

### ● General Description

The AGM15T06C-B 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 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM15T06C-B	AGM15T06C-B	TO-220	---	---	1000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	140	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	120	A
	Drain Current-Continuous(Tc=100°C)	85	A
IDM (pulse)	Drain Current-Pulsed <b>(Note 2)</b>	480	A
PD	Maximum Power Dissipation(Tc=25°C)	104	w
	Maximum Power Dissipation(Tc=100°C)	42	w
EAS	Avalanche energy <b>(Note 3)</b>	450	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>	---	50	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	1.2	°C/W

### Product Summary

BVDSS	RDSON	ID
140V	5.7mΩ	120A

### TO-220 Pin Configuration

**Table 3. Electrical Characteristics (T<sub>J</sub>=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	140	147	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=140V,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	--	4	V
gFS	Forward Transconductance	VDS=5V,ID=15A	--	20	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	5.7	7.5	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=40V,VGS=0V ,F=1MHZ	--	3752	--	pF
Coss	Output Capacitance		--	1560	--	pF
Crss	Reverse Transfer Capacitance		--	47	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	0.8	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=10V,VDS=30V, ID=40A,RGEN=2.5Ω RL=15Ω	--	19	--	nS
tr	Turn-on Rise Time		--	5	--	nS
td(off)	Turn-Off Delay Time		--	24	--	nS
tf	Turn-Off Fall Time		--	10	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=75V, ID=70A	--	57	--	nC
Qgs	Gate-Source Charge		--	14	--	nC
Qgd	Gate-Drain Charge		--	11	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	120	A
VSD	Forward on Voltage	VGS=0V,IS=20A	--	0.9	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , TJ=25°C	--	85	--	ns
Qrr	Reverse Recovery Charge		--	120	--	nc

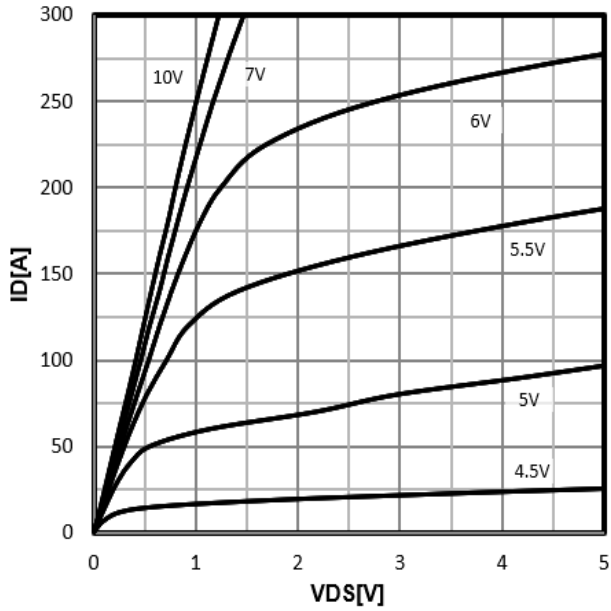
Notes 1.The maximum current rating is package limited.

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

Notes 3.EAS condition: T<sub>J</sub>=25°C

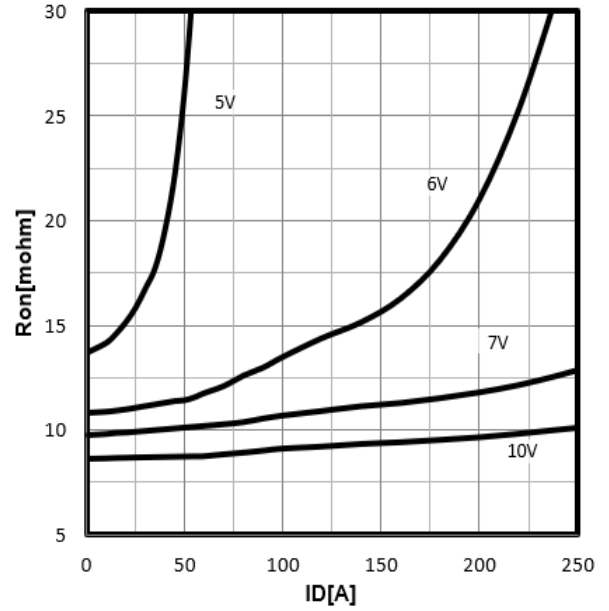
Typ. output characteristics

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



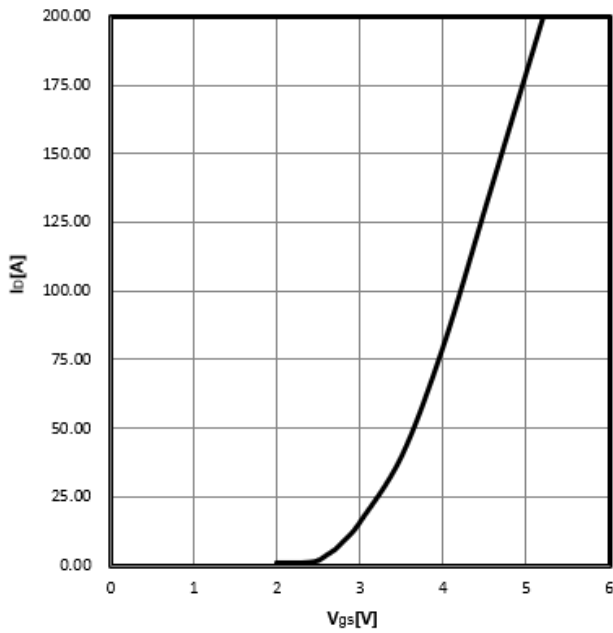
Typ. drain-source on resistance

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



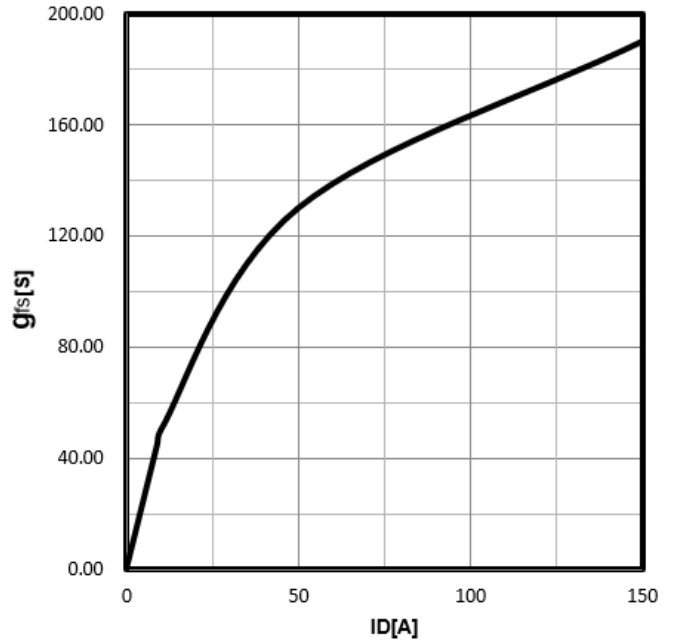
Typ. transfer characteristics

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



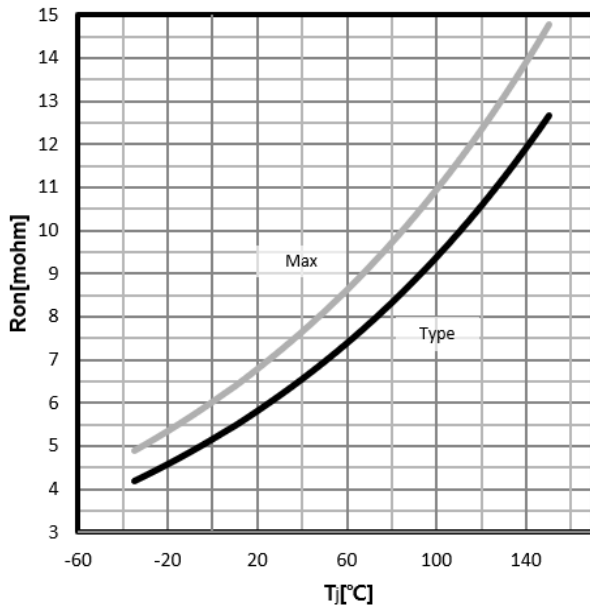
Typ. forward transconductance

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

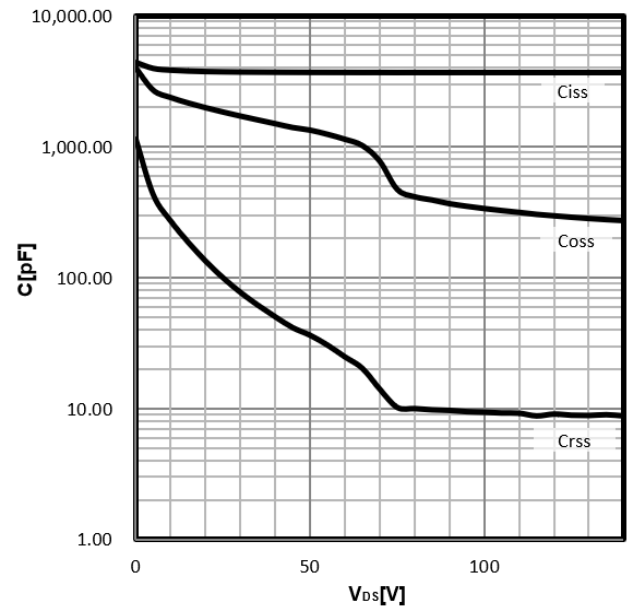


**Drain-source on-state resistance**

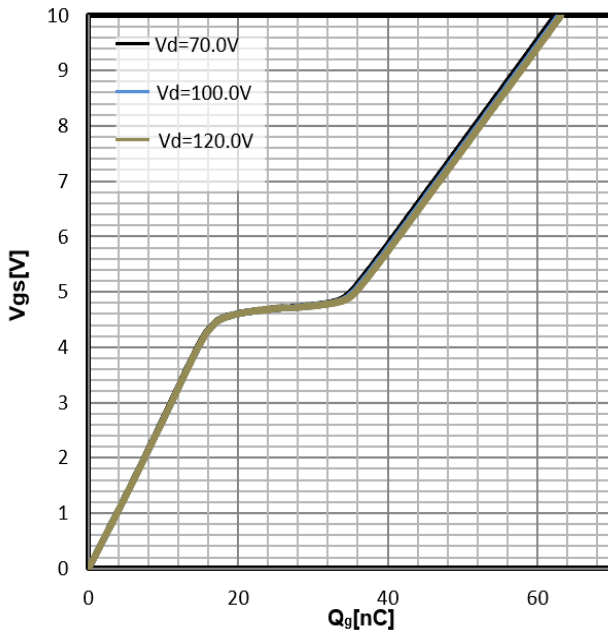
$$R_{DS(on)} = f(T_j); I_D = 20A; V_{GS} = 10V$$


**Typ. capacitances**

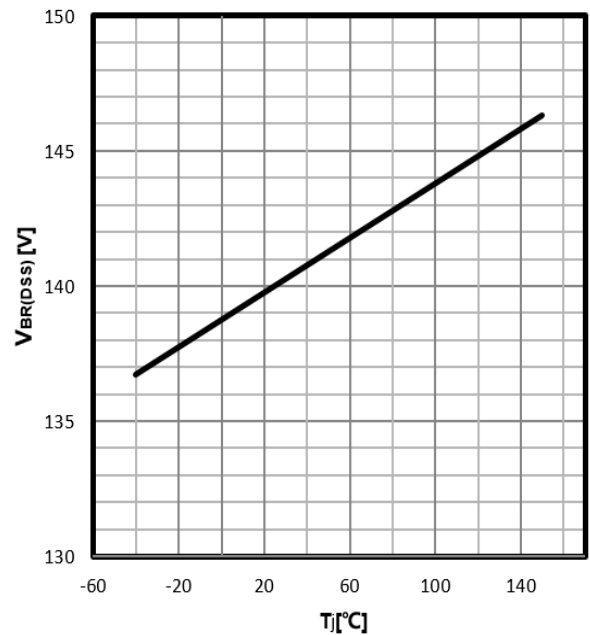
$$C = f(V_{DS}); V_{GS} = 0V; f = 1MHz$$


**Typ. gate charge**

$$V_{GS} = f(Q_{gate})$$

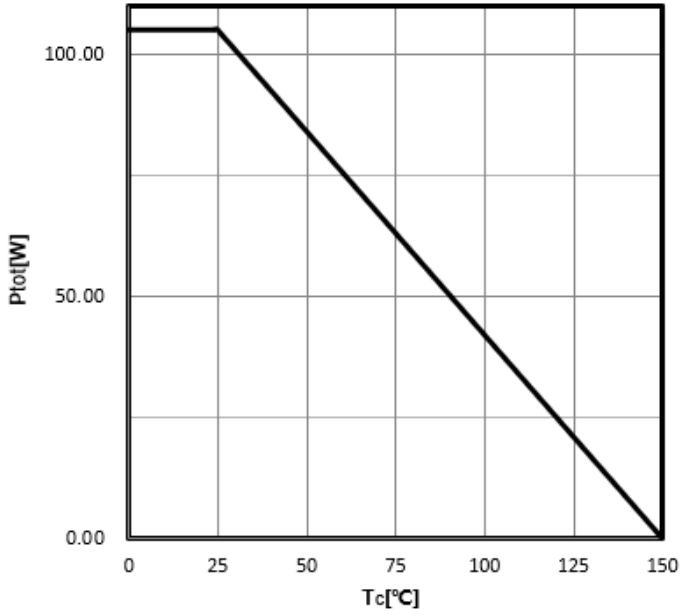

**Drain-source breakdown voltage**

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



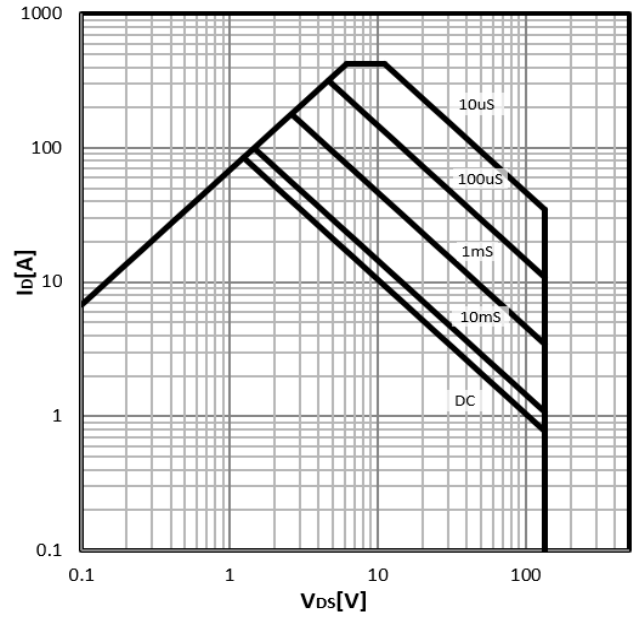
**Power Dissipation**

$P_{tot}=f(T_j)$



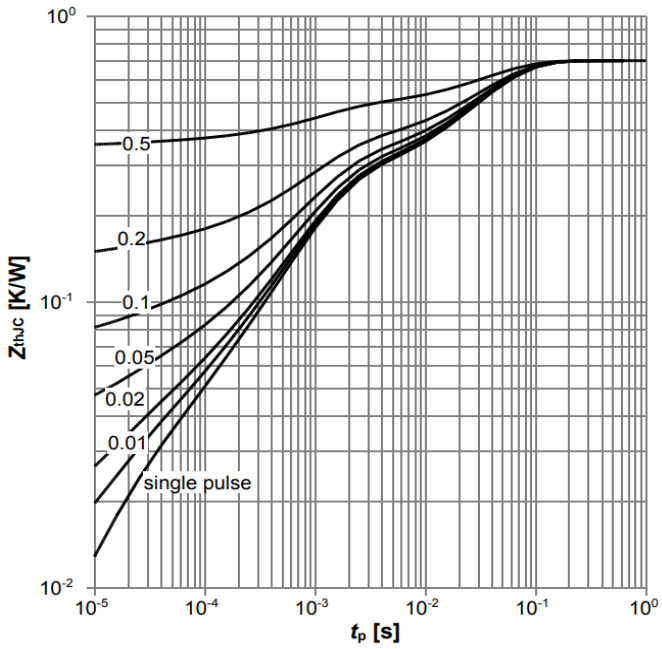
**Safe operating area**

$I_D=f(V_{DS})$

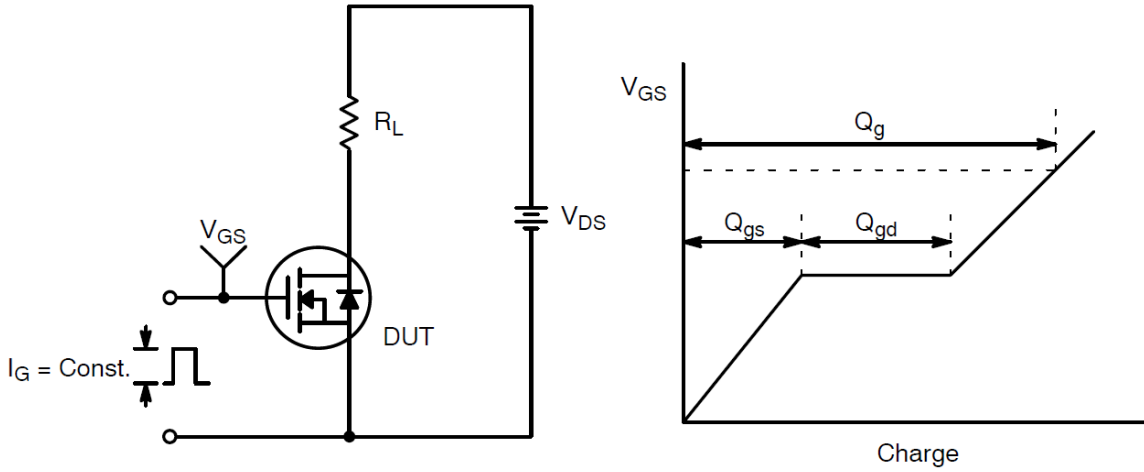


**Max. transient thermal impedance**

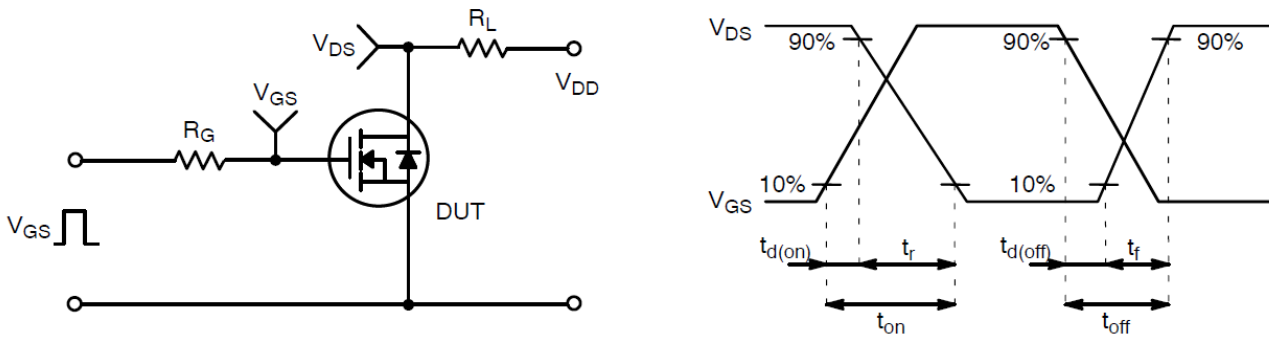
$Z_{thJC}=f(t_p)$



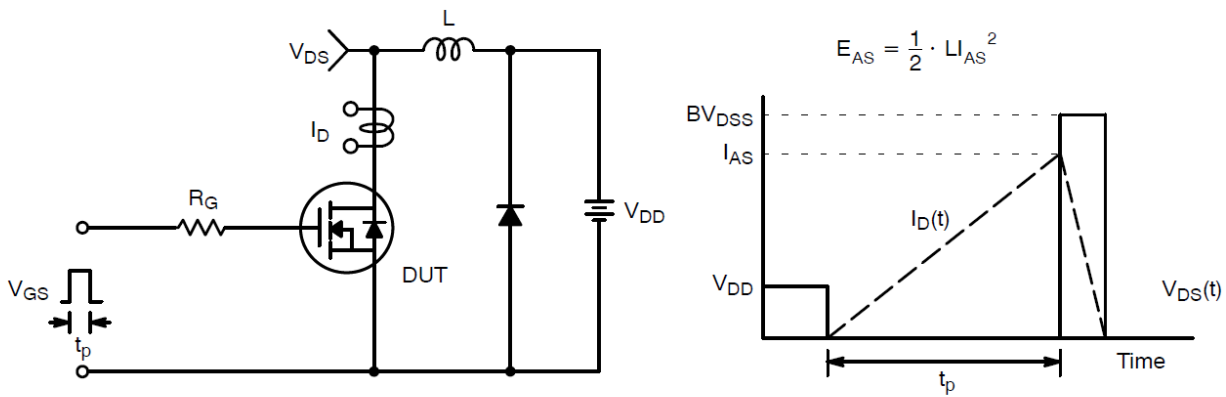
**Test Circuit and Waveform:**



**Gate Charge Test Circuit & Waveform**

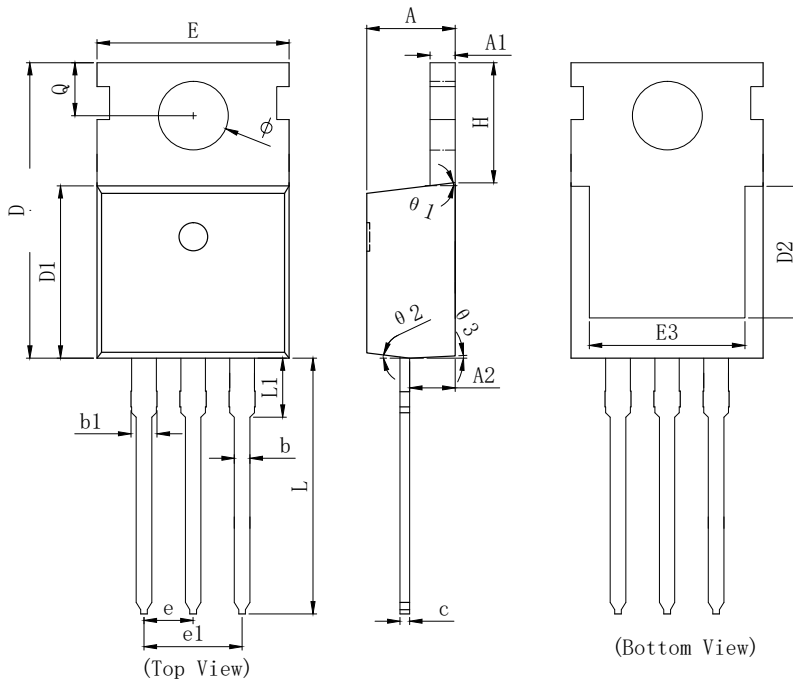


**Resistive Switching Test Circuit & Waveforms**



**Unclamped Inductive Switching Test Circuit & Waveforms**

# TO-220 PACKAGE INFORMATION



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.700
A1	1.250	1.300	1.400
A2	2.150	2.350	2.550
b	0.700	0.800	0.950
b1	1.170	1.270	1.470
c	0.450	0.500	0.600
D	15.100	15.600	16.100
D1	8.800	9.100	9.400
D2	5.500	6.300 REF	
E	9.700	10.000	10.300
E3	7.000	7.600 REF	
e	2.540 BSC		
e1	5.080 BSC		
L	13.200	13.500	13.800
L1		3.100	3.400
H	6.250	6.500	6.750
$\phi$	3.400	3.600	3.800
Q	2.600	2.800	3.000
$\theta 1$	7° TYP		
$\theta 2$	7° TYP		
$\theta 3$	3° TYP		


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