

General Description

The AGM20P07EL 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

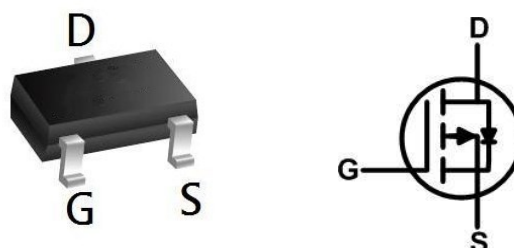
Application

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

Product Summary

BVDSS	RDSON	ID
-20V	16mΩ	-6.5A

SOT-23-3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
20P07	AGM20P07EL	SOT-23-3	178mm	8mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-20	V
VGS	Gate-Source Voltage (VDS=0V)	±12	V
ID	Drain Current-Continuous(Ta=25°C) (Note 1)	-6.5	A
	Drain Current-Continuous(Ta=70°C)	-5.8	A
IDM (pulse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-26	A
PD	Maximum Power Dissipation(Ta=25°C)	1.7	w
	Maximum Power Dissipation(Ta=70°C)	1.08	w
EAS	Avalanche energy (Note 3)	--	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) ¹	---	74	°C/W

Table 3. Electrical Characteristics (TA=25°C 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=±8V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-0.45	-0.6	-1.0	V
gFS	Forward Transconductance	VDS=-10V,ID=-3A	--	9	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-4.5V, ID=-4.0A	--	16	22	mΩ
		VGS=-2.5V, ID=-3.0A	--	21	33	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-10V,VGS=0V, VDS=0V,f=1.0MHz	--	980	--	pF
Coss	Output Capacitance		--	450	--	pF
Crss	Reverse Transfer Capacitance		--	250	--	Ω
Rg	Gate resistance		--	--	--	--
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V, VDS=-4.5V, ID=-5.0A,RG=1Ω	--	12	--	nS
tr	Turn-on Rise Time		--	35	--	nS
td(off)	Turn-Off Delay Time		--	30	--	nS
tf	Turn-Off Fall Time		--	10	--	nC
Qg	Total Gate Charge	VGS=-10V, VDS=-4.5V,ID=-5A	--	7.8	--	nC
Qgs	Gate-Source Charge		--	1.2	--	nC
Qgd	Gate-Drain Charge			1.6		
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)	VGS=0V,IS=-1.6A	--	--	-6.5	A
VSD	Forward on Voltage	IF=-1.6A , 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°C

Typical Performance Characteristics

Figure 1: Output Characteristics

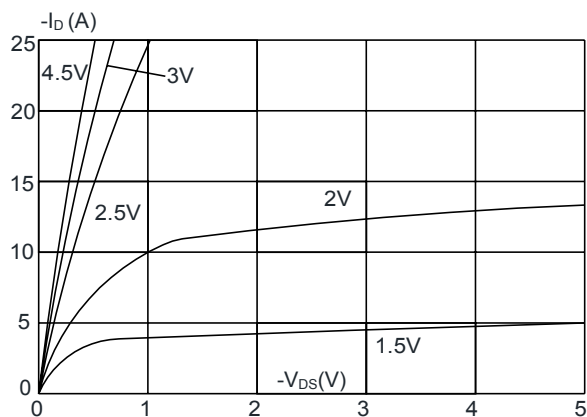


Figure 2: Typical Transfer Characteristics

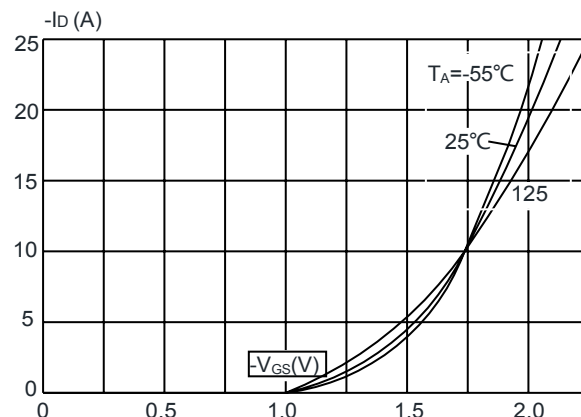


Figure 3: On-resistance vs. Drain Current

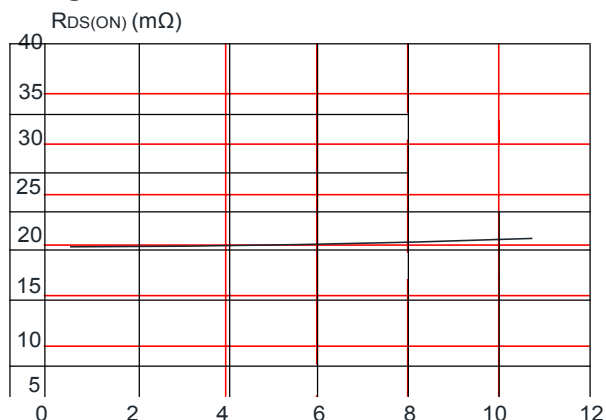


Figure 4: Body Diode Characteristics

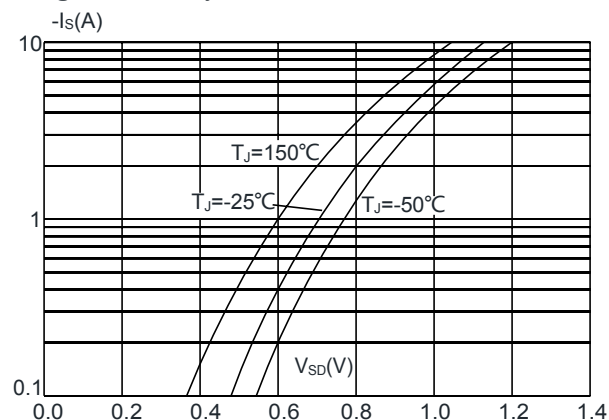


Figure 5: Gate Charge Characteristics

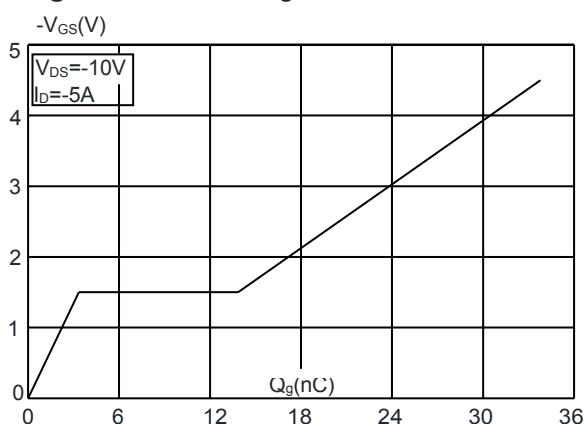


Figure 6: Capacitance Characteristics

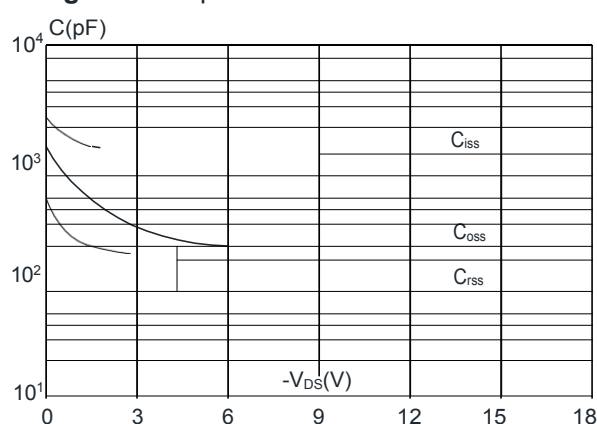


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

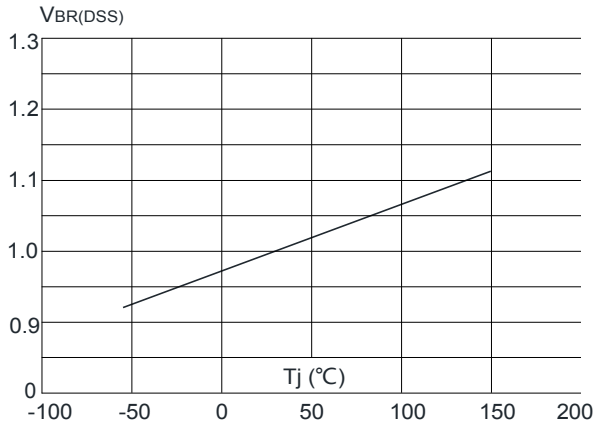


Figure 8: Normalized on Resistance vs. Junction Temperature

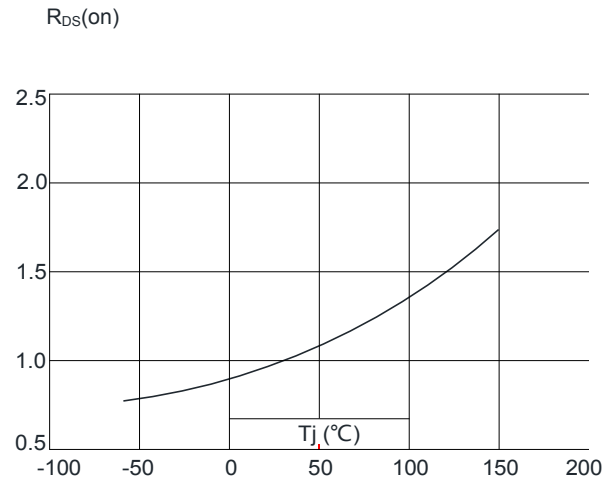


Figure 9: Maximum Safe Operating Area

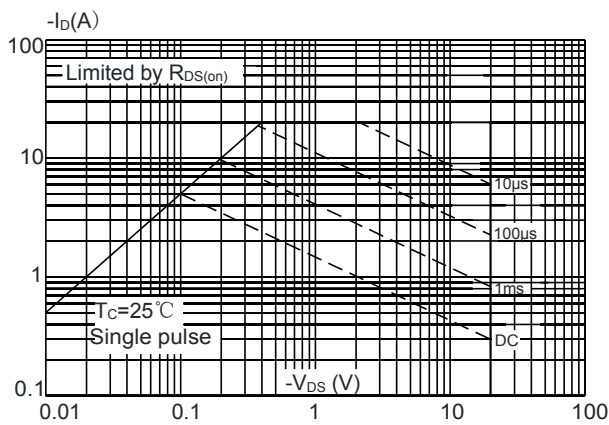


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

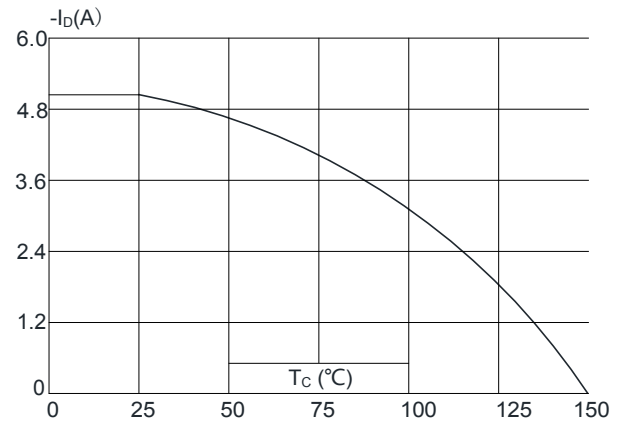
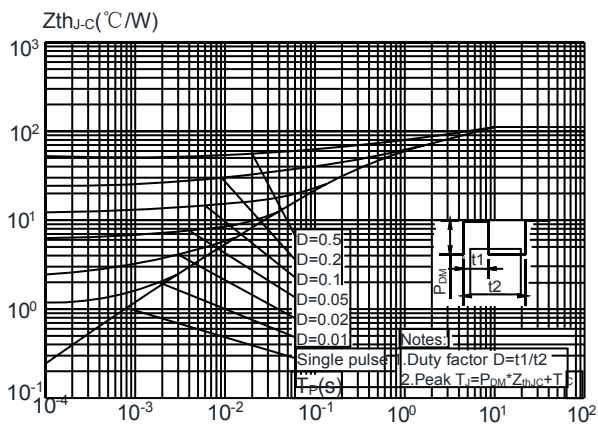
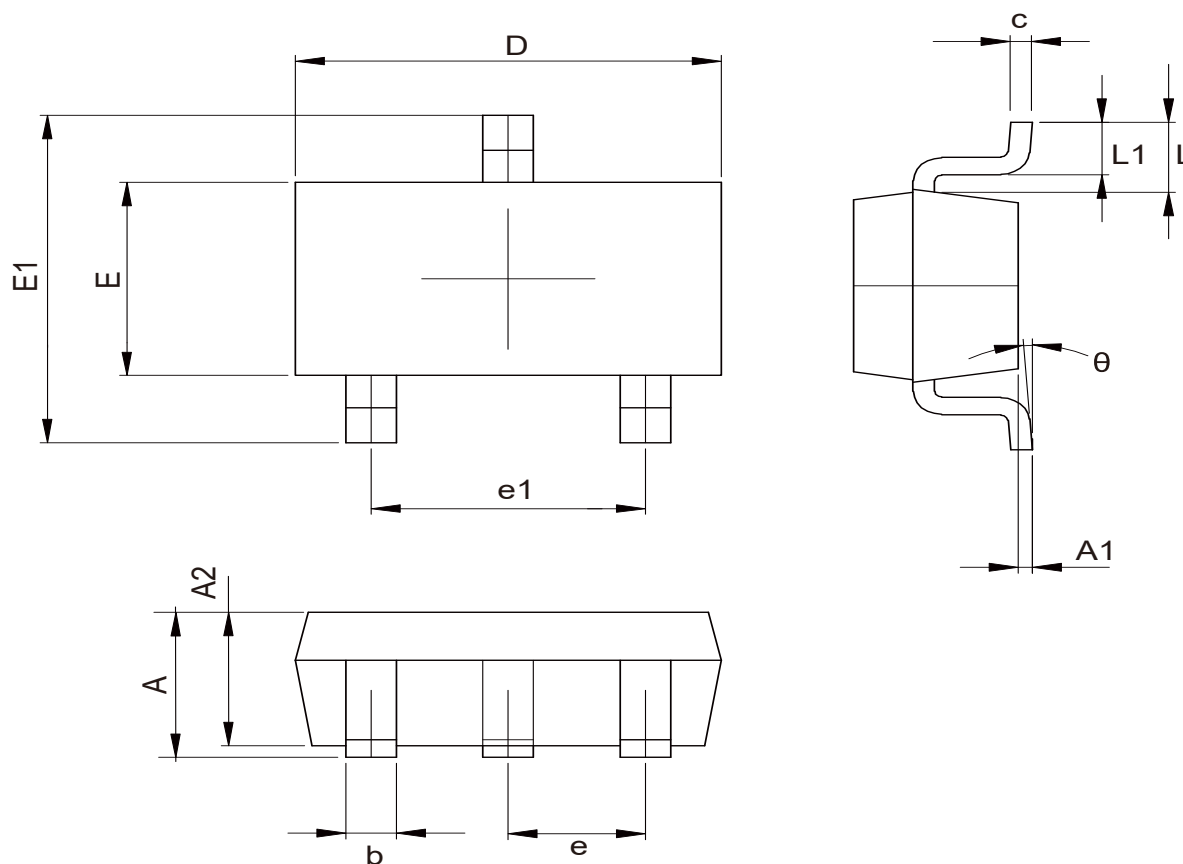


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



SOT-23-3L PACKAGE OUTLINE DIMENSIONS



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	NOM	MAX
A	1.050	---	1.300
A1	0.000	---	0.200
A2	1.050	---	1.200
b	0.300	0.400	0.500
c	0.100	---	0.200
D	2.820	2.900	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
e	0.950TYP		
e1	1.800	1.900	2.000
L	0.6REF		
L1	0.300	0.450	0.600
θ	0°	--	8°

Unit:mm

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