

● General Description

The AGM15T06T 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	6.3mΩ	160A

TO-247 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM15T06T	AGM15T06T	TO-247	----	----	450

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)	160	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)	250	w
	Maximum Power Dissipation(Tc=100°C)	100	w
EAS	Avalanche energy (Note 3)	520	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

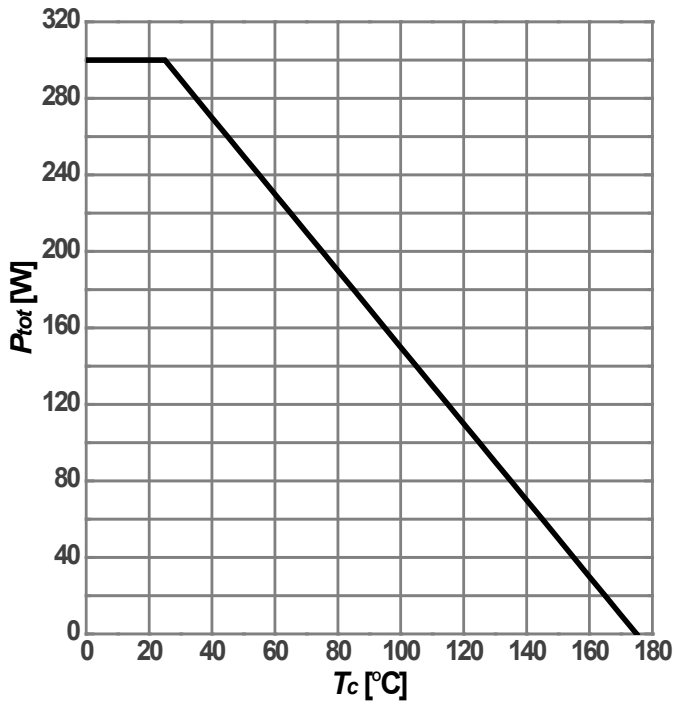
Table 3. Electrical Characteristics (TA=25°C unless otherwise noted)

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	--	6.3	7.5	mΩ
		VGS=4.5V, ID=15A	--	7.5	12	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)		--	--	160	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

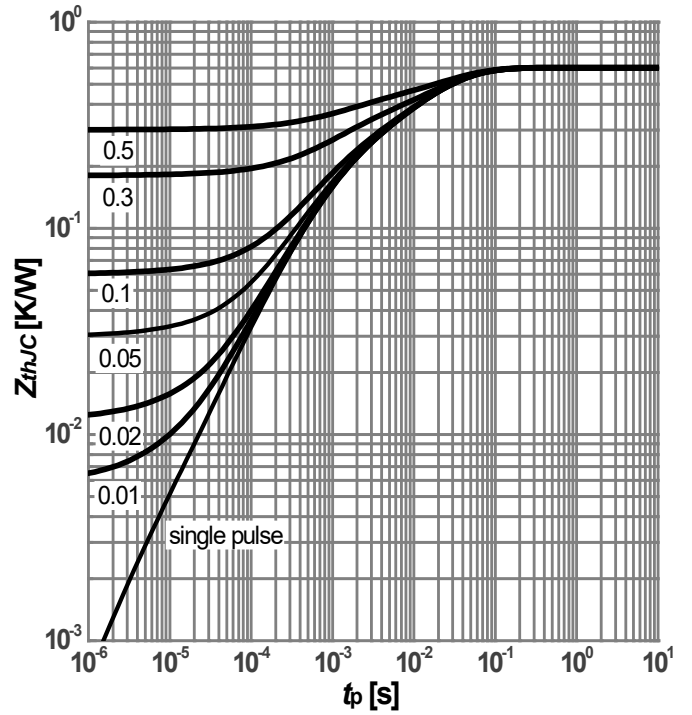
Notes 1.The maximum current rating is package limited.

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

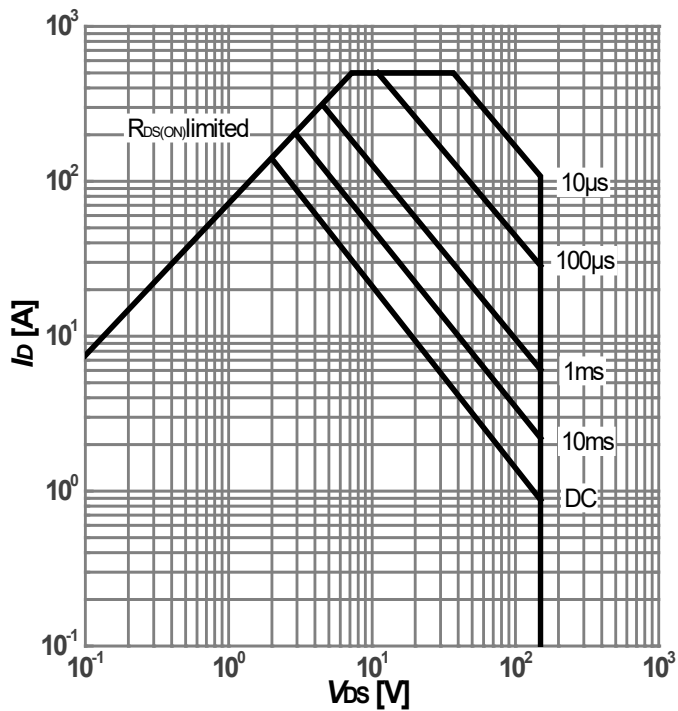
Notes 3.EAS condition: TJ=25°C

Diagram 1: Power dissipation


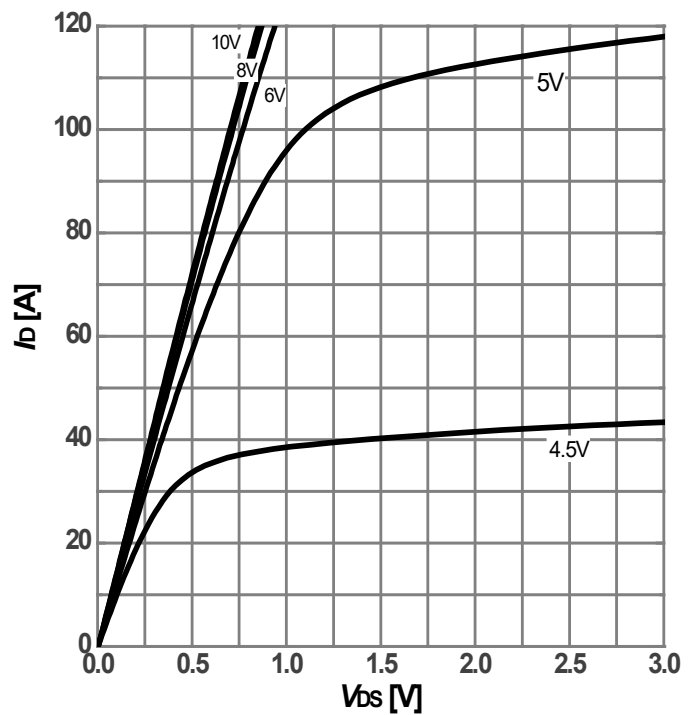
$$P_{tot}=f(T_C)$$

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


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

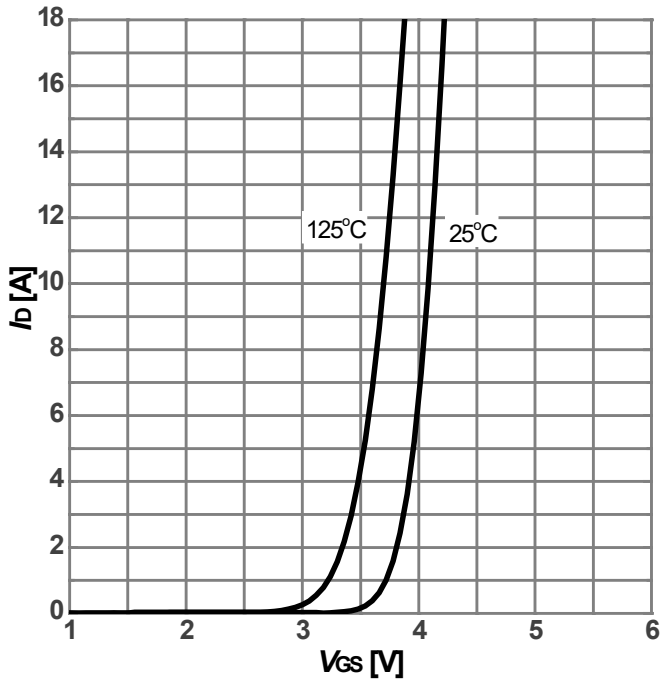
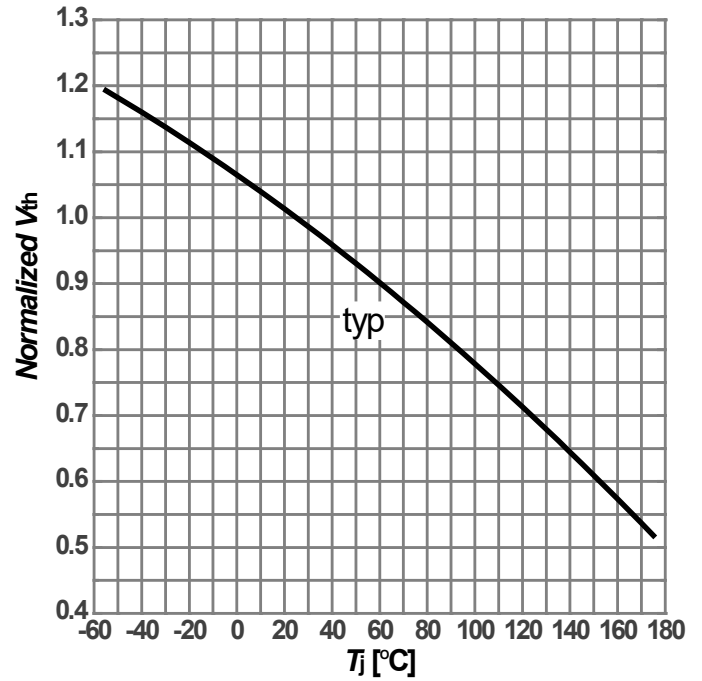
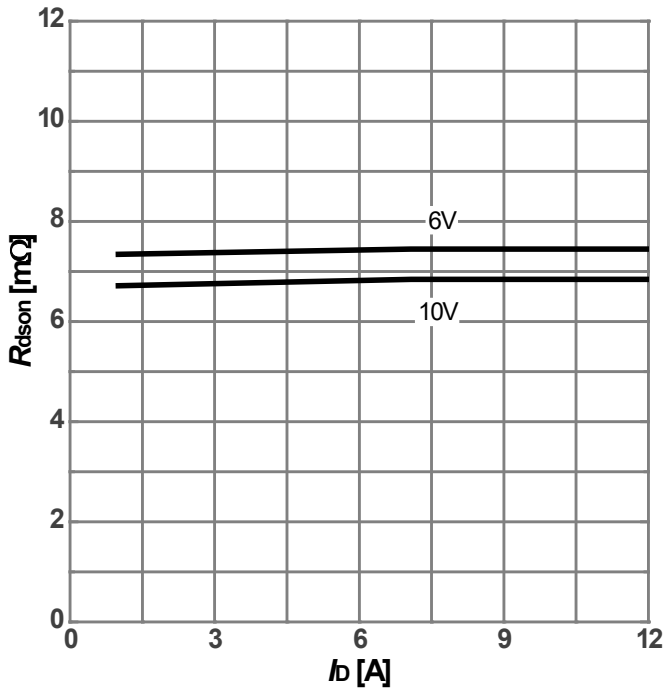
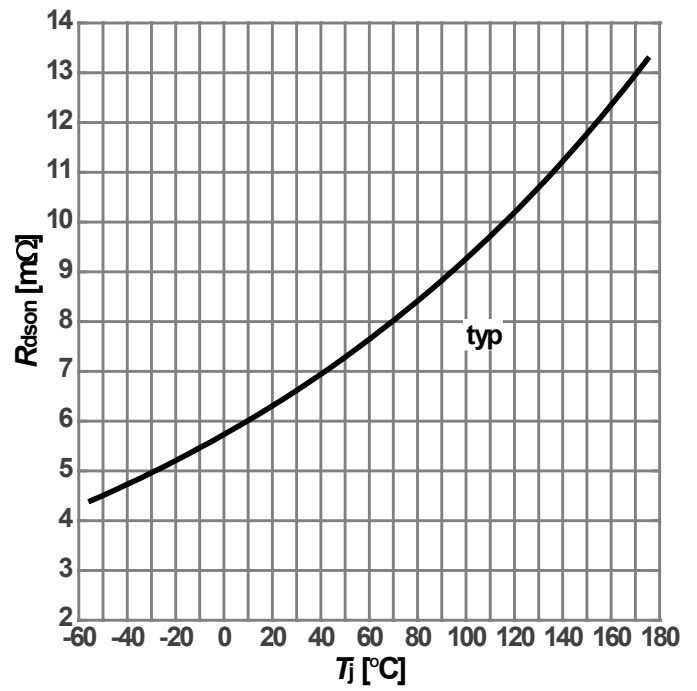
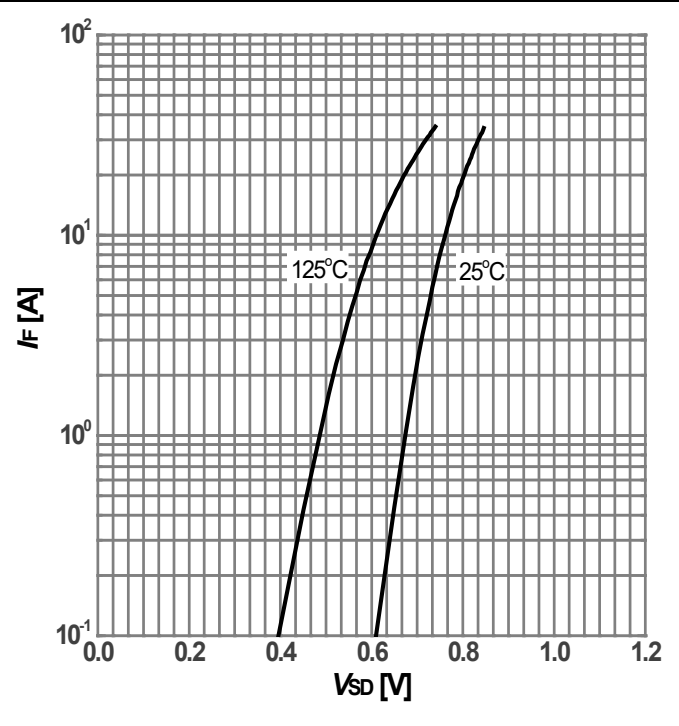
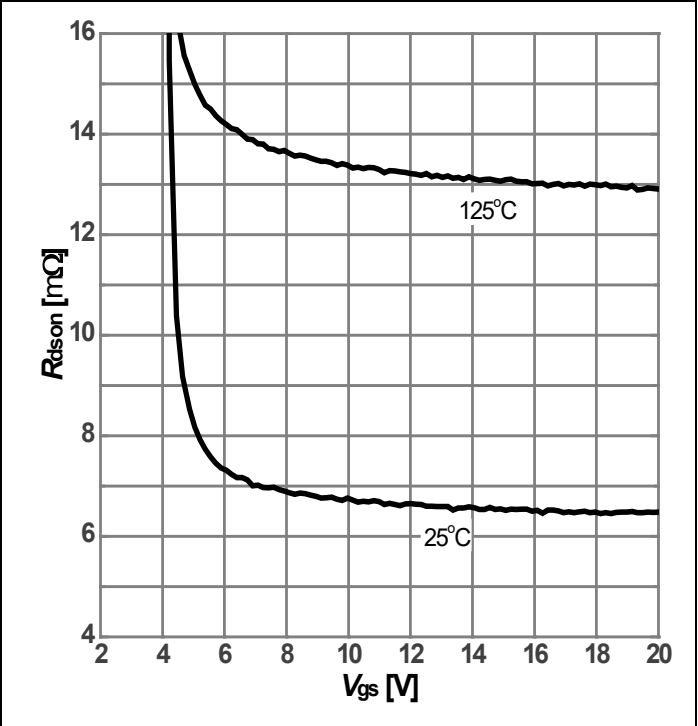
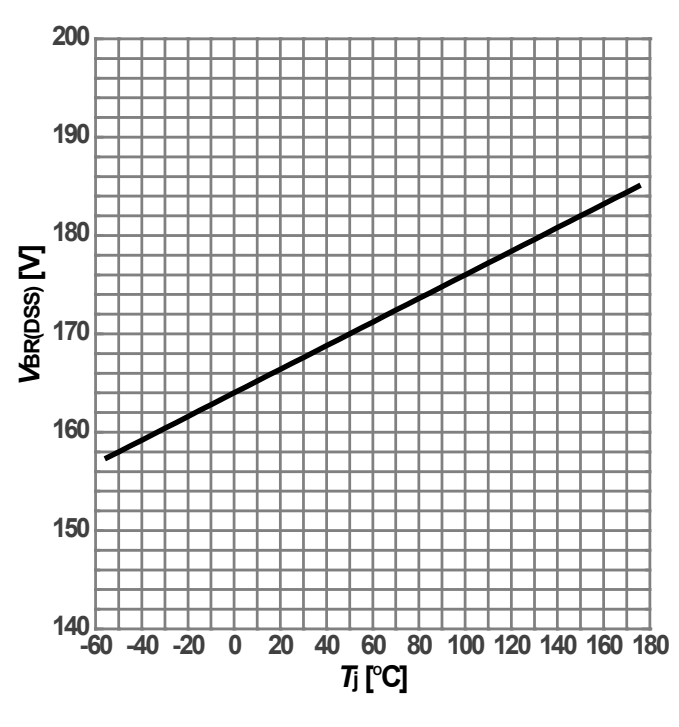
Diagram 5: Typ. transfer characteristics

 $I_D = f(V_{GS}); V_{DS} = 5\text{V}; \text{parameter: } T_j$
Diagram 6: Gate threshold voltage vs. Junction temperature

 $V_{th} = f(T_j); I_D = 250\mu\text{A}$
Diagram 7: On-state resistance vs. Drain current

 $R_{DS(on)} = f(I_D); T_j = 25^\circ\text{C}; \text{parameter: } V_{GS}$
Diagram 8: On-state resistance vs. Junction temperature

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

Diagram 9: Forward characteristics of reverse diode


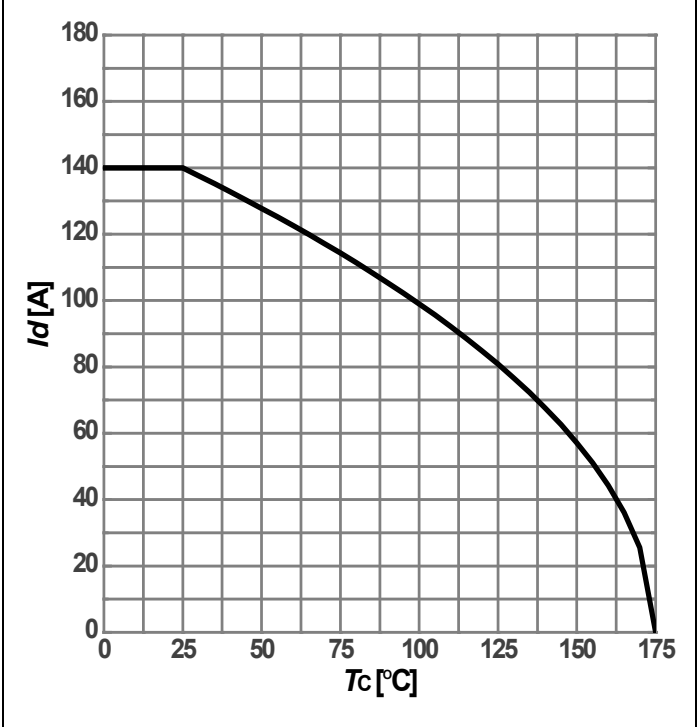
$$I_F = f(V_{SD}); \text{ parameter: } T_j$$

Diagram 10: On-state resistance vs. V_{GS} characteristics


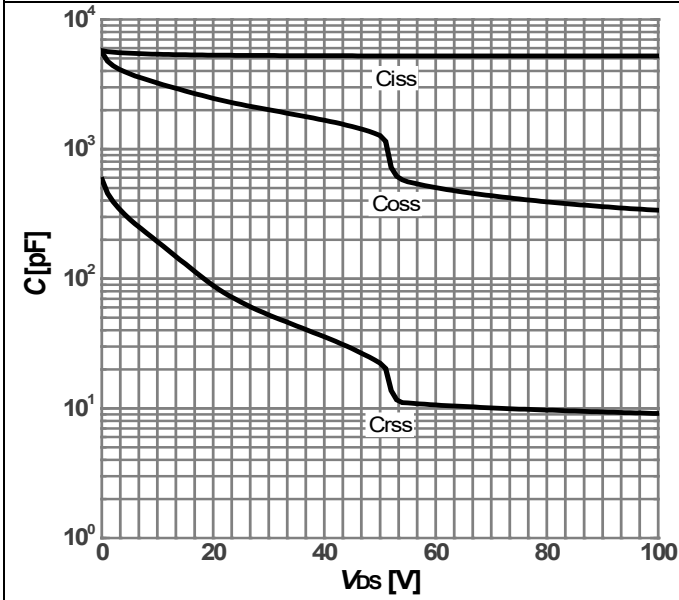
$$R_{DS(on)} = f(V_{GS}); I_D = 20A; \text{ parameter: } T_j$$

Diagram 11: Breakdown Voltage Variation vs. Temperature


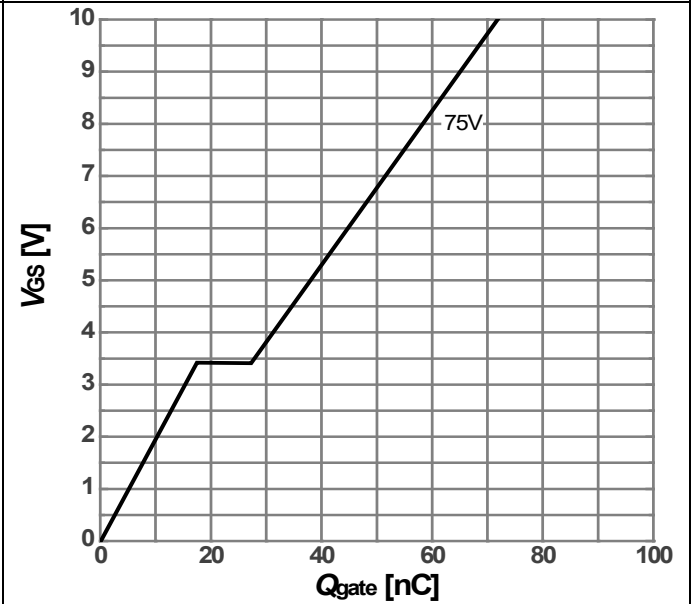
$$V_{BR(DSS)} = f(T_j); I_D = 250\mu A$$

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


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

Table 7. Diode characteristics

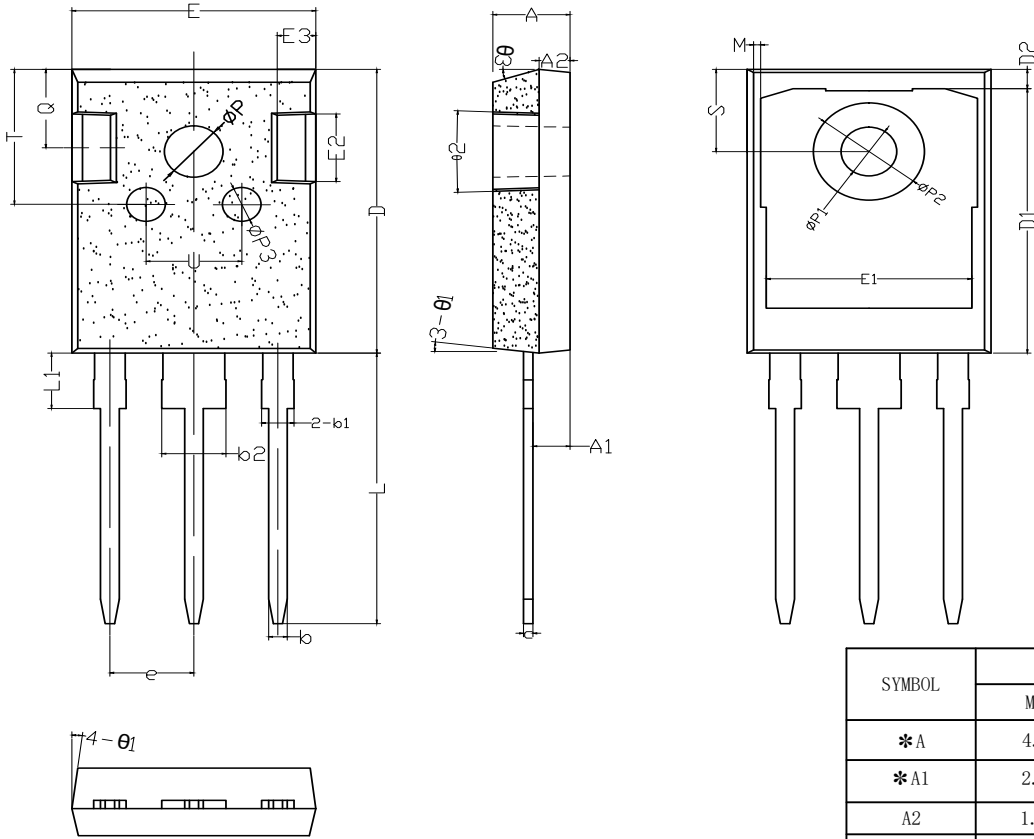
Test circuit for diode characteristics	Diode recovery waveform

Table 8. Switching times

Switching times test circuit for inductive load	Switching times waveform

Table 9. Unclamped inductive load

Unclamped inductive load test circuit	Unclamped inductive waveform

TO-247 Package Information:


SYMBOL	mm		
	MIN	NOM	MAX
*A	4.90	5.00	5.10
*A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
*b	1.15	1.20	1.25
*b1	1.95	2.10	2.25
*b2	2.95	3.10	3.25
*c	0.55	0.60	0.65
*D	20.90	21.00	21.10
D1	16.35	16.55	16.75
D2	1.05	1.20	1.35
*E	15.70	15.80	15.90
E1	13.10	13.25	13.40
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
*e	5.40	5.44	5.48
*L	19.80	19.92	20.10
*L1	-	-	4.30
* ΦP	3.70	3.80	3.90
* $\Phi P1$	3.50	3.60	3.70
$\Phi P2$	7.00	7.20	7.40
$\Phi P3$	2.40	2.50	2.60
Q	5.60	5.80	6.00
*S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	6.20	6.40
$\theta 1$	5°	7°	9°
$\theta 2$	1°	3°	5°
$\theta 3$	13°	15°	17°


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