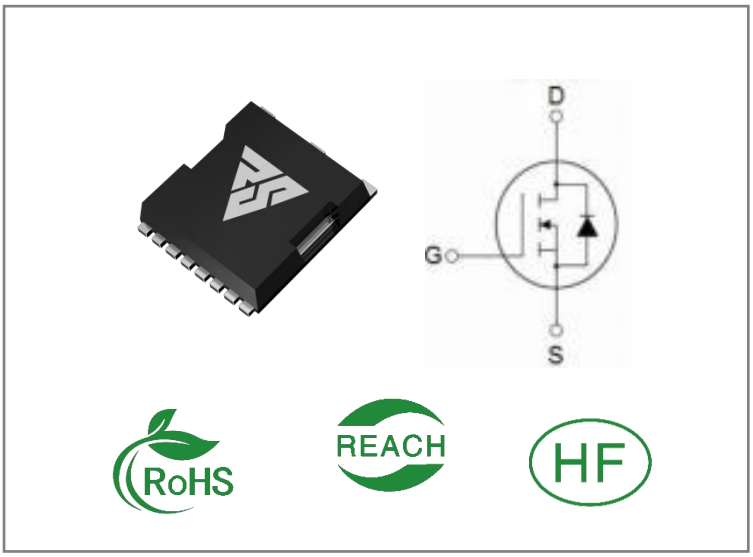
ID	R_{DS}(ON)(Typ)	VDSS
320A	0.65mΩ	40V



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.
RS40N320I	T0LL-8L	RS40N320I	Tape&reel	2000 PCS

Absolute Maximun Ratings Tc= 2 5℃ unless otherwise specified

Symbol	Parameter	RS40N320I	Units
VDSS	Drain-to-Source Voltage	40	V
ID	Continuous Drain Current TC=25℃	320	A
ID	Continuous Drain Current TC=100℃	95	
IDM	Pulsed Drain Current TP=100us	1200	
PD	Power Dissipation	125	W
VGS	Gate- to- Source Voltage	±20	V
EAS	Single Pulse Avalanche Engergy L = 0.5mH,VDD =32V, RG = 25Ω, Tj = 25℃	900	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	RS40N320I	Units	Test Conditions
RθJC	Junction-to-Case	1.0	℃/ 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	40	--	--	V	VGS=0V ID=250μA
IDSS	Drain- to- Source Leakage Current	0.1	--	1	μA	VDS=40V 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	--	0.65	0.85	mΩ	VGS=10V ID=75A
VGS (TH)	Gate Threshold Voltage	1.1	1.7	2.4	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	--	19	--	nS	VDS=17.5V RG=5Ω VGS=10V
trise	Rise Time	--	26	--		
td(OFF)	Turn- OFF Delay Time	--	85	--		
tfall	Fall Time	--	45	--		

Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
Ciss	Input Capacitance	--	7300	--	pF	VGS= 0V VDS=20V f=1MHz
Coss	Output Capacitance	--	3550	--		
Crss	Reverse Transfer Capacitance	--	145	--		
Qg	Total Gate Charge	--	130	--	nC	VDS= 50V ID=20A VGS=10V
Qgs	Gate- to- Source Charge	--	43	--		
Qgd	Gate-to-Drain(" Miller") Charge	--	29	--		

Source- Drain Diode Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
IS	Continuous Forward Current	--	--	150	A	Integral pn- diode in MOSFET
VSD	Diode Forward Voltage	--	--	1.2	V	IS=75A VGS=0V
trr	Reverse Recovery Time	--	141	--	nS	VD=35V IS=10A di/dt=100A/μs
Qrr	Reverse Recovery Charge	--	333	--	nC	

Typical Feature Curve

Figure.1 Typical Output Characteristics

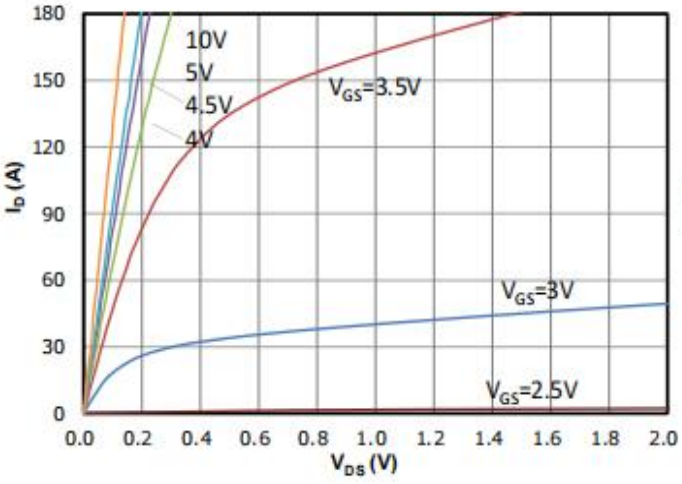


Figure.2 Typical Gate Charge vs Gate to Source Voltage

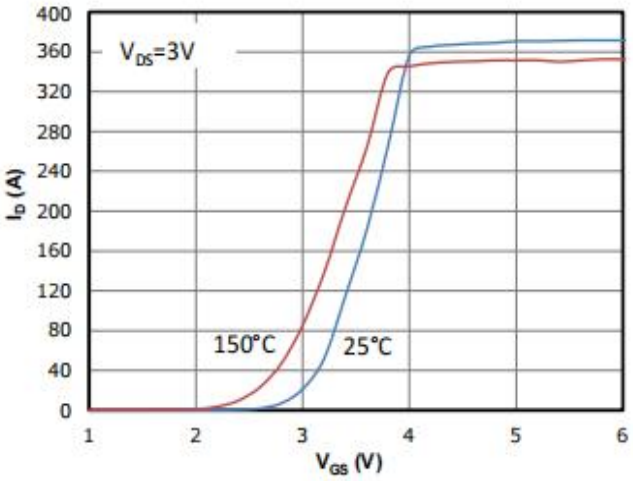


Fig 3: Rds(on) vs Drain Current and Gate Voltage

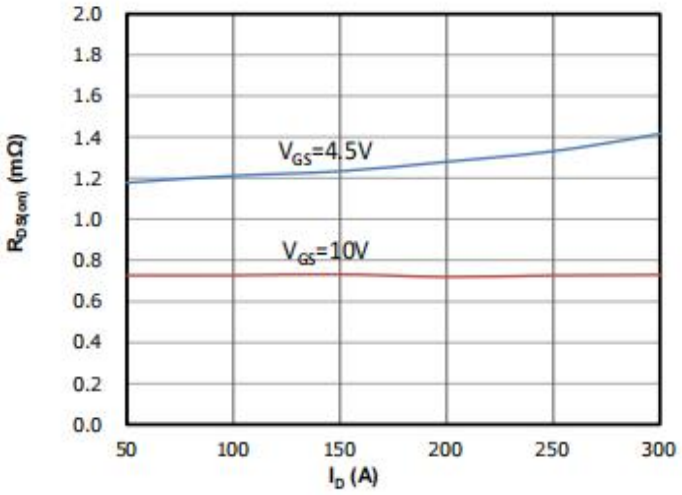


Fig 4: Rds(on) vs Gate Voltage

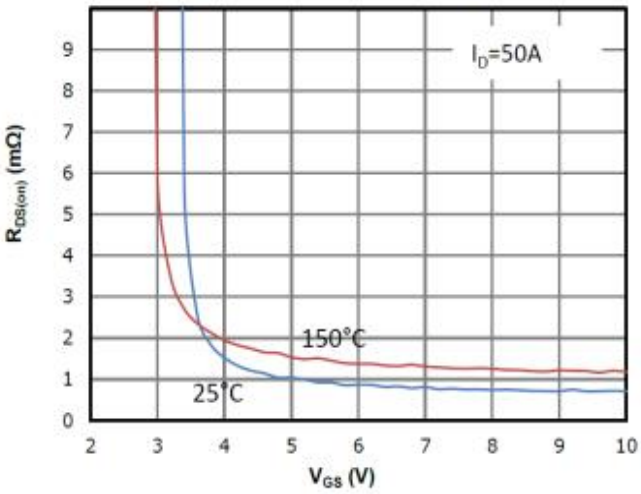


Fig 5: Rds(on) vs. Temperature

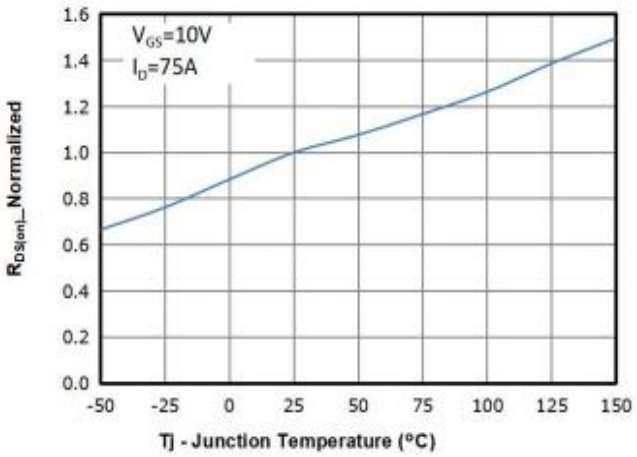


Fig 6: Vgs(th) vs. Temperature

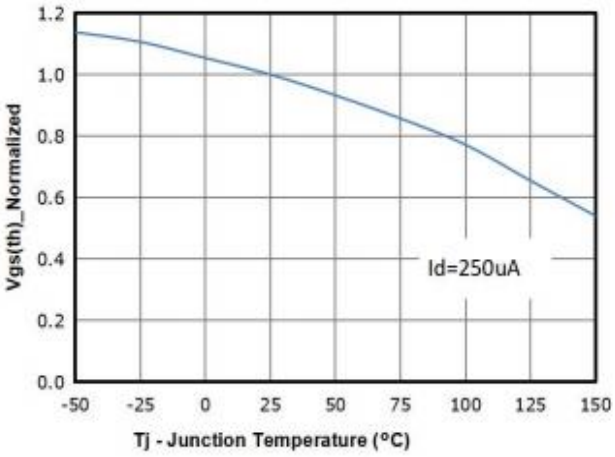


Fig 7: BVdss vs. Temperature

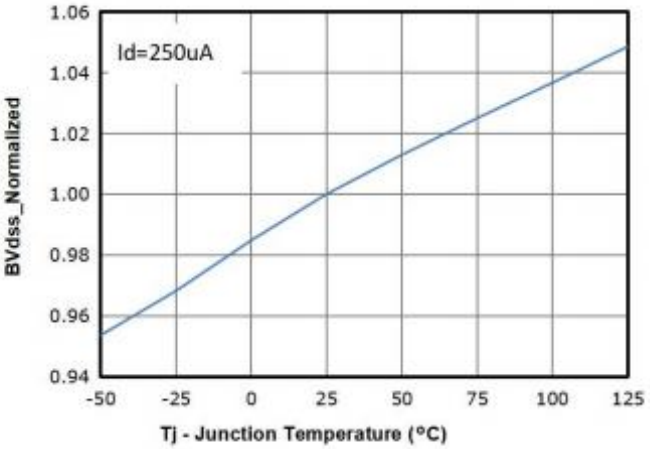


Fig 8: Capacitance Characteristics

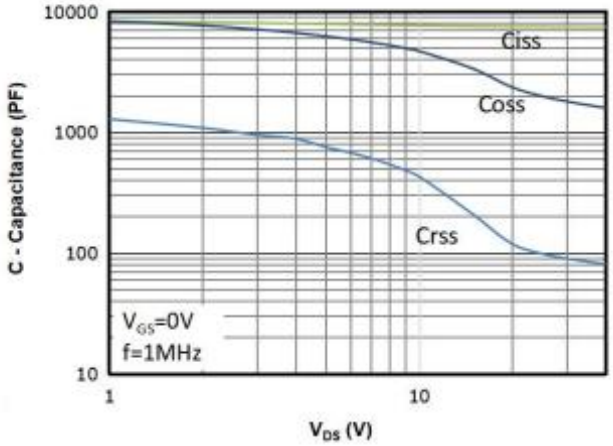


Figure.9 Gate ChargeCharacteristics

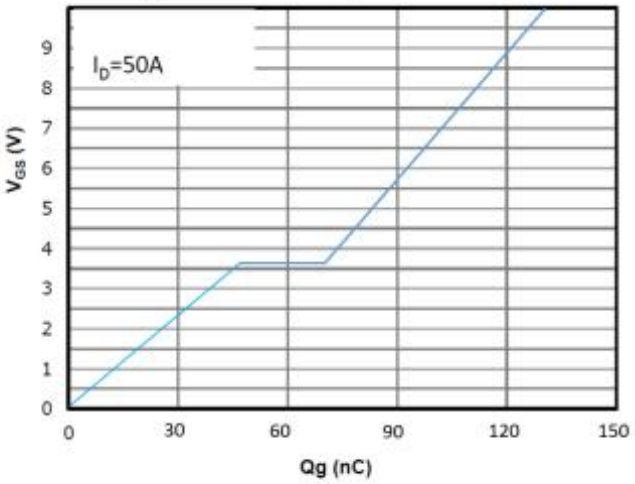


Fig 10: Body-diode Forward Characteristics

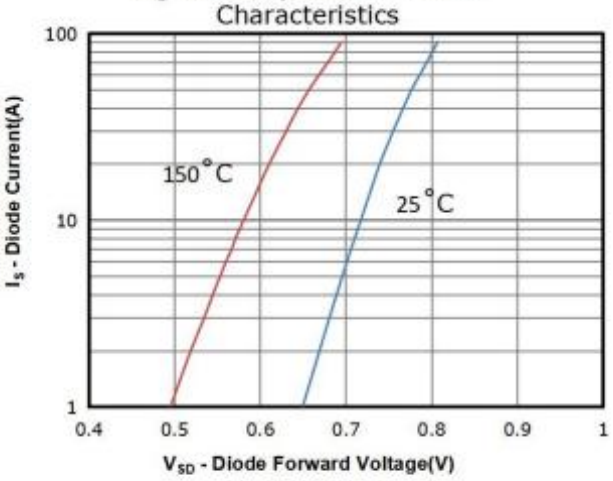


Fig 11: Power Dissipation

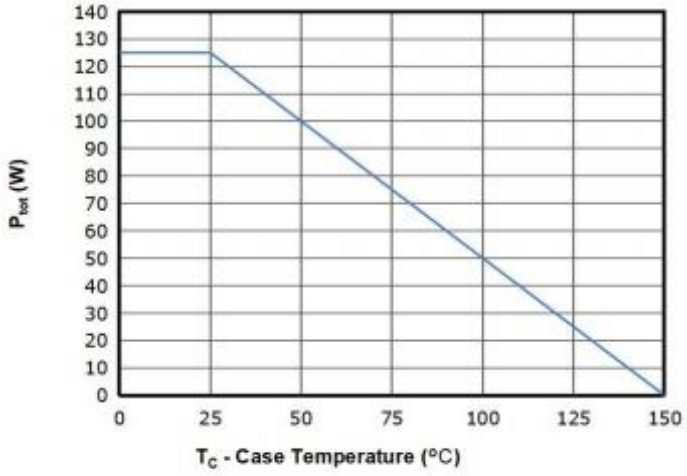


Figure.12 Drain Current Derating

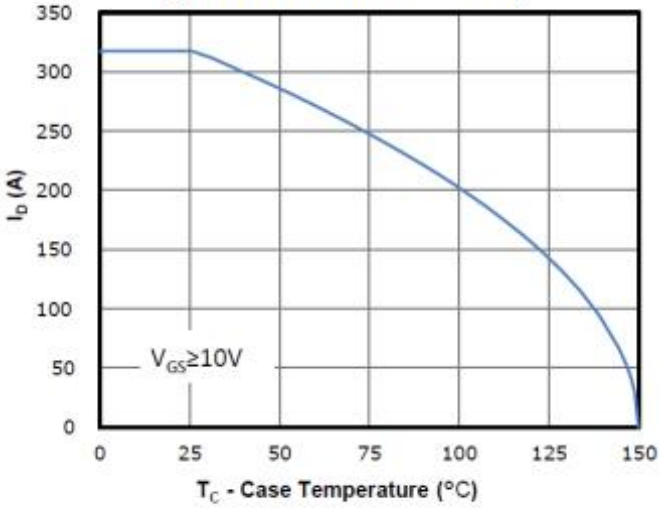
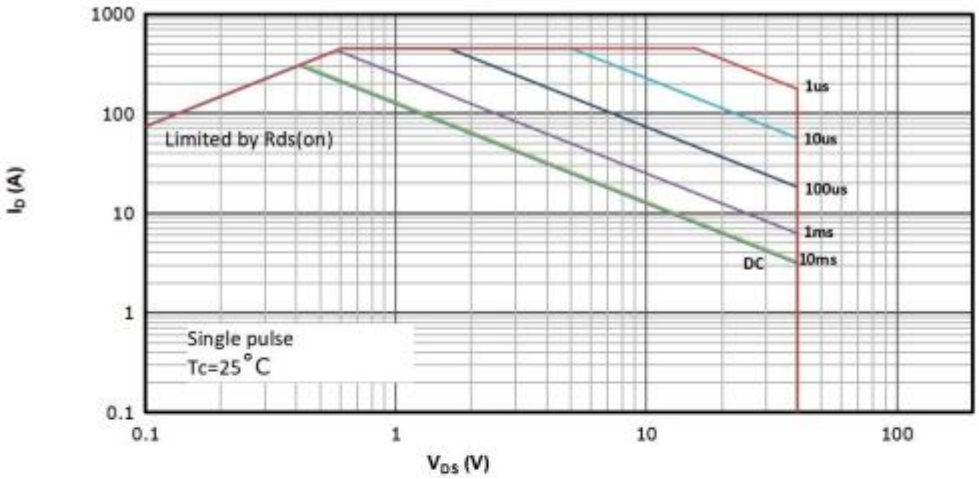
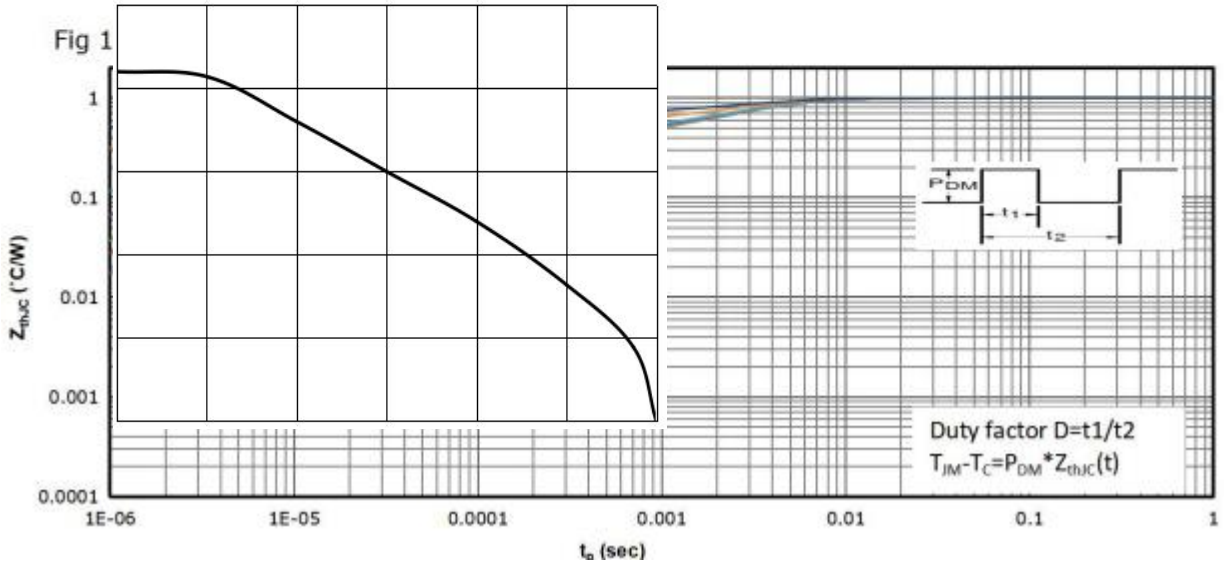


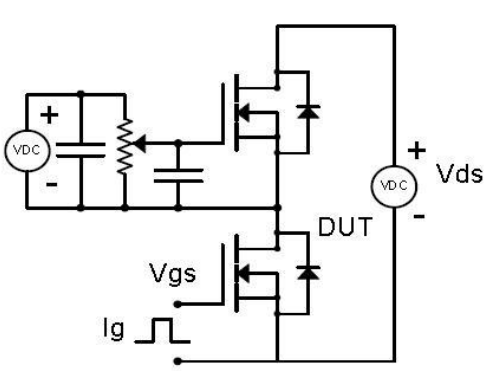
Fig 13: Safe Operating Area

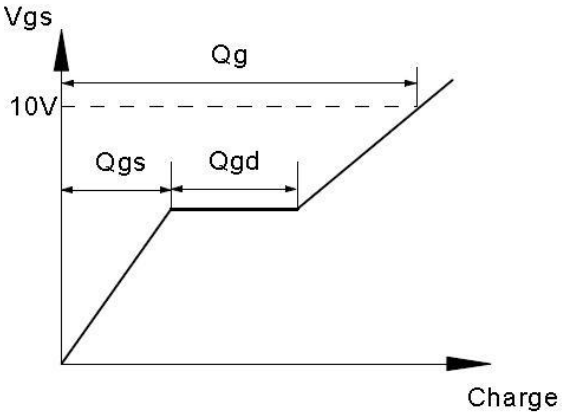




Test ircuits and Waveforms

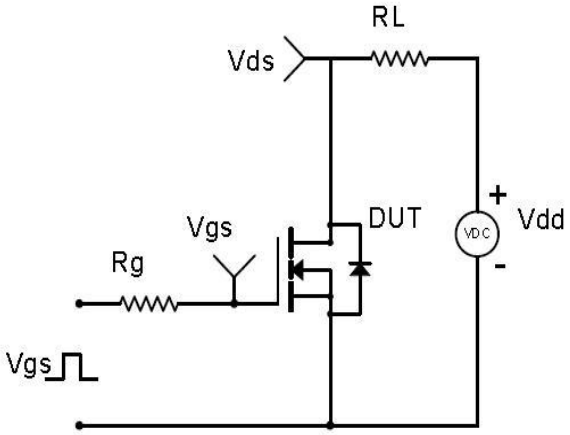
Gate Charge Test Circuit & Waveform

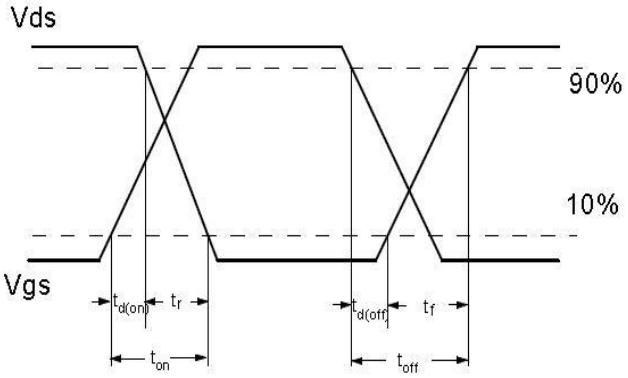




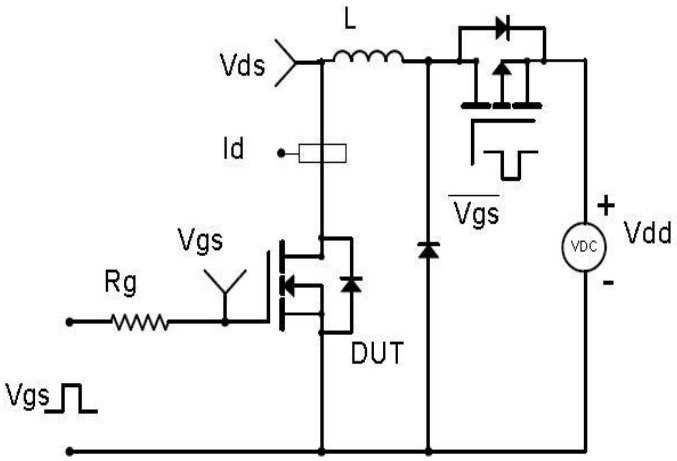
Test ircuits and Waveforms

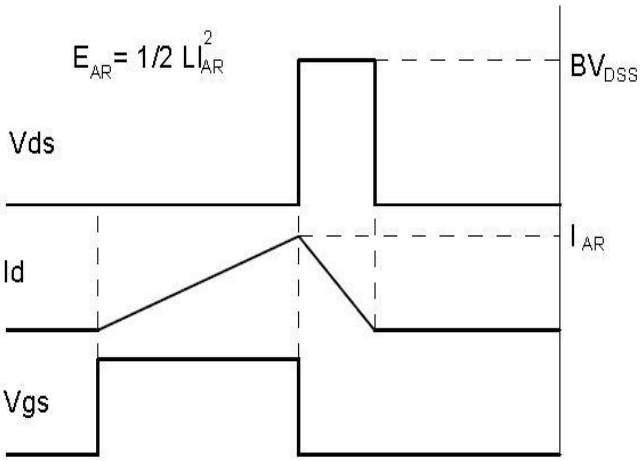
Resistive Switching Test Circuit & Waveforms



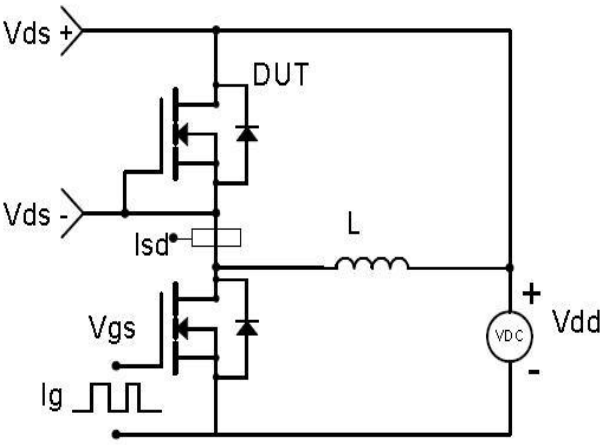


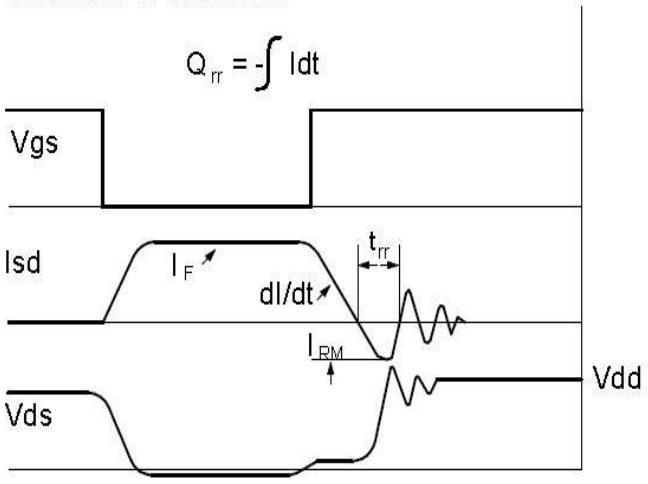
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



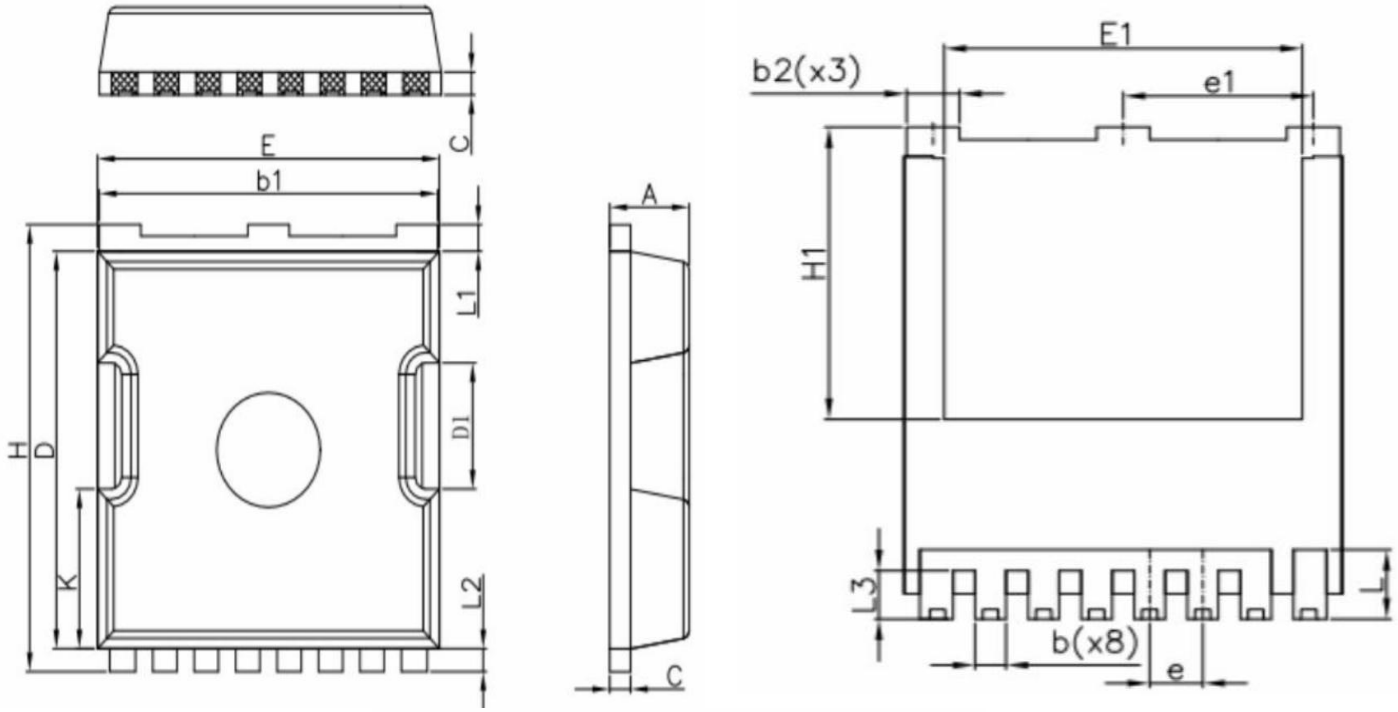


Diode Recovery Test Circuit & Waveforms





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



TOLL—8L			
DIM.	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.65	0.75	0.85
b1	9.70	9.80	9.90
b2	1.10	1.20	1.30
C	0.50	0.60	0.70
D	10.30	10.40	10.50
D1	3.15	3.30	3.45
E	9.70	9.90	10.10
E1	8.00	8.10	8.20
e	1.10	1.20	1.30
e1	4.20	4.30	4.40
H	11.60	11.70	11.80
H1	6.85	6.95	7.05
K	4.08	4.18	4.28
L	1.60	1.65	2.10
L1	0.60	0.70	0.80
L2	0.50	0.60	0.70
L3	1.05	1.20	1.30
All dimensions in millimeters			

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