Features

- R_{DSON_MAX}=4.2mΩ@V_{GS}=10V
- Low gate Charge (typical 96nC)
- Low Crss(typical 14pF)
- Low On-Resistance
- Excellent FoM(figure of merit)
- 100% UIS and R_g tested

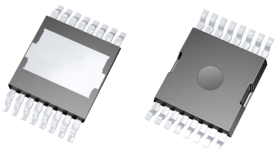
Applications

- Motor Driver
- DC/DC Converter
- Battery Management System

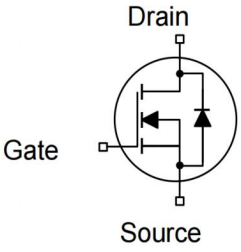
Product Summary

V_{DS}	150 V
$R_{DS(on)_MAX}$	4.2 mΩ
I_D	250 A

100% DVDS Tested
100% Avalanche Tested



TOLT-16L



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
RST038N15NLT	RST038N15NLT	TOLT-16L	Tape&Reel	N/A	N/A	1800 pcs

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted

Parameter		Symbol	Value	Unit
Drain-Source Voltage(V_{GS}=0V)		V_{DS}	150	V
Continuous Drain Current [1]	T_C = 25ºC	I_D	250	A
	T_C = 100ºC		175	
Pulsed Drain Current [2]		$I_{D,pulse}$	1000	A
Gate-Source Voltage		V_{GS}	±20	V
Single Pulse Avalanche Energy [3]		E_{AS}	1262	mJ
Power Dissipation		P_D	481	W
Continuous Diode Forward Current		I_S	250	A
Diode Pulsed Current [2]		$I_{S\ pulse}$	1000	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~+150	ºC
Thermal Resistance, Junction-to-Case		R_{thJC}	0.26	ºC/W
Thermal Resistance, Junction-to-Ambient		R_{thJA}	20	

Electrical Characteristics T_J = 25ºC, unless otherwise noted						
Parameter	**Symbol**	**Test Conditions**	**Value**			**Unit**
			Min.	**Typ.**	**Max.**	
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250uA	150	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 150V V_{GS} = 0V, T_J = 25ºC	--	--	1	uA
		V_{DS} = 150V V_{GS} = 0V, T_J = 150ºC	--	--	100	
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20V	--	--	±100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250uA	2.5	--	4.5	V
Drain-Source On-State-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 70A	--	3.5	4.2	mΩ
Gate Resistance	R_G	f = 1.0MHz	--	3.5	--	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 75V, f = 1.0MHz	--	6609	--	pF
Output Capacitance	C_{oss}		--	790	--	
Reverse Transfer Capacitance	C_{rss}		--	14	--	
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DD} = 75V I_D = 70A	--	96	--	nC
Gate-Source Charge	Q_{gs}		--	41	--	
Gate-Drain Charge	Q_{gd}		--	22.6	--	
Gate Plateau Voltage	$V_{Plateau}$		--	6.4	--	V
Turn-on Delay Time	$t_{d(on)}$	V_{GS} = 10V, V_{DD} = 75V R_G = 6Ω, I_D = 70A	--	30	--	ns
Turn-on Rise Time	t_r		--	40	--	
Turn-off Delay Time	$t_{d(off)}$		--	70	--	
Turn-off Fall Time	t_f		--	15	--	
Drain-Source Body Diode Characteristics						
Body Diode Forward Voltage	V_{SD}	T_J = 25ºC, I_S = 70A, V_{GS} = 0V	--	0.84	1.4	V
Reverse Recovery Time	t_{rr}	I_F = 70A, diF/dt = 100A/us	--	108	--	ns
Reverse Recovery Charge	Q_{rr}		--	270	--	nC

Notes

1) Limited by maximum junction temperature.

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

3) L=0.5mH, R_G=25Ω, V_{GS}=10V, V_{DD}=50V, Start T_J=25℃.

Typical Characteristics T_J = 25ºC, unless otherwise noted

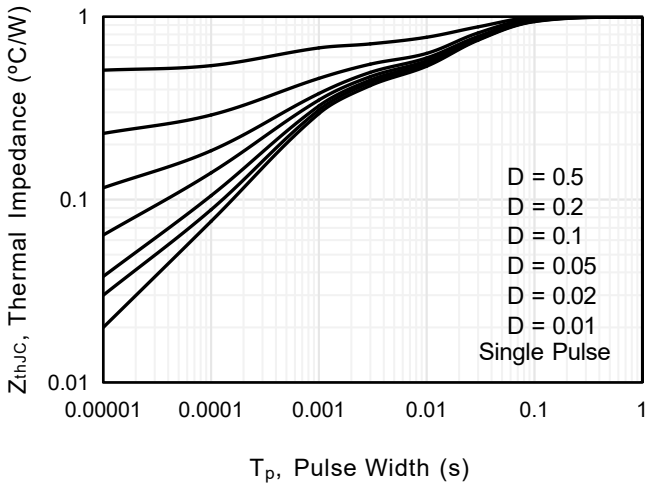


Figure 1. Transient Thermal Impedance

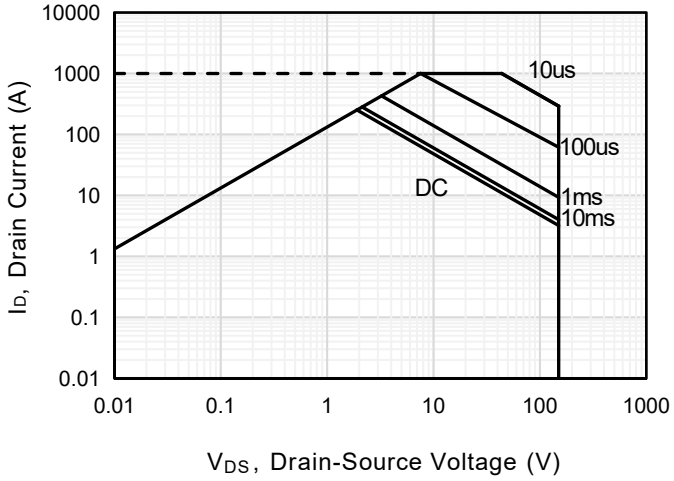


Figure 2 . Safe Operation Area

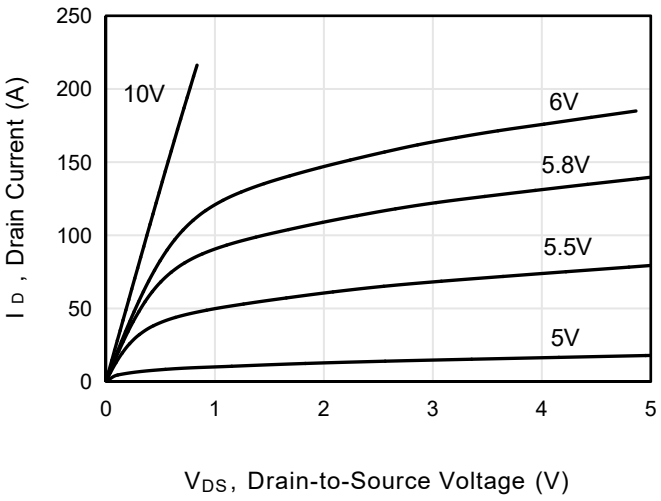


Figure 3 . Output Characteristics

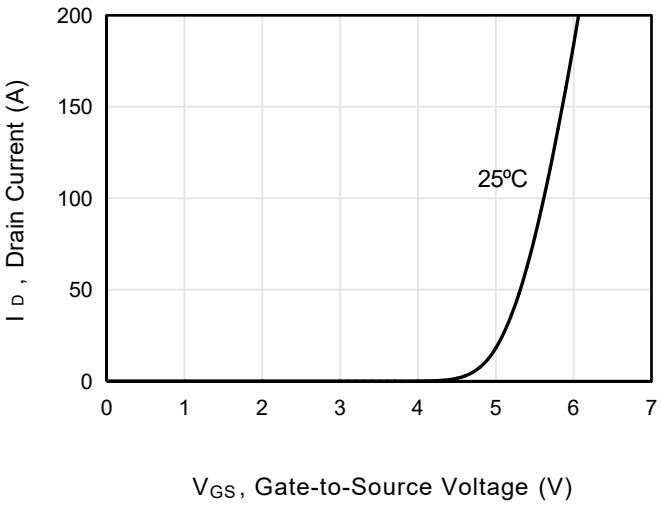


Figure 4 . Transfer Characteristics

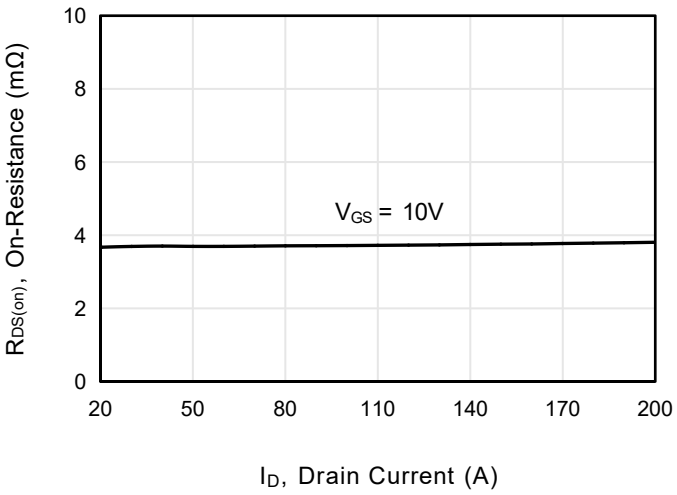


Figure 5 . On-Resistance vs Drain Current

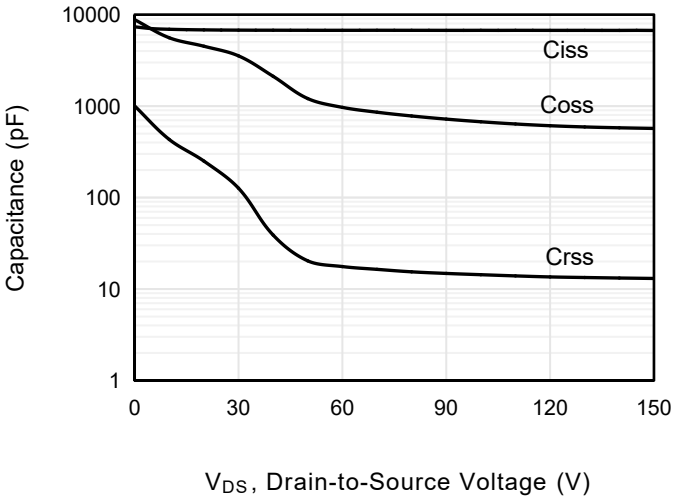


Figure 6 . Capaticance

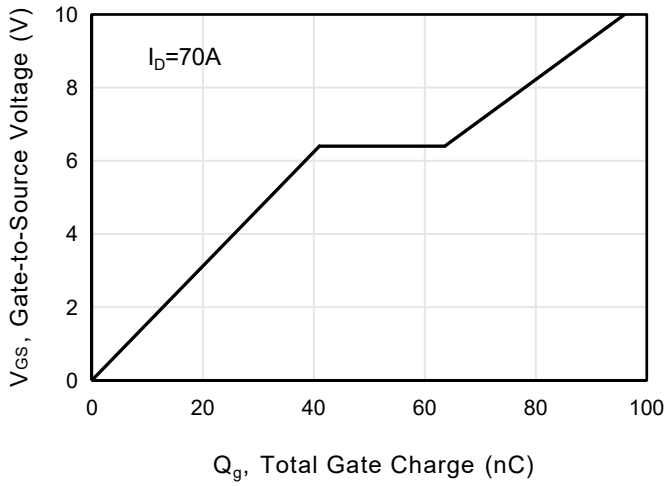


Figure 7 . Gate Charge

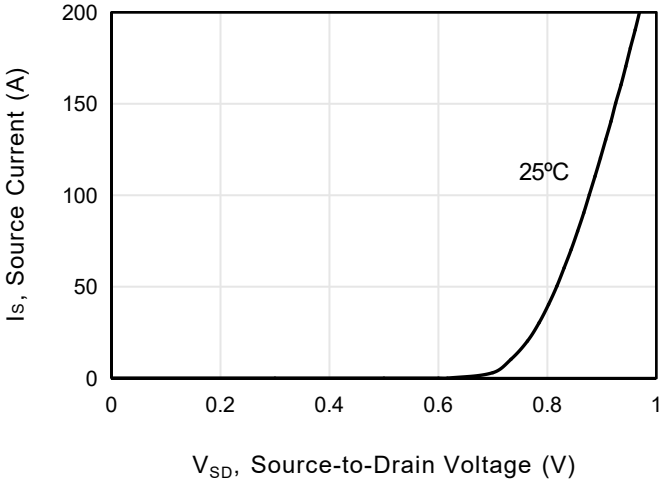


Figure 8 . Body Diode Forward Voltage

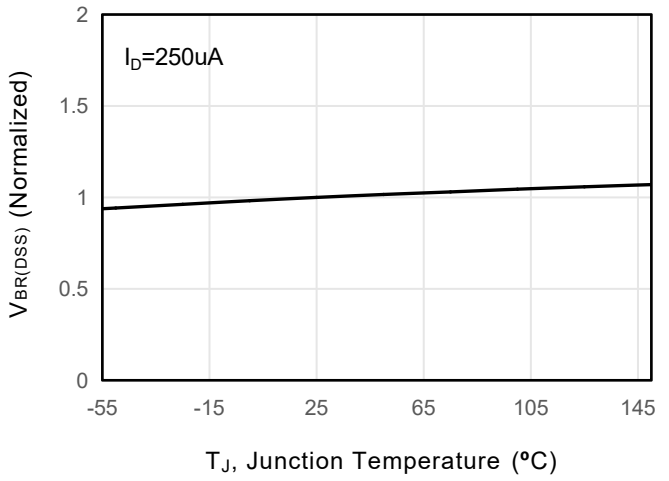


Figure 9. Breakdown Voltage vs Junction Temperature

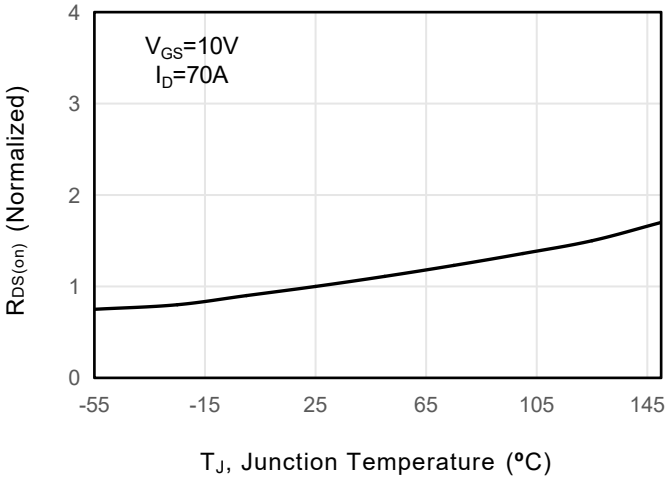


Figure 10. On-Resistance vs Temperature

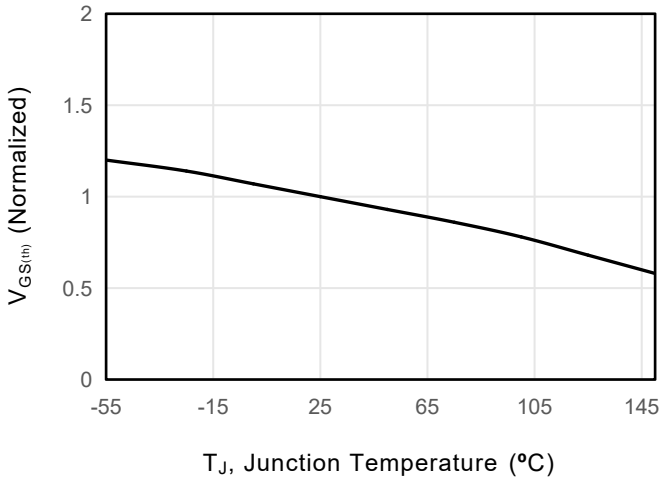


Figure 11. $V_{GS(th)}$ vs Junction Temperature

Figure A：Gate Charge Test Circuit and Waveform

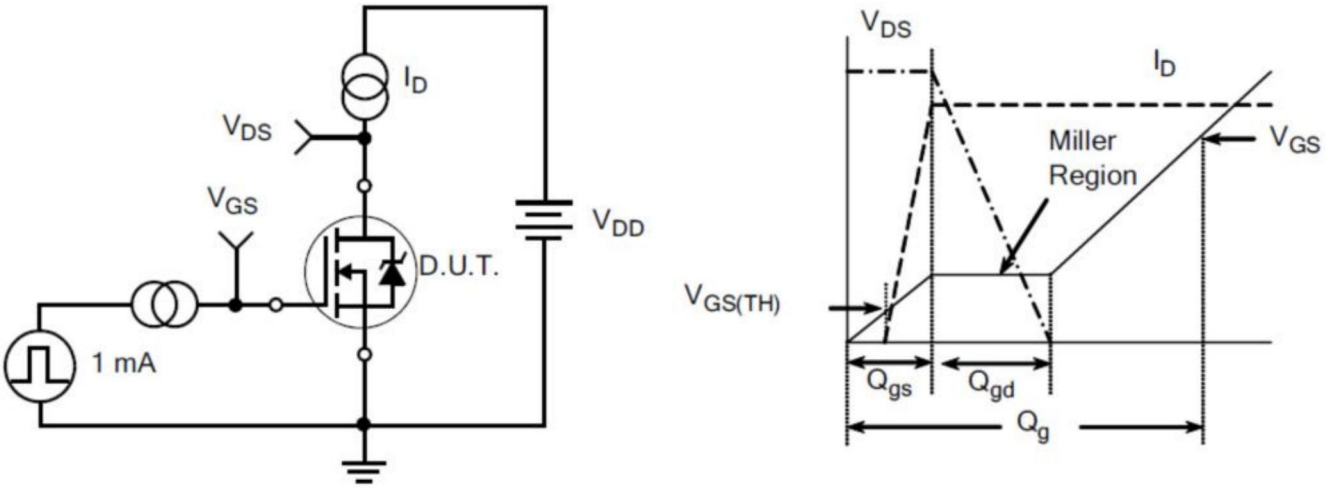


Figure B：Resistive Switching Test Circuit and Waveform

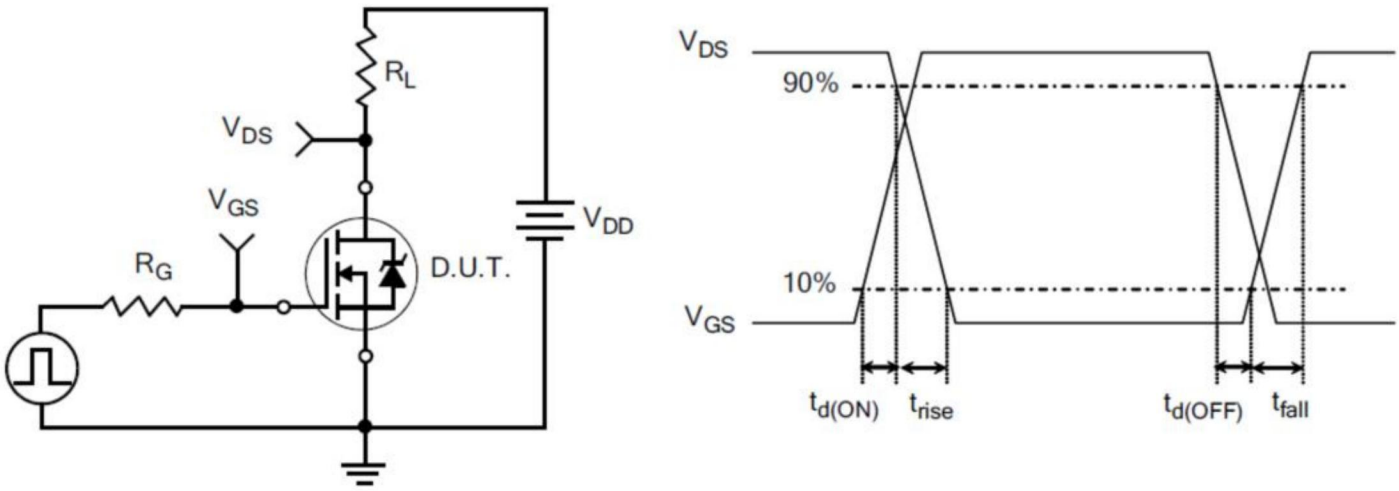
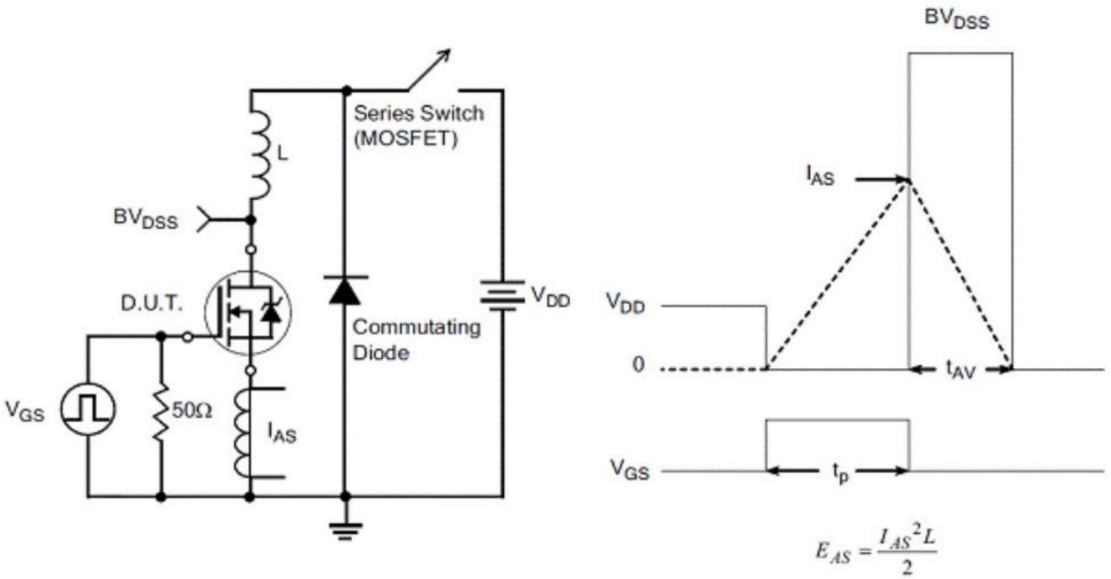
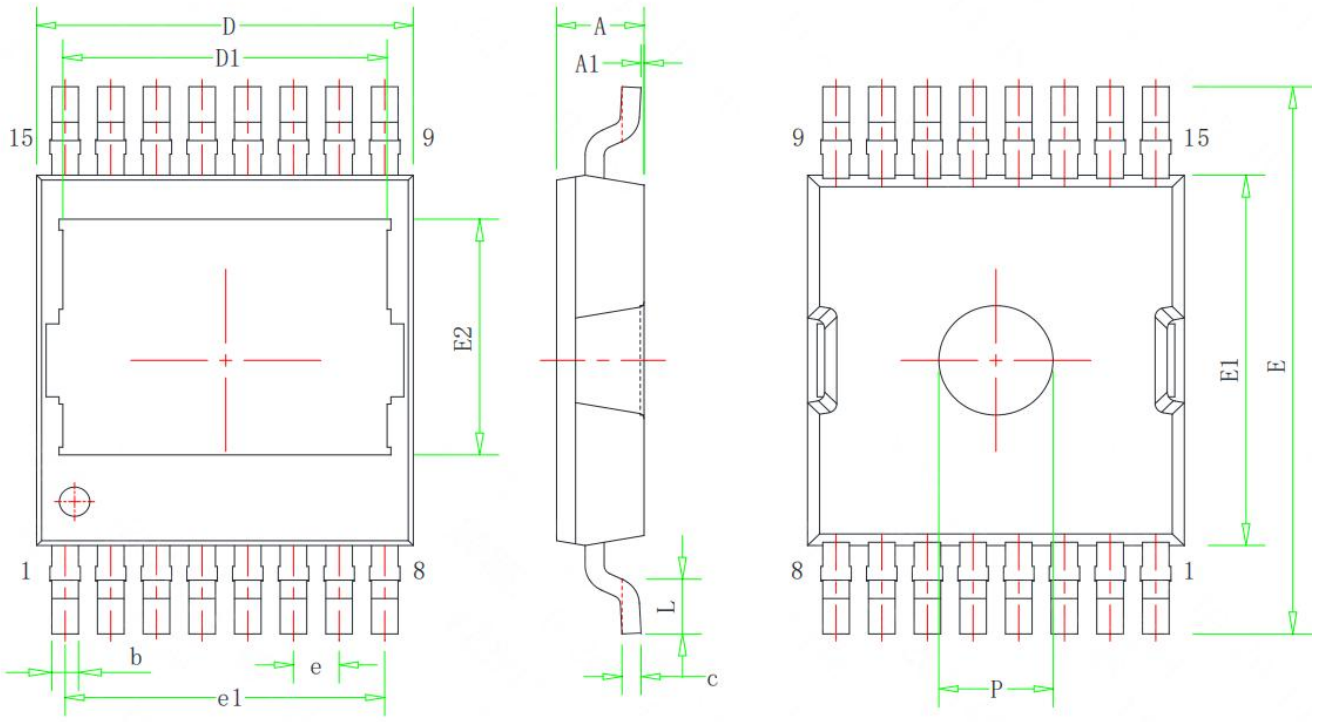


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



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

Package Outline: TOLT-16L



Symbol	Min	Typ	Max
A	2.25	2.3	2.35
A1	0.01		0.16
b	0.65	0.7	0.75
c	0.45	0.5	0.55
D	9.7	9.9	11.1
D1	8.37	8.52	8.67
E	14.8	15	15.2
E1	10	10.15	10.3
E2	6.06	6.26	6.46
e	1.2		
e1	8.4		
L	1.4	1.5	1.6
P	2.9	3	3.1