ITO-220AB Plastic-Encapsulate MOSFETS

Features

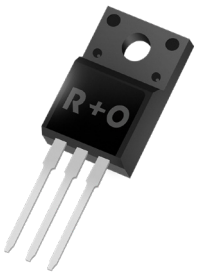
- V_{DS}=650V
- I_D=11A
- $R_{DS(on)}$@V_{GS}=10V ＜ 0.37Ω
- Fast Switching
- Low Gate Charge and Rdson
- Super Junction Technology

Drain-source Voltage
650 V
Drain Current
11 Ampere

Applications

- Power switching application
- Battery management
- Uninterruptible power supply

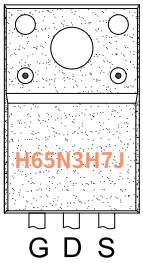
ITO-220AB

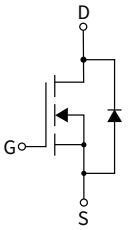


Mechanical Data

- Case: ITO-220AB
  Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram





Ordering Information

PACKAGE	UNIT WEIGHT(g)	TUBE(pcs)	BOX(pcs)
ITO-220AB	1.767	50	2500

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	650
Gate-source Voltage	V_{GS}	V	±30
Drain Current	I_D	A	11
Pulsed Drain Current (1)	I_{DM}	A	42
Total Power Dissipation	P_D	W	31
Single pulse avalanche energy(2)	EAS	mJ	204.8
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	°C / W	4
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	63

Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=250μA	V	650	—	—
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=650V, V_{GS}=0V	μA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±30V, V_{DS}=0V	nA	—	—	±100
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	V	3.5	4	5
Static Drain-Source On-Resistance (3)	$R_{DS(ON)}$	V_{GS}= 10V, I_D=5.5A	Ω	—	0.31	0.37

Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHZ	pF	—	1303	—
Output Capacitance	C_{oss}			—	554	—
Reverse Transfer Capacitance	C_{rss}			—	25	—

Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=400V, I_D=11A ,R_{GEN}=25Ω	nS	—	69	—
Turn-on Rise Time	t_r		nS	—	65	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	146	—
Turn-off fall Time	t_f		nS	—	59	—
Total Gate Charge	Q_g	V_{DS}=520V, I_D=11A V_{GS}=10V	nC	—	28	—
Gate-Source Charge	Q_{gs}		nC	—	8	—
Gate-Drain Charge	Q_{gd}		nC	—	12	—

Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	I_S=11A, V_{GS}=0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	11
Reverse Recovery Time	T_{rr}	I_S=11A, di/dt=100A/us, TJ=25°C	nS	—	320	—
Reverse Recovery Charge	Q_{rr}		uC	—	5	—

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)EAS condition : Tj=25°C ,VDD=50V,VG=10V,L=10mH,IAS=6.4A,Rg=25Ω.
(3)Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

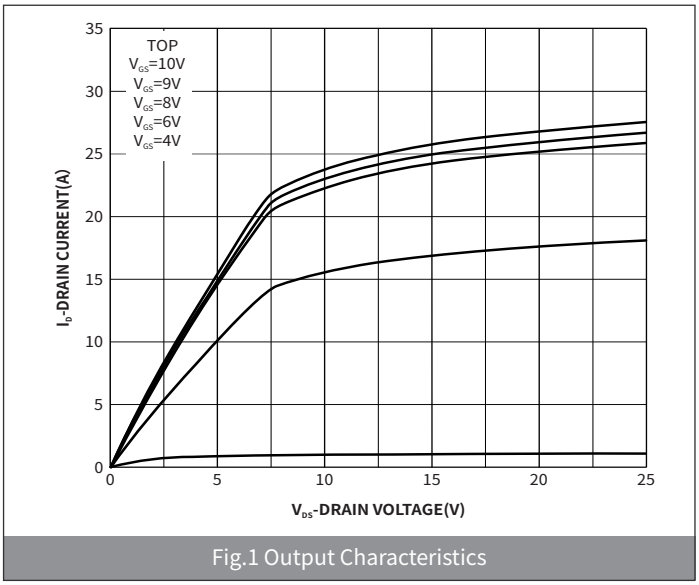


Fig.1 Output Characteristics

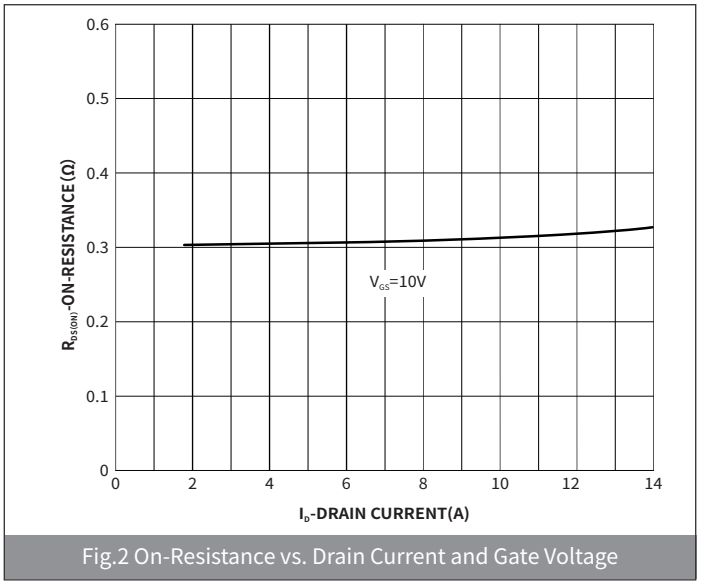


Fig.2 On-Resistance vs. Drain Current and Gate Voltage

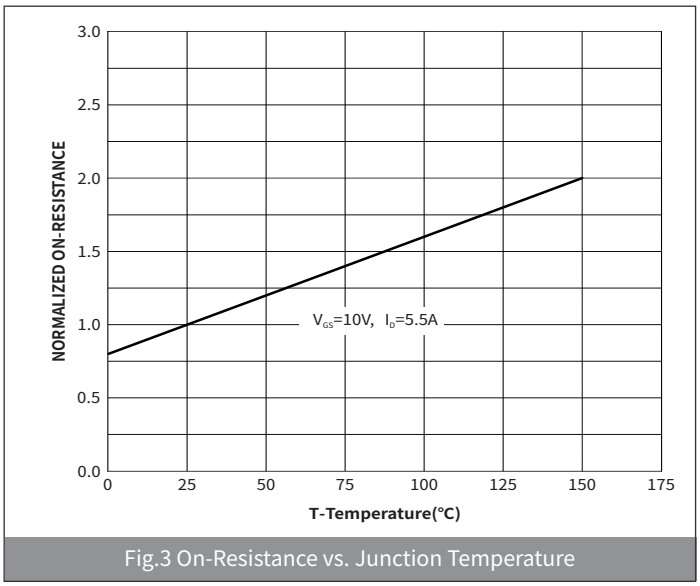


Fig.3 On-Resistance vs. Junction Temperature

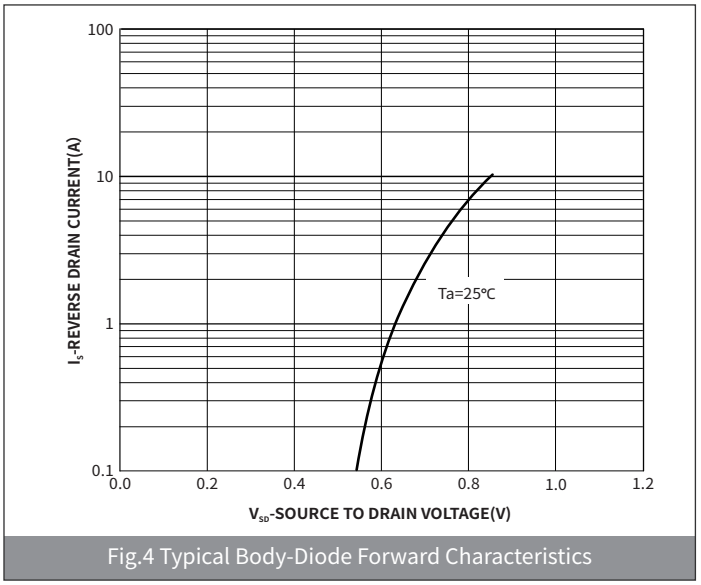


Fig.4 Typical Body-Diode Forward Characteristics

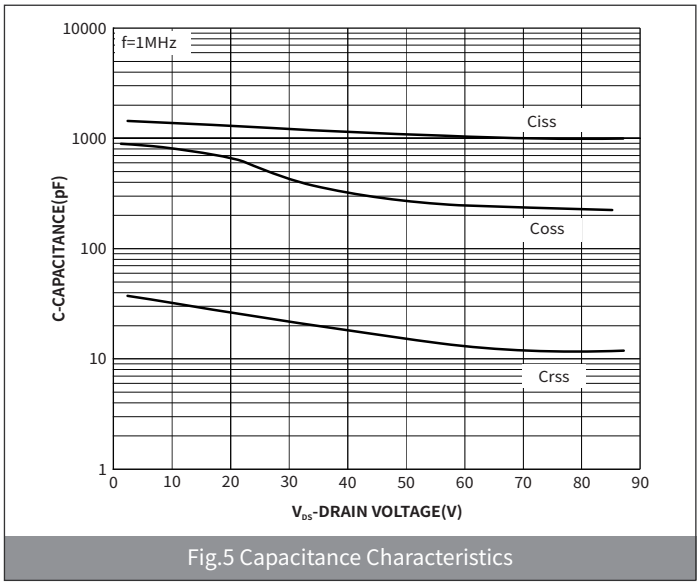


Fig.5 Capacitance Characteristics

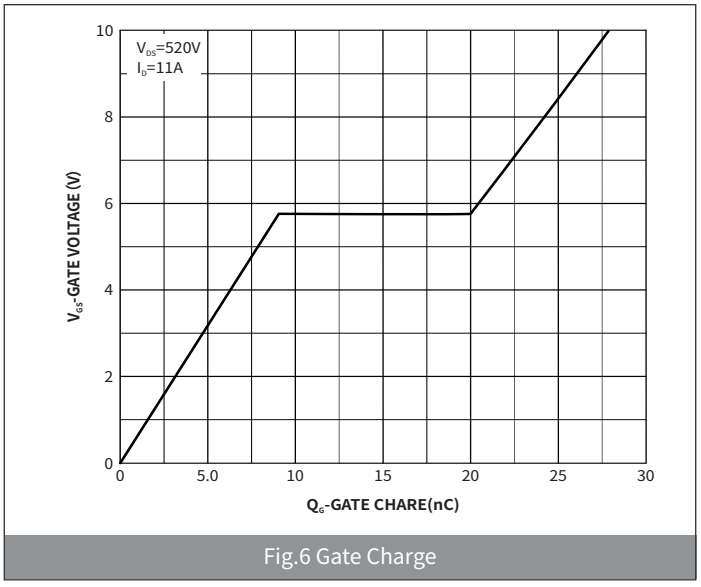


Fig.6 Gate Charge

Ratings And Characteristics Curves (Ta=25°C Unless otherwise specified)

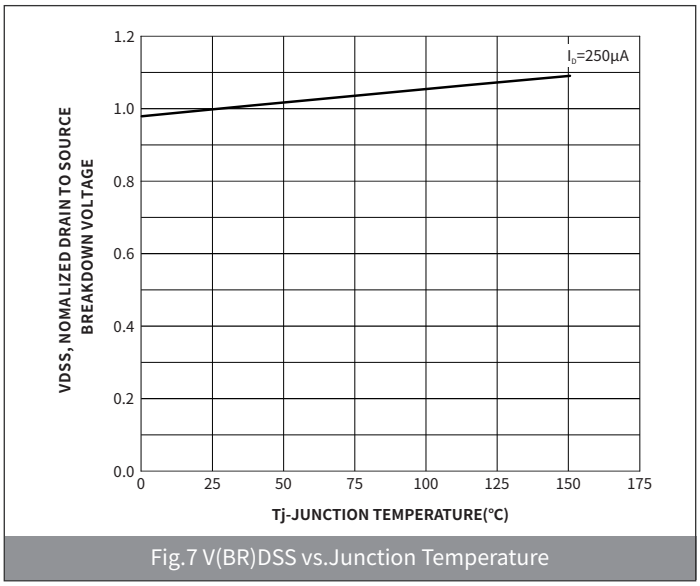


Fig.7 V(BR)DSS vs.Junction Temperature

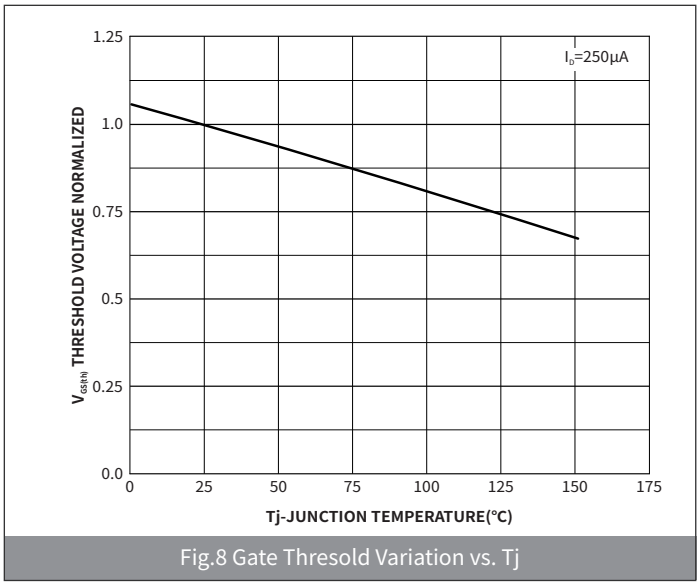


Fig.8 Gate Thresold Variation vs. Tj

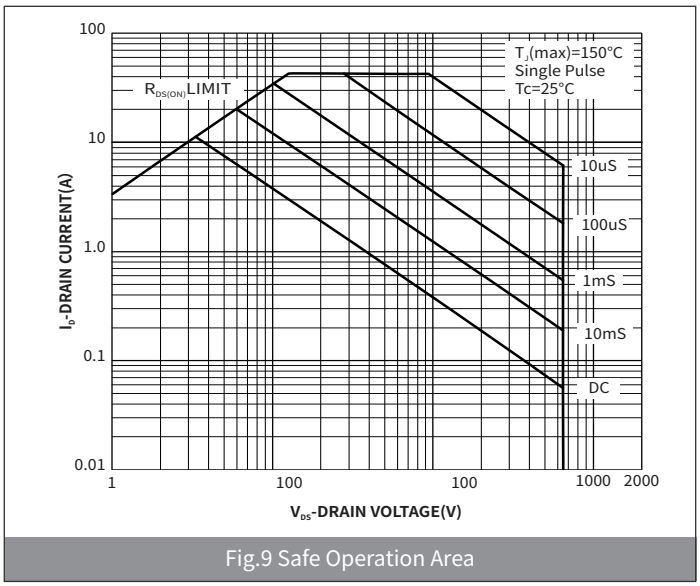


Fig.9 Safe Operation Area

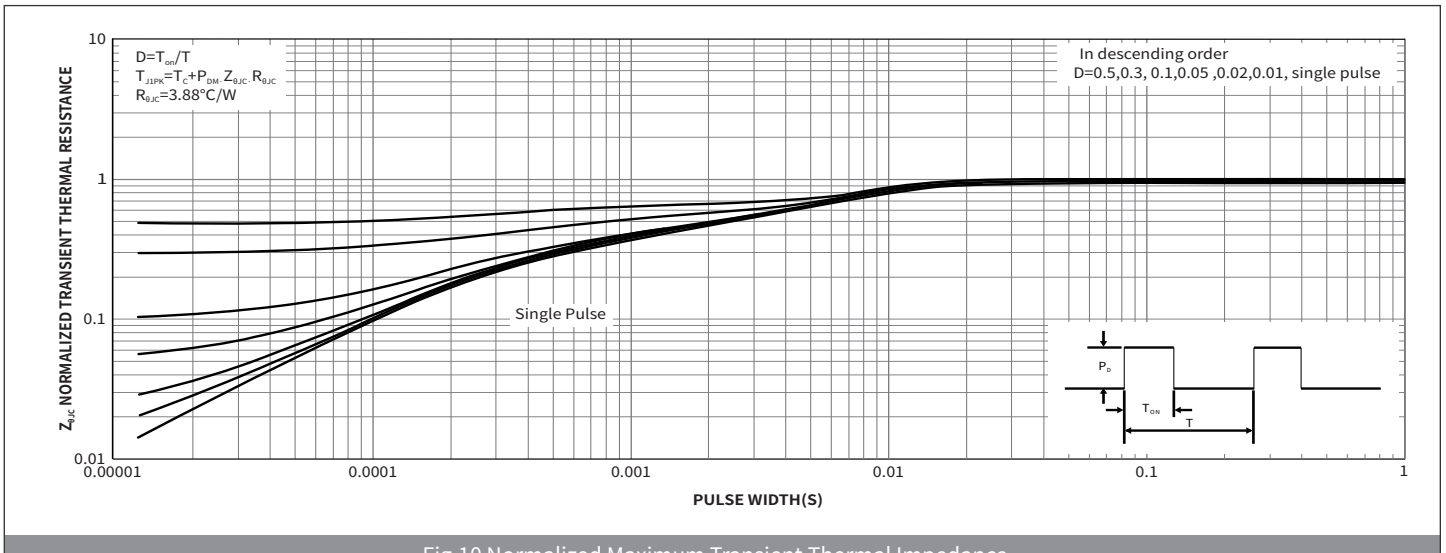
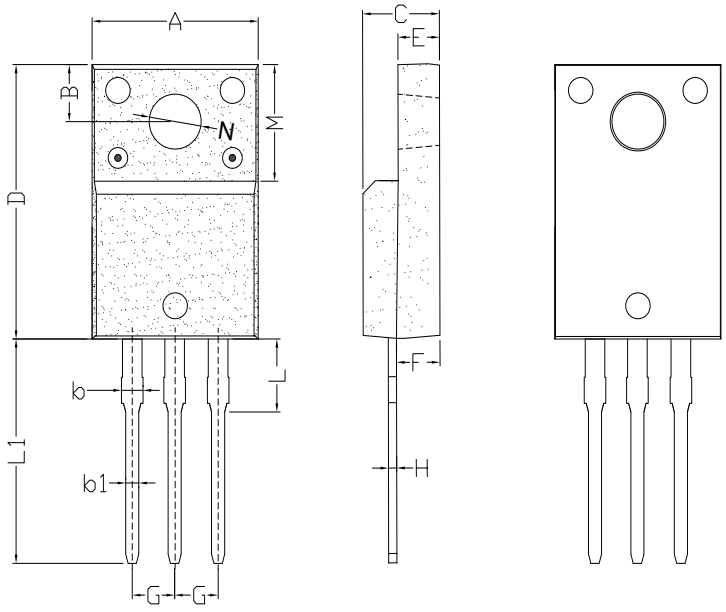


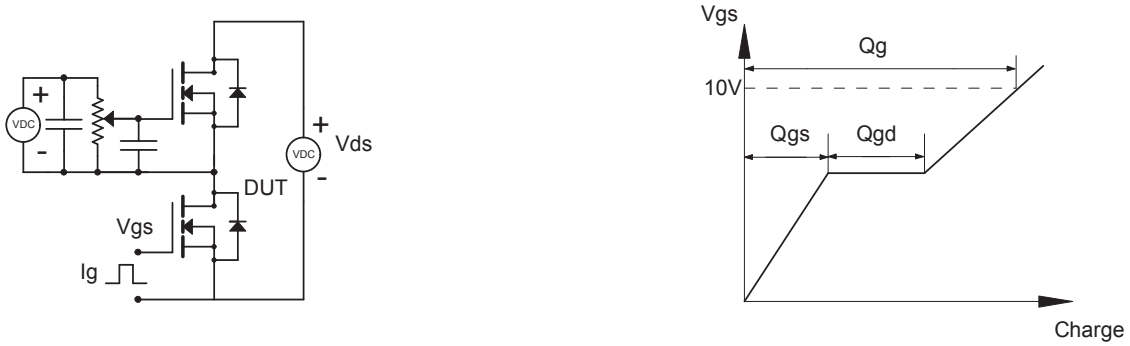
Fig.10 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (ITO-220AB)

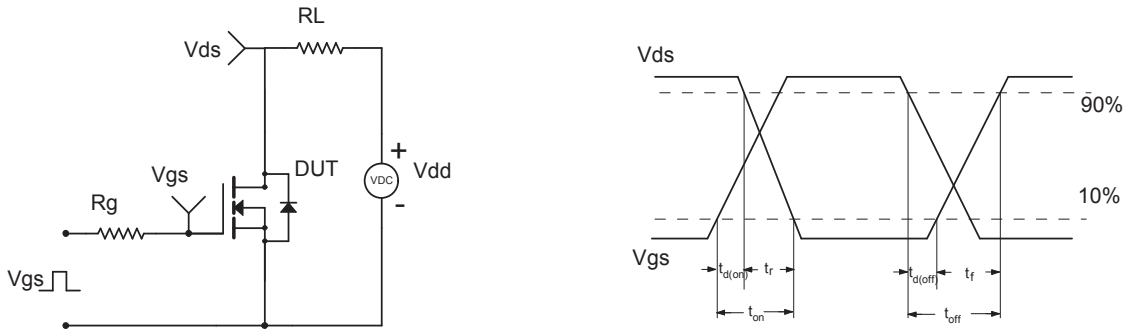


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10.08	10.28	0.397	0.405
B	3.17	3.37	0.125	0.133
b	1.24	1.44	0.049	0.057
b1	0.7	0.9	0.028	0.035
C	4.5	4.9	0.177	0.193
D	15.67	16.07	0.617	0.633
E	2.34	2.74	0.092	0.108
F	2.34	2.74	0.092	0.108
G	2.44	2.64	0.096	0.104
H	0.4	0.6	0.016	0.024
L	2.45	2.85	0.096	0.112
L1	13.3	13.7	0.524	0.539
M	6.38	6.98	0.251	0.275
N	3.18TYP		0.125TYP	

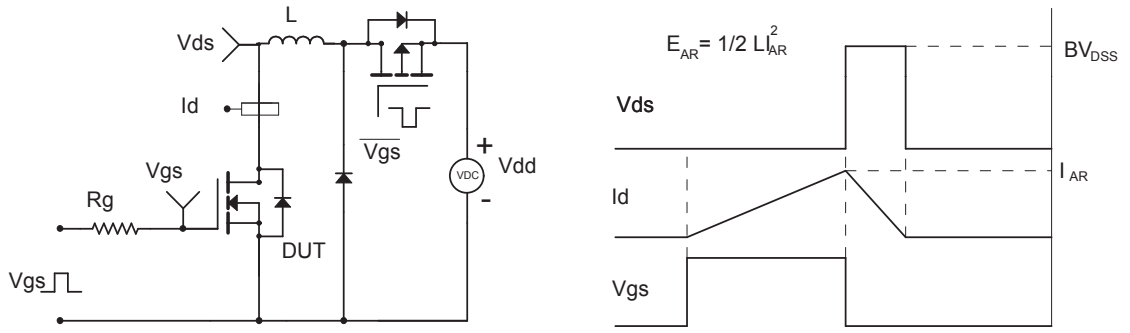
1.Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



3.Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



4.Diode Recovery Test Circuit & Waveforms