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
- 100% Avalanche tested
- 100% DVDS tested

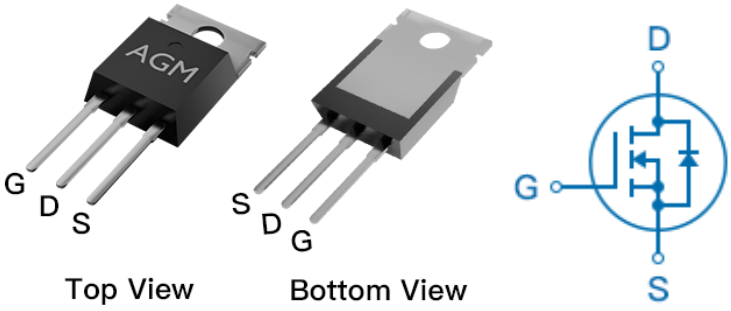
Application

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

Product Summary

BVDSS	RDSON	ID
100V	3.5mΩ	160A

TO-220 Pin Configuration



Package Marking and Ordering Information

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

Table 1. Absolute Maximum Ratings (TA=25℃)

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℃) **(Note 1)**	160	A
	Drain Current-Continuous(Tc=100℃)	105	A
IDM (pluse)	Drain Current-Pulsed **(Note 2)**	640	A
PD	Maximum Power Dissipation(Tc=25℃)	227	w
	Maximum Power Dissipation(Tc=100℃)	91	w
EAS	Avalanche energy **(Note 3)**	441	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	---	62	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	0.55	℃/W

Table 3. Electrical Characteristics (TJ=25℃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=100V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.7	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=15A	--	59	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	3.5	4.6	mΩ
		VGS=4.5V, ID=15A	--	4.4	6.0	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=40V,VGS=0V, F=1MHZ	--	4131	--	pF
Coss	Output Capacitance		--	1473	--	pF
Crss	Reverse Transfer Capacitance		--	101	--	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=20A	--	--	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs ,TJ=25℃	--	82	--	ns
Qrr	Reverse Recovery Charge		--	120	--	nc

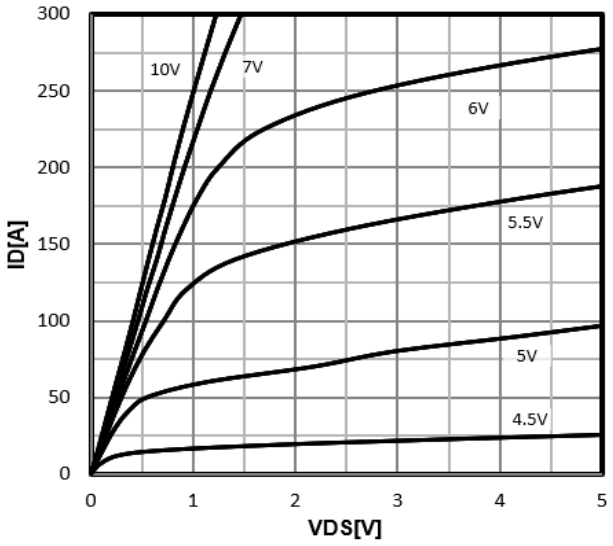
Notes 1.The maximum current rating is package limited.

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

Notes 3.EAS condition: TJ=25℃,VDD=50V,Vgs=10V,ID=42A,L=0.5mH,RG=25ohm

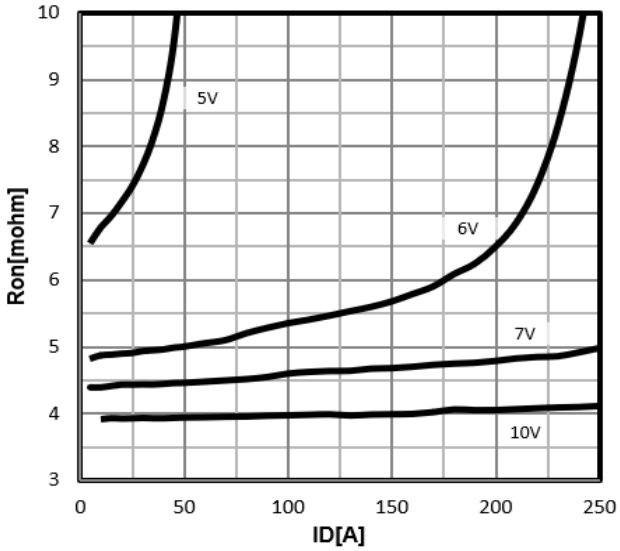
Typ. output characteristics

$I_D=f(V_{DS})$



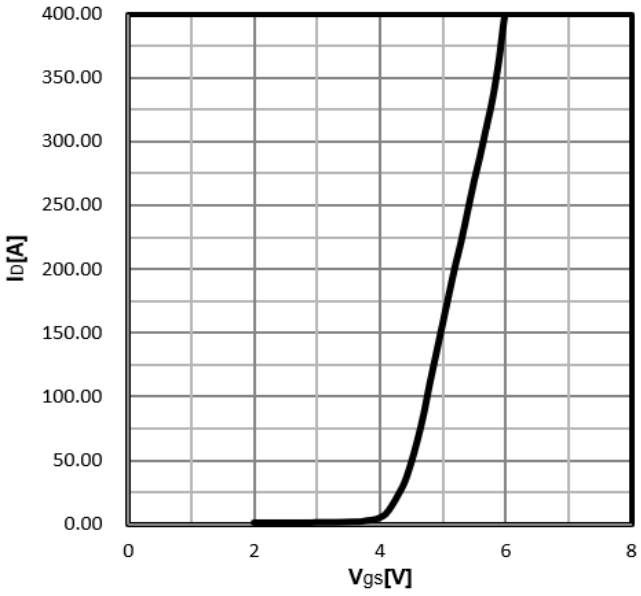
Typ. drain-source on resistance

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



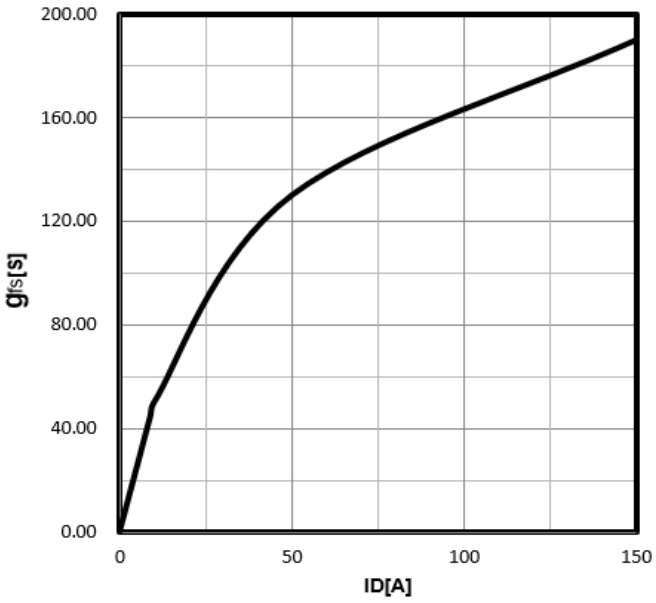
Typ. transfer characteristics

$I_D=f(V_{GS})$



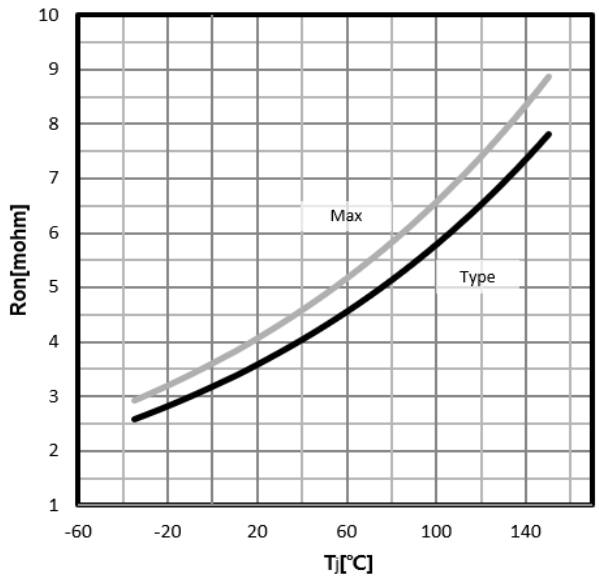
Typ. forward transconductance

$g_{fs}=f(I_D)$



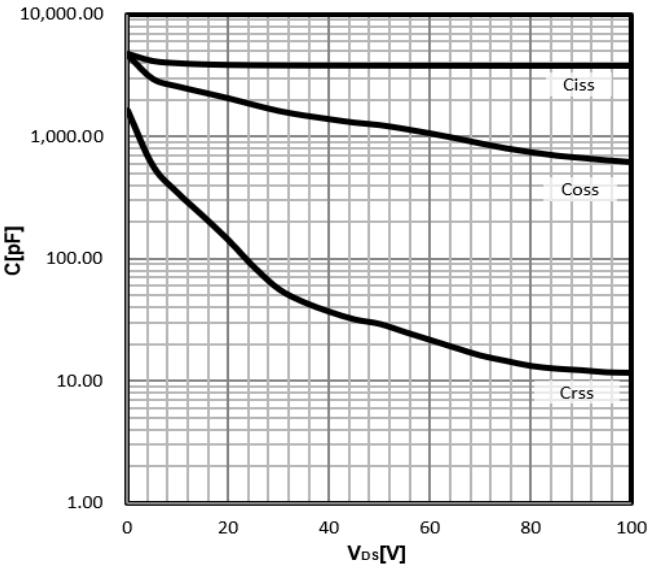
Drain-source on-state resistance

$R_{DS(on)}=f(T_j)$; $I_D=80A$; $V_{GS}=10V$



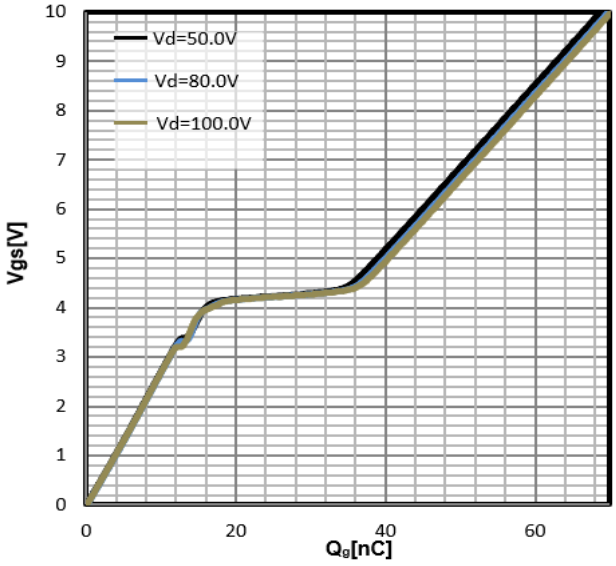
Typ. capacitances

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



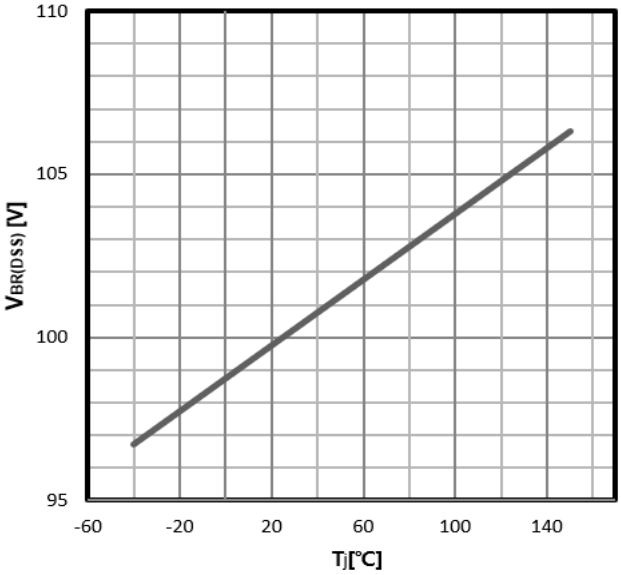
Typ. gate charge

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



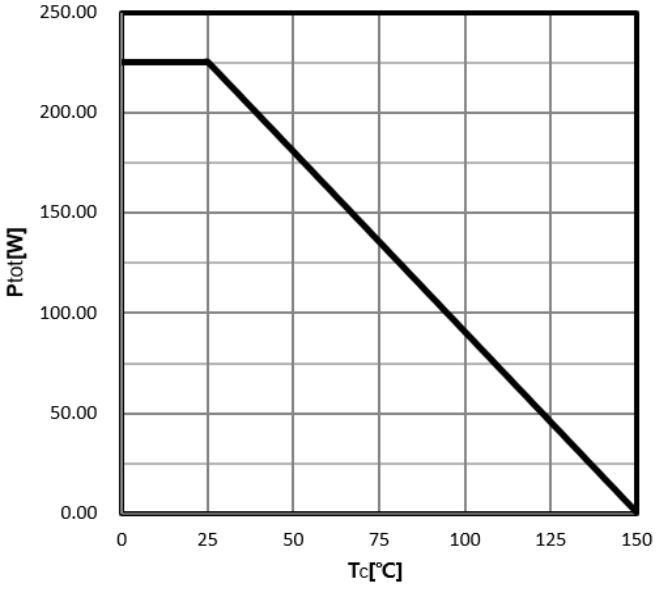
Drain-source breakdown voltage

$V_{BR(DSS)}=f(T_j)$; $I_D=250uA$



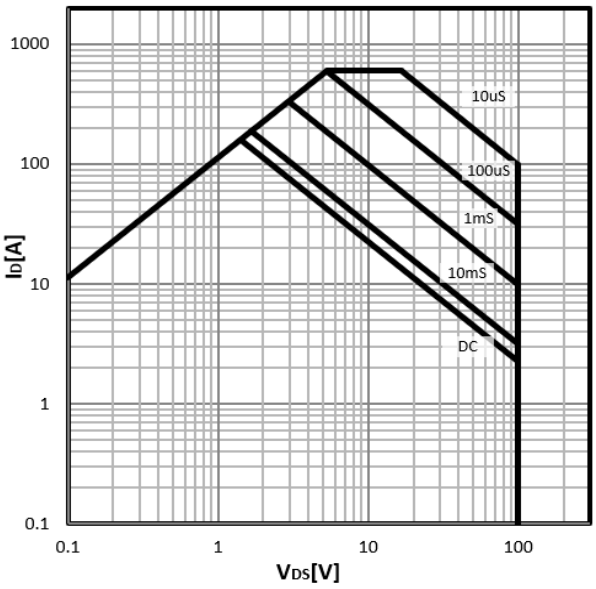
Power Dissipation

$P_{tot}=f(T_C)$



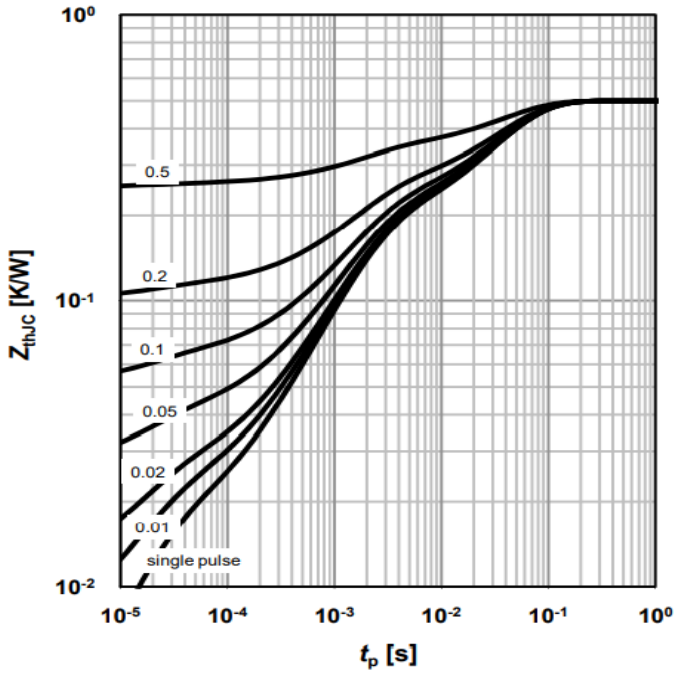
Safe operating area

$I_D=f(V_{DS})$

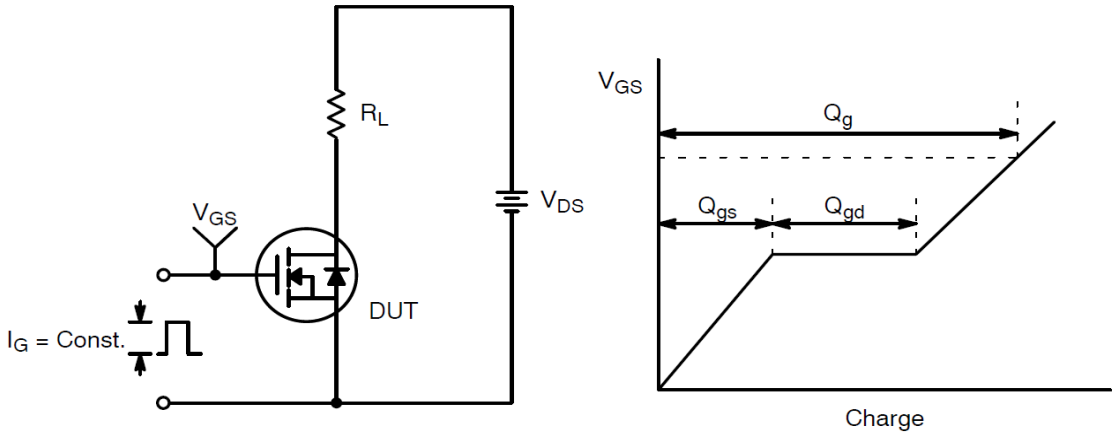


Max. transient thermal impedance

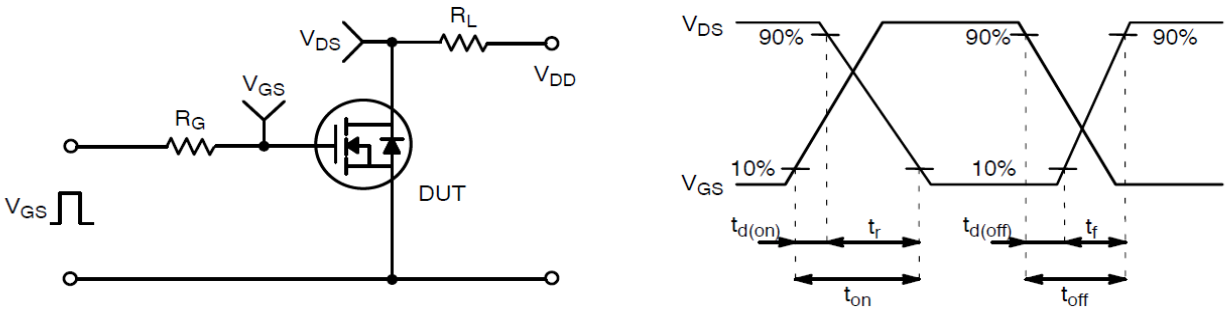
$Z_{thJC}=f(t_p)$



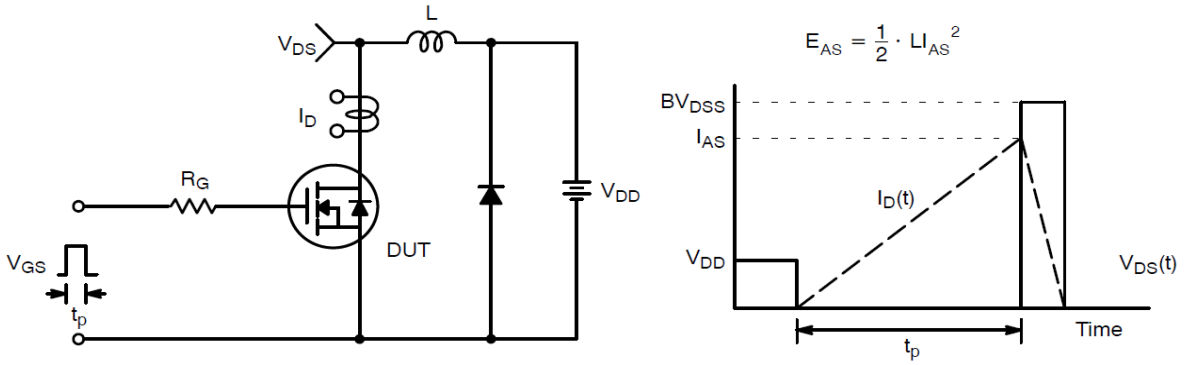
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

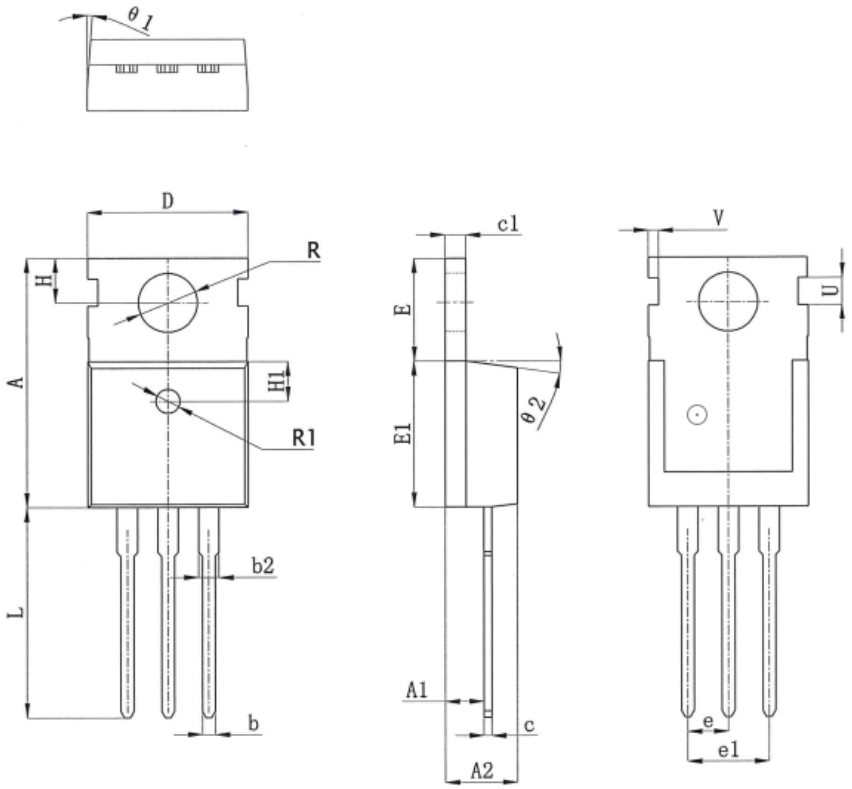


Resistive Switching Test Circuit & Waveforms

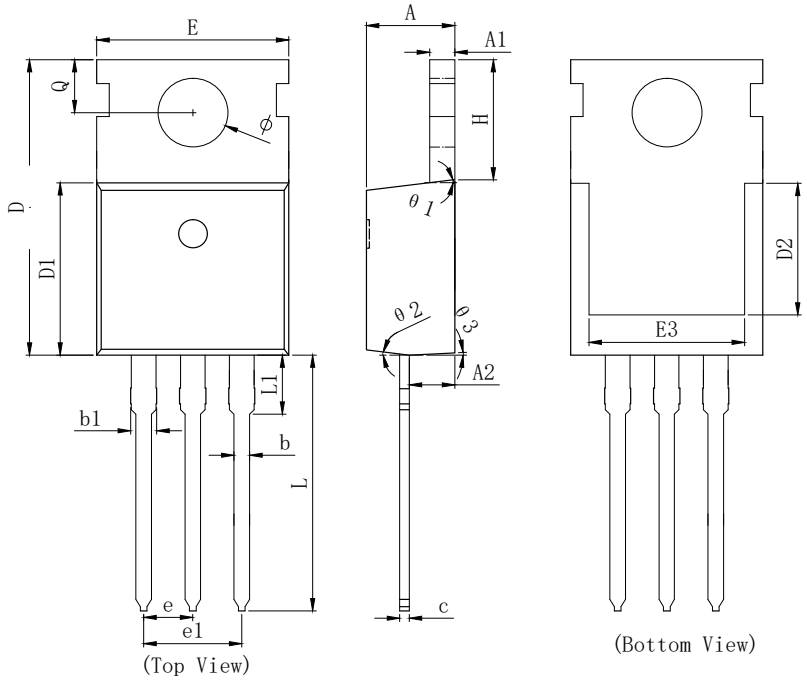


Unclamped Inductive Switching Test Circuit & Waveforms

TO220 PACKAGE INFORMATION



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	15.400	15.600	15.800
A1	2.350	2.400	2.500
A2	4.400	4.500	4.700
b	0.700	0.800	0.900
b2	1.180	1.310	1.440
c	0.480	0.500	0.560
c1	1.290	1.300	1.320
D	9.800	10.000	10.200
E	6.400	6.500	6.600
E1	9.000	9.100	9.200
e	2.420	2.540	2.660
e1	4.840	5.080	5.320
H	2.730	2.800	2.870
H1	2.400	2.500	2.600
L	13.020	13.370	13.720
R	3.500	3.600	3.730
R1	1.400	1.500	1.600
U	1.650	1.750	1.850
V	0.580	0.680	0.780
θ1	2°	2.5°	3°
θ2	6.5°	7°	7.5°



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
Φ	3.400	3.600	3.800
Q	2.600	2.800	3.000
θ1	7° TYP		
θ2	7° TYP		
θ3	3° TYP		

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