Features

- R_{DSON_MAX}=1.4mΩ@V_{GS}=10V
- Low gate Charge (typical 232nC)
- Low Crss(typical 113pF)
- Low On-Resistance
- Excellent FoM(figure of merit)
- 100% UIS and R_g tested

Applications

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

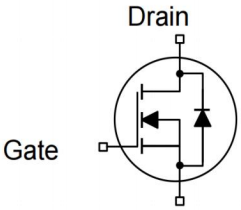
Product Summary

V_{DS}	100 V
$R_{DS(on)_MAX}$	1.4 mΩ
I_D	410 A

100% DVDS Tested
100% Avalanche Tested



TOLL-8L



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
RST014N10NL	RST014N10NL	TOLL	Tape&Reel	N/A	N/A	2000 pcs

Absolute Maximum Ratings T_C = 25ºC, unless otherwise noted				
Parameter		**Symbol**	**Value**	**Unit**
Drain-Source Voltage(V_{GS}=0V)		V_{DS}	100	V
Continuous Drain Current [1]	T_C = 25ºC	I_D	410	A
	T_C = 100ºC		287	
Pulsed Drain Current [2]		$I_{D,pulse}$	1640	A
Gate-Source Voltage		V_{GS}	±20	V
Single Pulse Avalanche Energy [3]		E_{AS}	981	mJ
Power Dissipation		P_D	430	W
Continuous Diode Forward Current		I_S	410	A
Diode Pulsed Current [2]		$I_{S\ pulse}$	1640	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~+150	ºC
Thermal Resistance, Junction-to-Case		R_{thJC}	0.29	ºC/W
Thermal Resistance, Junction-to-Ambient		R_{thJA}	30	

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	100	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V V_{GS} = 0V, T_J = 25ºC	--	--	1	uA
		V_{DS} = 100V 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	--	1.2	1.4	mΩ
Gate Resistance	R_G	f = 1.0MHz	--	1.6	--	Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 50V f = 1.0MHz	--	13333	--	pF
Output Capacitance	C_{oss}		--	3005	--	
Reverse Transfer Capacitance	C_{rss}		--	113	--	
Total Gate Charge	Q_g	V_{GS} = 10V, V_{DS} = 50V I_D = 70A	--	232	--	nC
Gate-Source Charge	Q_{gs}		--	77	--	
Gate-Drain Charge	Q_{gd}		--	72	--	
Gate Plateau Voltage	$V_{Plateau}$		--	6.1	--	V
Turn-on Delay Time	$t_{d(on)}$	V_{GS} = 10V, V_{DS} = 50V R_G = 3Ω, I_D = 70A	--	55	--	ns
Turn-on Rise Time	t_r		--	92	--	
Turn-off Delay Time	$t_{d(off)}$		--	26	--	
Turn-off Fall Time	t_f		--	35	--	
Drain-Source Body Diode Characteristics						
Body Diode Forward Voltage	V_{SD}	I_F = 70A,V_{GS} = 0V	--	0.84	1.4	V
Reverse Recovery Time	t_{rr}	I_F = 70A, diF/dt = 100A/us	--	92	--	ns
Reverse Recovery Charge	Q_{rr}		--	236	--	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

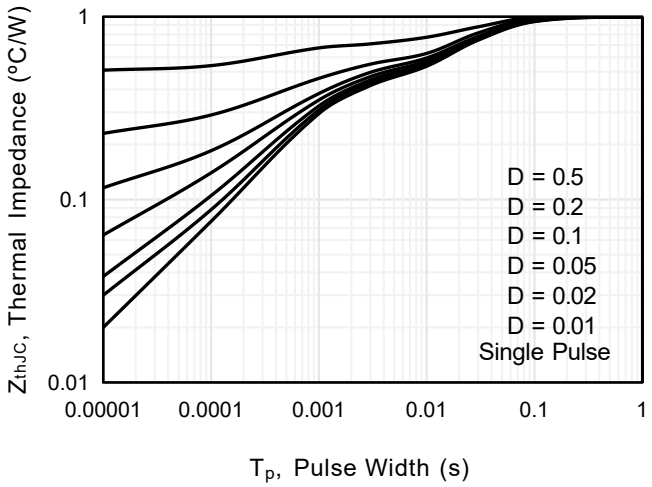


Figure 1. Transient Thermal Impedance

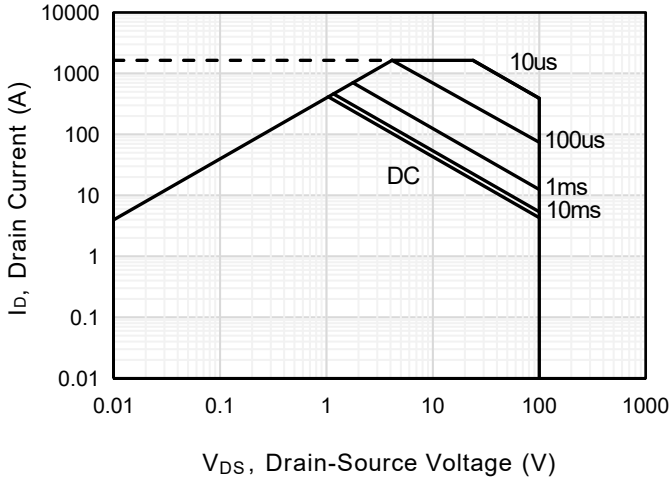


Figure 2 . Safe Operation Area

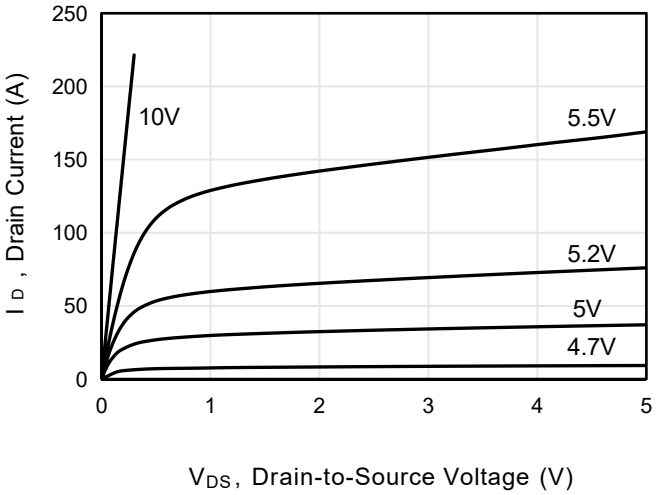


Figure 3 . Output Characteristics

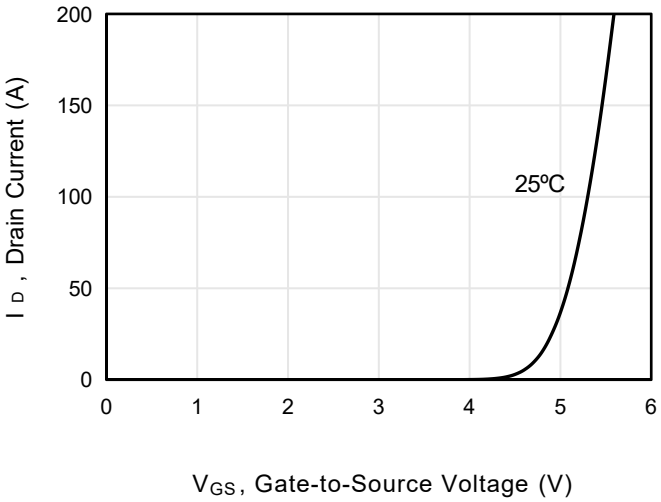


Figure 4 . Transfer Characteristics

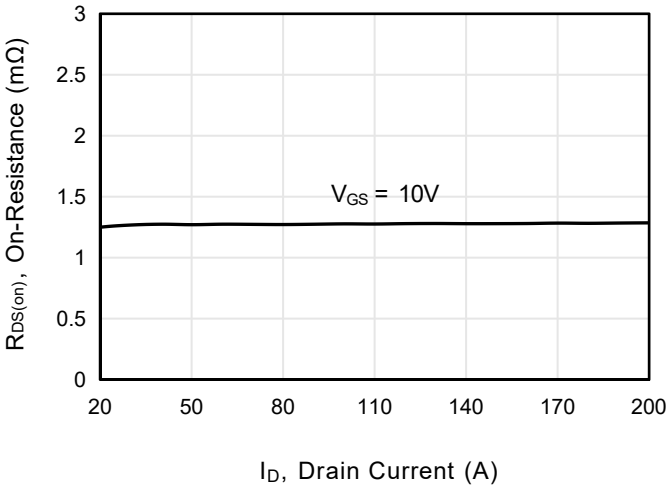


Figure 5 . On-Resistance vs Drain Current

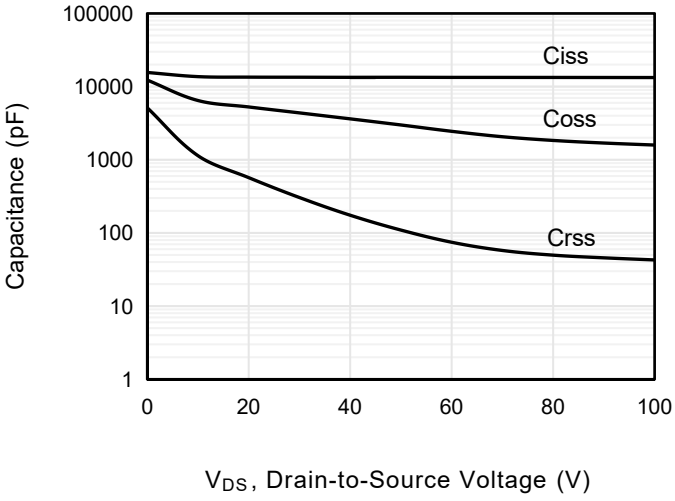


Figure 6 . Capaticance

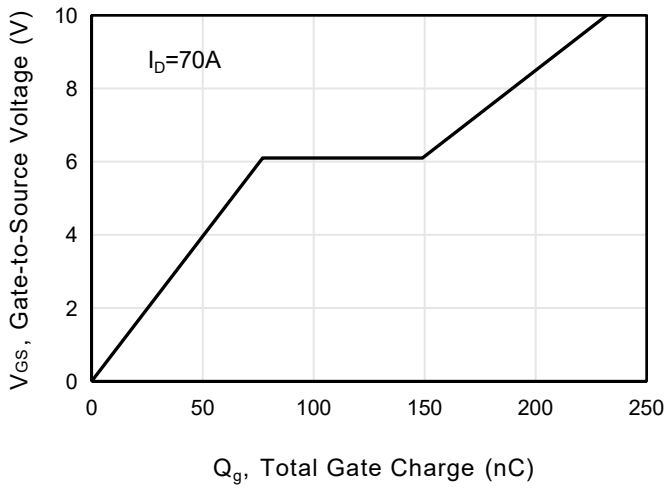


Figure 7 . Gate Charge

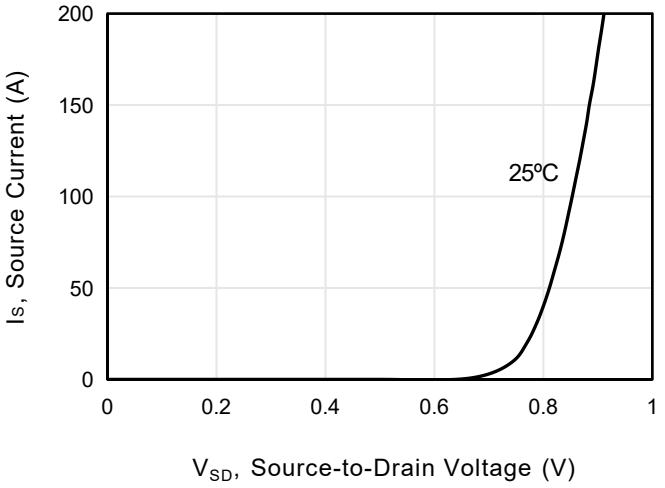


Figure 8 . Body Diode Forward Voltage

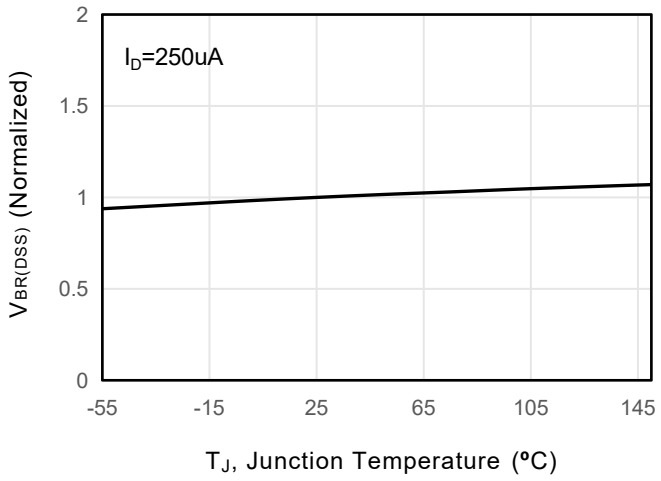


Figure 9. Breakdown Voltage vs Junction Temperature

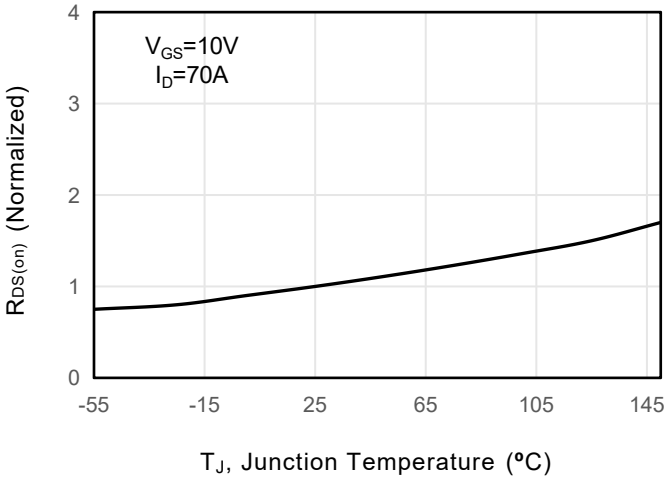


Figure 10. On-Resistance vs Temperature

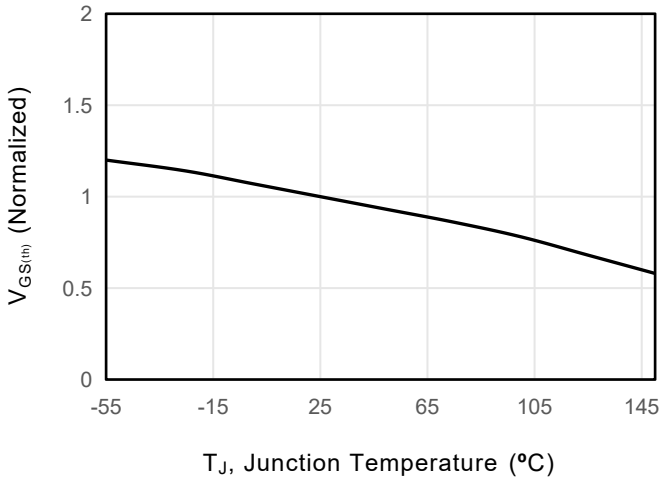


Figure 11. $V_{GS(th)}$ vs Junction Temperature

Figure A：Gate Charge Test Circuit and Waveform

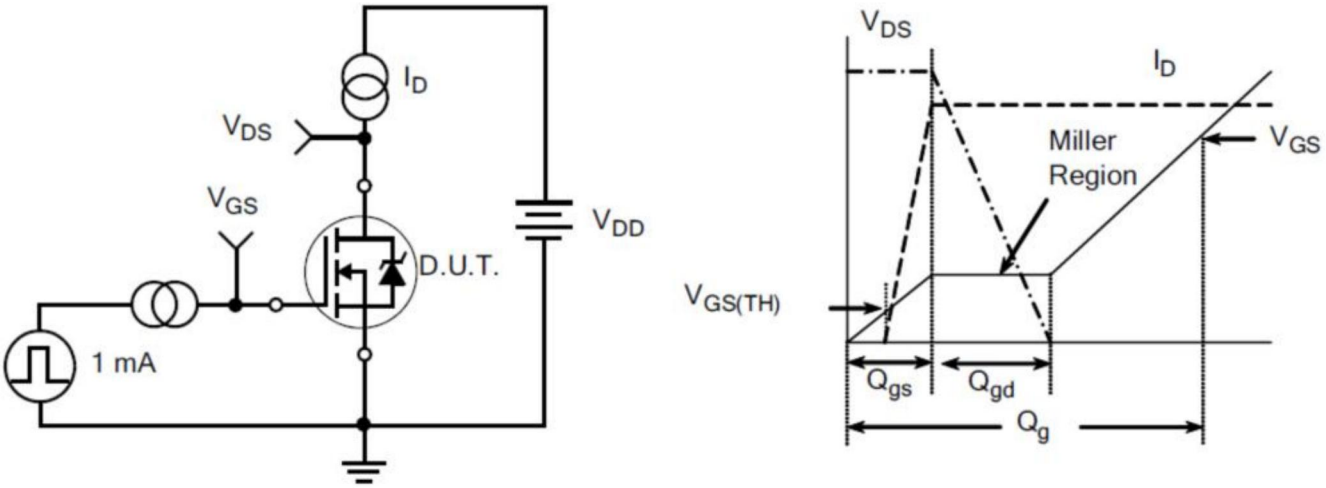


Figure B：Resistive Switching Test Circuit and Waveform

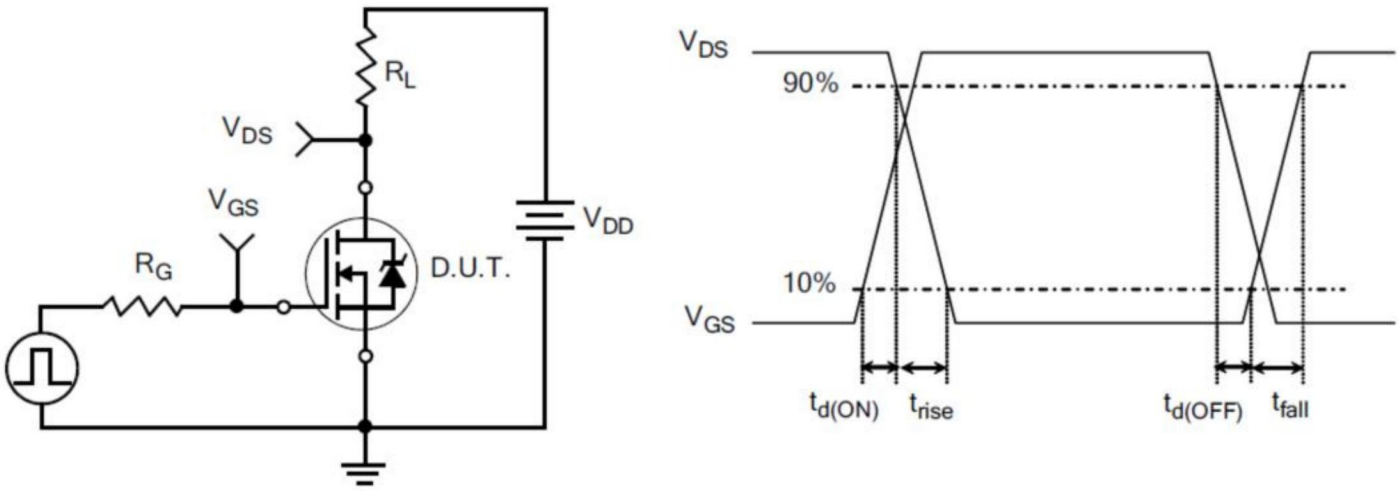
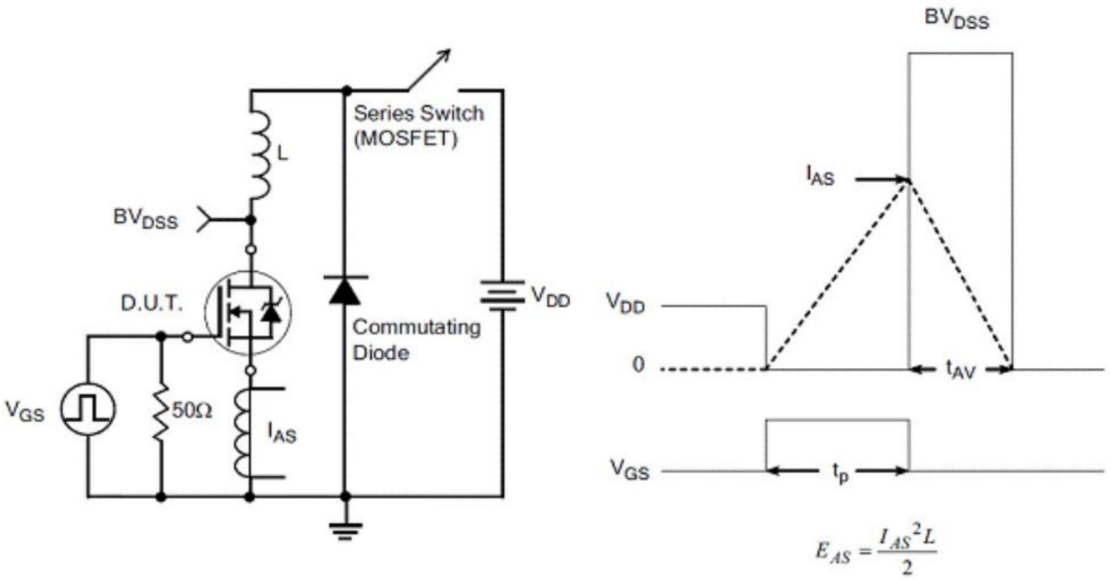
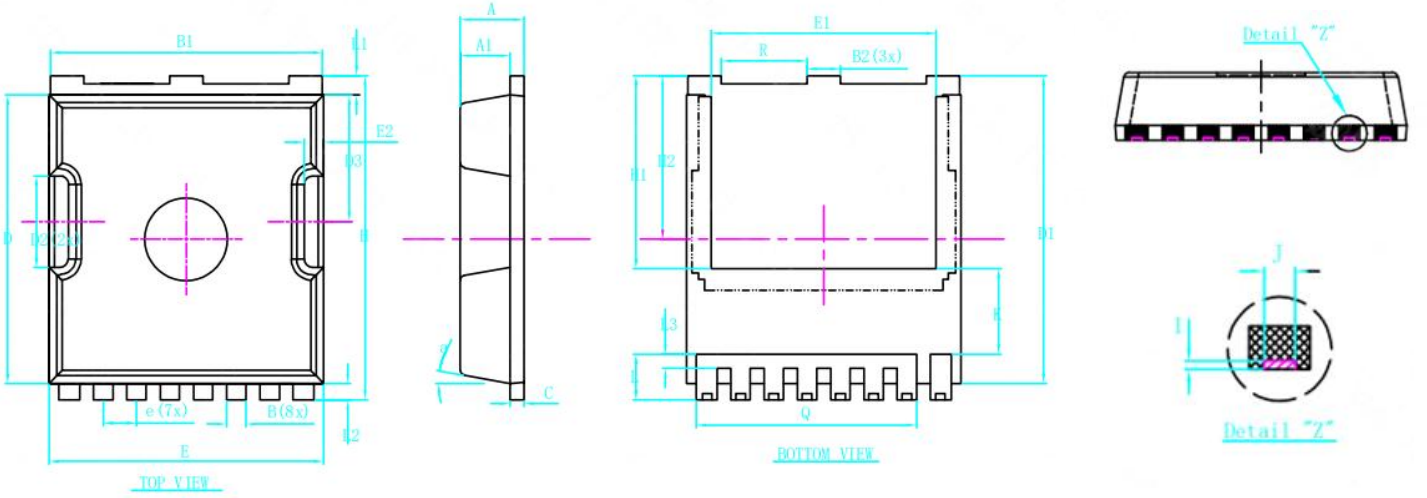


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



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

Package Outline: TOLL-8L



SYMBOL	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.200	2.300	2.400
A1	1.700	1.800	1.900
B	0.700	0.800	0.900
B1	9.700	9.800	9.900
B2	1.100	1.200	1.300
C	0.400	0.500	0.600
D	10.300	10.400	10.500
D1	11.000	11.100	11.200
D2	3.200	3.300	3.400
D3	4.470	4.570	4.670
E	9.800	9.900	10.000
E1	8.000	8.100	8.200
E2	0.500	0.600	0.700
e		1.200 BSC	
H	11.600	11.700	11.800
H1		6.950 BSC	
H2		5.900 BSC	
I	0.050	0.100	0.15
J		0.350 REF.	
K		3.100 REF.	
L	1.550	1.650	1.750
L1	0.600	0.700	0.800
L2	0.500	0.600	0.700
L3	0.400	0.500	0.600
Q		8.000 REF.	
R	3.000	3.100	3.200
a		10° REF.	