General Description

The AGMH606H 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
60V	5.4mΩ	80A

TO-263 Pin Configuration

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGMH606H	AGMH606H	TO-263	330mm	25mm	800

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	60	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25℃) **(Note 1)**	80	A
	Drain Current-Continuous(Tc=100℃)	54	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	320	A
PD	Maximum Power Dissipation(Tc=25℃)	83	w
	Maximum Power Dissipation(Tc=100℃)	33	w
EAS	Avalanche energy **(Note 3)**	342	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]	---	1.5	℃/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	60	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=60V,VGS=0V	--	--	1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	2.0	2.7	4.0	V
gFS	Forward Transconductance	VDS=5V,ID=15A	--	5	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	5.4	8.0	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=30V,VGS=0V, F=100 kHz	--	4009	--	pF
Coss	Output Capacitance		--	243	--	pF
Crss	Reverse Transfer Capacitance		--	201	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.6	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=30V ID=20A,RGEN=3Ω	--	19	--	nS
tr	Turn-on Rise Time		--	42	--	nS
td(off)	Turn-Off Delay Time		--	48	--	nS
tf	Turn-Off Fall Time		--	29	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=30V, ID=20A	--	76	--	nC
Qgs	Gate-Source Charge		--	17	--	nC
Qgd	Gate-Drain Charge		--	19	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	80	A
VSD	Forward on Voltage	VGS=0V,IS=20A	--	--	1.2	V
trr	Reverse Recovery Time	Is=20A , dI/dt=100A/μs , TJ=25℃	--	28	--	ns
Qrr	Reverse Recovery Charge		--	52	--	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=30V,Vgs=10V,ID=37A, L=0.5mH,RG=25ohm

Typical Characteristics T_J = 25ºC, unless otherwise noted

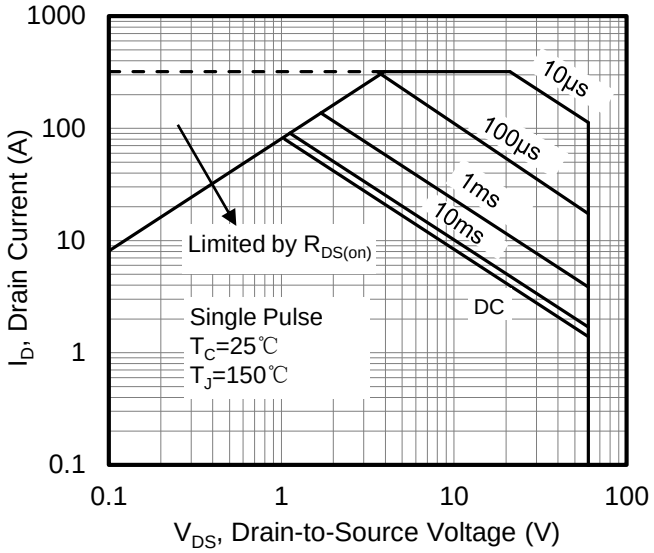


Figure 1. Maximum Safe Operating Area

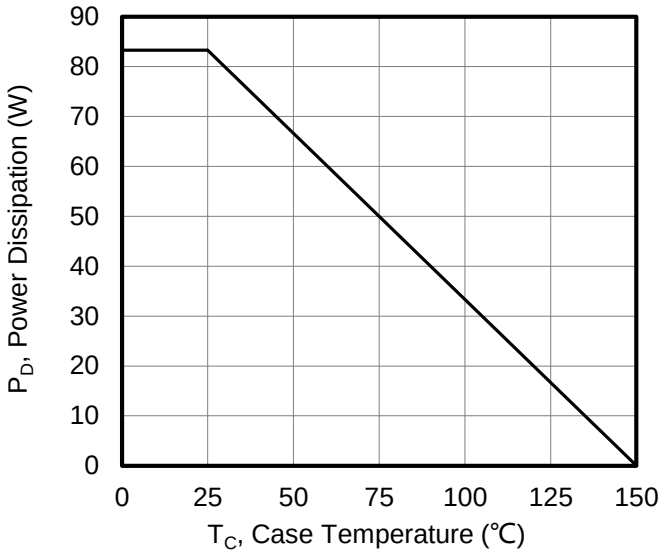


Figure 2. Maximum Power Dissipation vs Case Temperature

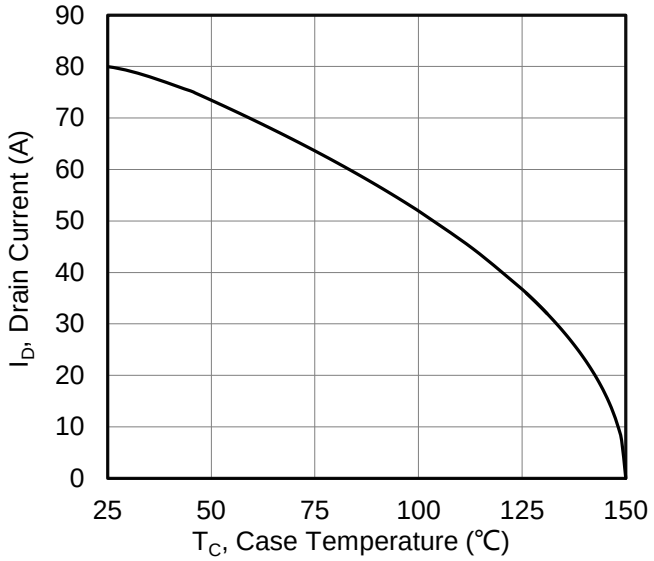


Figure 3. Maximum Continuous Drain Current vs Case Temperature

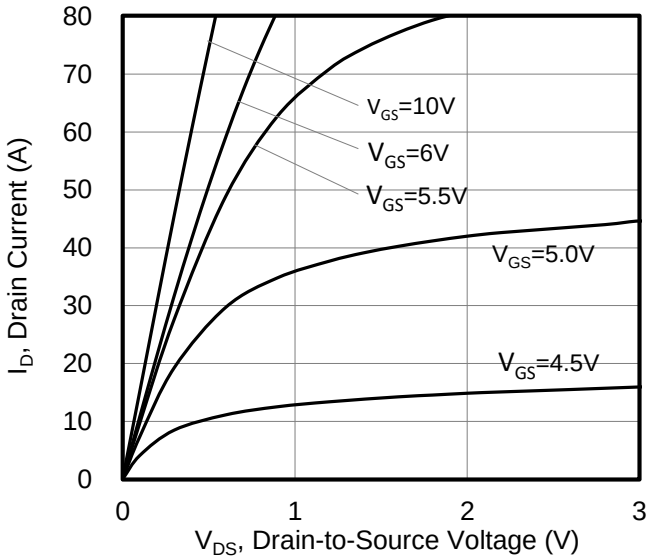
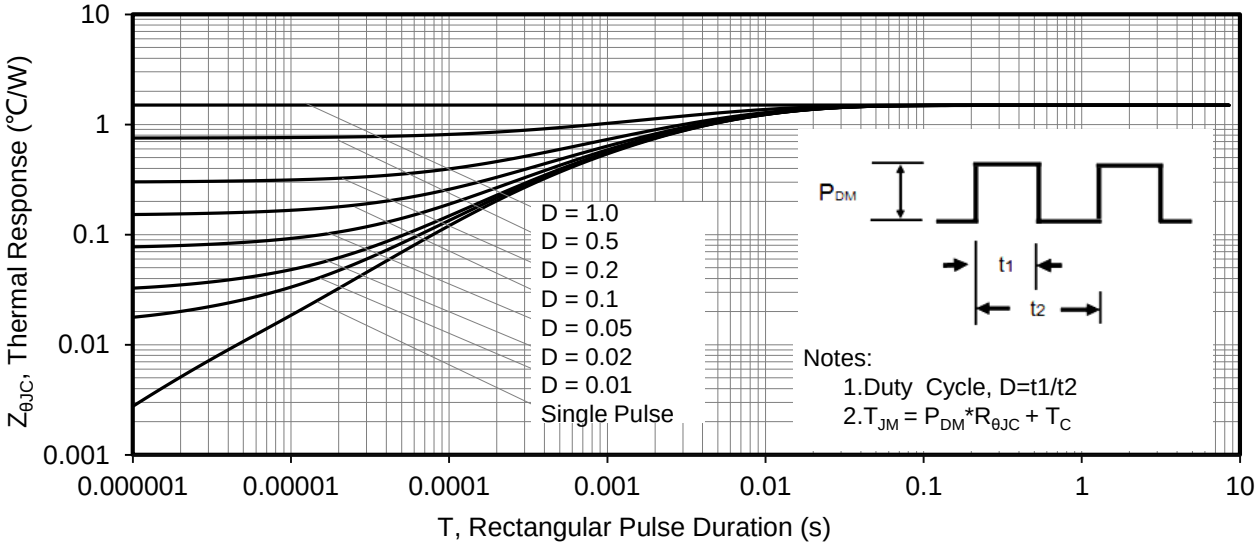


Figure 4. Typical output Characteristics



Typical Characteristics T_J = 25ºC, unless otherwise noted

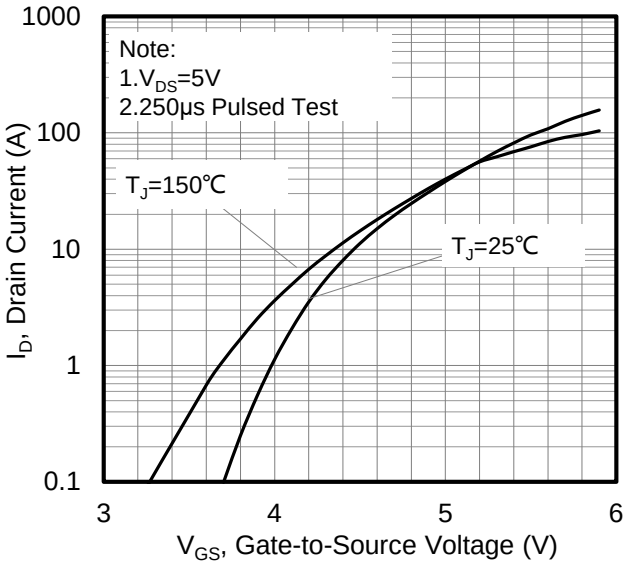


Figure 6. Typical Transfer Characteristics

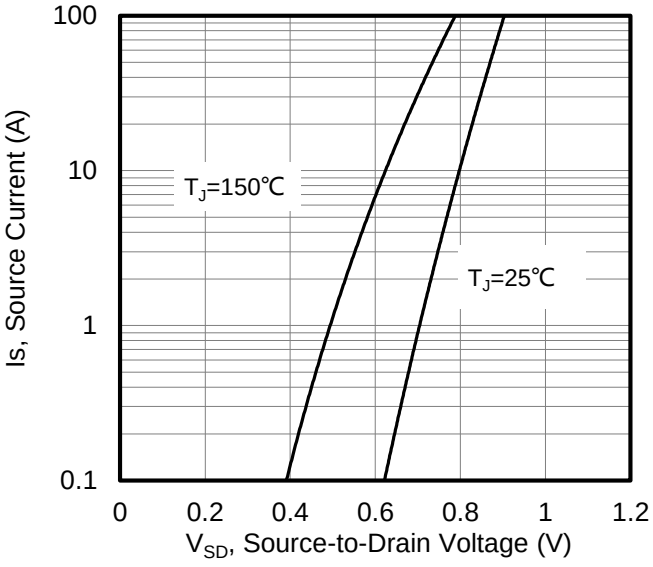


Figure 7. Typical Body Diode Transfer Characteristics

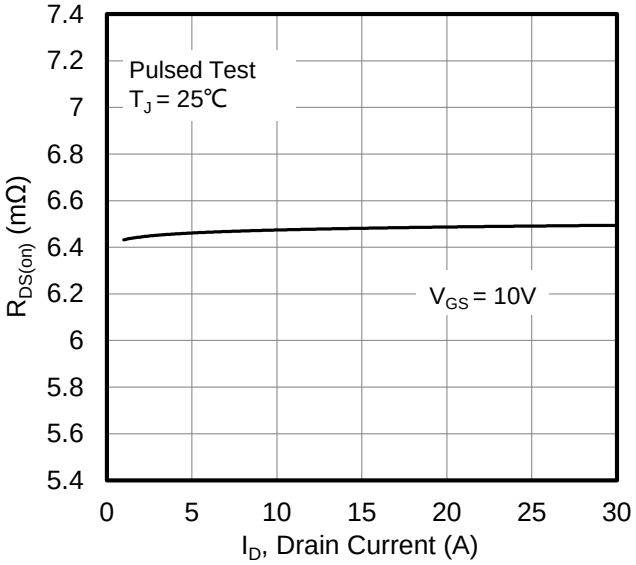


Figure 8. Drain-to-Source On Resistance vs Drain Current

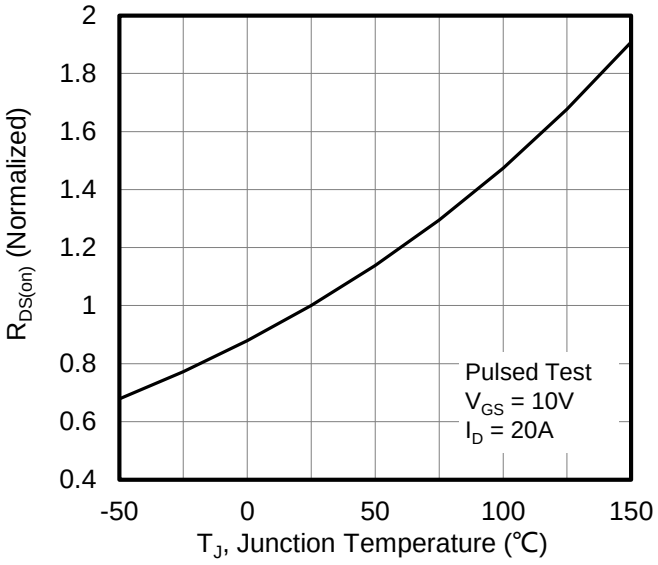


Figure 9. Normalized On Resistance vs Junction Temperature

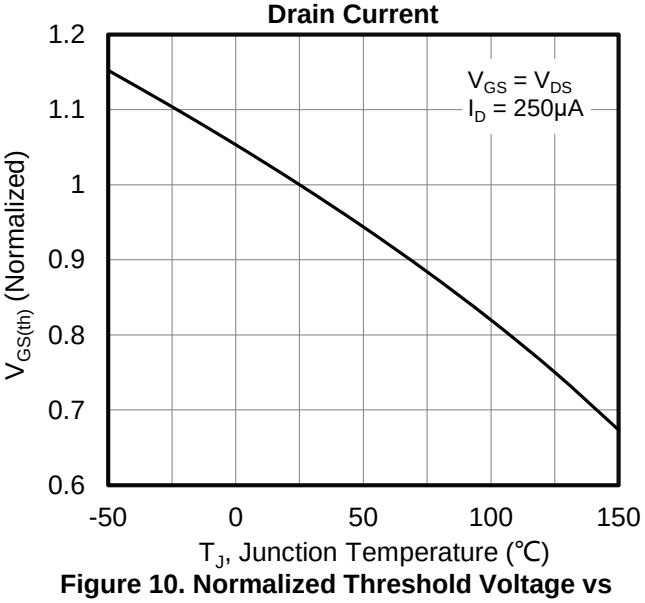


Figure 10. Normalized Threshold Voltage vs Junction Temperature

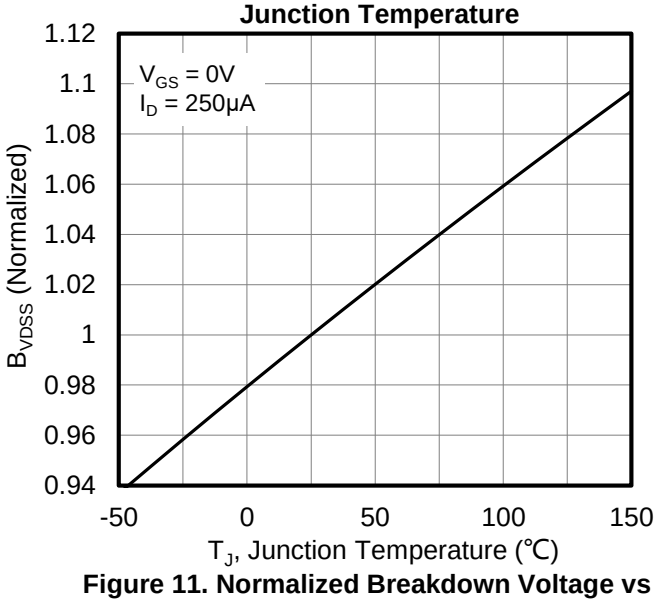


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

Typical Characteristics T_J = 25ºC, unless otherwise noted

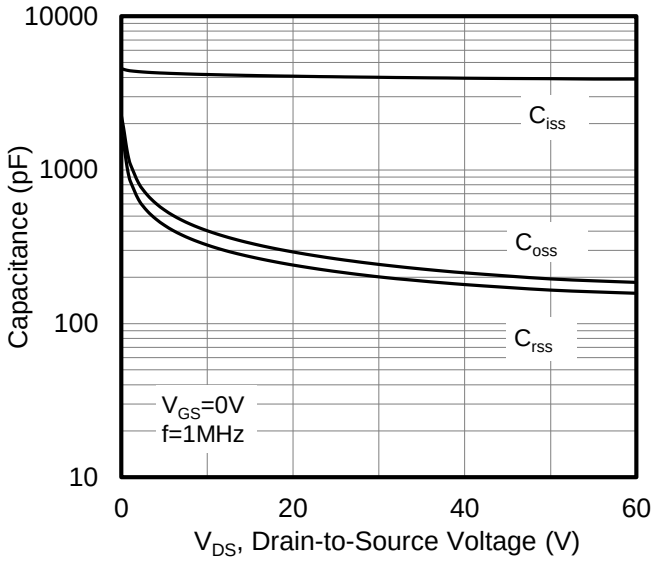


Figure 12. Capacitance Characteristics

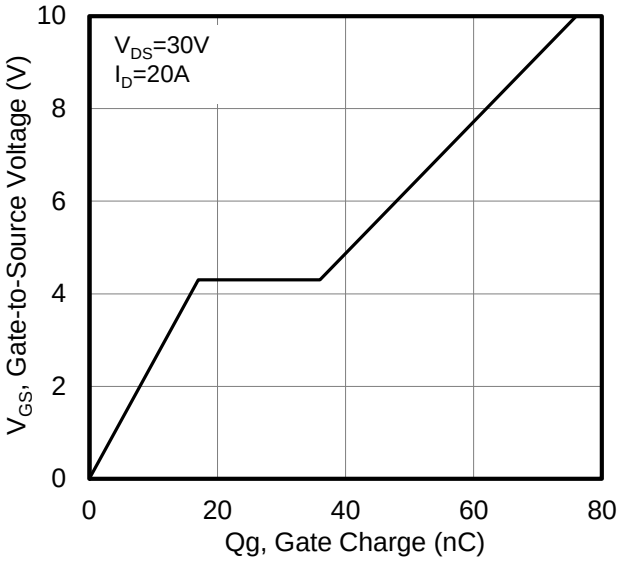


Figure 13. Typical Gate Charge vs Gate to Source Voltage

Figure A：Gate Charge Test Circuit and Waveform

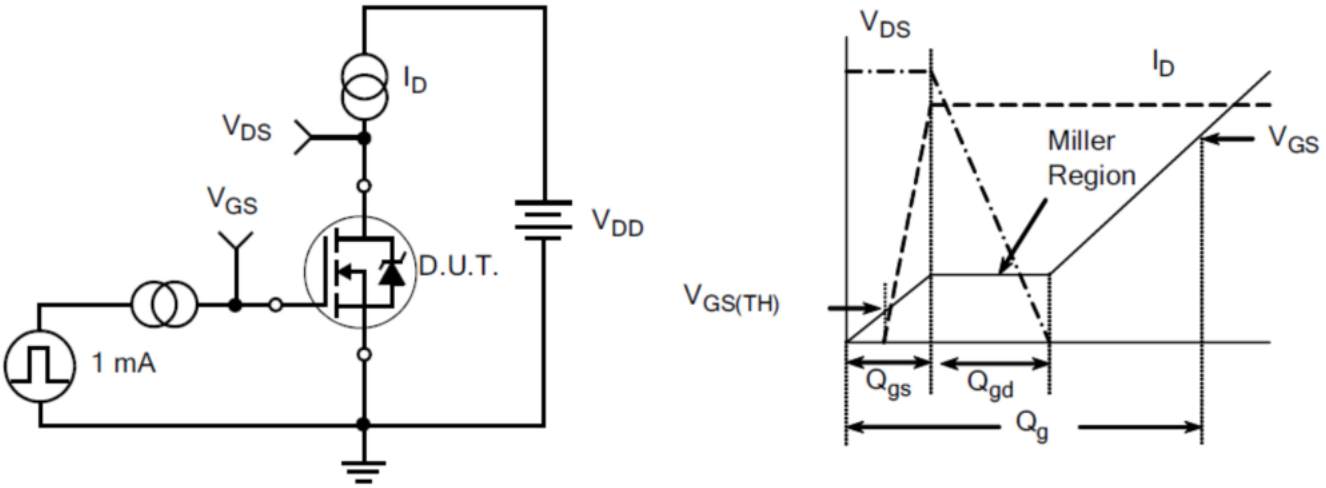


Figure B：Resistive Switching Test Circuit and Waveform

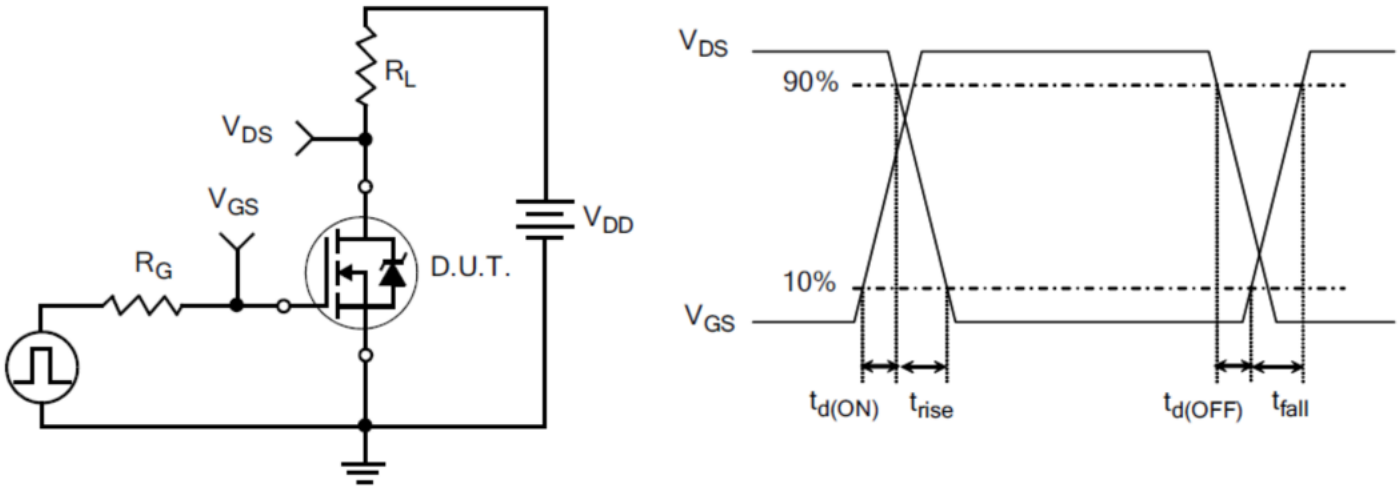
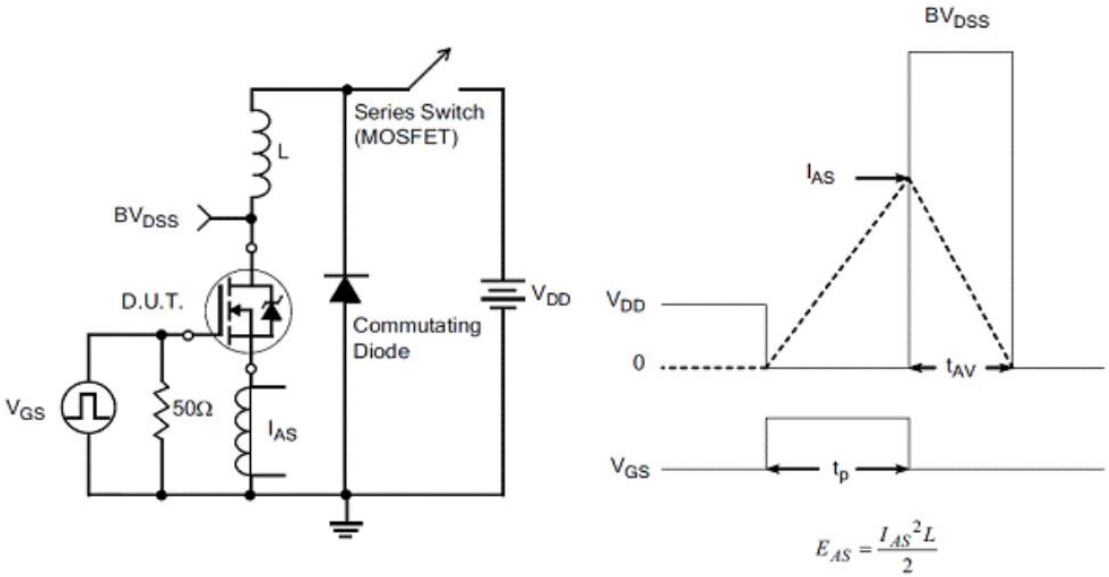
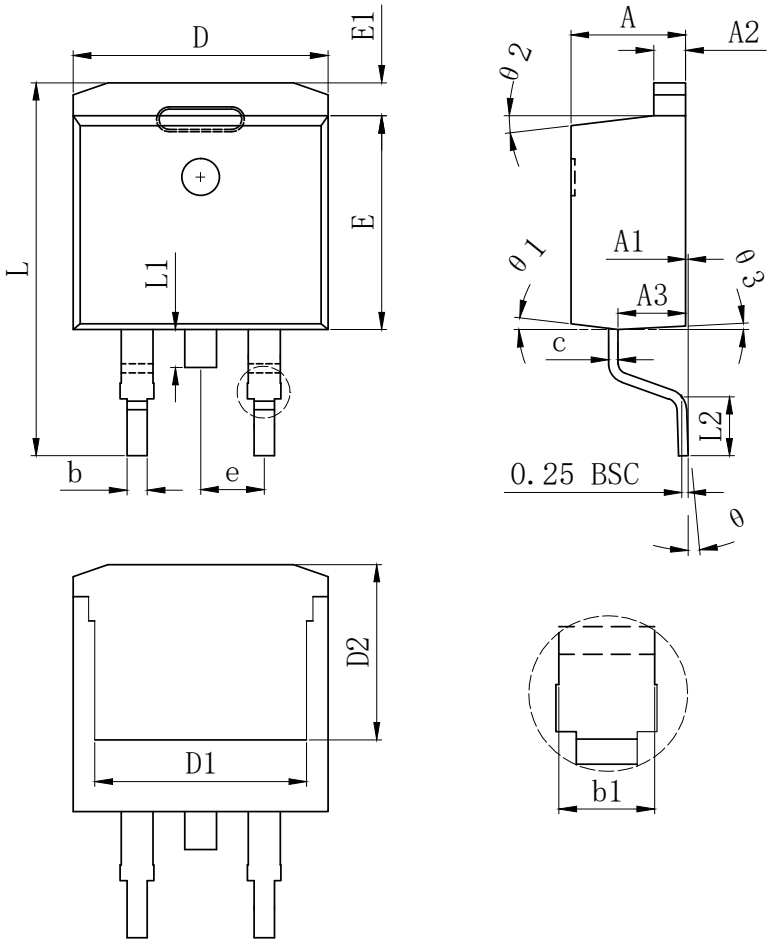


Figure C：Unclamped Inductive Switching Test Circuit and Waveform

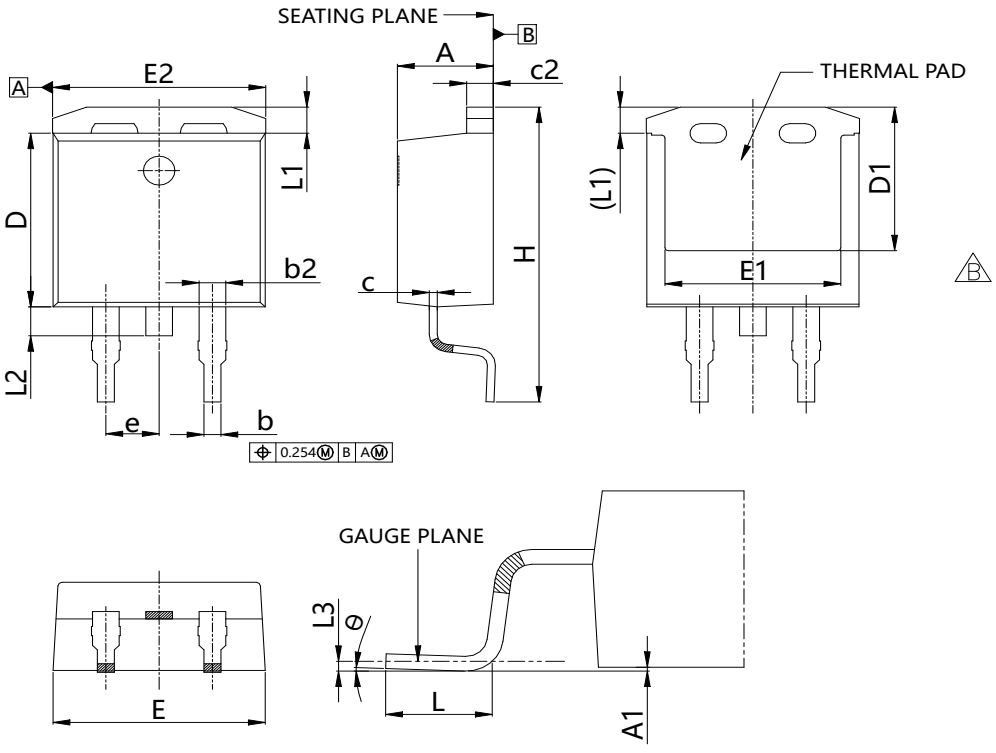


$$E_{AS} = \frac{I_{AS}^2 L}{2}$$

TO-263 PACKAGE INFORMATION



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
θ	0°		9°
θ1	7° TYP		
θ2	7° TYP		
θ3	3° TYP		



SYMBOL	MILLIMETER		
	MIN.	NOMINAL	MAX.
A	4.47	4.57	4.67
A1	0.00	0.10	0.25
b	0.71	0.81	0.91
b2	1.17	1.27	1.37
c	0.360	0.381	0.500
c2	1.17	1.27	1.37
D	8.70	9.00	9.30
D1	7.10	7.44	7.80
E	9.90	10.11	10.30
E1	8.08	8.38	8.68
E2	10.00	10.16	10.30
e	2.44	2.54	2.64
H	15.00	15.28	15.60
L	2.25	2.54	2.80
L1	1.10	1.35	1.60
L2	---	---	1.78
L3	0.254 BSC		
Θ	0°	---	8°

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