

H5N50G

500V N-Channel MOSFET

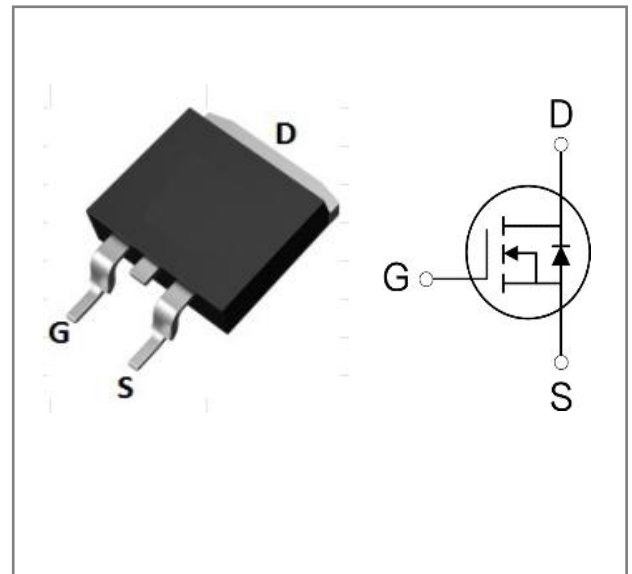
VDSS	R _{DS(ON)} (Typ)	ID
500V	1.2Ω	5A

Features:

- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability
- Enhanced Avalanche Ruggedness
- Lead Free

Applications:

- Switch Mode Power Supply(SMPS)
- Adapter & Charger
- AC-DC Switching Power Supply



Ordering Information

Part Number	Package	Marking	Packing	Qty.
H5N50G	TO-252	H5N50G	Tape&reel	2500 PCS

Absolute Maximun Ratings (Tc= 2 5℃ unless otherwise specified)

Symbol	Parameter	Rating	Units
VDS	Drain-to-Source Voltage	500	V
VGS	Gate- to- Source Voltage	±30	V
ID	Continuous Drain Current TC=25℃	5	A
	Continuous Drain Current TC=100℃	3	
IDM	Pulsed Drain Current	20	
PD	Power Dissipation	52	W
EAS	Single Pulse Avalanche Enenergy L = 10mH, RG = 25 Ω, TC=25℃	200	mJ
TJ, TSTG	Operating Junction and Storage Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ	Max	Unit
RθJC	Thermal Resistance Junction-Case	2.6	--	℃/ W
RθJA	Thermal Resistance Junction-Ambient	62	--	℃/ W

Electrical Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
V(BR)DSS	Drain- Source Breakdown Voltage	500	--	--	V	VGS=0V,ID=250μA
IDSS	Zero Gate Voltage Drain Current (25℃)	--	--	1	μA	VDS=500V,VGS=0V
	Zero Gate Voltage Drain Current (100℃)	--	--	100	μA	VDS=500V,VGS=0V
IGSS	Gate to Source Forward Leakage	--	--	100	nA	VGS=30V ,VDS=0V
	Gate to Source Reverse Leakage	--	--	-100		VGS=-30V ,VDS=0V
VGS(TH)	Gate Threshold Voltage	2	--	4	V	VGS=VDS,ID=250μA
RDS(on)	Static Drain- to- Source On-Resistance	--	1.2	1.5	Ω	VGS=10V,ID=2.5A

Dynamic Electrical Characteristics

Ciss	Input Capacitance	--	478	--	pF	VGS=0V VDS=25V f=1MHz
Coss	Output Capacitance	--	55	--		
Crss	Reverse Transfer Capacitance	--	6.7	--		
Rg	Gate Resistance	--	1.5	--	Ω	f=1MHz
Qg	Total Gate Charge	--	16	--	nC	VDS=400V ID=5A VGS=10V
Qgs	Gate- to- Source Charge	--	3.5	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	5.5	--		

Switching Characteristics

td(ON)	Turn- on Delay Time	--	24	--	nS	VDS=250V ID=5A VGS=10V
trise	Rise Time	--	18	--		
td(OFF)	Turn- OFF Delay Time	--	52	--		
tfall	Fall Time	--	31	--		

Source- Drain Diode Characteristics

VSD	Diode Forward Voltage	--	--	1.4	V	IF=2.5A,VGS=0V
trr	Reverse Recovery Time	--	408	--	nS	VGS=0V,IF=5A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	1.5	--	uC	

Notes:

- * 1. Repetitive rating, pulse width limited by maximum junction temperature.
- * 2. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

Typical Characteristics

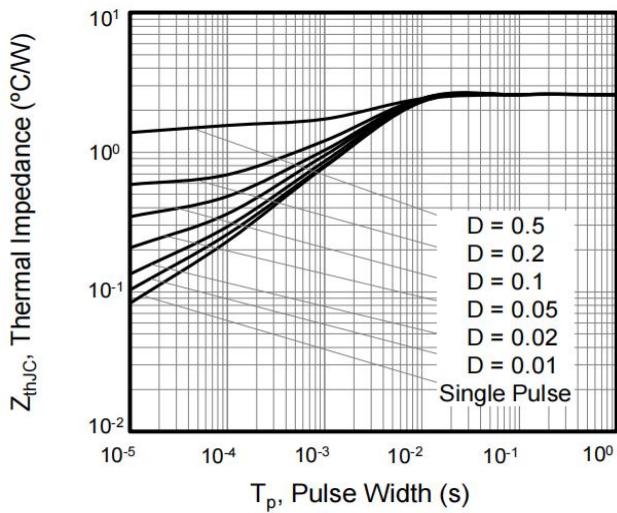


Figure 1. Transient Thermal Impedance

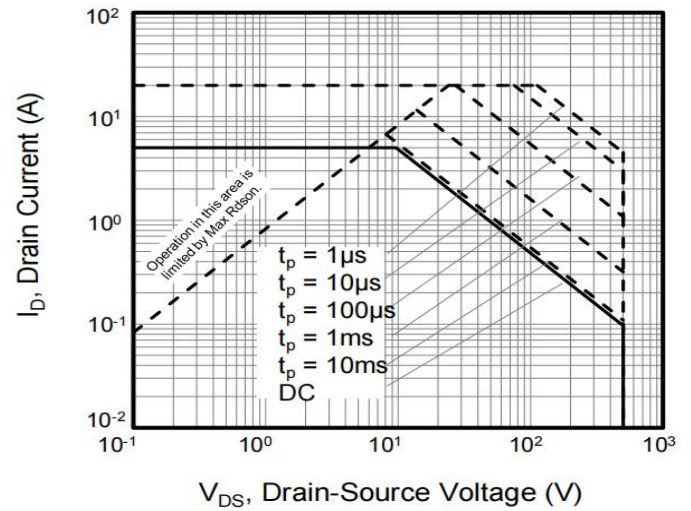


Figure 2. Safe Operation Area

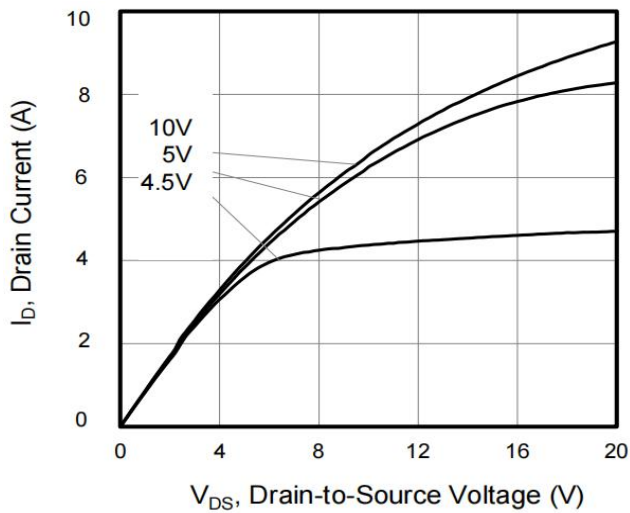


Figure 3. Output Characteristics

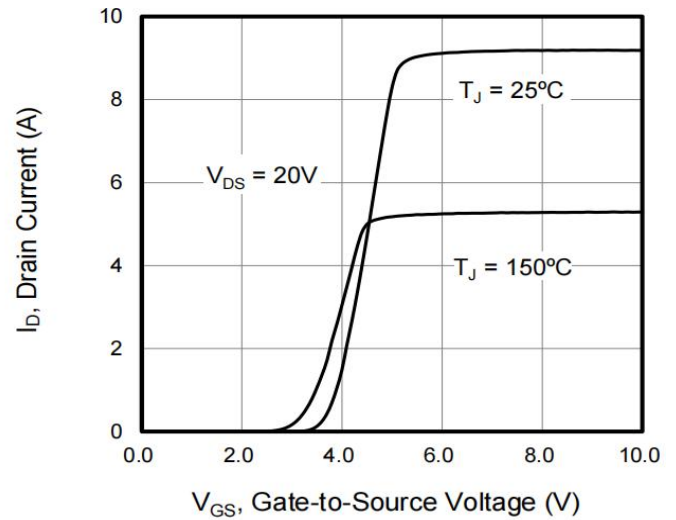


Figure 4. Transfer Characteristics

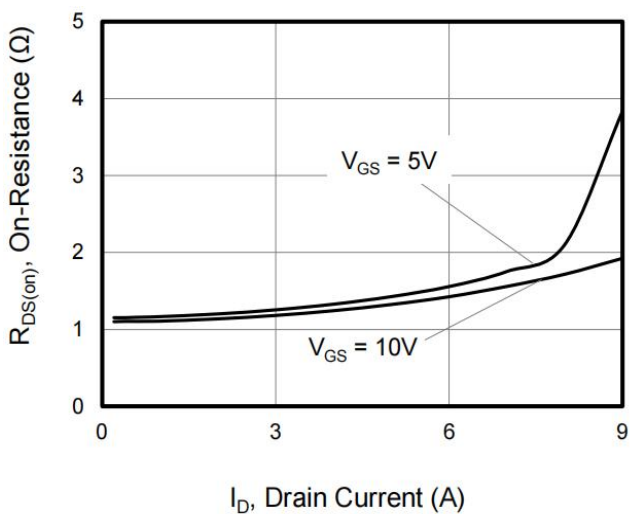


Figure 5. On-Resistance vs Drain Current

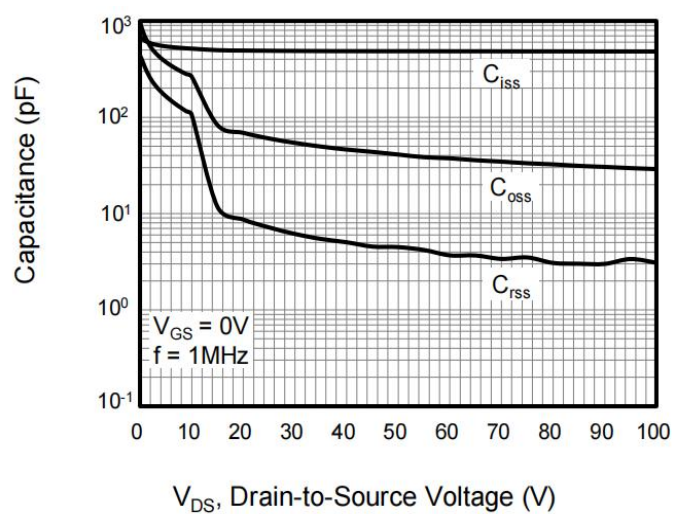


Figure 6. Capacitance

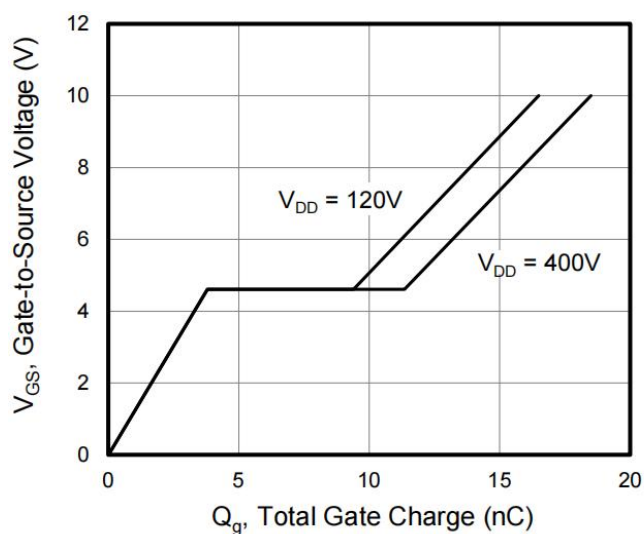


Figure 7. Gate Charge

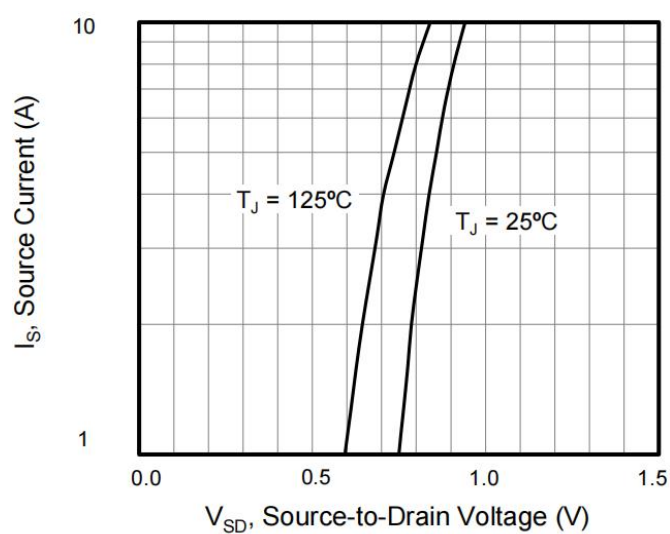


Figure 8. Body Diode Forward Voltage

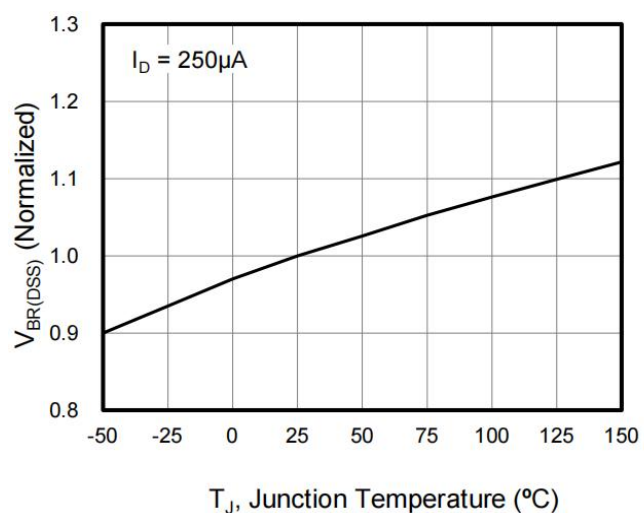


Figure 9. Breakdown Voltage vs Junction Temperature

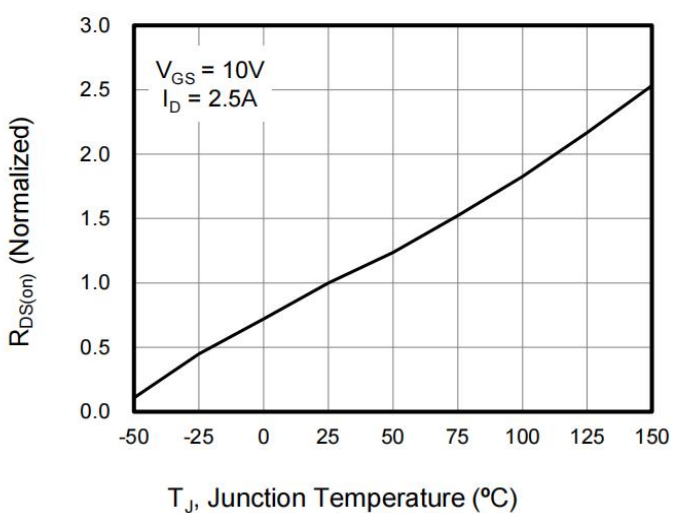


Figure 10. On-Resistance vs Temperature

Test Circuits and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

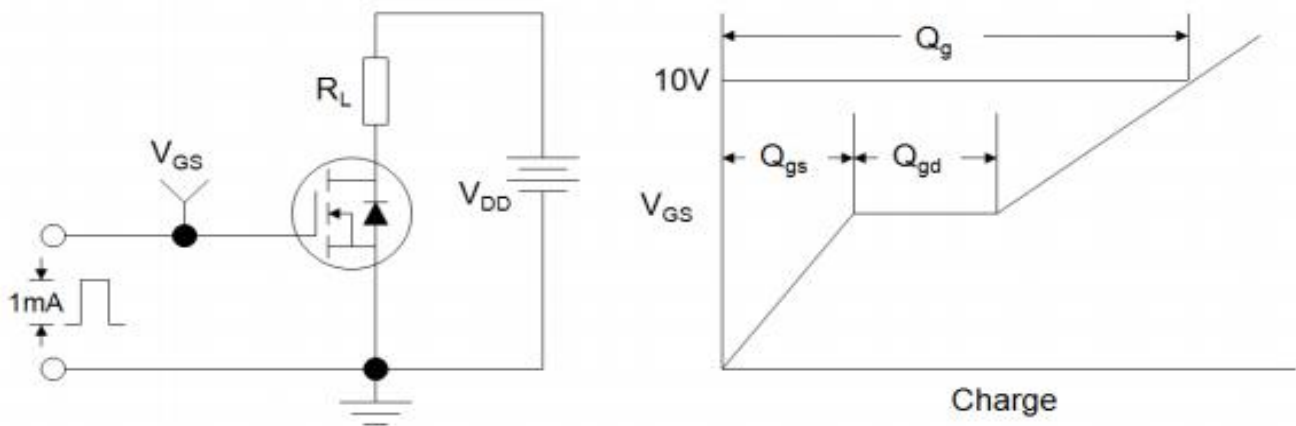


Figure B: Resistive Switching Test Circuit and Waveform

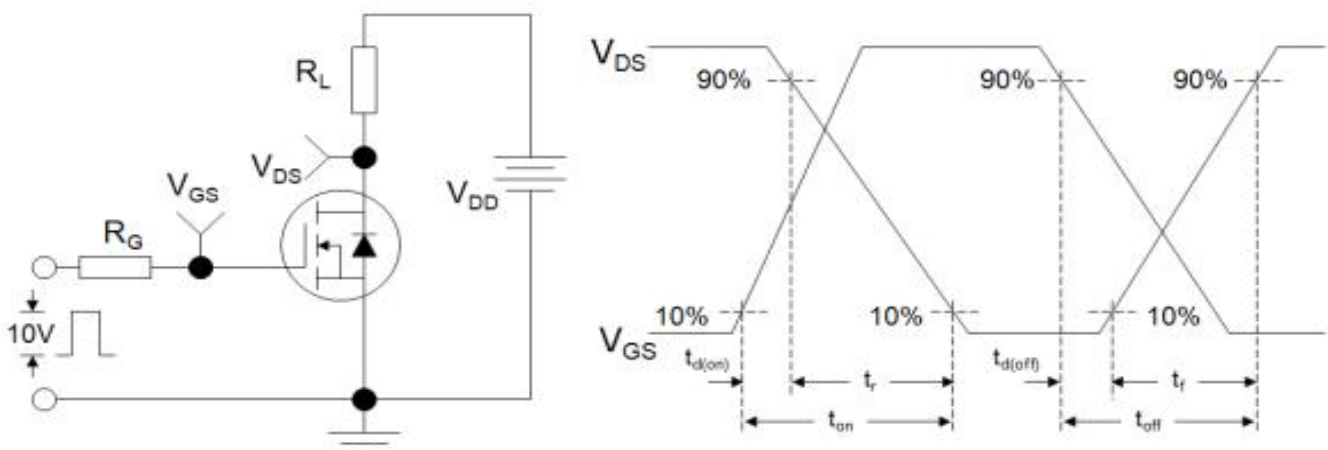
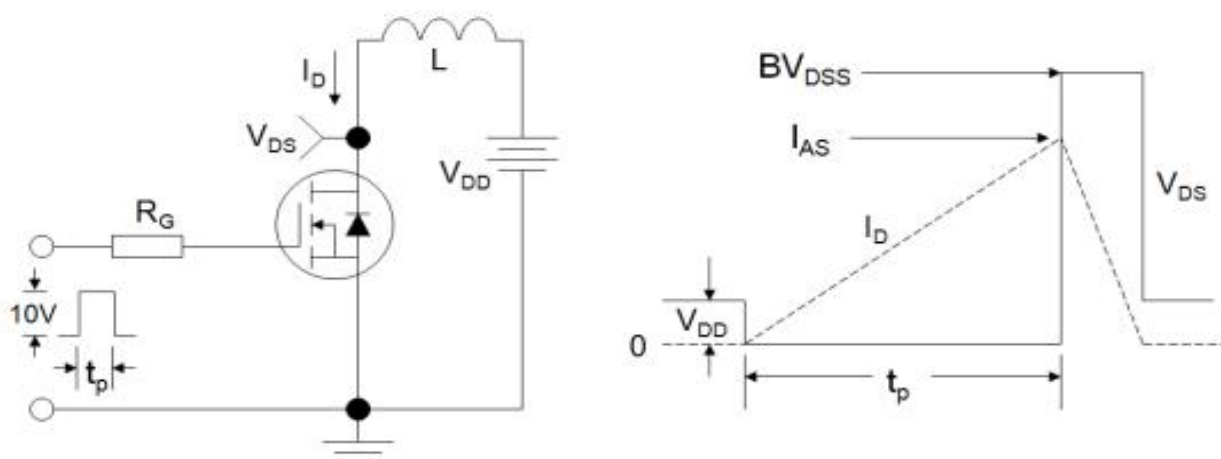
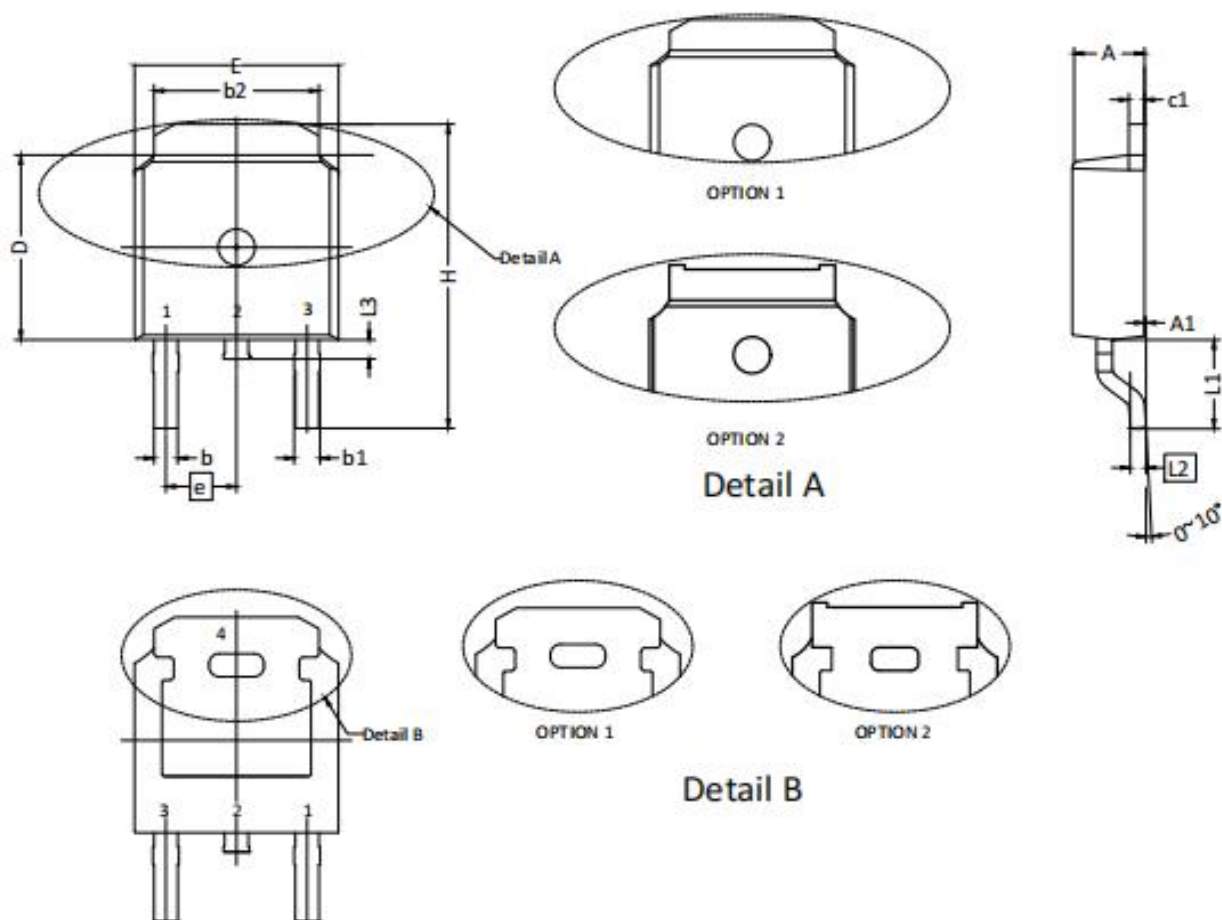


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



Package outline drawing (TO-252 Unit: mm)



SYMBOLS	DIMENSION IN MM		
	MIN	NOM	MAX
A	2.184	2.286	2.400
A1	0.000	---	0.200
b	0.635	0.762	0.889
b1	0.680	0.840	1.143
b2	4.953	5.340	5.500
c1	0.450	0.508	0.630
D	5.969	6.096	6.223
E	6.350	6.604	6.800
e	2.286 BSC		
H	9.398	10.033	10.500
L1	2.921 REF.		
L2	0.408	0.508	0.608
L3	0.600	---	1.016