

### ● General Description

The AGM30P20M 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
-30V	17mΩ	-11A

### SOP8 Pin Configuration

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM30P20M	AGM30P20M	SOP8	330mm	12mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-30	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	-11	A
	Drain Current-Continuous(Tc=100°C)	-7.0	A
IDM (pluse)	Drain Current-Pulsed <b>(Note 2)</b>	-44	A
PD	Maximum Power Dissipation(Tc=25°C)	3.0	w
	Maximum Power Dissipation(Tc=100°C)	1.2	w
EAS	Avalanche energy <b>(Note 3)</b>	100	mJ
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>	---	41.6	°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	VGS=0V ID=-250μA	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-30V,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	--	-2.2	V
gFS	Forward Transconductance	VDS=-5V,ID=-4A	--	7	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-5A	--	17	21	mΩ
		VGS=-4.5V, ID=-4A	--	24.5	31	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-15V,VGS=0V, F=1MHZ	--	924	--	pF
Coss	Output Capacitance		--	135	--	pF
Crss	Reverse Transfer Capacitance		--	121	--	pF
Rg	Gate resistance	f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	ID =-5A VDS = -15V VGS =-10V RG = 3.0Ω	--	10	--	nS
tr	Turn-on Rise Time		--	18	--	nS
td(off)	Turn-Off Delay Time		--	130	--	nS
tf	Turn-Off Fall Time		--	90	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-15V, ID=-8A	--	20	--	nC
Qgs	Gate-Source Charge		--	1.9	--	nC
Qgd	Gate-Drain Charge		--	4.2	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-11	A
VSD	Forward on Voltage	VGS=0V,IS=-5A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-5A , dI/dt=100A/μs , TJ=25°C	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	nc

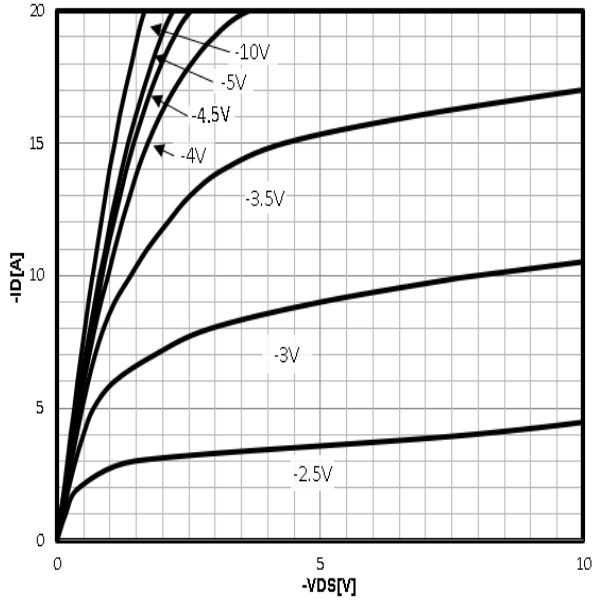
Notes 1.The maximum current rating is package limited.

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

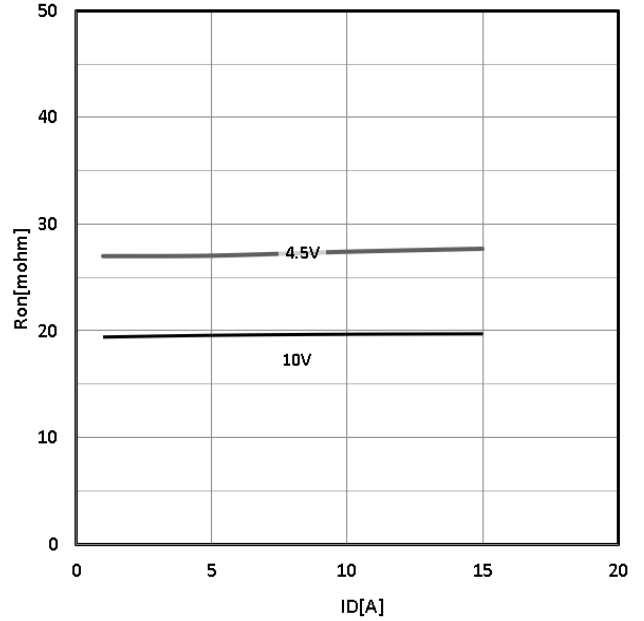
Notes 3.EAS condition: T<sub>J</sub>=25°C ,VDD=-15V,Vgs=-10V,ID=-20A, L=0.5mH,RG=25ohm

### Characteristics Curve:

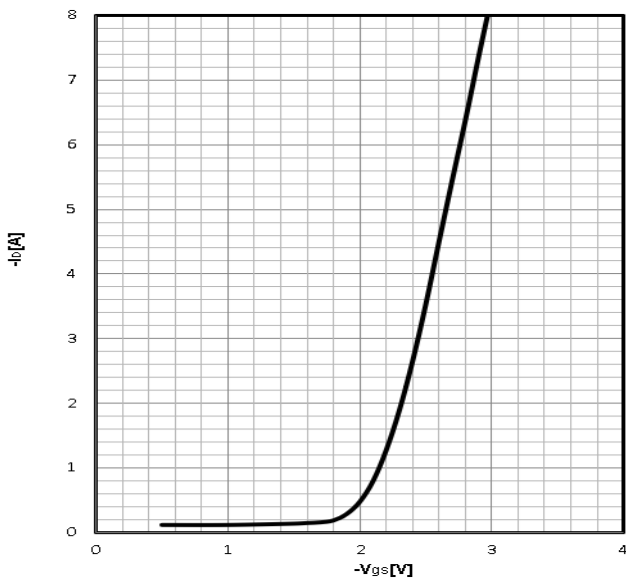
**Typ. output characteristics**  
 $-I_D = f(-V_{DS})$



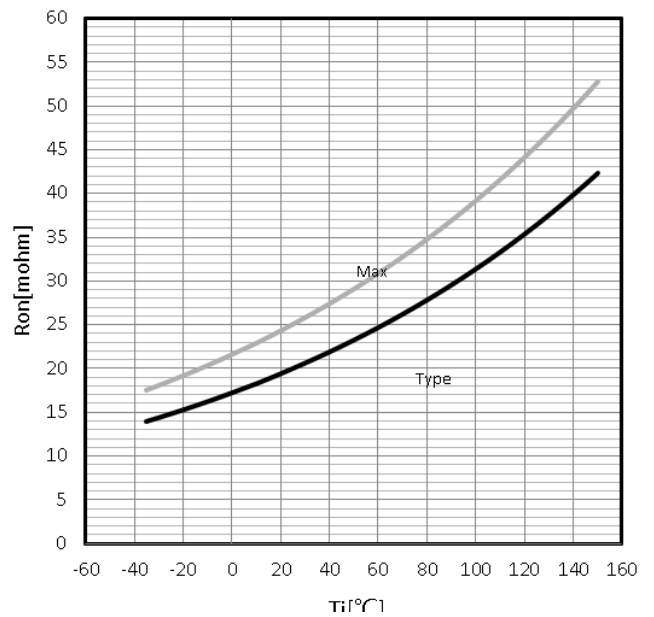
**Typ. drain-source on resistance**  
 $R_{DS(on)} = f(-I_D)$



**Typ. transfer characteristics**  
 $-I_D = f(-V_{GS})$

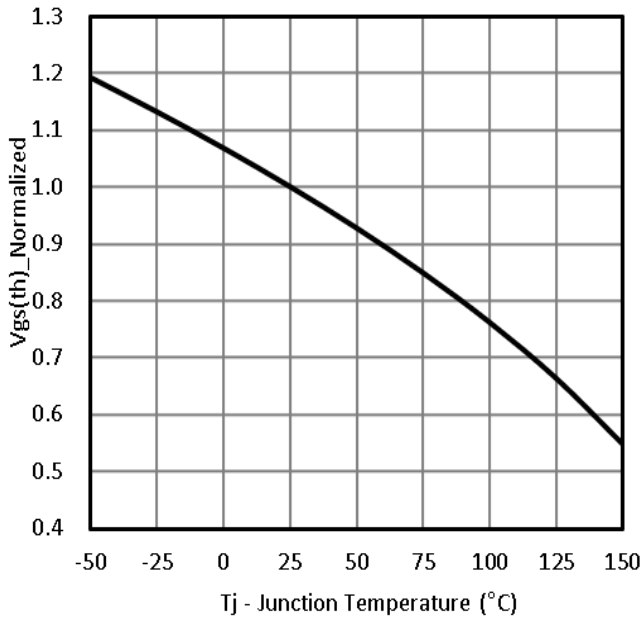


**Drain-source on-state resistance**  
 $R_{DS(on)} = f(T_j); I_D = -8A; V_{GS} = -10V$

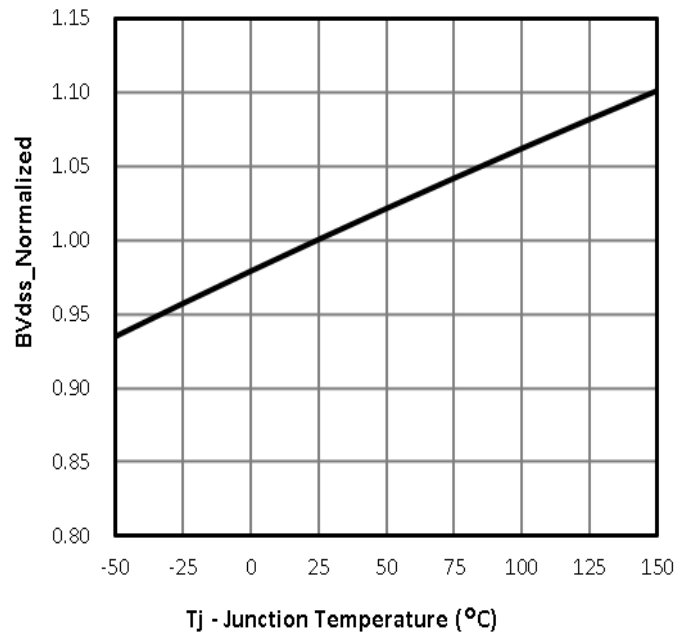


**Gate Threshold Voltage**

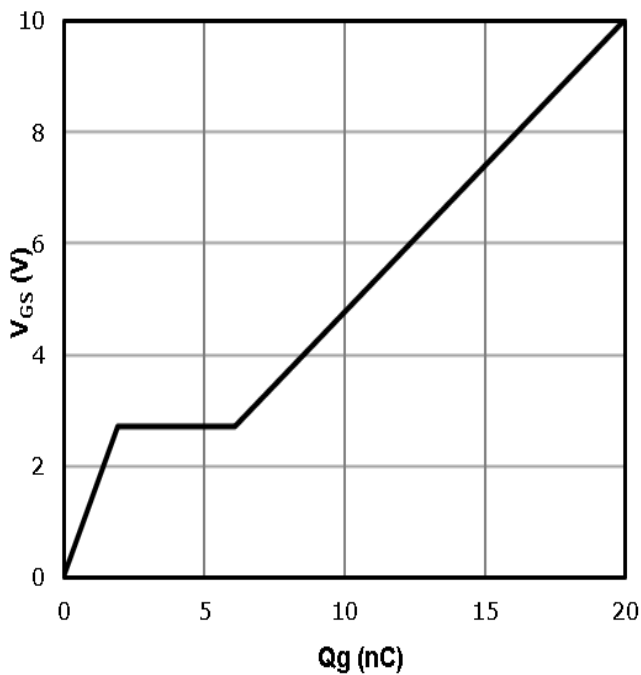
$$-V_{TH}=f(T_j); I_D=-250\mu A$$


**Drain-source breakdown voltage**

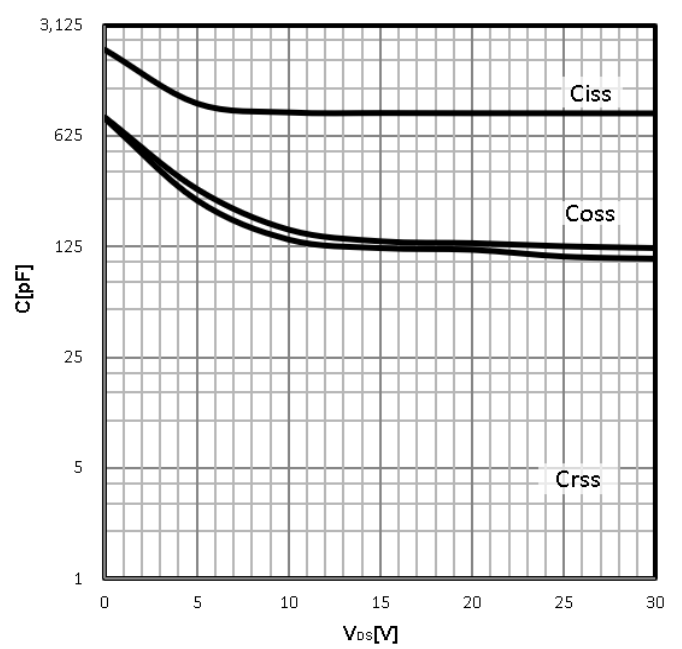
$$-V_{BR(DSS)}=f(T_j); I_D=-250\mu A$$


**Typ. gate charge**

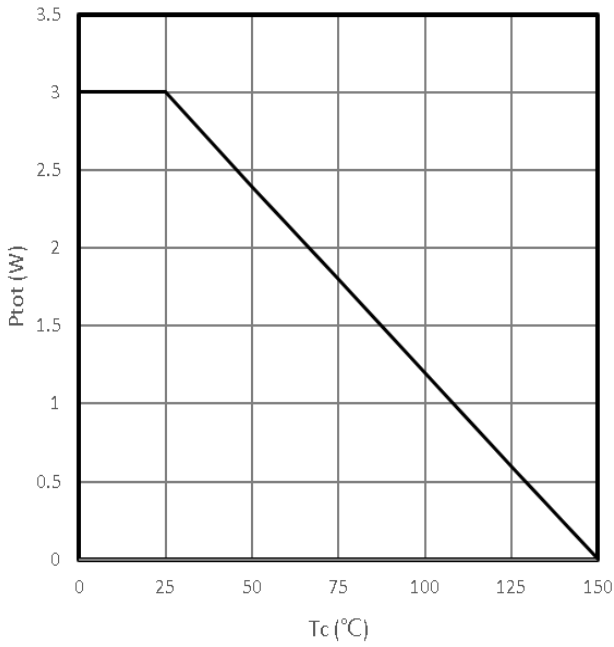
$$-V_{GS}=f(Q_g); I_D=-8A$$


**Typ. capacitances**

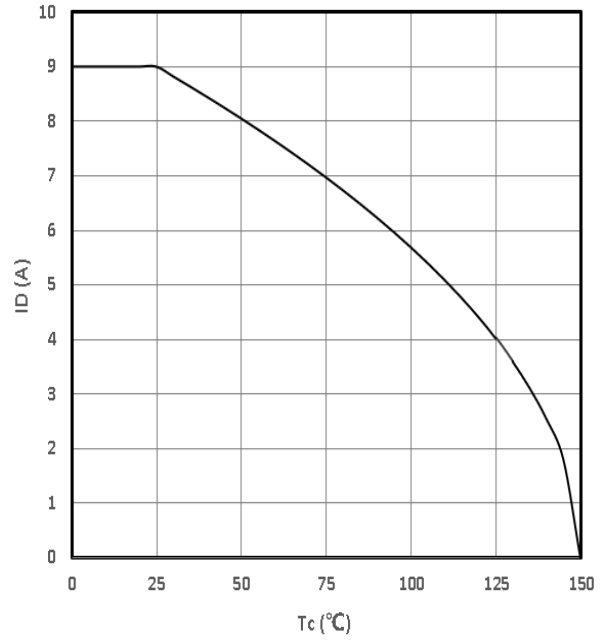
$$C=f(-V_{DS}); V_{GS}=0V; f=1MHz$$



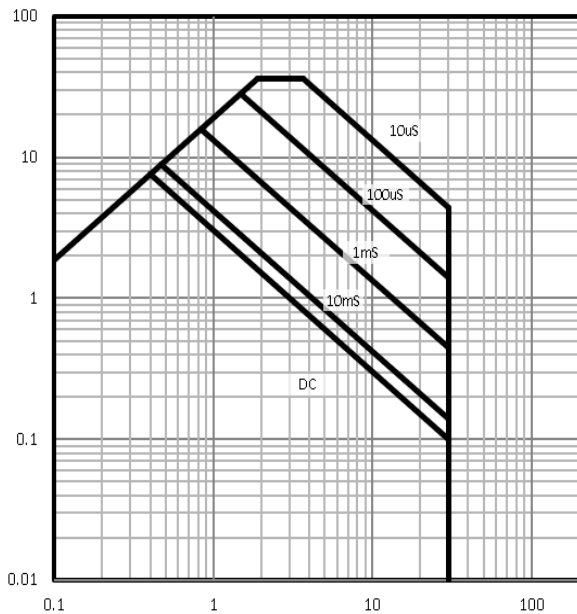
**Power Dissipation**  
 $P_{tot}=f(T_c)$



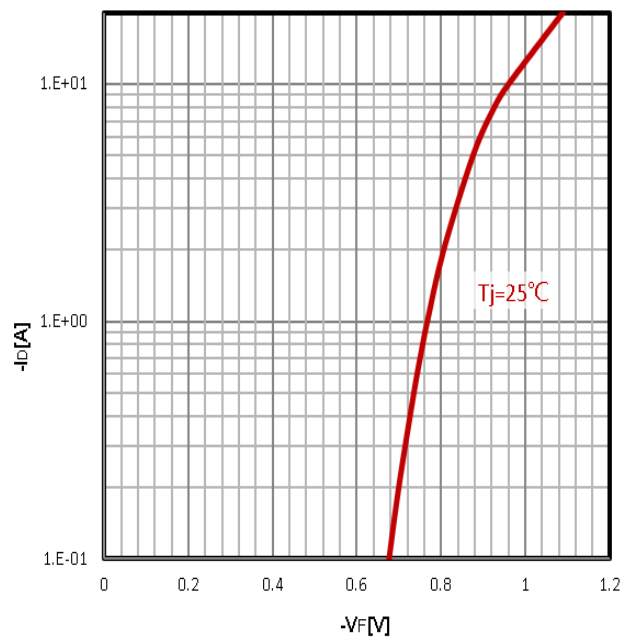
**Maximum Drain Current**  
 $-I_D=f(T_c)$



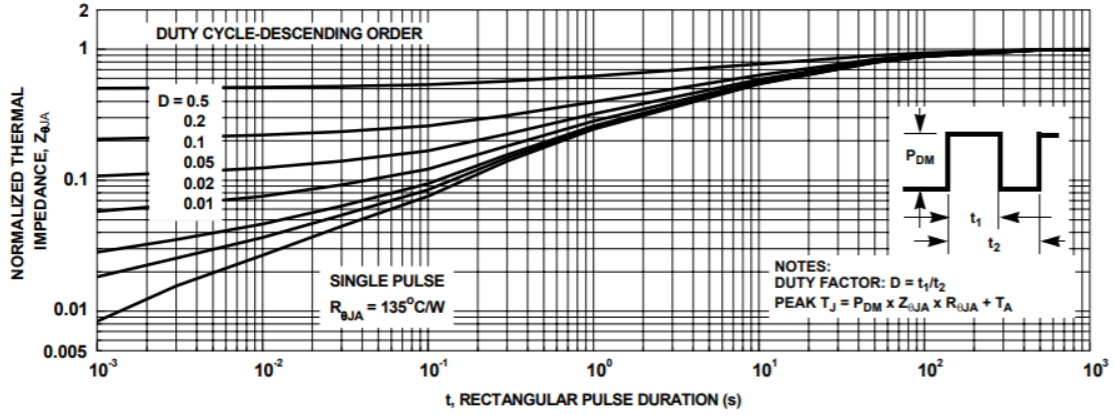
**Safe operating area**  
 $-I_D=f(-V_{DS})$



**Body Diode Forward Voltage Variation**  
 $-I_F=f(-V_{DS})$

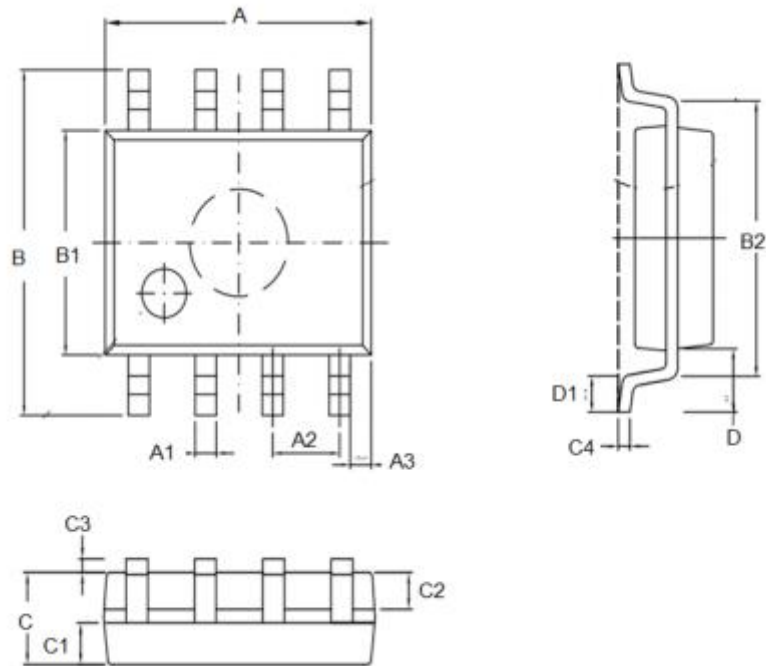


**Max. transient thermal impedance**  
 $Z_{thJC} = f(t_p)$



**•Dimensions(SOP8)**

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62




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