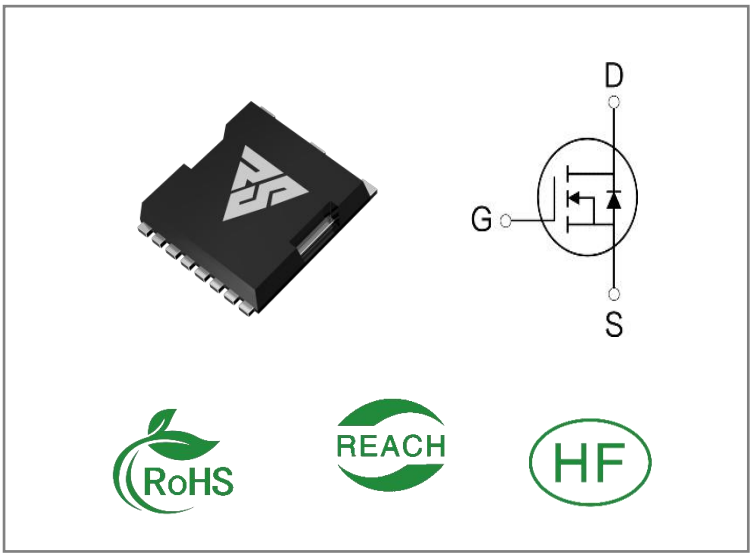
ID	R_{DS}(ON)(Typ)	VDSS
210A	1.9mΩ	105V



Applications:
- Load Switch
- PWM Applications
- Power Managment

Features:
- Fast switching speed
- 100% avalanche tested
- Improved dv/dt capability

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RS105N210I	T0LL-8L	RS105N210I	Tape&reel	2000 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS105N210I	Units
VDSS	Drain-to-Source Voltage	105	V
ID	Continuous Drain Current TC=25℃ Notes *1)	210	A
ID	Continuous Drain Current TC=100℃	121	
IDM	Pulsed Drain Current Notes *2)	772	
PD	Power Dissipation	178	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy Notes *3) L = 0.5mH,VDD =50V, RG = 25Ω, Tj = 25℃	1536	mJ
TL TPKG	Maximum Temperature for Soldering	300 260	℃
	Leads at 0.063in(1.6mm)from Case for 10 seconds Package Body for 10 seconds		
TJ and TSTG	Operating Junction and Storage Temperature Range	-55 to 150	

* Drain Current Limited by Maximum Junction Temperature
Caution: Stresses greater than those listed in the“ Absolute Maximum Ratings” Table may cause permanent damage to the device.

Thermal Resistance

Symbol	Parameter	RS105N210I	Units	Test Conditions
RθJC	Junction-to-Case	0.63	℃/ W	Drain lead soldered to water cooled heatsink, PD adjusted for a peak junction temperature of + 1 5 0 ℃

OFF Characteristics TJ= 25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BVDSS	Drain- to- source Breakdown Voltage	105	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	--	--	1	μA	VDS=80V VGS=0V
IGSS	Gate- to- Source Forward Leakage	--	--	100	nA	VGS=20V VDS=0V
	Gate- to- Source Reverse Leakage	--	--	-100		VGS=-20V VDS=0V

ON Characteristics TJ=25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
RDS(on)	Static Drain- to- Source On-Resistance	--	1.9	2.5	mΩ	VGS=10V ID=20A
VGS (TH)	Gate Threshold Voltage	2.0	2.9	4.0	V	VGS=VDS ID=250μA

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
td(ON)	Turn- on Delay Time	--	26	--	nS	VDS=50V RG=3Ω ID=20A VGS=10V
trise	Rise Time	--	43	--		
td(OFF)	Turn- OFF Delay Time	--	113	--		
tfall	Fall Time	--	64	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	10093	--	pF	VGS= 0V VDS=50V f=1MHz
Coss	Output Capacitance	--	1559	--		
Crss	Reverse Transfer Capacitance	--	67	--		
Qg	Total Gate Charge	--	160	--	nC	VDS= 50V ID=20A VGS=10V
Qgs	Gate- to- Source Charge	--	47	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	39	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Source Current	--	--	200	A	Integral pn- diode in MOSFET
VSD	Diode Forward Voltage	--	--	1.0	V	IS=1A VGS=0V
trr	Reverse Recovery Time	--	100	--	nS	VGS=0V IS=15A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	258	--	nC	

Notes:

* 1. Computed continuous current assumes the condition of TJ_Max while the actual continuous current depends on the thermal & electro-mechanical
application board design

* 2. This single-pulse measurement was taken under TJ_Max = 150°C

* 3. EAS of 1536 mJ is based on starting TJ = 25°C, L = 3.0mH, IAS = 45A, VGS = 10V, VDD = 50V; 100% test at L =0.5mH, IAS =64A

* 4. The power dissipation PD is based on TJ_Max = 150°C.

* 5. This value is guaranteed by design hence it is not included in the production test.

Typical Feature Curve

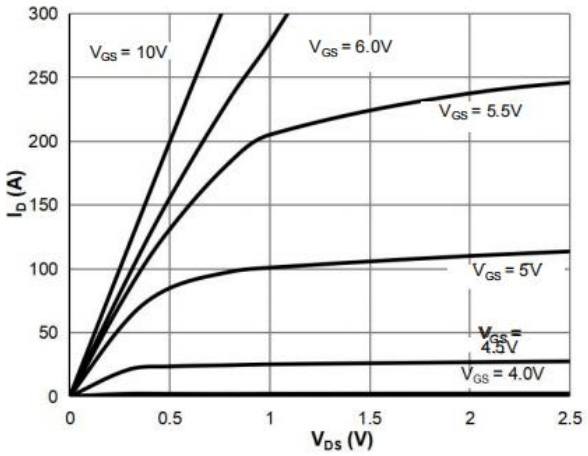


Figure 1: Saturation Characteristics

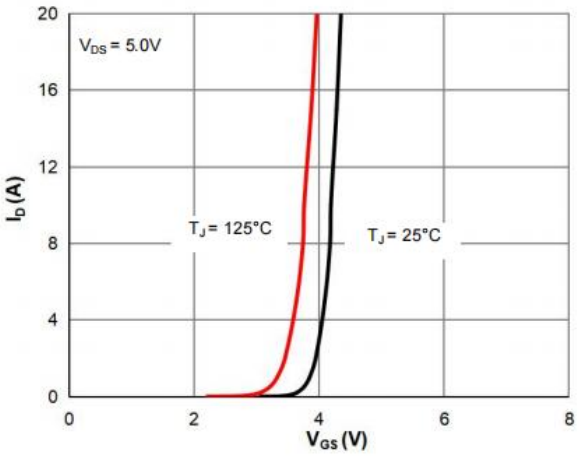


Figure 2: Transfer Characteristics

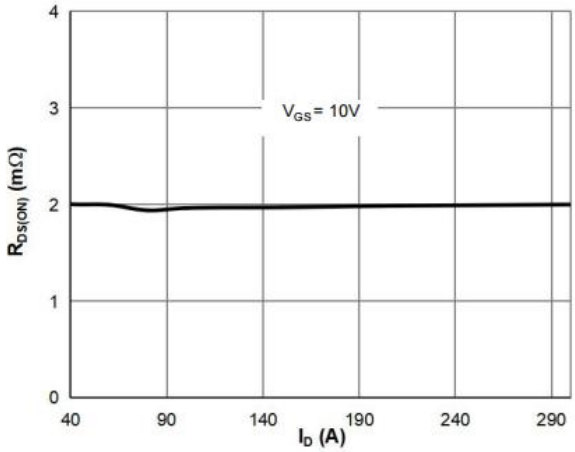


Figure 3: $R_{DS(ON)}$ vs. Drain Current

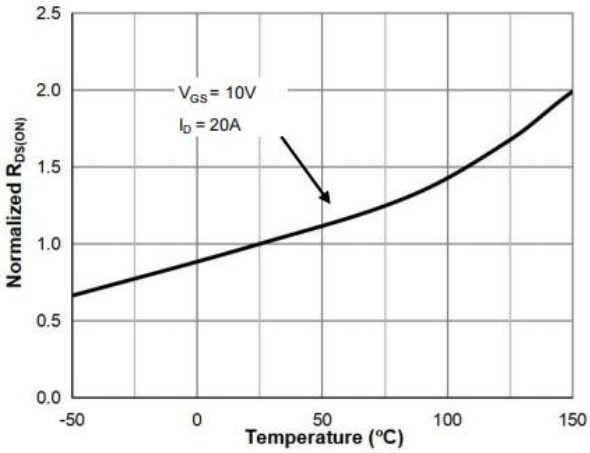


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

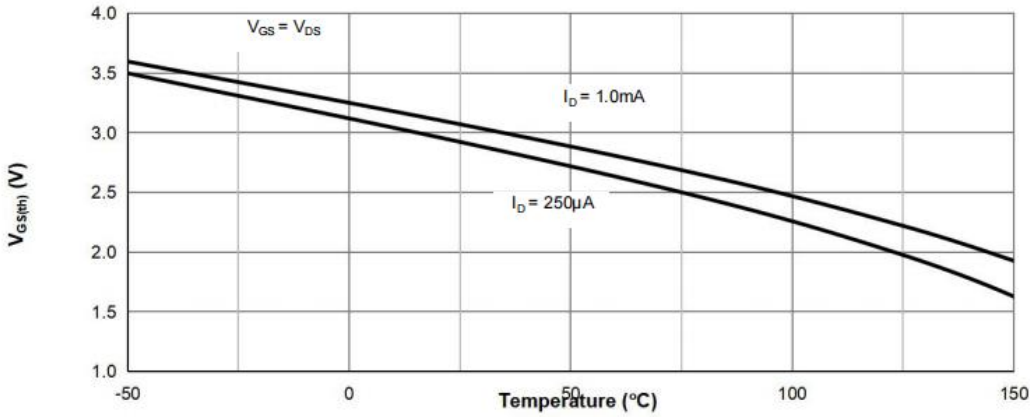


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

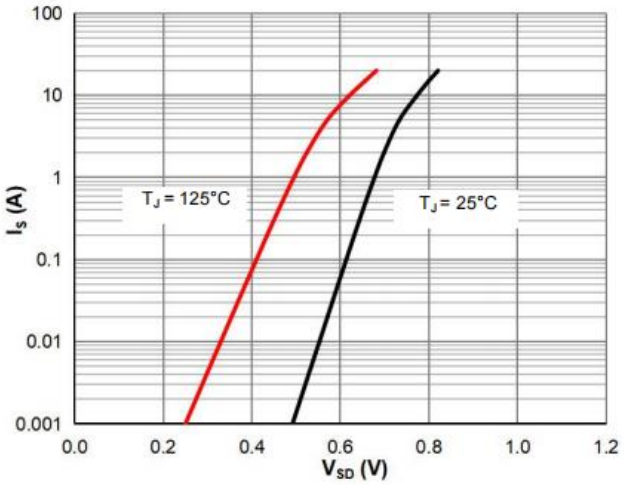


Figure 7: Body-Diode Characteristics

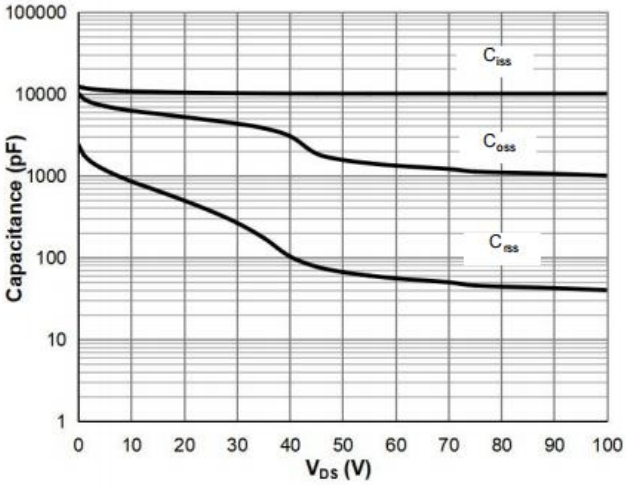


Figure 8: Capacitance Characteristics

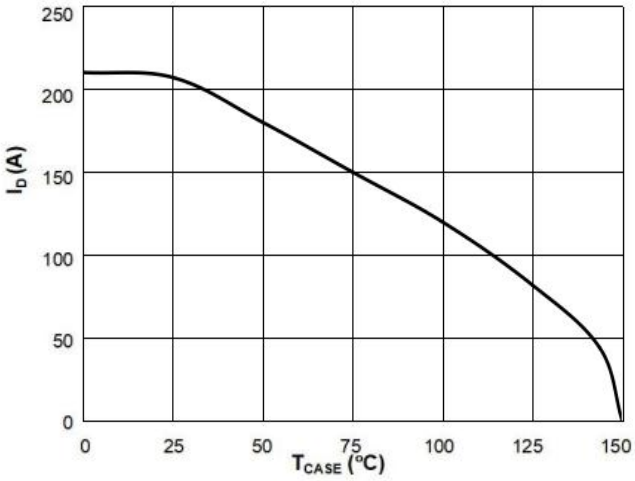


Figure 9: Current De-rating

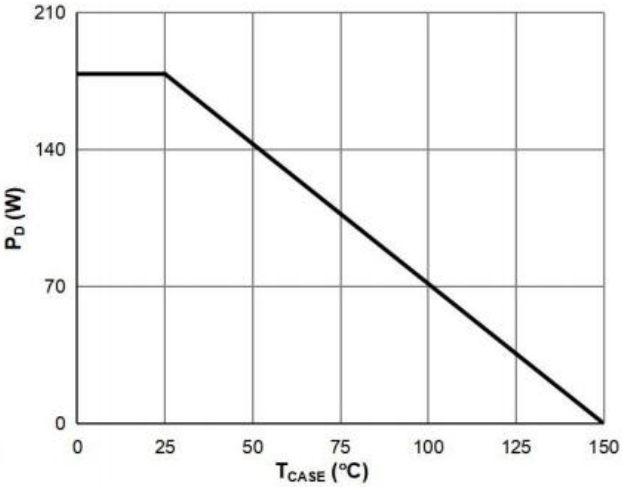


Figure 10: Power De-rating

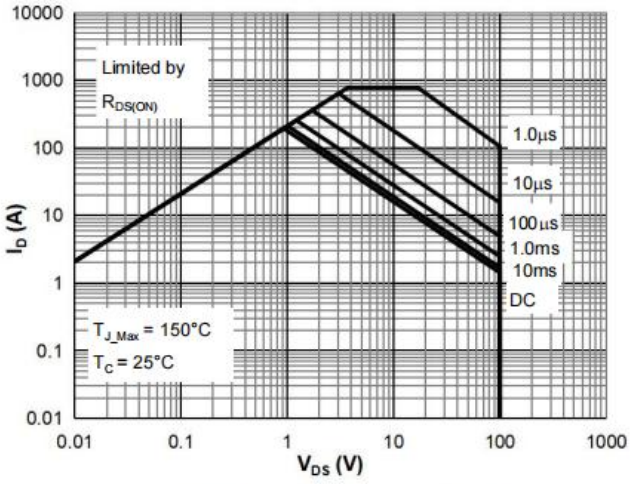


Figure 11: Maximum Safe Operating Area

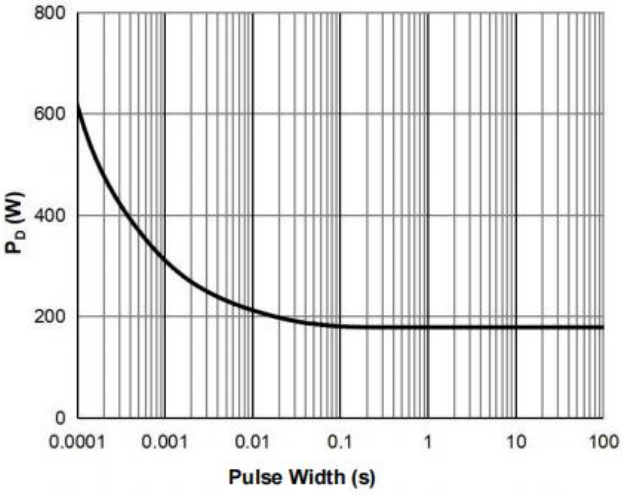


Figure 12: Single Pulse Power Rating, Junction-to-Case

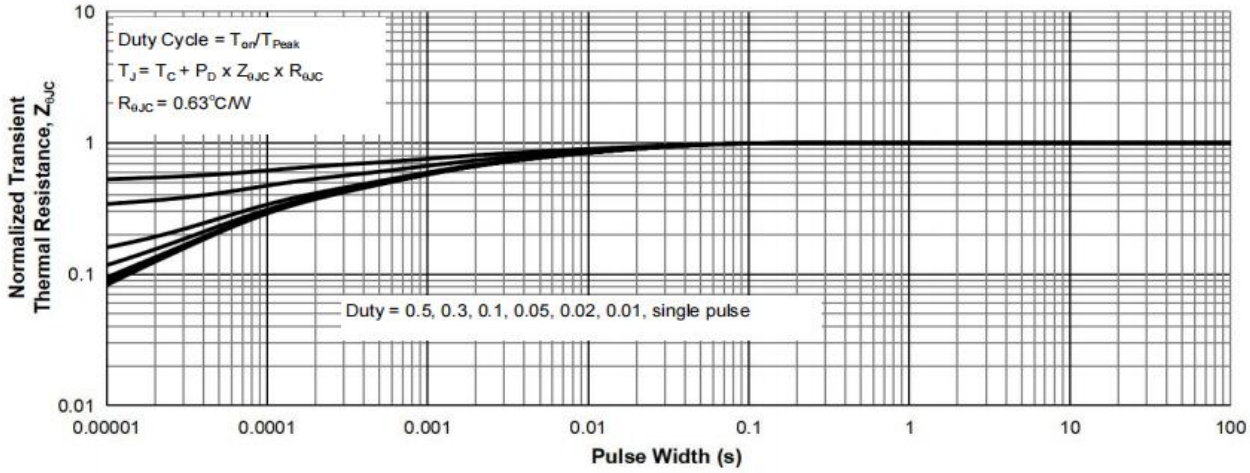


Figure 13: Normalized Maximum Transient Thermal Impedance

Test ircuits and Waveforms

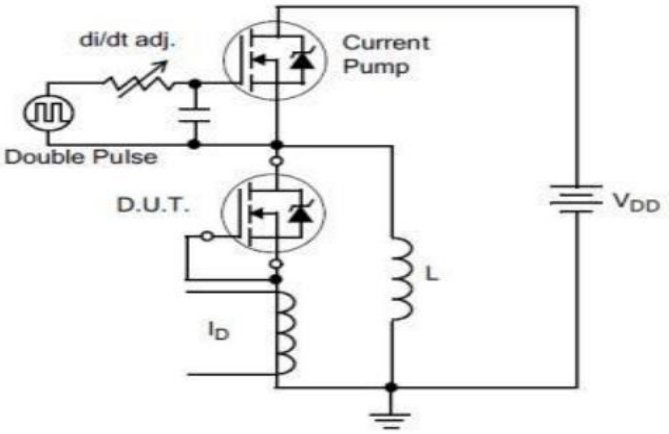


Figure E.Diode Reverse Recovery Test Circuit

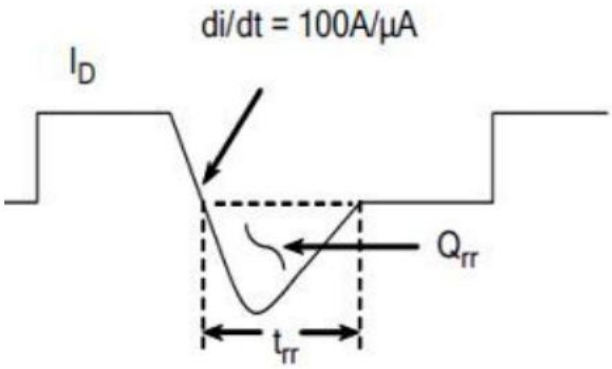


Figure F.Diode Reverse Recovery Waveform

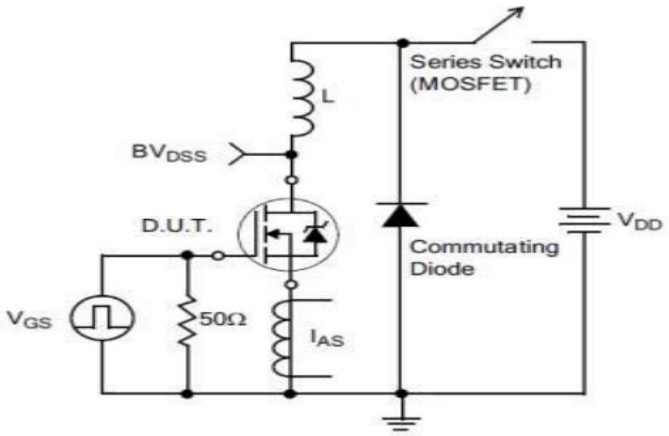
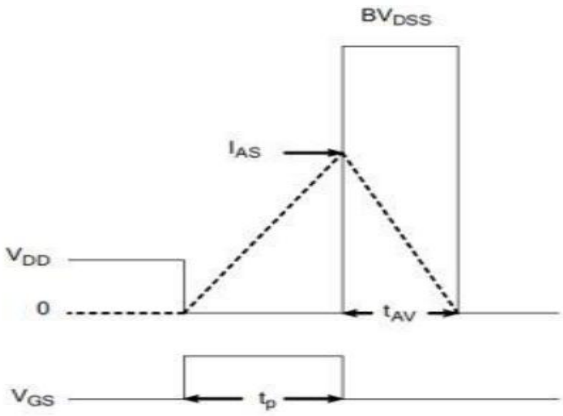


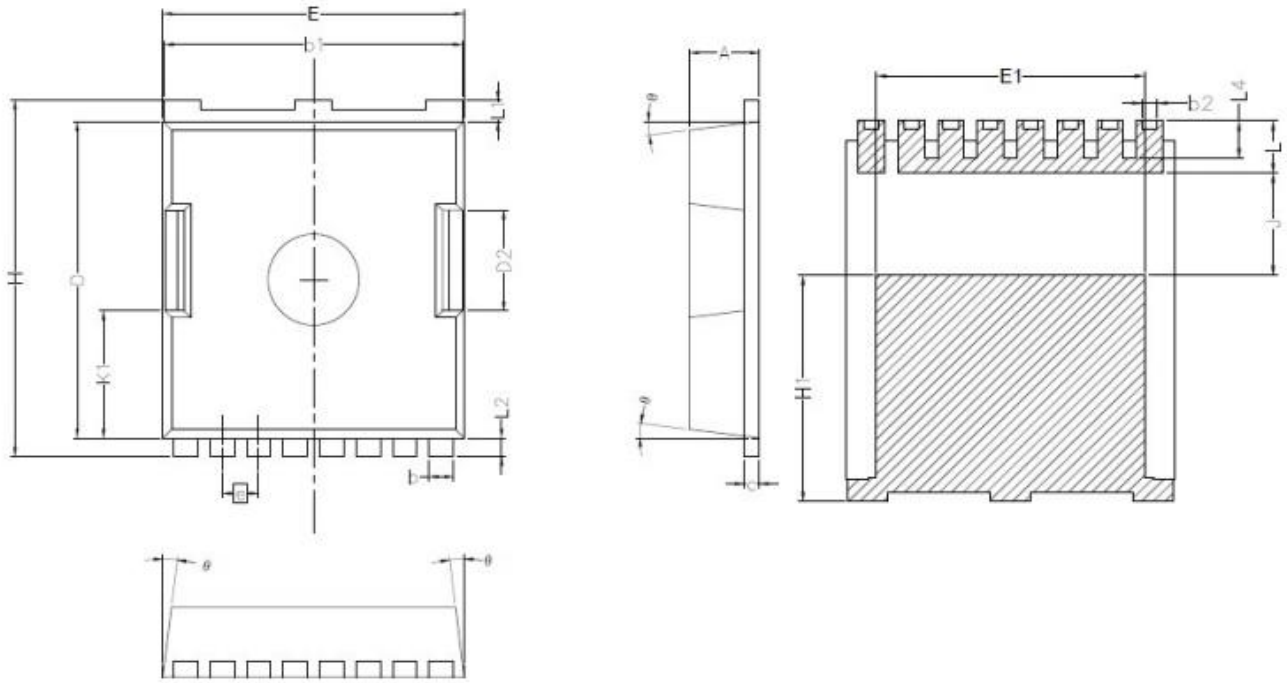
Figure G.Unclamped Inductive Switching Test Circuit



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

Figure H.Unclamped Inductive Switching Waveforms

Package outline drawing(TOLL-8L Unit: mm)



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.20	2.40
b	0.90	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°

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