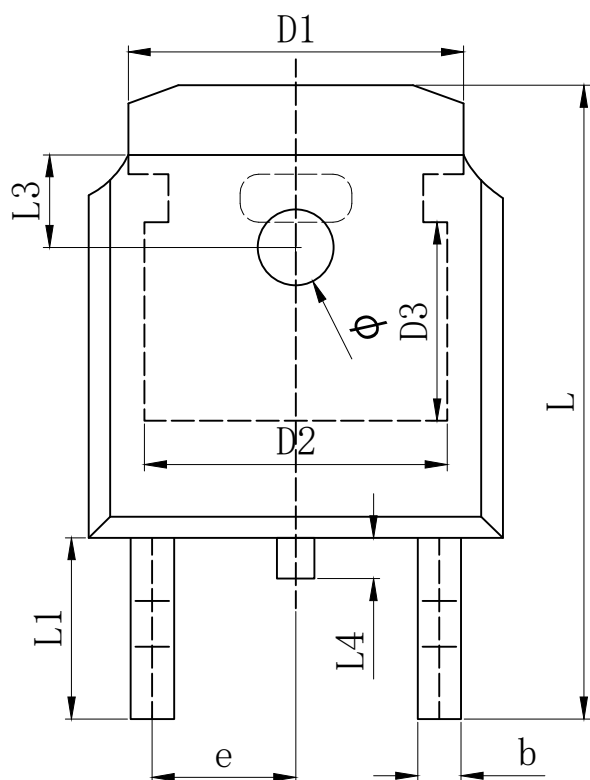


2) Gate Charge Test Circuit



3) Switch Time Test Circuit





SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c(电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ_1	9° TYP		
θ_2	9° TYP		

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