

● General Description

The AGM15T06F 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	RDSON	ID
150V	6.5mΩ	140A

TO-220F Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM15T06F	AGM15T06F	TO-220F	----	----	1000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	150	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	140	A
	Drain Current-Continuous(Tc=100°C)	95	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	500	A
PD	Maximum Power Dissipation(Tc=25°C)	260	w
	Maximum Power Dissipation(Tc=100°C)	100	w
EAS	Avalanche energy (Note 3)	600	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	---	60	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	0.5	°C/W

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

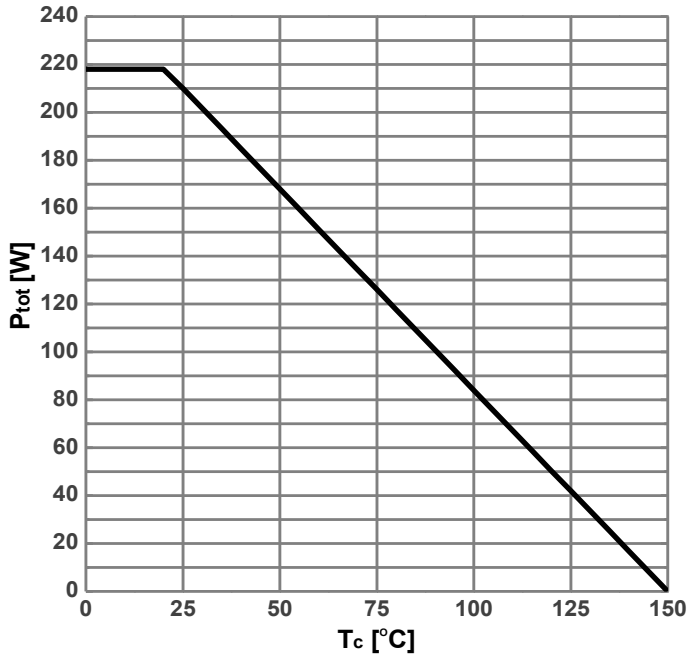
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	150	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=150V, VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	2.0	2.8	4.0	V
gFS	Forward Transconductance	VDS=5V, ID=20A	--	18	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	6.5	7.5	mΩ
		VGS=4.5V, ID=15A	--	--	--	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=75V, VGS=0V, F=1MHZ	--	5025	--	pF
Coss	Output Capacitance		--	410	--	pF
Crss	Reverse Transfer Capacitance		--	10	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V, f=1.0MHz	--	--	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V, VDS=75V, ID=80A, RGEN=6Ω	--	25	--	nS
tr	Turn-on Rise Time		--	31	--	nS
td(off)	Turn-Off Delay Time		--	60	--	nS
tf	Turn-Off Fall Time		--	20	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=75V, ID=80A	--	19	--	nC
Qgs	Gate-Source Charge		--	11	--	nC
Qgd	Gate-Drain Charge		--	12	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	140	A
VSD	Forward on Voltage	VGS=0V, IS=80A	--	--	1.5	V
trr	Reverse Recovery Time	IF=80A , dI/dt=100A/μs , TJ=25°C	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	nc

Notes 1.The maximum current rating is package limited.

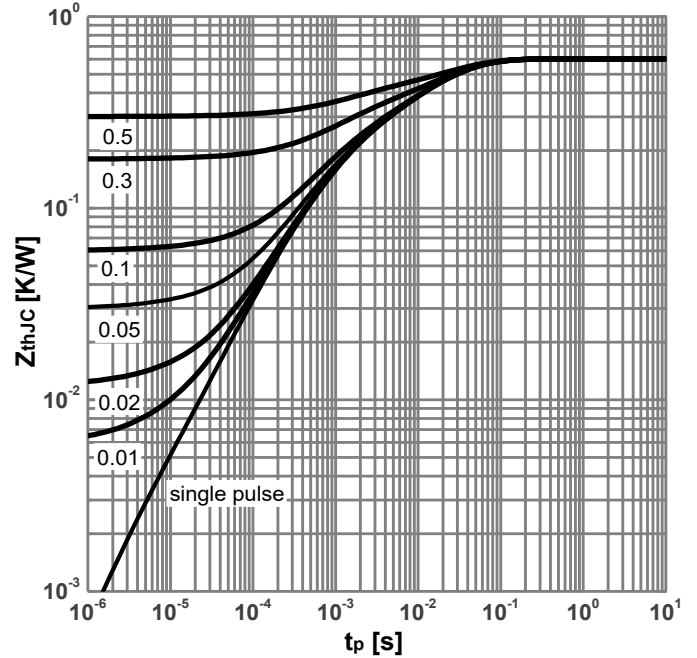
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25°C

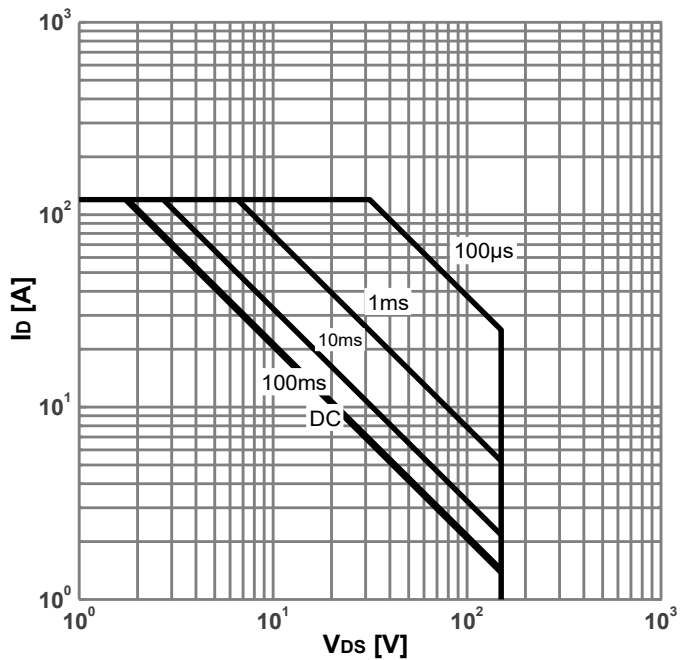
Electrical characteristics diagrams

Diagram 1: Power dissipation


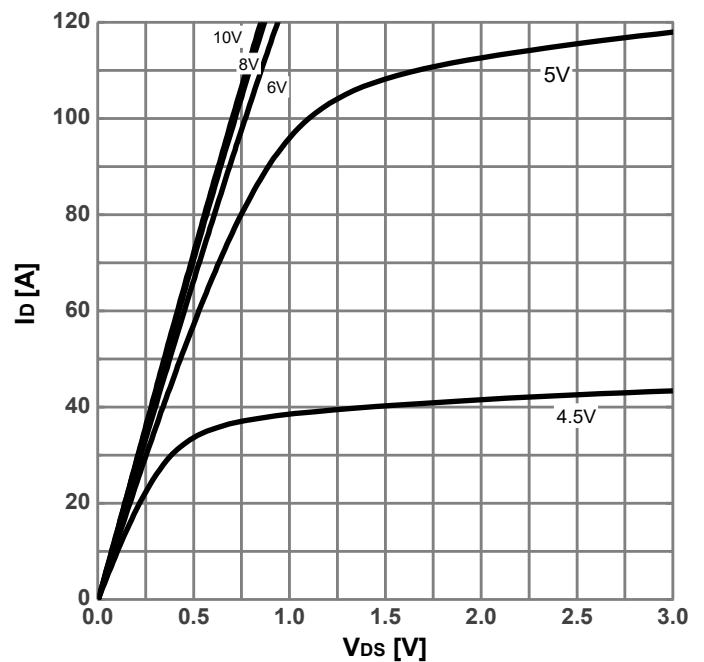
$$P_{tot}=f(T_c)$$

Diagram 2: Max. transient thermal impedance


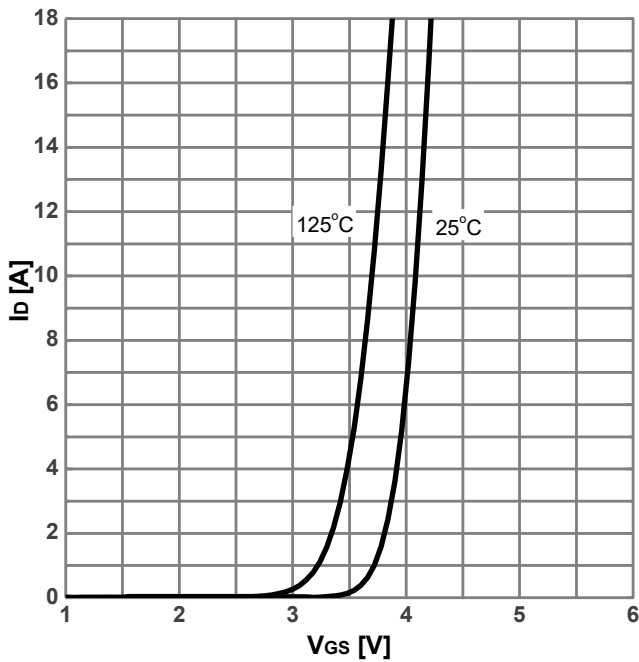
$$Z_{thJC}=f(t_p); \text{ parameter: } D= t_p/T$$

Diagram 3: Safe operating area


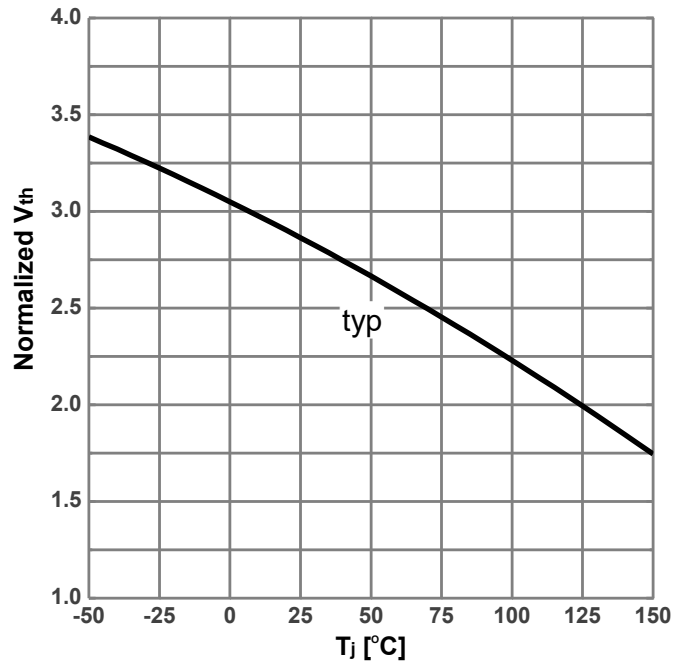
$$I_D=f(V_{DS}); T_J=25^\circ\text{C}; D=0; \text{ parameter: } t_p$$

Diagram 4: Typ. output characteristics


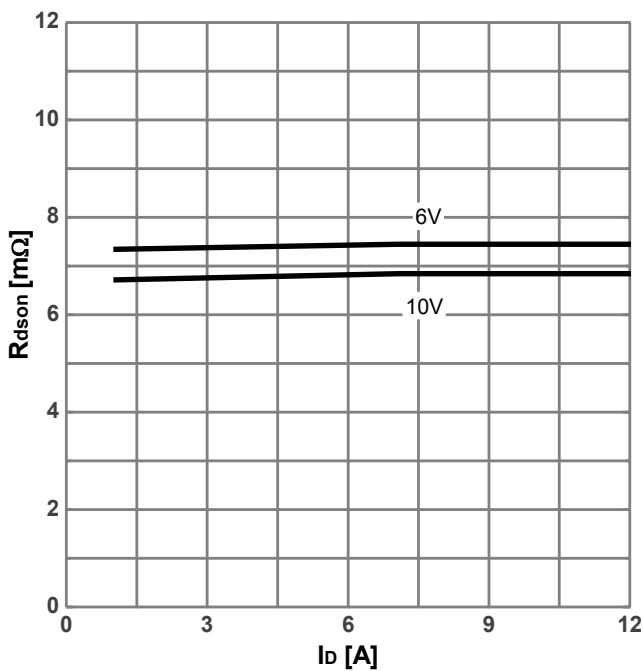
$$I_D=f(V_{DS}); T_J=25^\circ\text{C}; \text{ parameter: } V_{GS}$$

Diagram 5: Typ. transfer characteristics


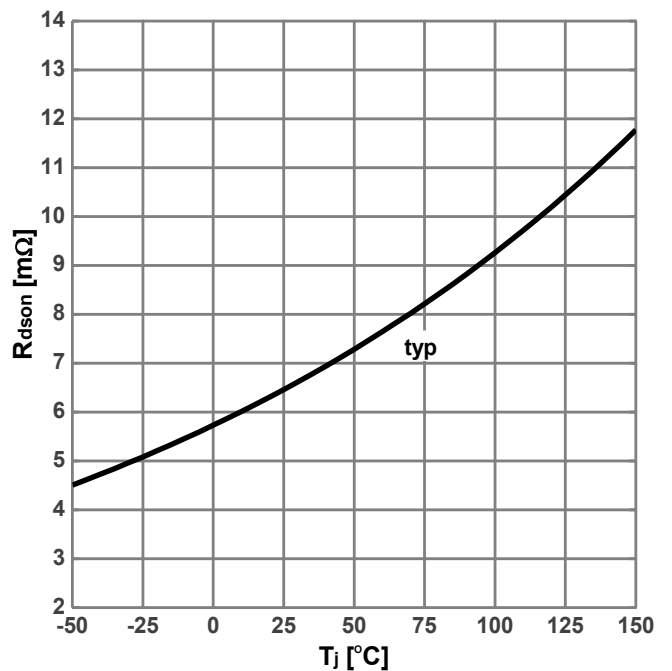
$$I_D = f(V_{GS}); V_{DS} = 5V; \text{parameter: } T_j$$

Diagram 6: Gate threshold voltage vs. Junction temperature


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

Diagram 7: On-state resistance vs. Drain current


$$R_{DS(on)} = f(I_D); T_j = 25^\circ C; \text{parameter: } V_{GS}$$

Diagram 8: On-state resistance vs. Junction temperature


$$R_{DS(on)} = f(T_j); I_D = 20A; V_{GS} = 10V$$

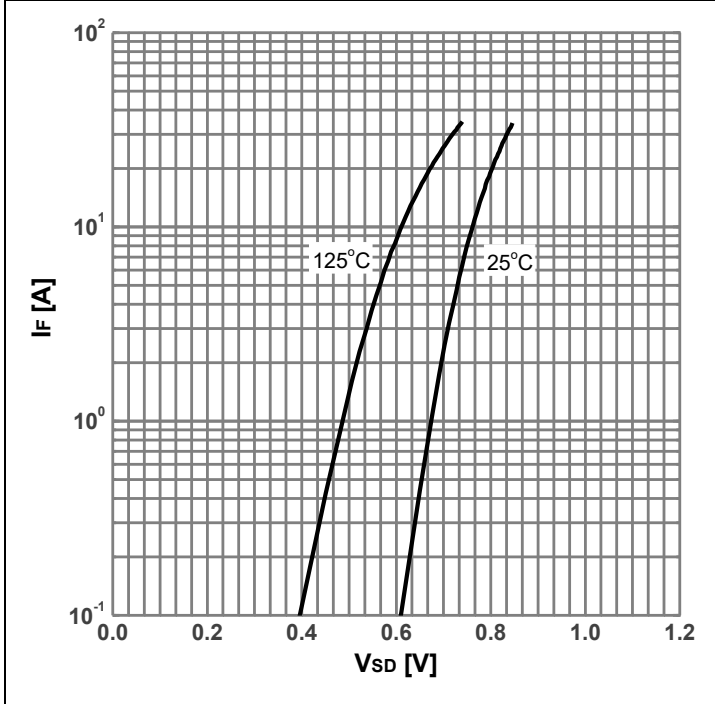
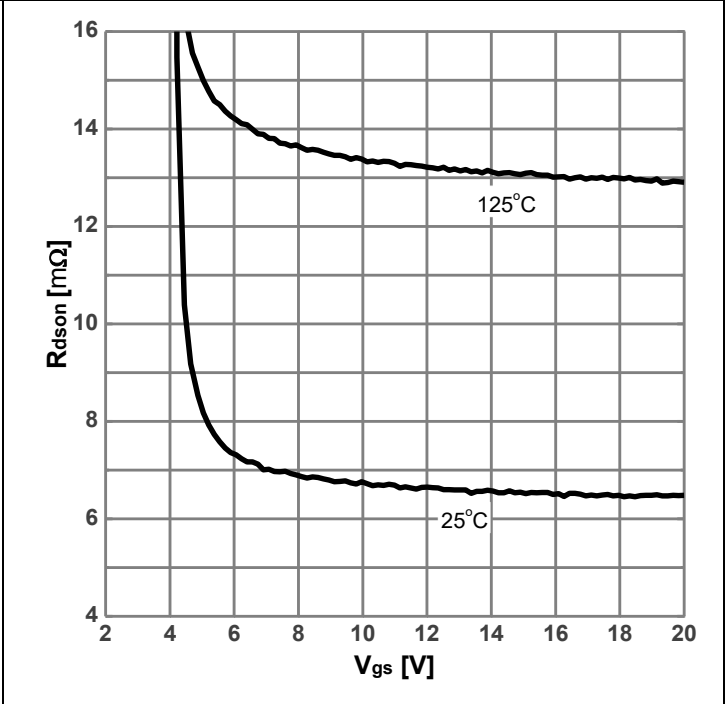
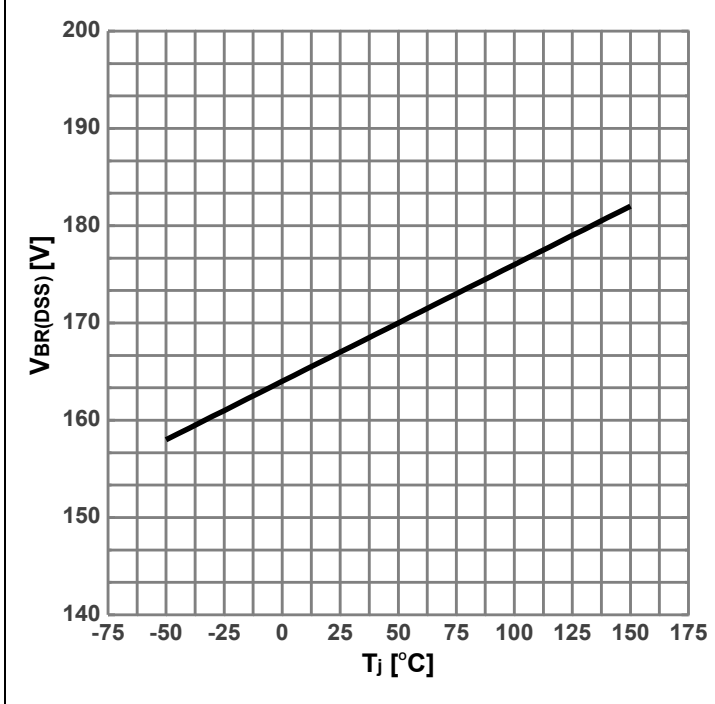
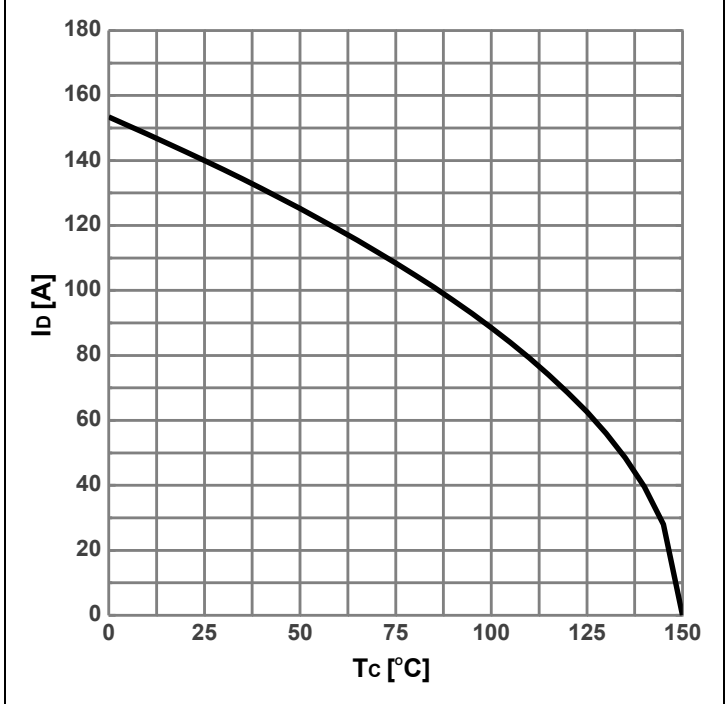
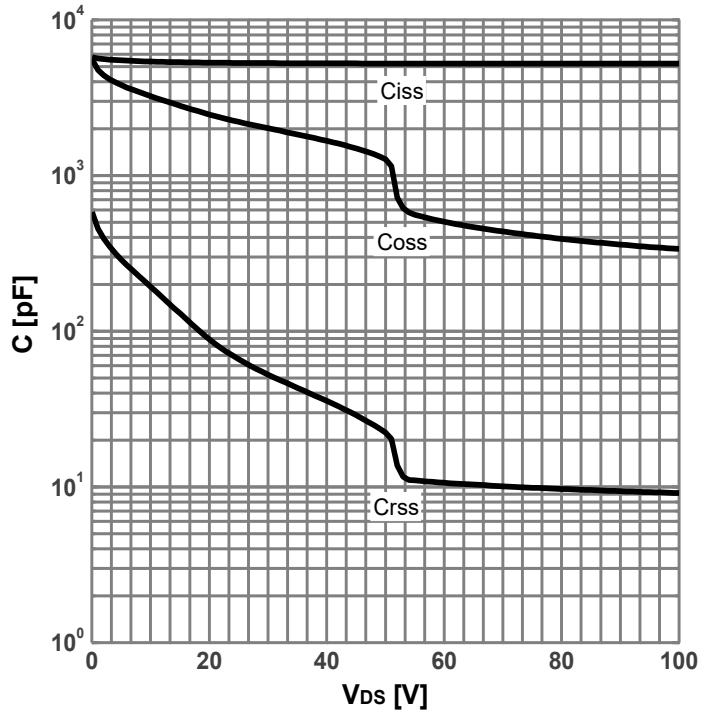
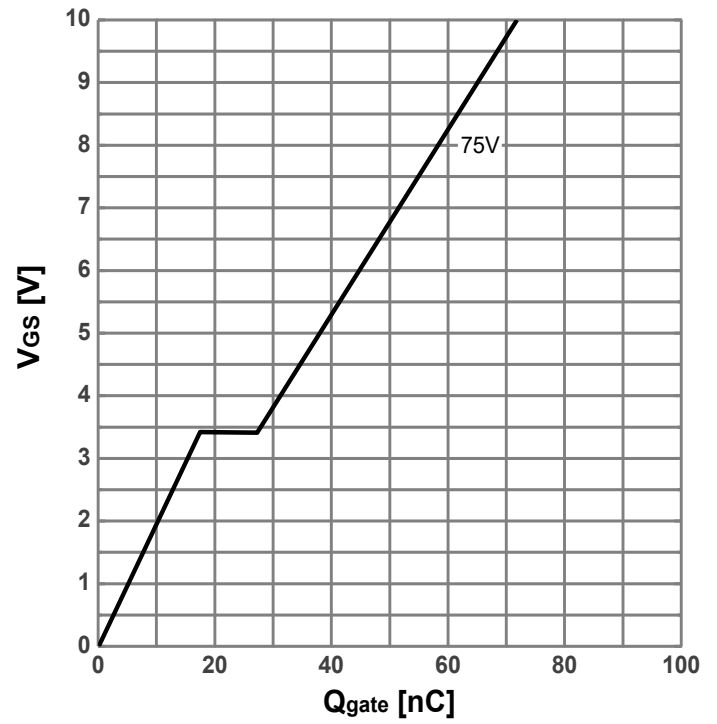
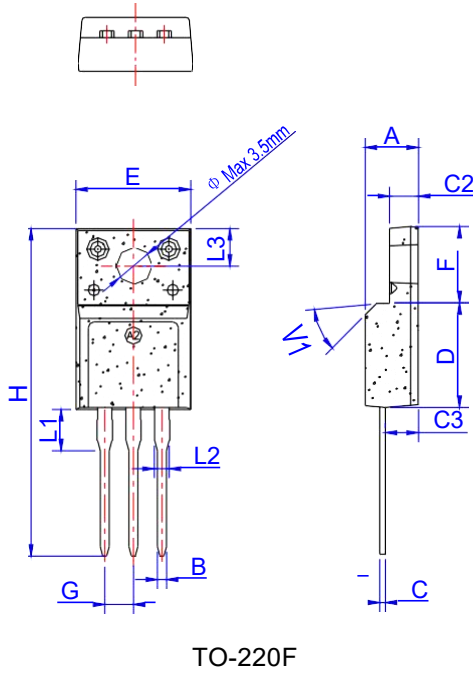
Diagram 9: Forward characteristics of reverse diode

 $I_F = f(V_{SD});$ parameter: T_j
Diagram 10: On-state resistance vs. V_{GS} characteristics

 $R_{DS(on)} = f(V_{GS}); I_D = 20A;$ parameter: T_j
Diagram 11: Breakdown Voltage Variation vs. Temperature

 $V_{BR(DSS)} = f(T_j); I_D = 250\mu A$
Diagram 12: Maximum Drain Current

 $I_D = f(T_c); V_{GS} = 10V$

Diagram 13: Typ. capacitances

 $C=f(V_{DS}); V_{GS}=0V; f=1MHz$
Diagram 14: Typ. gate charge

 $V_{GS}=f(Q_{gate}); I_D=20A \text{ pulsed}; V_{DS}=75V$

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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