1. Features

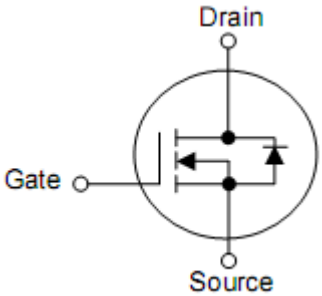
- Uses advanced SGT technology
- Extremely low $R_{DS(on)}$.typ=1.25mΩ@V_{GS}=10V
- Excellent gate charge x $R_{DS(on)}$ product(FOM)

2. Application

- Motor control and drives
- Battery management
- DC/DC Converters
- General purpose applications

3. Pin configuration

TOLL-8



Pin	Function
1	Gate
9	Drain
2,3,4,5,6,7,8	Source

4. Ordering Information

Part Number	Package	Brand
KCT1808A	TOLL-8	KIA

5. Absolute maximum ratings

T_C=25 ºC unless otherwise specified

Parameter		Symbol	Ratings	Unit
Drain-to-Source Voltage		V_{DS}	80	V
Continuous Drain Current	T_C=25 ºC(Silicon limited)	I_D	260	A
	T_C=25 ºC(Package limited)		240	A
	T_C=100 ºC(Silicon limited)		170	A
Pulsed drain current (T_C = 25°C, t_p limited by T_{jmax})		I_{DP}	750	A
Avalanche energy, single pulse (L=0.5mH, Rg=25Ω)		E_{AS}	2862	mJ
Gate-Source voltage		V_{GS}	±20	V
Power dissipation		P_{tot}	250	W
Junction & Storage Temperature Range		T_J& T_{STG}	-55 to 150	ºC

6. Thermal characteristics

Parameter	Symbol	Ratings	Units
Thermal resistance, Junction-case	$R_{\theta JC}$	0.5	ºC/W
Thermal resistance, junction-ambient	$R_{\theta JA}$	52	ºC/W

7. Electrical characteristics

(T_J=25°C,unless otherwise notes)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250uA	80	-	-	V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA,T_j=25°C	2	3	4	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=80V,V_{GS}=0V,T_j=25°C	-	-	1	μA
		V_{DS}=64V,V_{GS}=0V,T_j=125°C	-	-	10	μA
Gate-source leakage current	I_{GSS}	V_{GS}=20V,V_{DS}=0V	-	-	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=50A,T_j=25°C	-	1.25	2	mΩ
Transconductance	g_{fs}	V_{DS}=5V,I_D=40A	-	227	-	S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=40V, f=1MHz	-	15022	-	pF
Output Capacitance	C_{oss}		-	2523	-	
Reverse Transfer Capacitance	C_{rss}		-	1303	-	
Gate Total Charge	Q_G	V_{GS}=10V, V_{DS}=40V, I_D=50A	-	205	-	nC
Gate-Source charge	Q_{gs}		-	54	-	
Gate-Drain charge	Q_{gd}		-	46	-	
Turn-on delay time	$t_{d(on)}$	T_j=25°C, V_{GS}=10V, V_{DS}=40V, R_L=3Ω	-	38	-	ns
Rise time	tr		-	132	-	
Turn-off delay time	$t_{d(off)}$		-	126	-	
Fall time	t_f		-	153	-	
Gate resistance	R_G	V_{GS}=0V, V_{DS}=0V,f=1MHz	-	1.85	-	Ω
Body Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_{SD}=50A	-	0.8	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F=30A, dI/dt=500A/μs	-	112	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}	I_F=30A, dI/dt=500A/μs	-	220	-	nC

8. Typical Characteristics

Fig 1: Output Characteristics

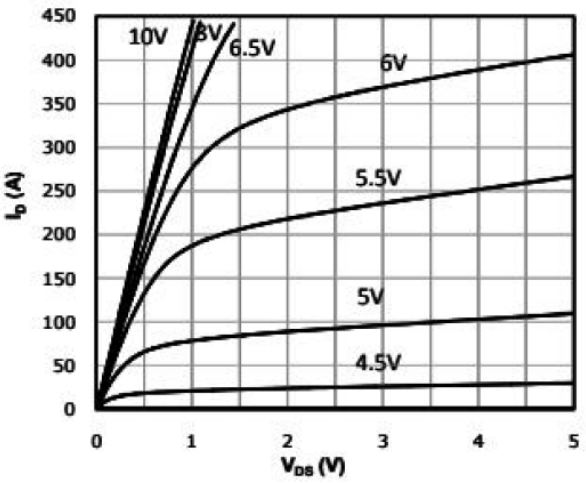


Fig 2: Transfer Characteristics

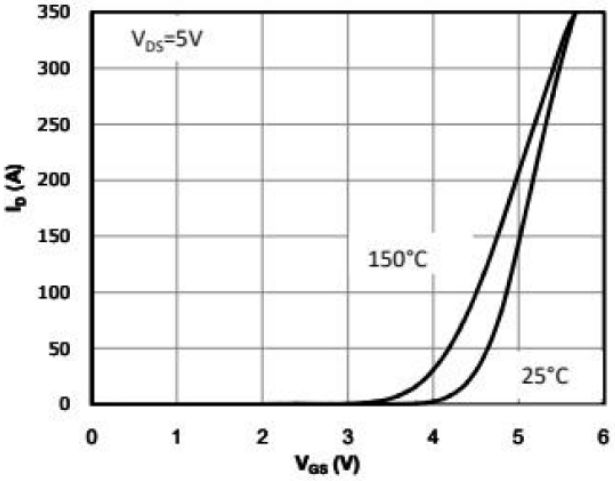


Fig 3: Rds(on) vs Drain Current and Gate Voltage

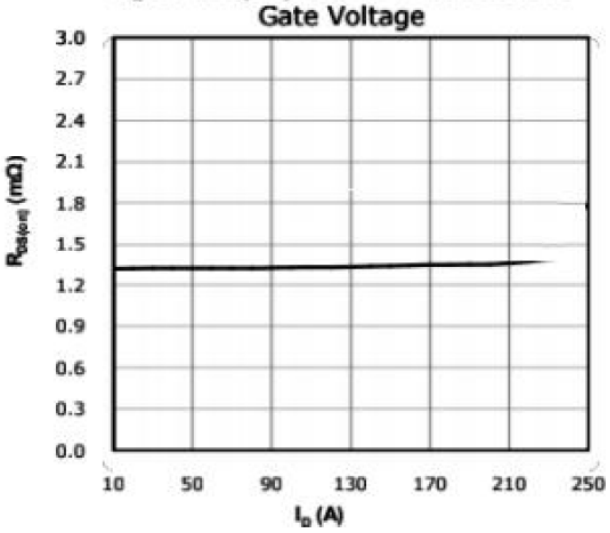


Fig 4: Rds(on) vs Gate Voltage

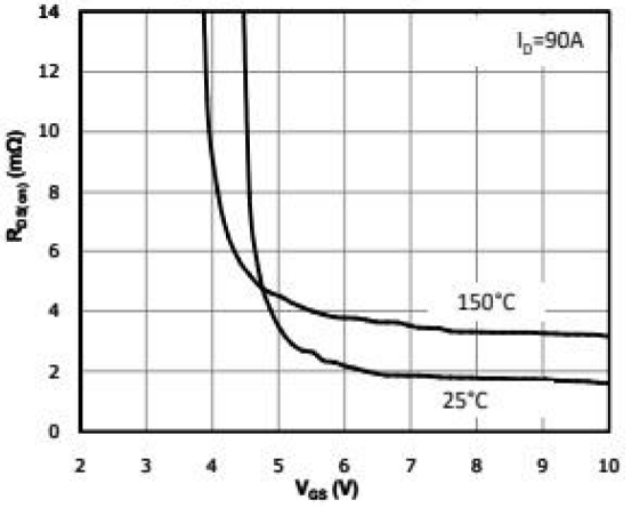


Fig 5: Rds(on) vs. Temperature

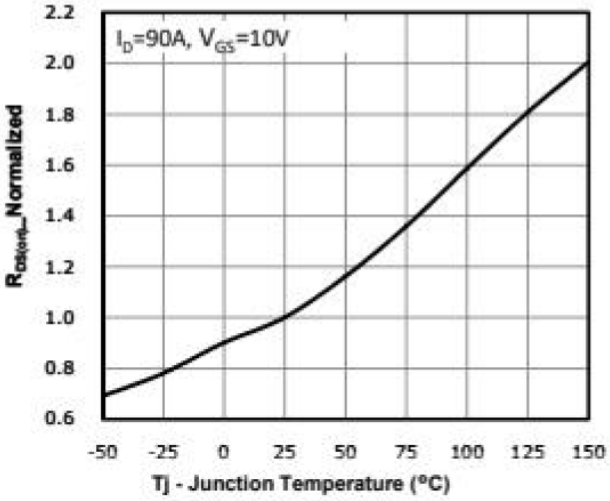


Fig 6: Capacitance Characteristics

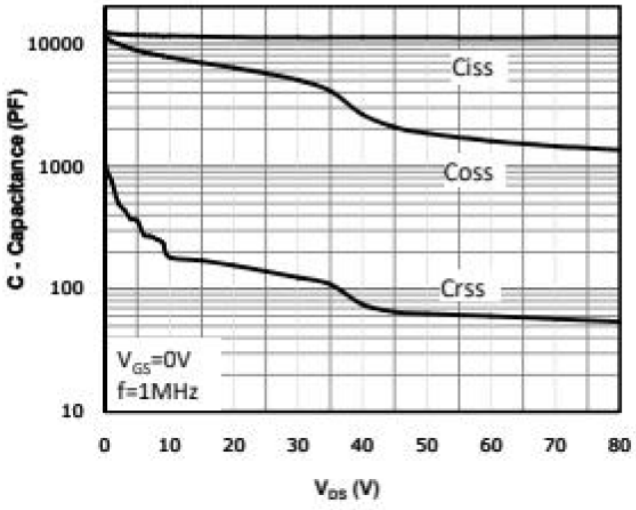


Fig 7: Vgs(th) vs. Temperature

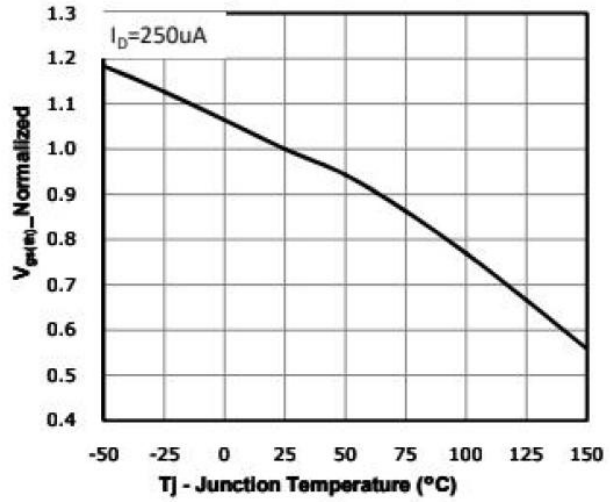


Fig 8: BVdss vs. Temperature

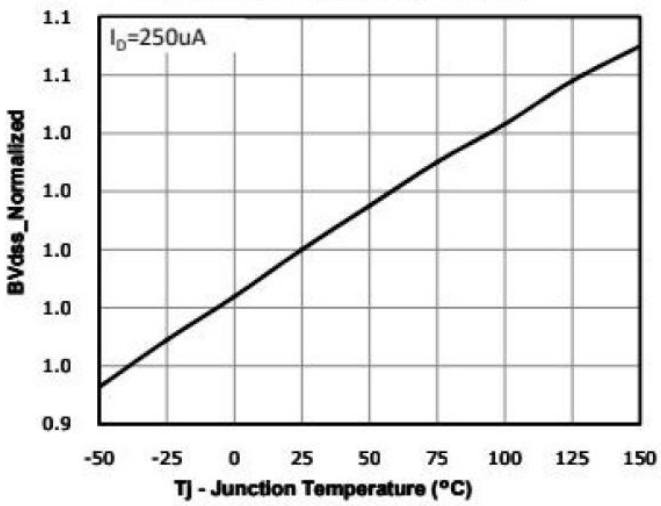


Fig 9: Gate Charge Characteristics

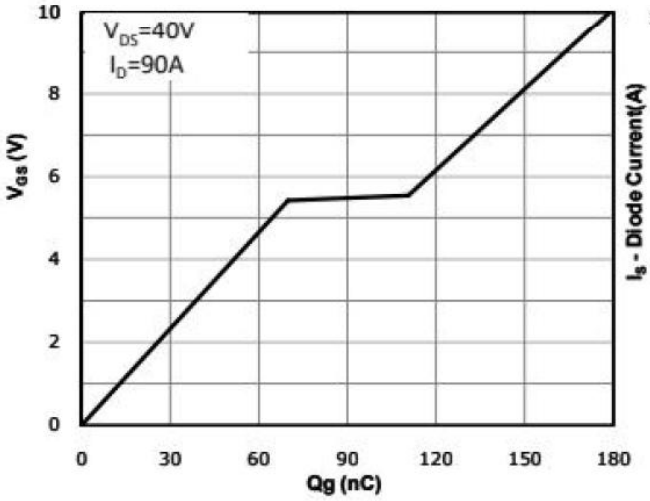


Fig 10: Body-diode Forward Characteristics

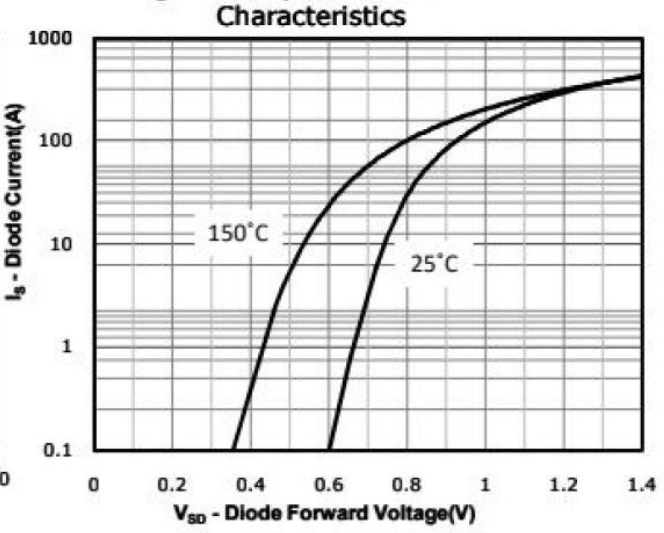


Fig 11: Power Dissipation

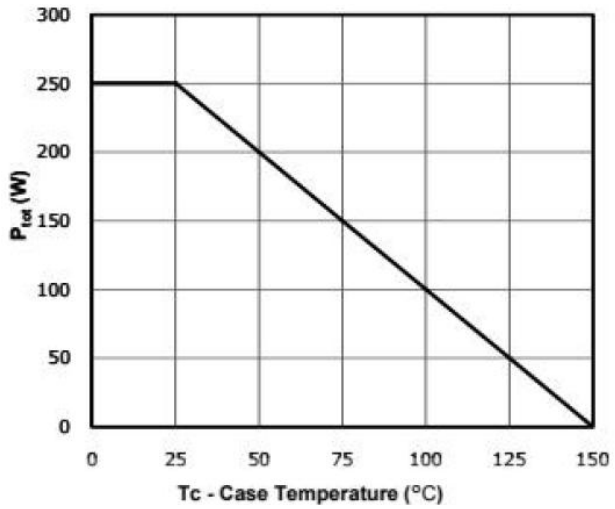


Fig 12: Drain Current Derating

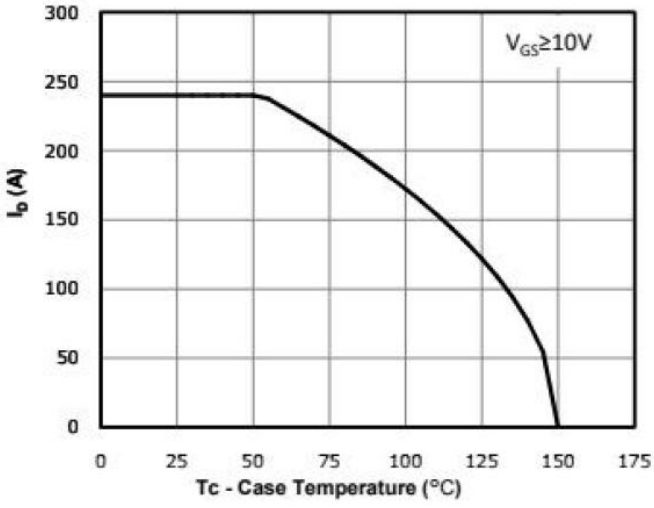


Fig 13： Safe Operating Area

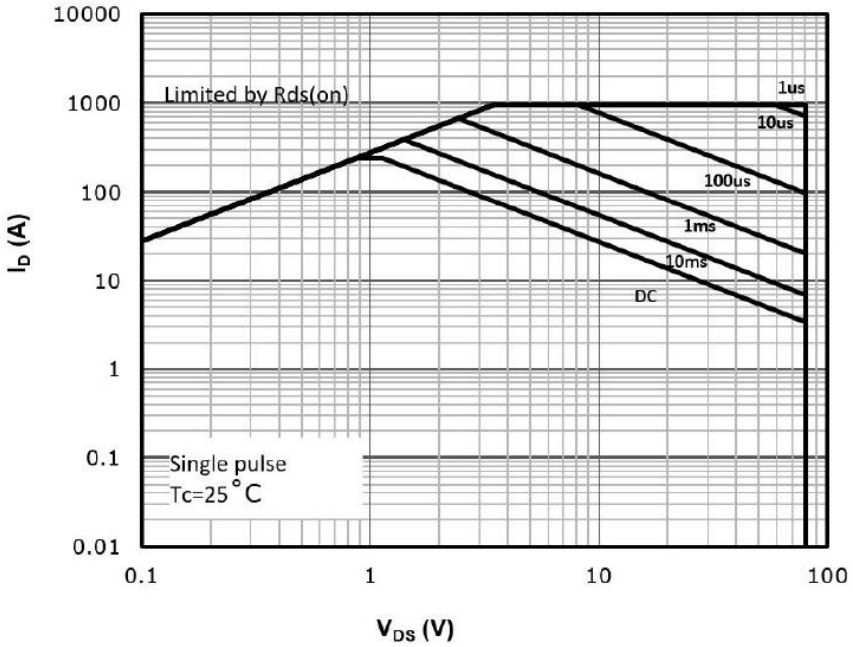
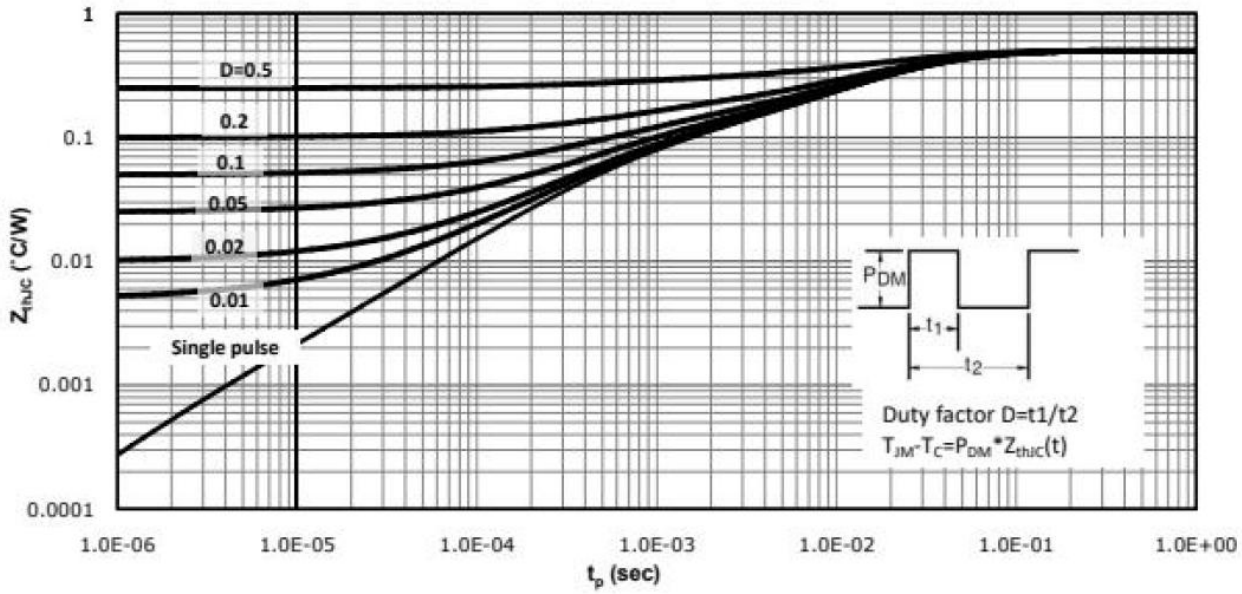
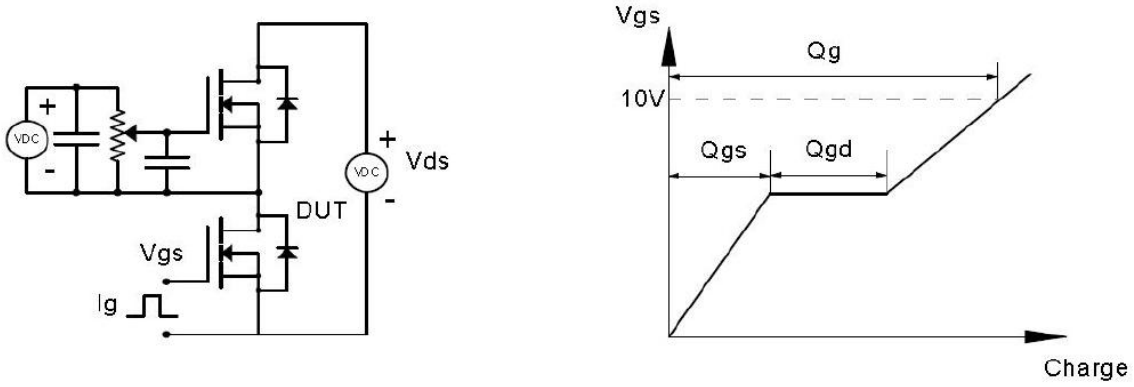


Fig 14： Max.Transient Thermal impedance

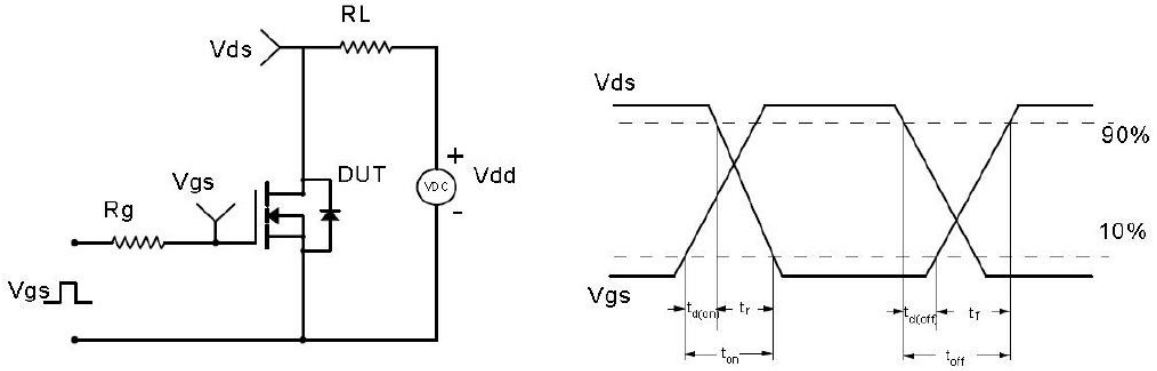


9. Test Circuit & Waveform

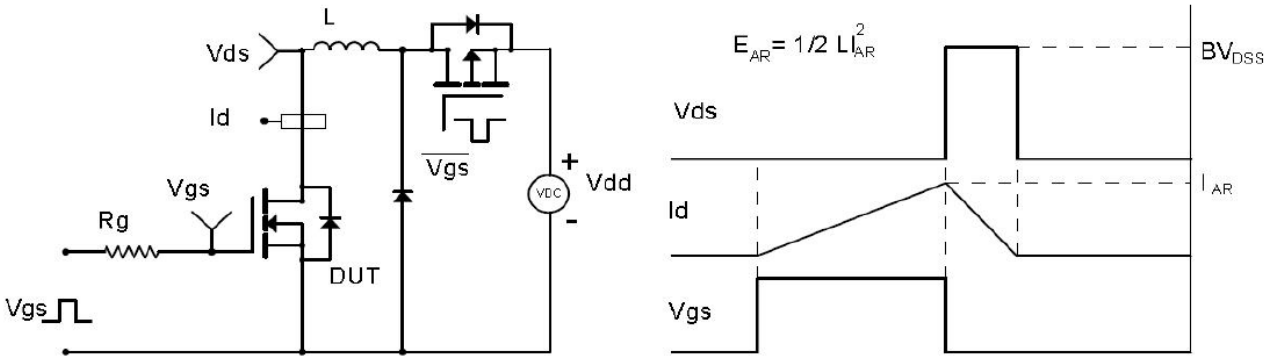
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms