

### ● General Description

The AGM60P85AP 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

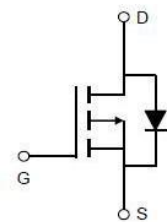
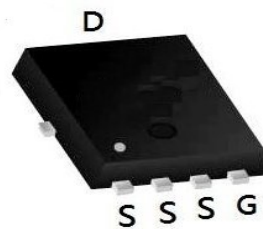
### ● Application

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

### Product Summary

BVDSS	RDSON	ID
-60V	80mΩ	-14A

### PDFN3.3\*3.3 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM60P85AP	AGM60P85AP	PDFN3.3*3.3	330mm	12mm	5000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage ( $V_{GS}=0V$ )	-60	V
VGS	Gate-Source Voltage ( $V_{DS}=0V$ )	$\pm 20$	V
ID	Drain Current-Continuous( $T_c=25^\circ\text{C}$ ) (Note 1)	-14	A
	Drain Current-Continuous( $T_c=100^\circ\text{C}$ )	-10	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-56	A
PD	Maximum Power Dissipation( $T_c=25^\circ\text{C}$ )	34	w
	Maximum Power Dissipation( $T_c=100^\circ\text{C}$ )	14	w
EAS	Avalanche energy (Note 3)	16	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ\text{C}$

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	50	$^\circ\text{C}/\text{W}$
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	3.7	$^\circ\text{C}/\text{W}$

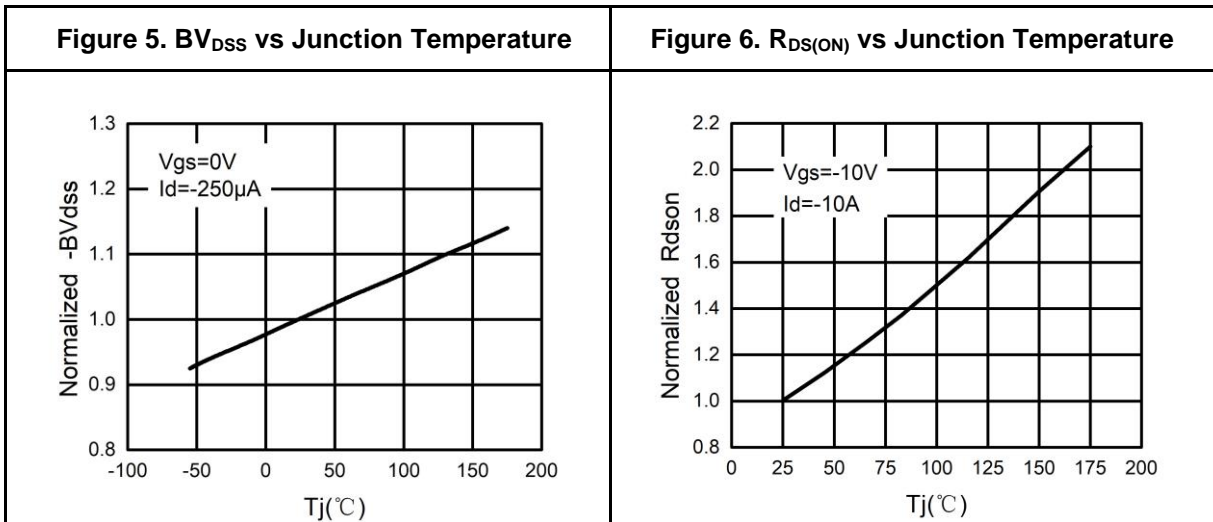
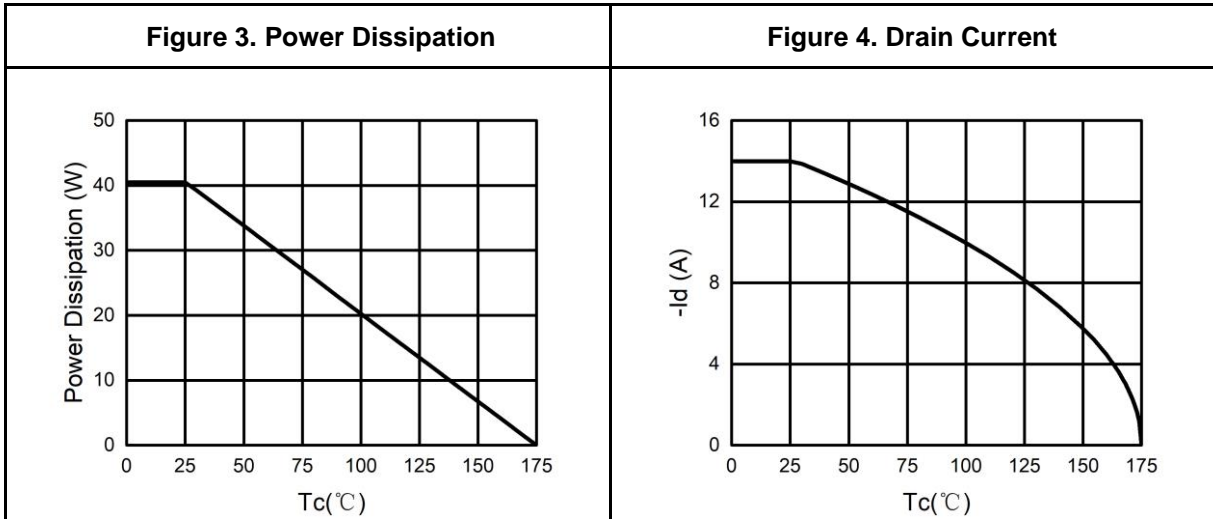
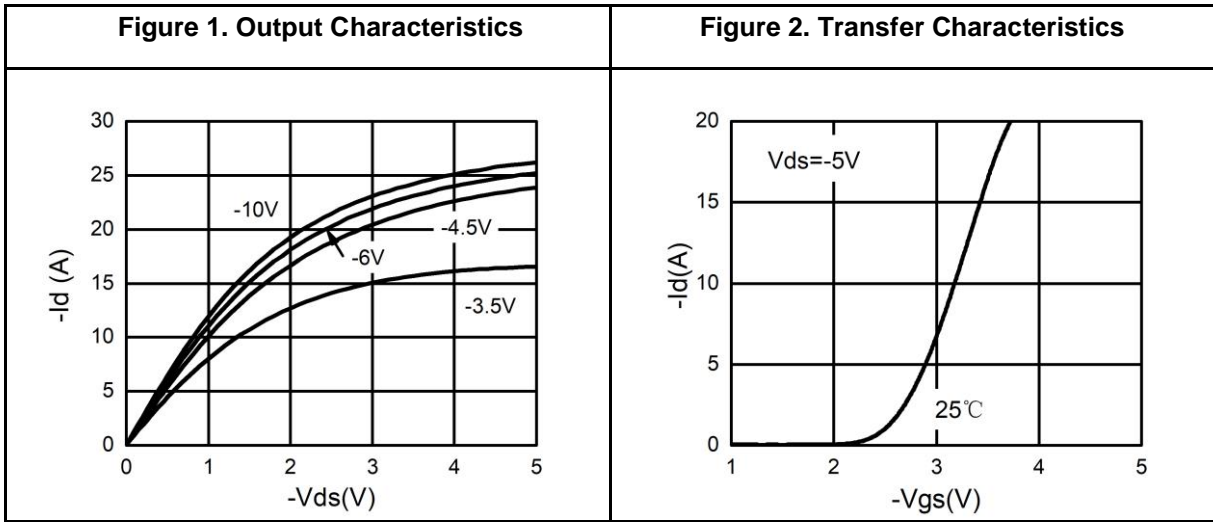
**Table 2. P-Channel Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

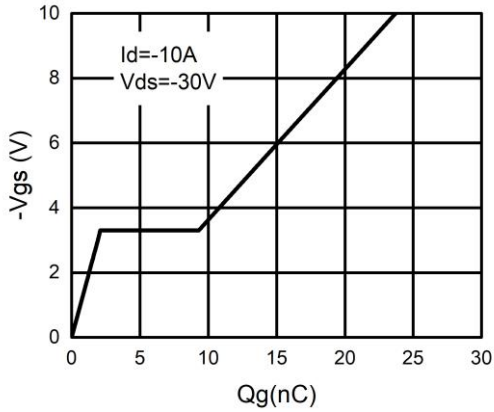
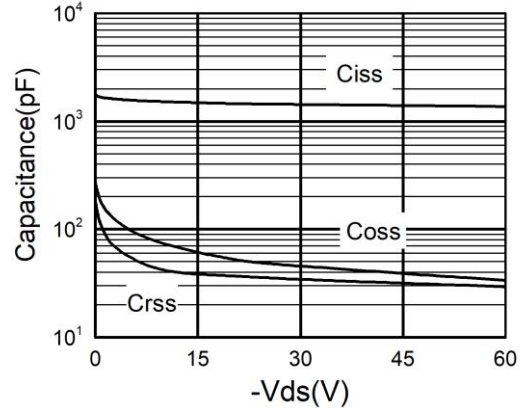
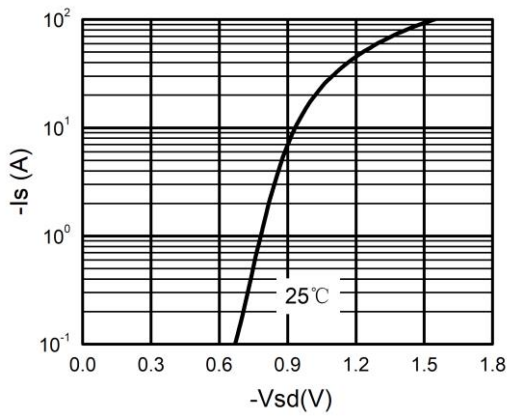
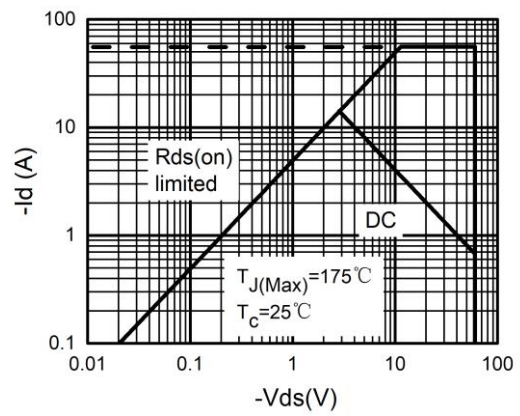
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-60	-72	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-60V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.2	-1.6	-2.1	V
gFS	Forward Transconductance	VDS=-5V,ID=-8A	--	16	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-10A	--	80	97	mΩ
		VGS=-4.5V, ID=-8A	--	97	126	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-25V,VGS=0V, F=1MHZ	--	1450	--	pF
Coss	Output Capacitance		--	48	--	pF
Crss	Reverse Transfer Capacitance		--	35	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-30V, RL=3Ω,RGEN=3Ω	--	9.7	--	nS
tr	Turn-on Rise Time		--	5.5	--	nS
td(off)	Turn-Off Delay Time		--	29	--	nS
tf	Turn-Off Fall Time		--	6	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-30V, ID=-10A	--	23.7	--	nC
Qgs	Gate-Source Charge		--	2.1	--	nC
Qgd	Gate-Drain Charge		--	7.2	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-14	A
VSD	Forward on Voltage	VGS=0V,IS=-10A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-10A , dI/dt=100A/μs , TJ=25°C	--	34	--	ns
Qrr	Reverse Recovery Charge		--	37	--	nc

Notes 1.The maximum current rating is package limited.

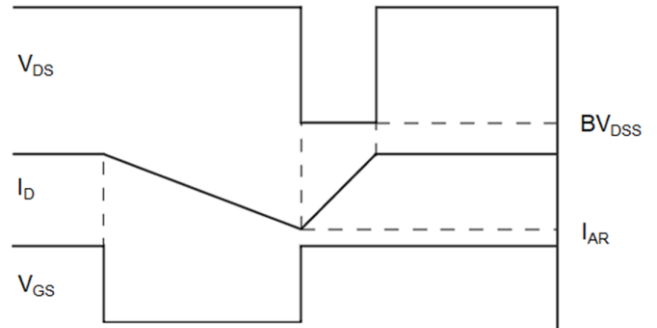
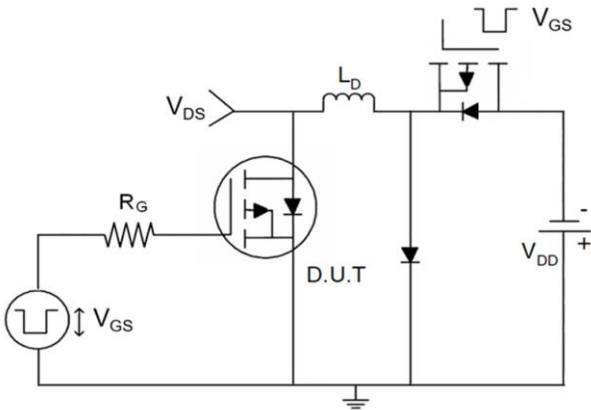
Notes2.Repetitive Rating: Pulse width limited by maximum junction temperature Notes

3.EAS condition: T<sub>J</sub>=25°C

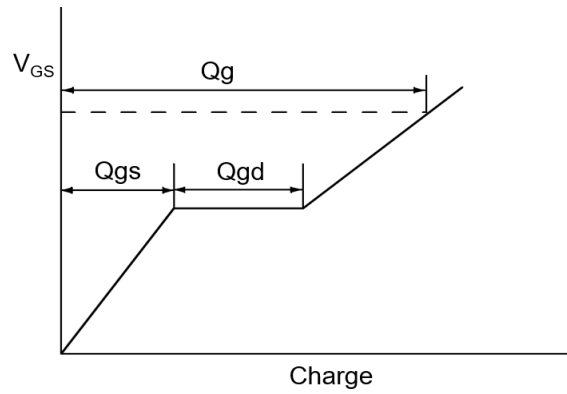
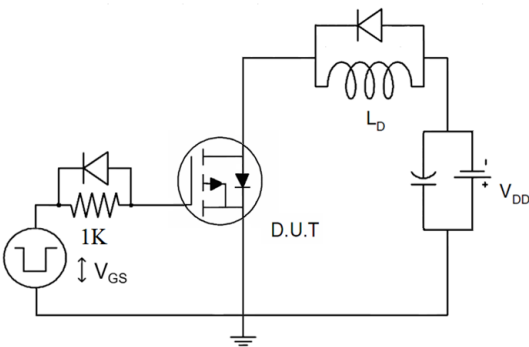


**Figure 7. Gate Charge Waveforms**

**Figure 8. Capacitance**

**Figure 9. Body-Diode Characteristics**

**Figure 10. Maximum Safe Operating Area**


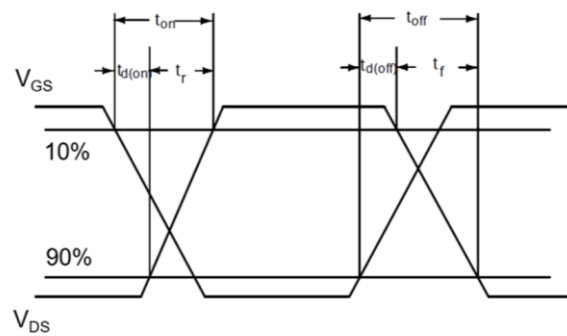
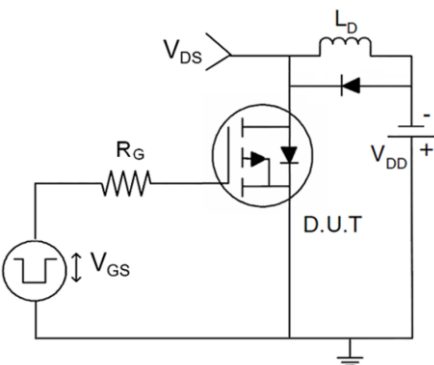
### 1) $E_{AS}$ Test Circuits

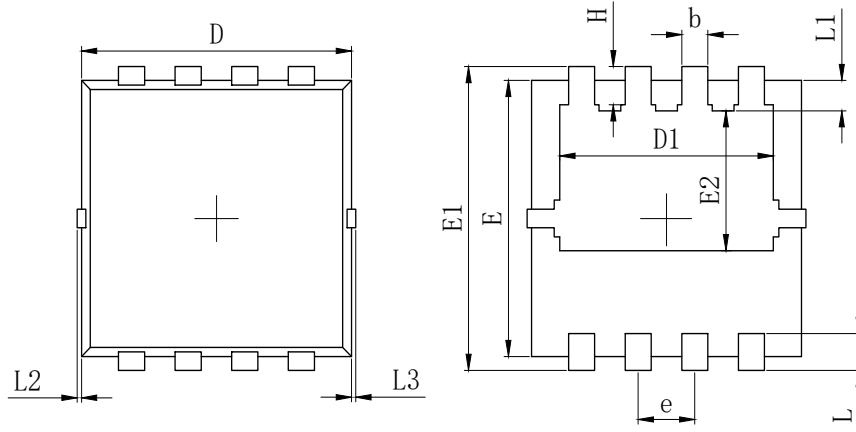


### 2) Gate Charge Test Circuit

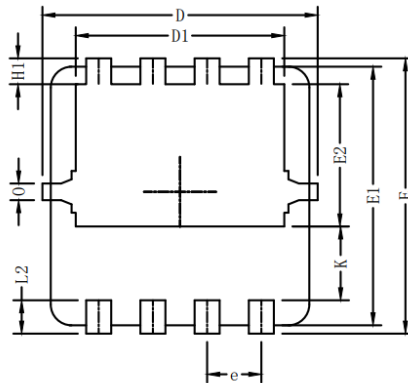
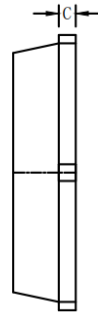
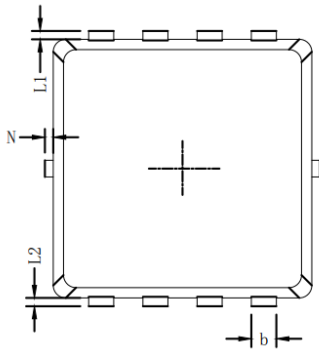
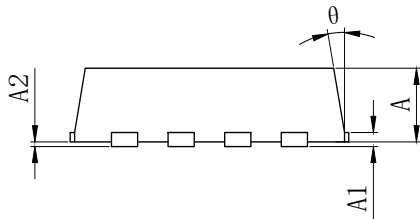


### 3) Switch Time Test Circuit



**•Dimensions (PDFN3.3×3.3)**


SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0°0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.320	1.520	1.720
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0°0.100		
L3	0°0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.60	1.70	1.80
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.78	0.88	0.98
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
0	0.2 REF.		


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