

● General Description

The AGM035N10C 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

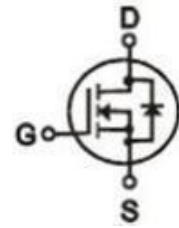
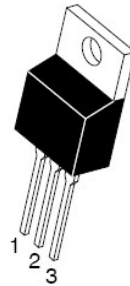
● Application

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

Product Summary

BVDSS	RDSON	ID
100V	3.5mΩ	160A

TO-220C Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM035N10C	AGM035N10C	TO-220C	----	----	1000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	100	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)	105	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	610	A
PD	Maximum Power Dissipation(Tc=25°C)	227	w
	Maximum Power Dissipation(Tc=100°C)	91	w
EAS	Avalanche energy (Note 3)	560	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	---	62	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	0.55	°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	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=80V,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	3.0	4.0	V
gFS	Forward Transconductance	VDS=10V,ID=2A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	3.5	4.1	mΩ
		VGS=4.5V, ID=15A	--	4.1	5.5	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	3750	--	pF
Coss	Output Capacitance		--	1100	--	pF
Crss	Reverse Transfer Capacitance		--	27	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHZ	--	0.7	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=50V, ID=10A,RGEN=6Ω	--	25.9	--	nS
tr	Turn-on Rise Time		--	23	--	nS
td(off)	Turn-Off Delay Time		--	90	--	nS
tf	Turn-Off Fall Time		--	76	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=12A	--	66	--	nC
Qgs	Gate-Source Charge		--	66	--	nC
Qgd	Gate-Drain Charge		--	13	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	160	A
VSD	Forward on Voltage	VGS=0V,IS=12A	--	--	1.0	V
trr	Reverse Recovery Time	IF=12A , dI/dt=100A/μs ,	--	82	--	ns
Qrr	Reverse Recovery Charge	TJ=25°C	--	120	--	nc

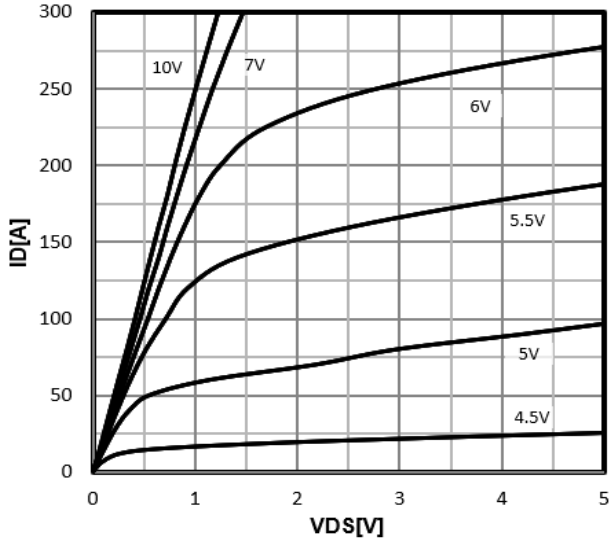
Notes 1.The maximum current rating is package limited.

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

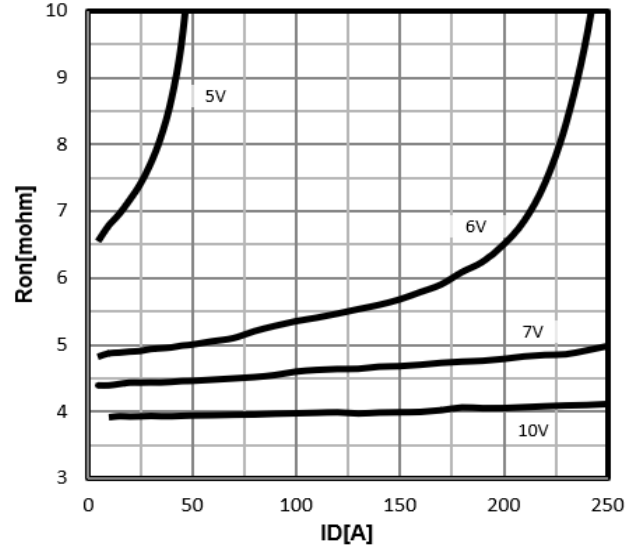
Notes 3.EAS condition: TJ=25°C

Typ. output characteristics

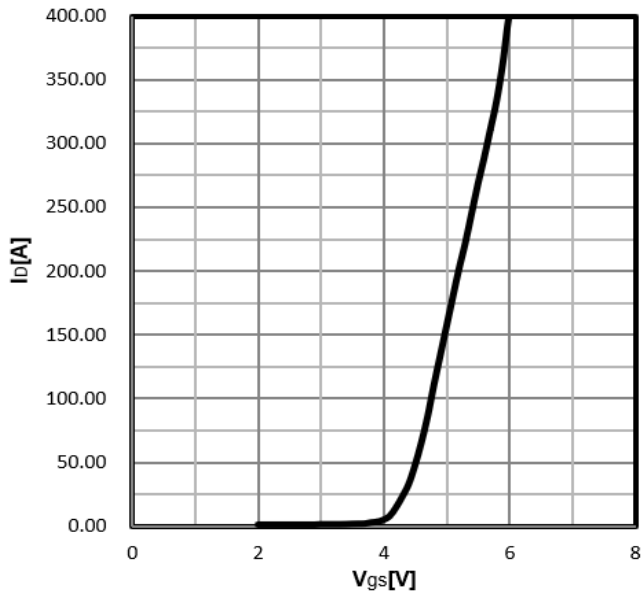
$$I_D = f(V_{DS})$$


Typ. drain-source on resistance

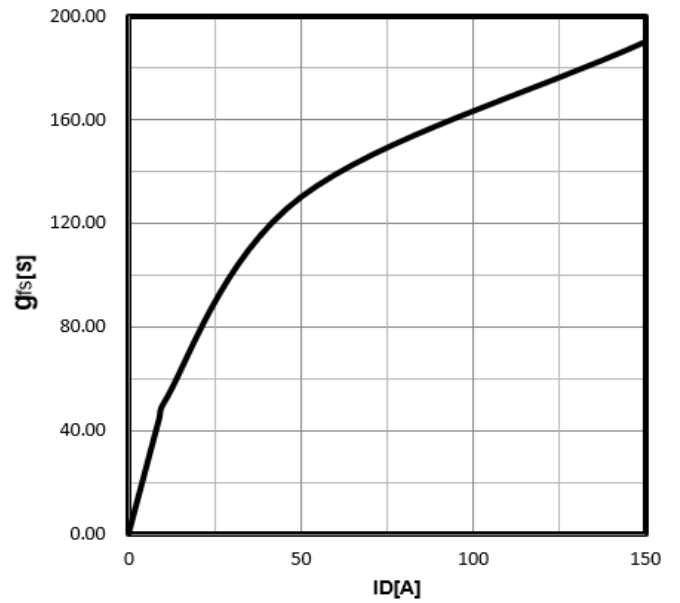
$$R_{DS(on)} = f(I_D)$$


Typ. transfer characteristics

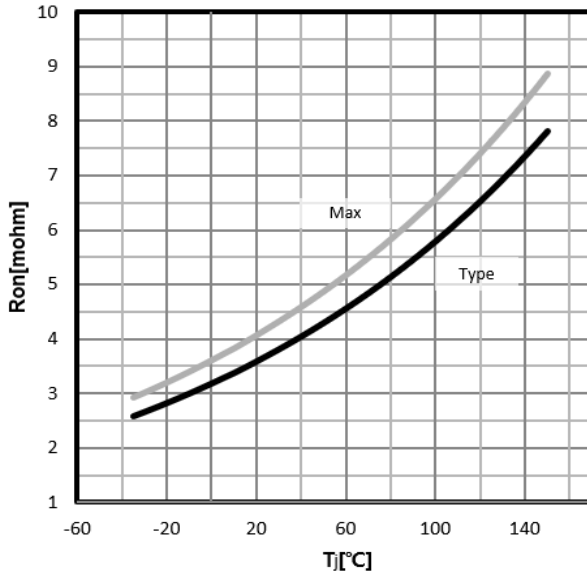
$$I_D = f(V_{GS})$$


Typ. forward transconductance

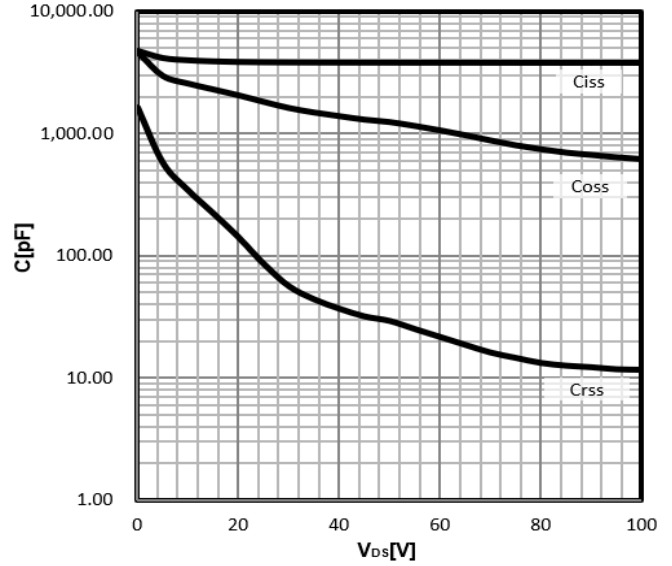
$$g_{fs} = f(I_D)$$



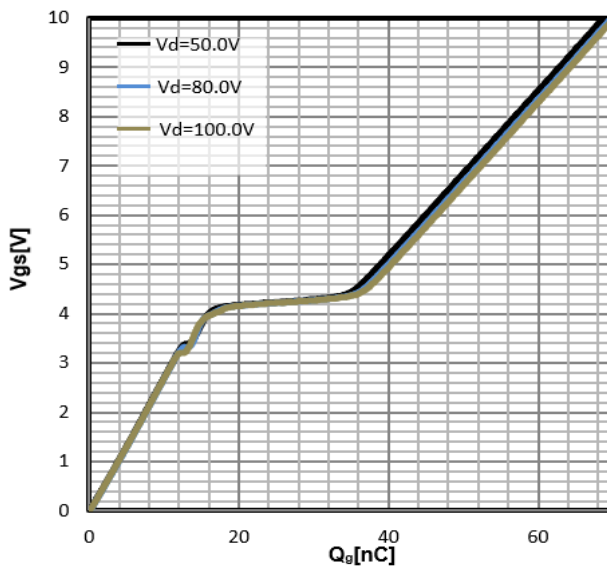
Drain-source on-state resistance
 $R_{DS(on)} = f(T_j)$; $I_D = 80A$; $V_{GS} = 10V$



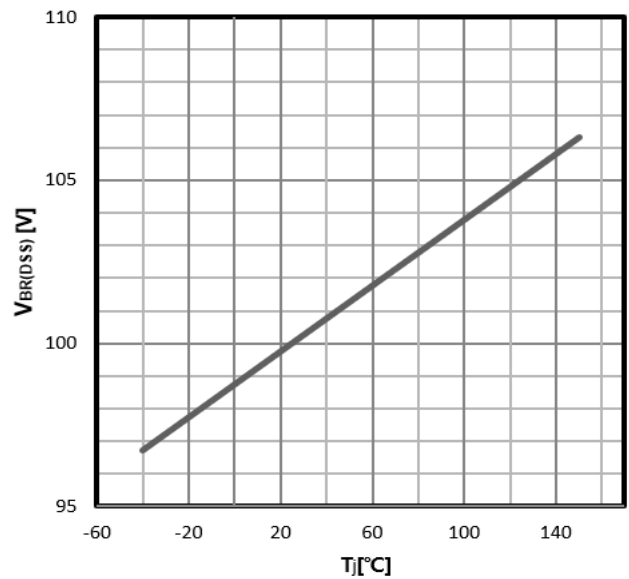
Typ. capacitances
 $C = f(V_{DS})$; $V_{GS} = 0V$; $f = 1MHz$



Typ. gate charge
 $V_{GS} = f(Q_{gate})$; $I_D = 20A$

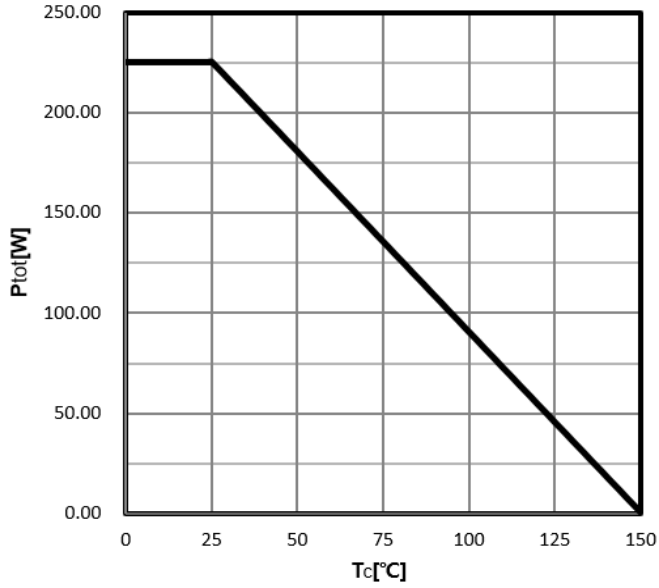


Drain-source breakdown voltage
 $V_{BR(DSS)} = f(T_j)$; $I_D = 250\mu A$

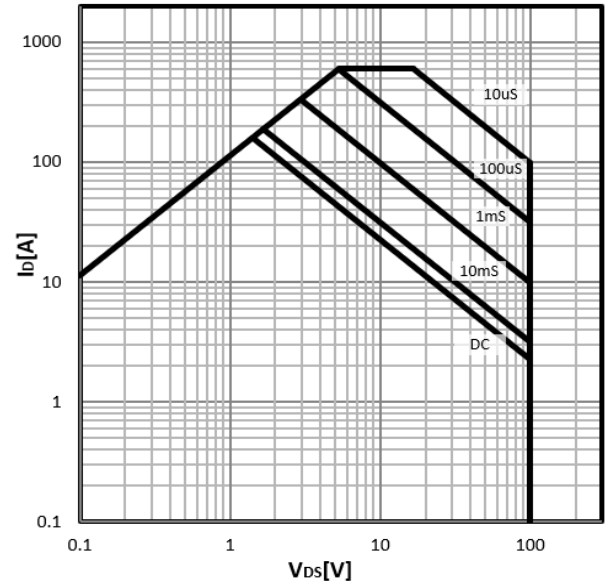


Power Dissipation

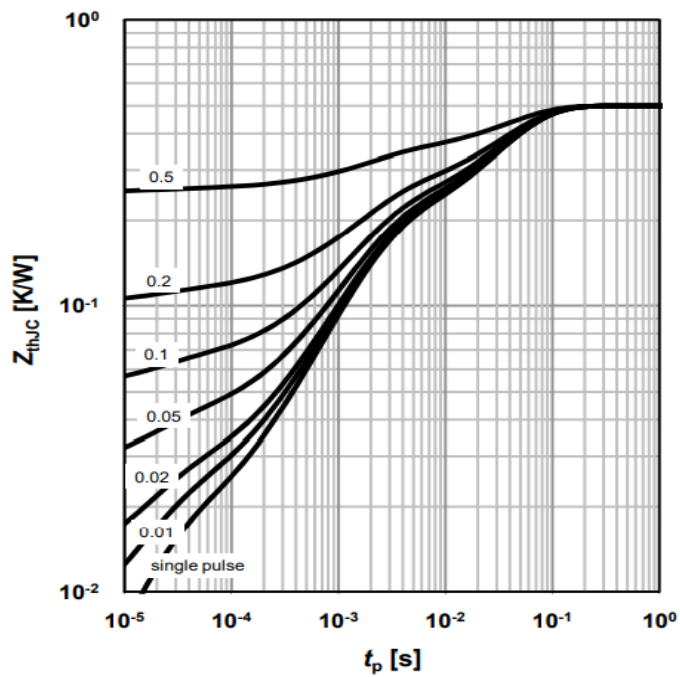
$$P_{tot}=f(T_C)$$

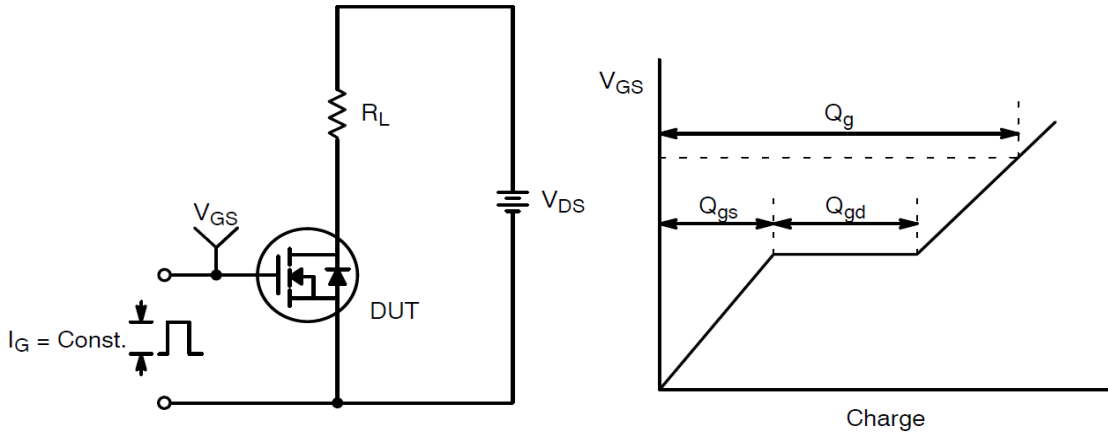
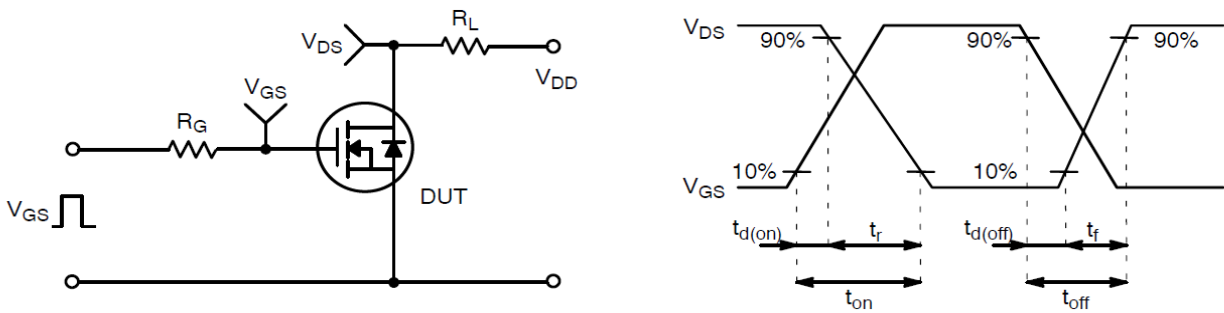
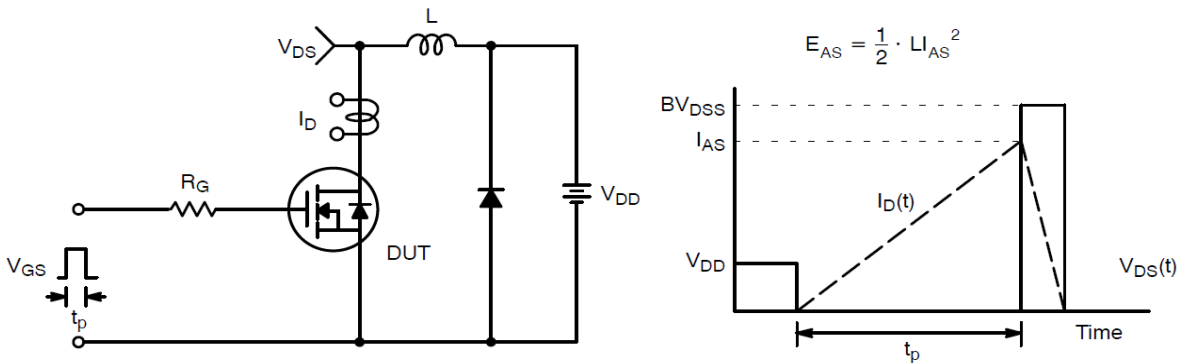

Safe operating area

$$I_D=f(V_{DS})$$

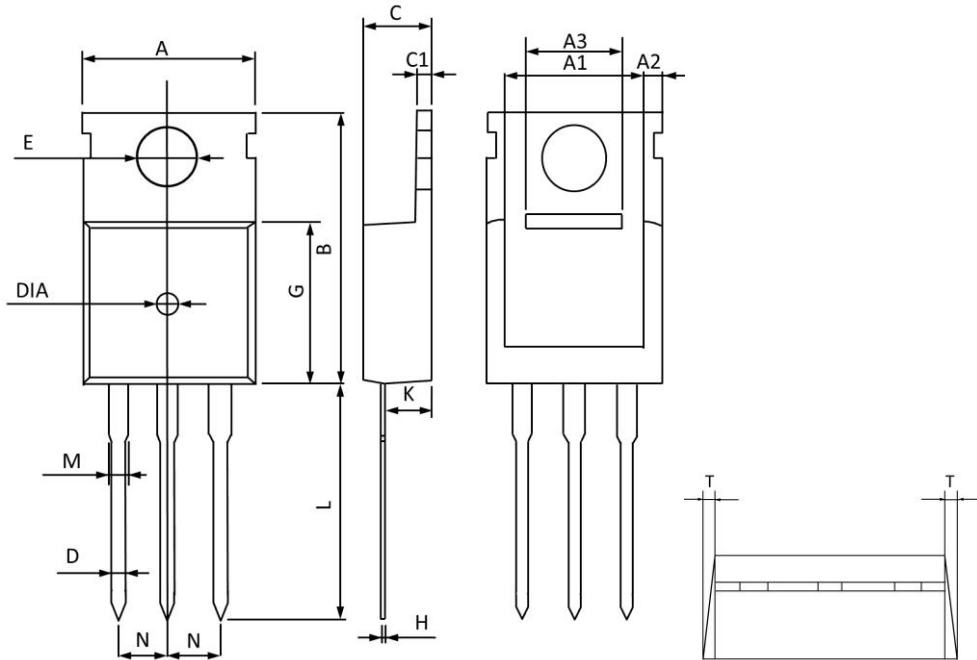

Max. transient thermal impedance

$$Z_{thJC}=f(t_p)$$



Test Circuit and Waveform:

Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching Test Circuit & Waveforms

TO220 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	10.300	9.700	0.406	0.382
A1	8.840	8.440	0.348	0.332
A2	1.250	1.050	0.049	0.041
A3	5.300	5.100	0.209	0.201
B	16.200	15.400	0.638	0.606
C	4.680	4.280	0.184	0.169
C1	1.500	1.100	0.059	0.043
D	1.000	0.600	0.039	0.024
E	3.800	3.400	0.150	0.134
G	9.300	8.700	0.366	0.343
H	0.600	0.400	0.024	0.016
K	2.700	2.100	0.106	0.083
L	13.600	12.800	0.535	0.504
M	1.500	1.100	0.059	0.043
N	2.590	2.490	0.102	0.098
T	W0.35		W0.014	
DIA	Φ1.5 TYP.	deep0.2 TYP.	Φ0.059 TYP.	deep0.008 TYP.


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