

### ● General Description

The AGM60P35F 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	RDS(ON)	ID
-60V	20mΩ	-52A

### TO-220F Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM60P35F	AGM60P35F	TO-220F	----	----	1000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-60	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	-52	A
	Drain Current-Continuous(Tc=100°C)	-24	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	-120	A
PD	Maximum Power Dissipation(Tc=25°C)	50	w
	Maximum Power Dissipation(Tc=100°C)	20	w
EAS	Avalanche energy <b>(Note 3)</b>	276	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>	---	--	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	2.5	°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	-60	--	--	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	-1.0	-1.6	-2.5	V
gFS	Forward Transconductance	VDS=5V, ID=-6A	--	23	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-15A	--	20	26	mΩ
		VGS=-4.5V, ID=-6A	--	26	34	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-30V, VGS=0V, F=1MHZ	--	4550	--	pF
Coss	Output Capacitance		--	175	--	pF
Crss	Reverse Transfer Capacitance		--	138	--	pF
Rg	Gate resistance	f=1.0MHz	--	--	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=-10V, VDS=-30V, ID=-1A, RL=15Ω RGEN=2.5Ω	--	66	--	nS
tr	Turn-on Rise Time		--	99	--	nS
td(off)	Turn-Off Delay Time		--	38	--	nS
tf	Turn-Off Fall Time		--	10	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-15V, ID=-12A	--	70	--	nC
Qgs	Gate-Source Charge		--	19	--	nC
Qgd	Gate-Drain Charge		--	10	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-52	A
VSD	Forward on Voltage	VGS=0V, IS=-12A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-12A , dI/dt=100A/μs , TJ=25°C	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	nc

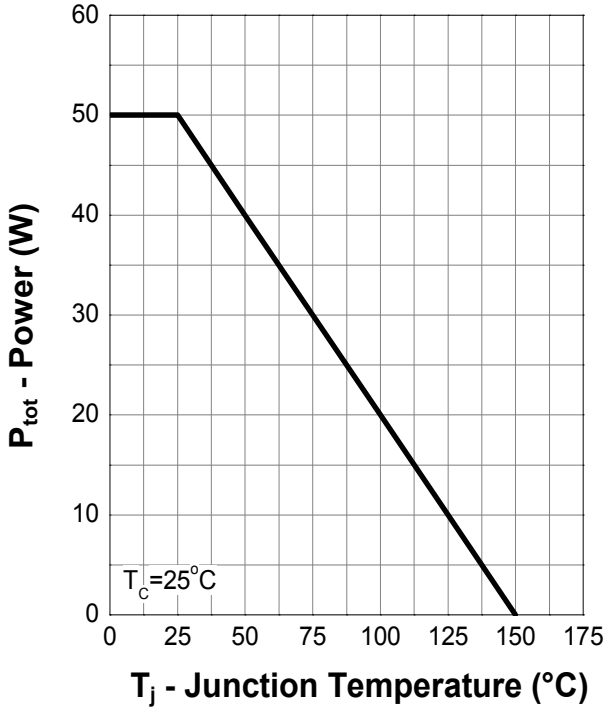
Notes 1. The maximum current rating is package limited.

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

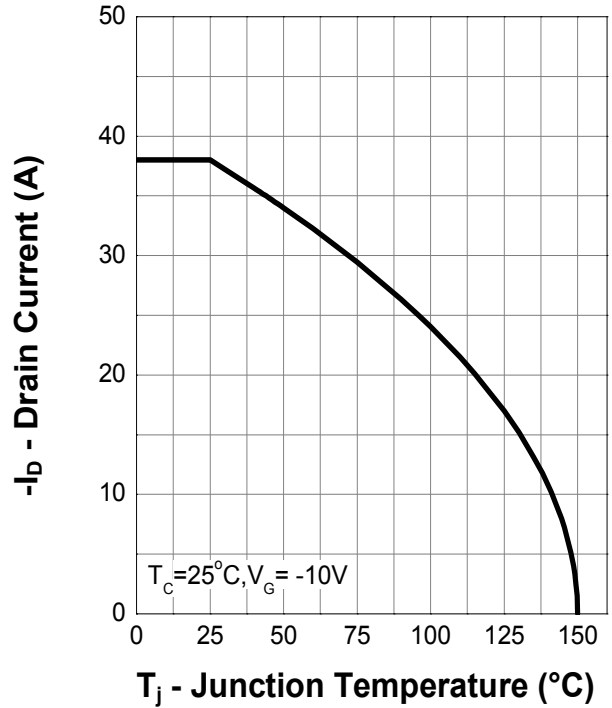
Notes 3. EAS condition: TJ=25°C

## Typical Characteristics (Cont.)

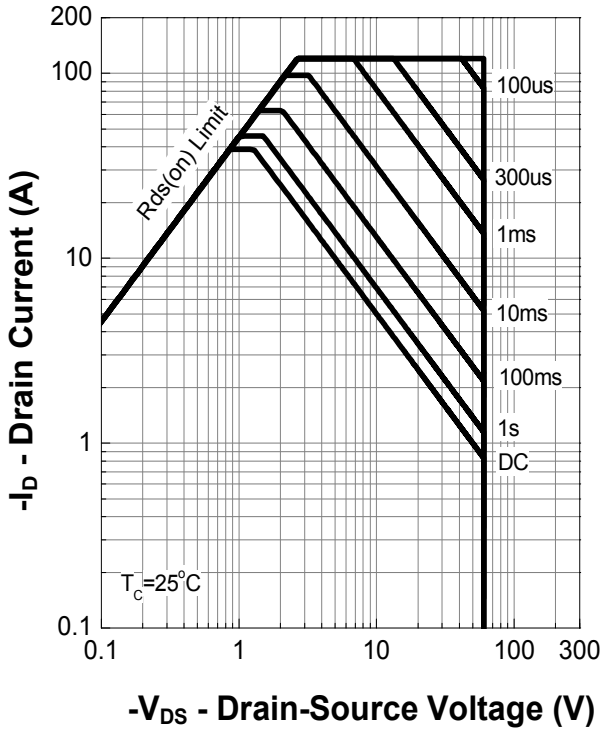
### Power Capability



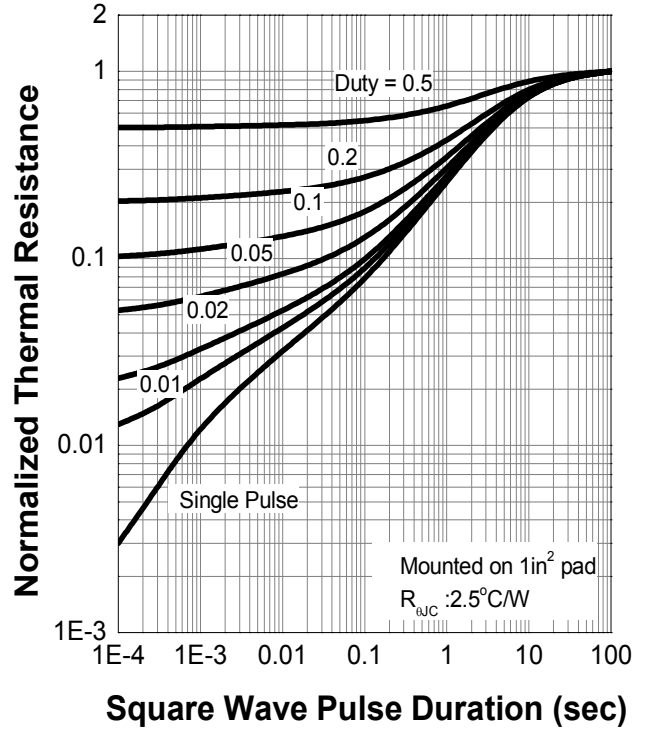
### Current Capability



### Safe Operation Area

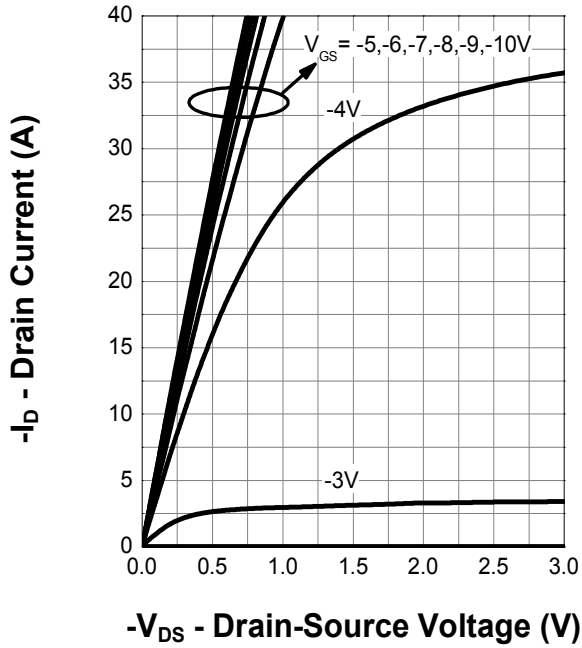


### Transient Thermal Impedance

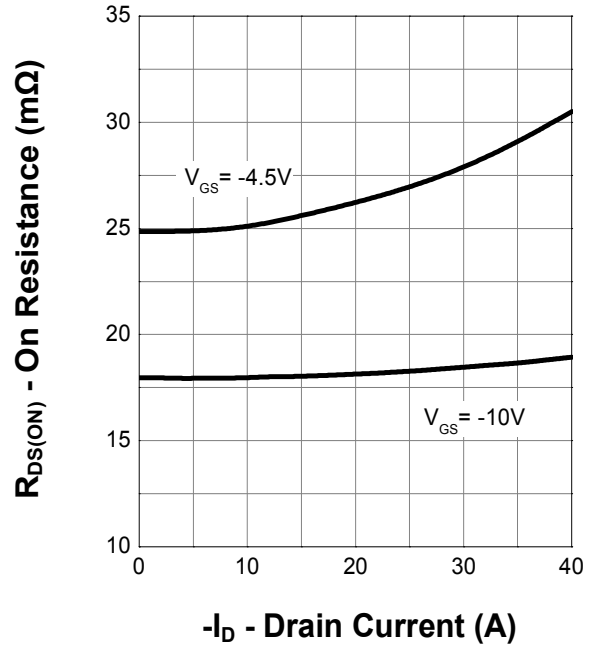


# Typical Characteristics (Cont.)

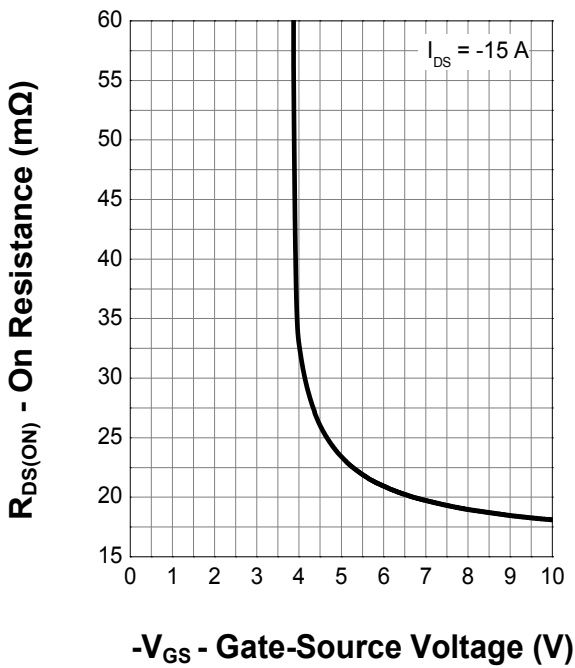
### Output Characteristics



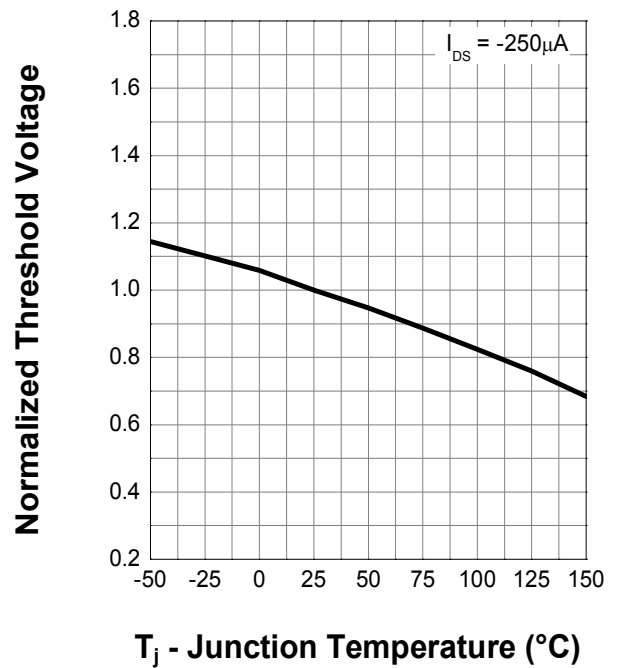
### Drain-Source On Resistance



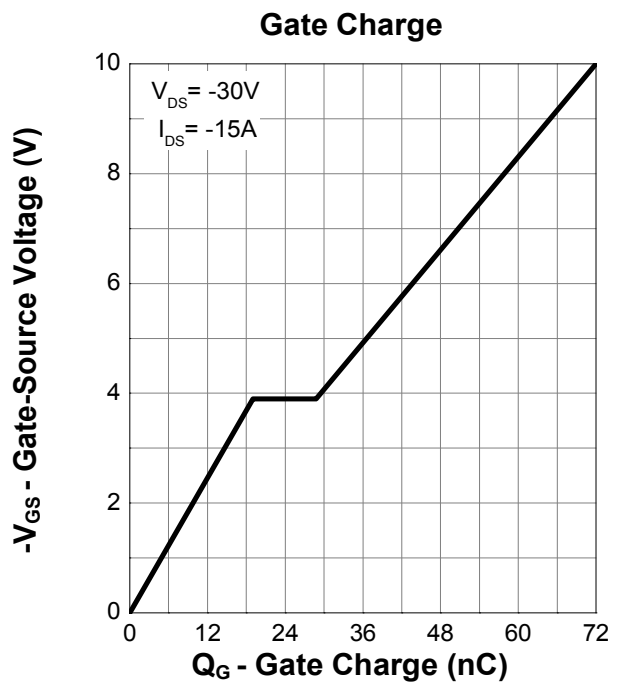
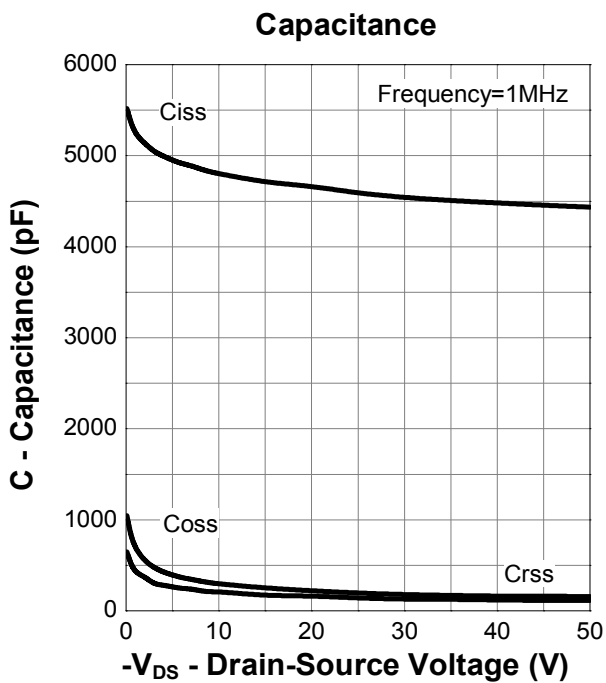
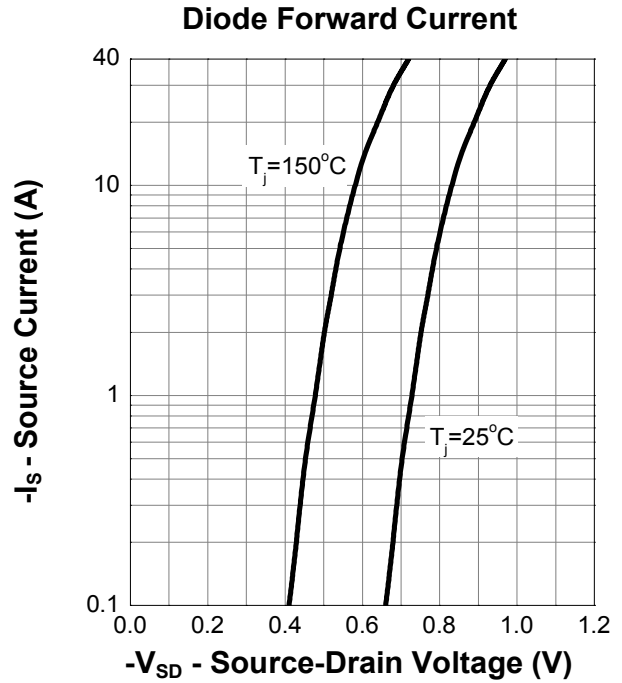
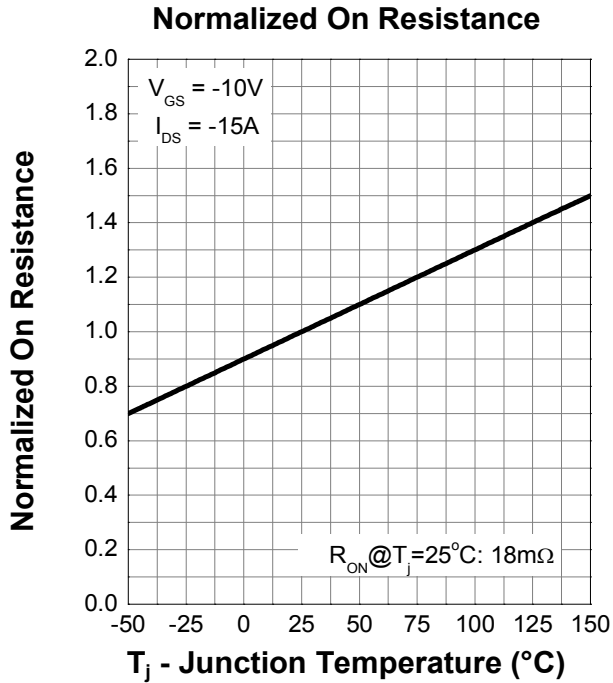
### Transfer Characteristics



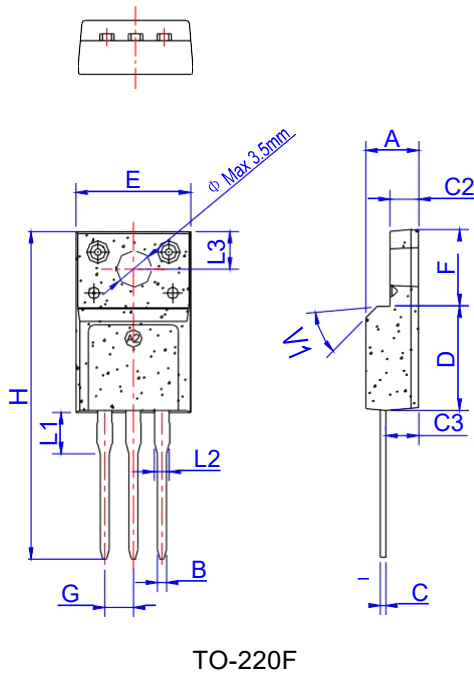
### Normalized Threshold Voltage



## Typical Characteristics (Cont.)



## Package Mechanical Data



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.50		4.90	0.177		0.193
B	0.74	0.80	0.83	0.029	0.031	0.033
C	0.47		0.65	0.019		0.026
C2	2.45		2.75	0.096		0.108
C3	2.60		3.00	0.102		0.118
D	8.80		9.30	0.346		0.366
E	9.80		10.4	0.386		0.410
F	6.40		6.80	0.252		0.268
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.63			0.143	
L2	1.14		1.70	0.045		0.067
L3		3.30			0.130	
V1		45°			45°	

## Package Information -TO-220F

OUTLINE	TUBE (PCS)	INNER BOX (PCS)	PER CARTON (PCS)
TUBE	50	1,000	5,000


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