SOP-8 Plastic-Encapsulate MOSFETS

Features

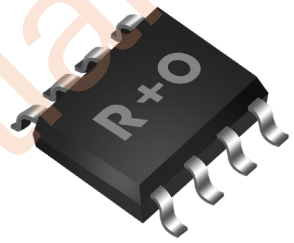
- V_{DS}=30V
- I_D=10A
- $R_{DS(on)}$@V_{GS}=10V ＜ 15mΩ
- $R_{DS(on)}$@V_{GS}=4.5V ＜ 20mΩ
- Low Gate Charge and Rdson
- Advanced high cell density Trench technology
- Improved dv/dt capability, high ruggedness

Drain-source Voltage
30 V
Drain Current
10 Ampere

Applications

- Load switch
- Battery protection applications

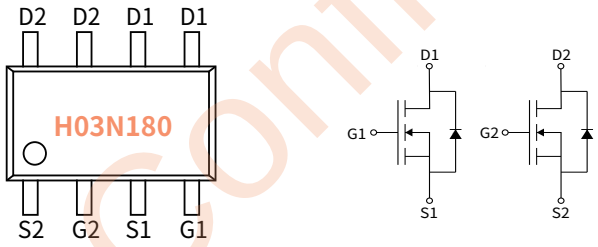
SOP-8



Mechanical Data

- Case: SOP-8
  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	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
SOP-8	R3	0.077	4000	8000	48000	13''

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

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	30
Gate-source Voltage	V_{GS}	V	±20
Drain Current	I_D	A	10
Pulsed Drain Current (1)	I_{DM}	A	40
Total Power Dissipation	P_D	W	1.25
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient	$R_{\theta JA}$	°C / W	100

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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	30	—	—
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V	μA	—	—	1.0
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	nA	—	—	±100
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	V	1.0	1.6	3.0
Static Drain-Source On-Resistance (2)	$R_{DS(ON)}$	V_{GS}= 10V, I_D=10A	mΩ	—	10	15
		V_{GS}= 4.5V, I_D=10A		—	14	20

Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, f=1MHZ	pF	—	968	—
Output Capacitance	C_{oss}			—	145	—
Reverse Transfer Capacitance	C_{rss}			—	130	—

Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=15V, I_D=10A ,R_{GEN}=1.8Ω	nS	—	10	—
Turn-on Rise Time	t_r		nS	—	8	—
Turn-off Delay Time	$t_{D(off)}$		nS	—	30	—
Turn-off fall Time	t_f		nS	—	5	—
Total Gate Charge	Q_g	V_{DS}=20V, I_D=10A V_{GS}=10V	nC	—	22.9	—
Gate-Source Charge	Q_{gs}		nC	—	2.6	—
Gate-Drain Charge	Q_{gd}		nC	—	6.8	—

Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V_{SD}	I_S=10A, V_{GS}=0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I_S	—	A	—	—	10

Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.
(2)Pulse Test: Pulse Width ⩽ 300μs, Duty Cycle ⩽ 2%.

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

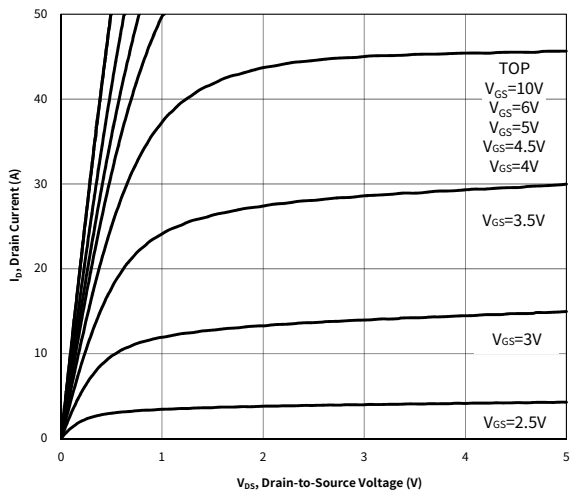


Fig.1 Output Characteristics

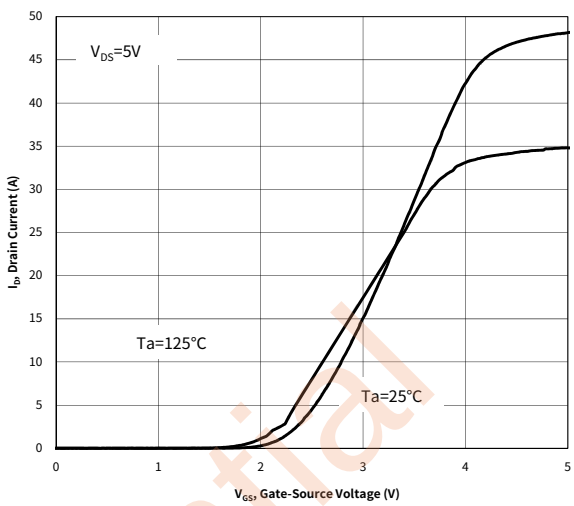


Fig.2 Transfer Characteristics

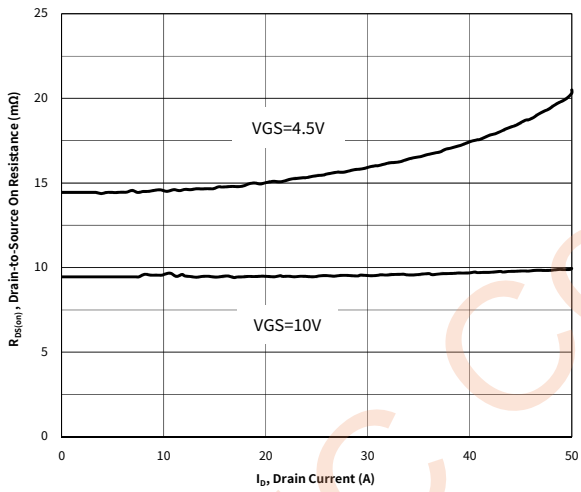


Fig.3 On-Resistance vs. Drain Current and Gate Voltage

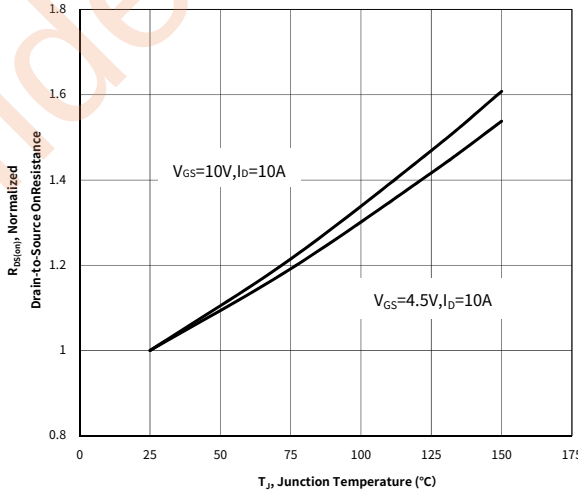


Fig.4 On-Resistance vs. Junction Temperature

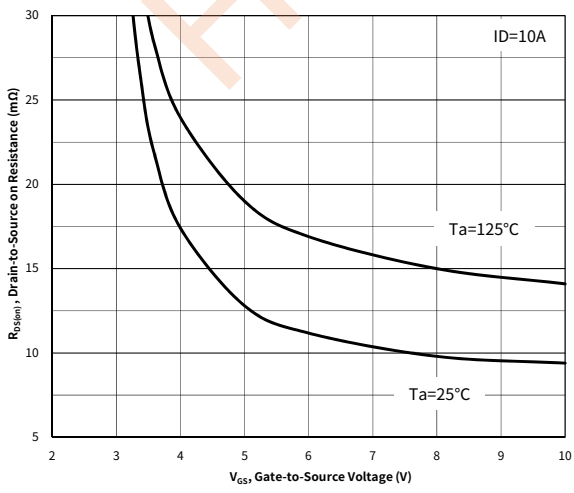


Fig.5 On-Resistance vs. Gate to Source Voltage

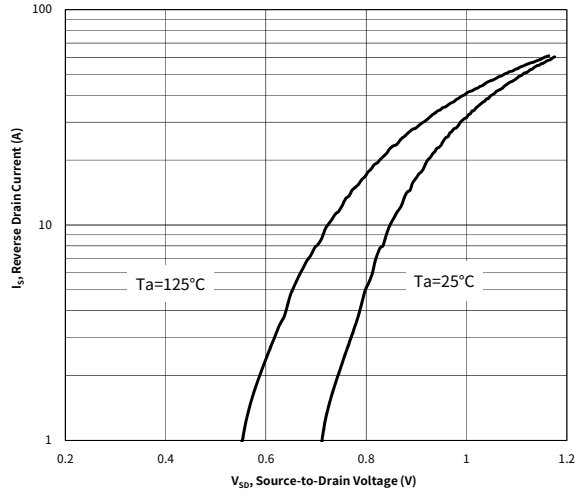


Fig.6 Typical Body-Diode Forward Characteristics

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

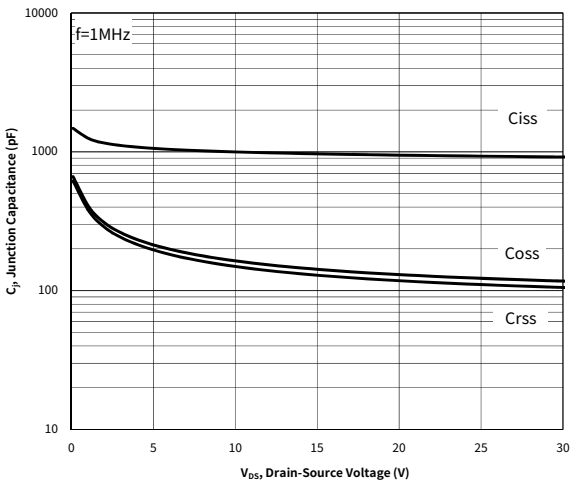


Fig.7 Capacitance Characteristics

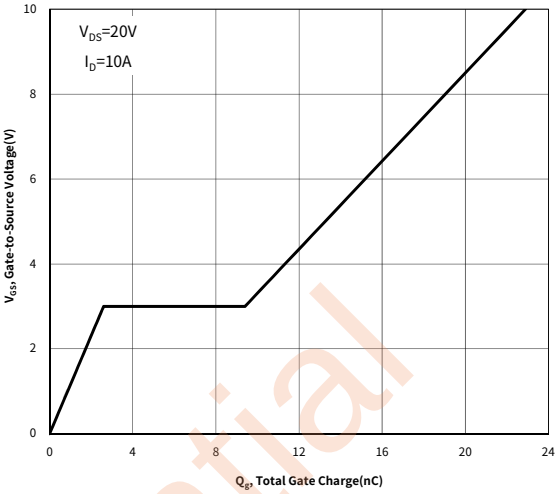


Fig.8 Gate Charge

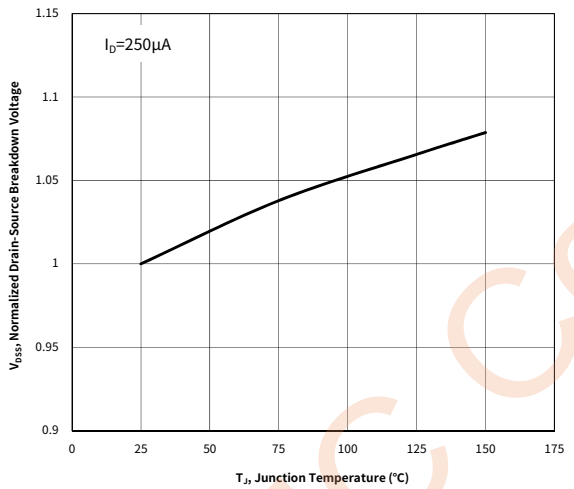


Fig.9 V(BR)DSS vs.Junction Temperature

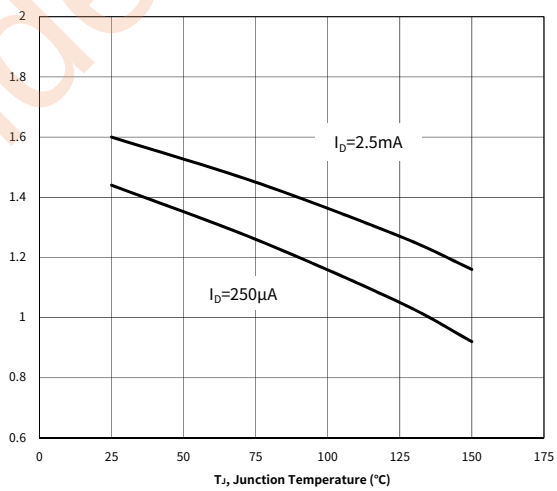


Fig.10 Gate Thresold Variation vs. Tj

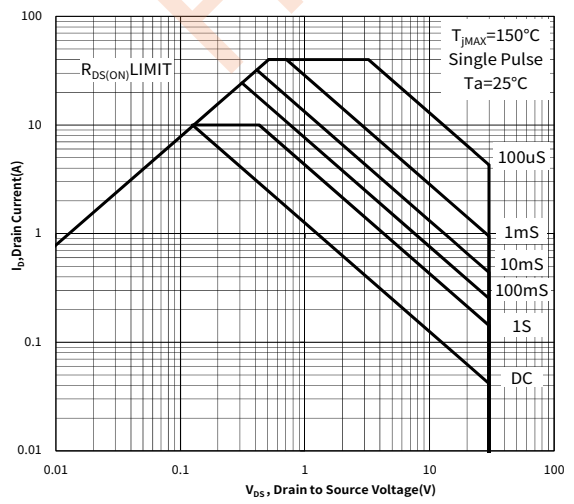


Fig.11 Safe Operation Area

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

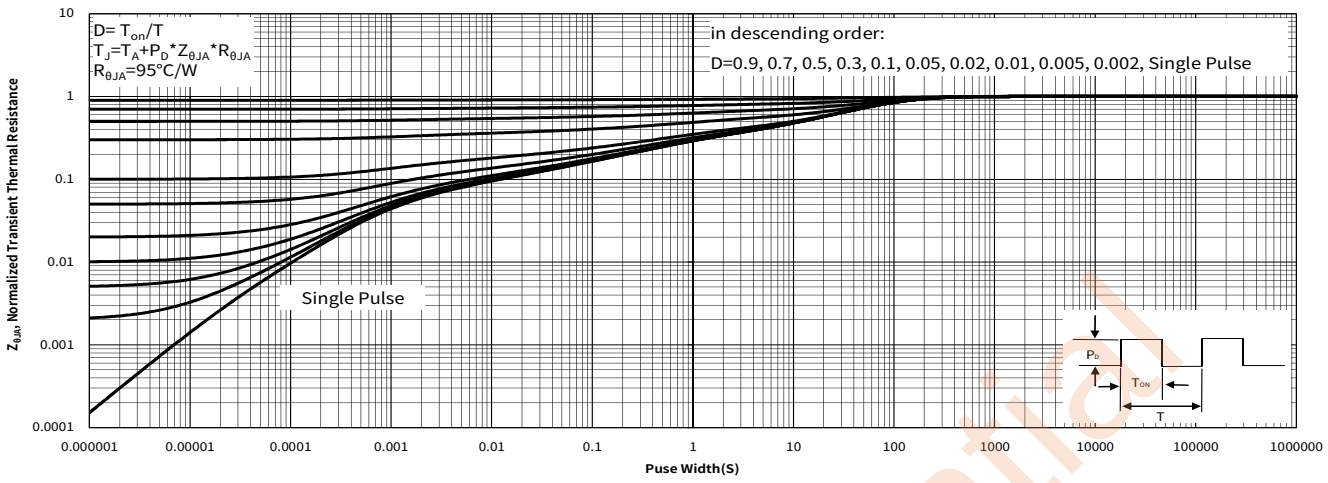
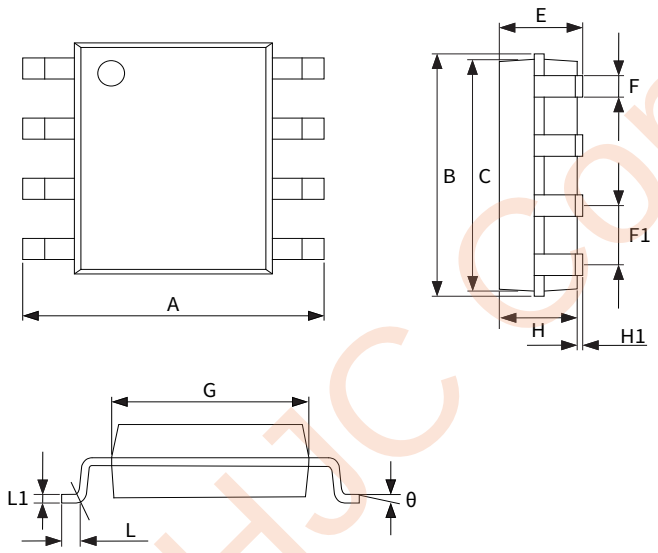


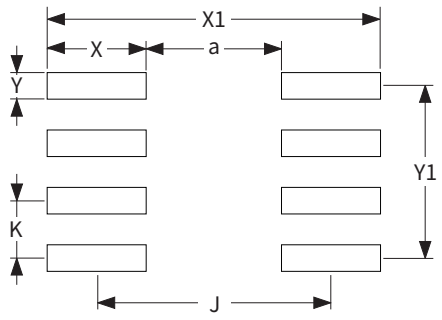
Fig.12 Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (SOP-8)



Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.70	6.30	0.224	0.248
B	5.13MAX.		0.202MAX.	
C	4.72	5.12	0.186	0.201
E	1.80MAX.		0.071MAX.	
F	0.31	0.51	0.0122	0.020
F1	1.27TYP.		0.050TYP.	
G	3.75	4.15	0.148	0.163
H	1.35	1.65	0.053	0.065
H1	0.1	0.25	0.004	0.010
L	0.3	0.7	0.012	0.028
L1	0.21TYP.		0.008TYP.	
θ	-	8°	-	8°

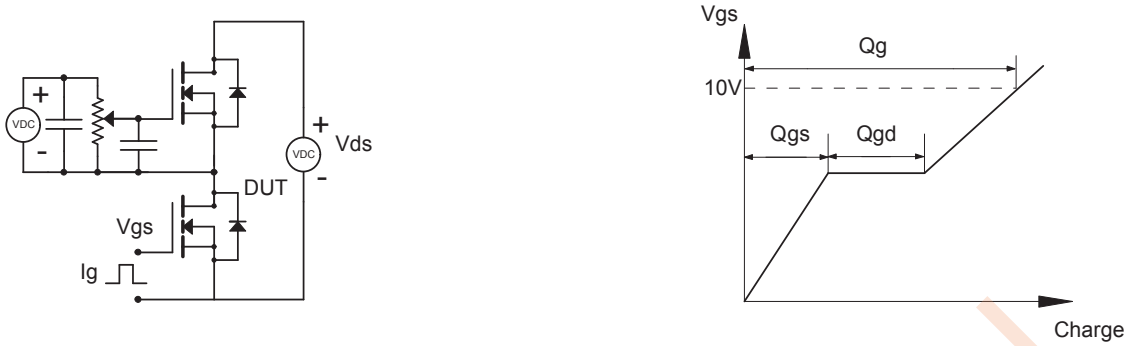
Suggested Pad Layout



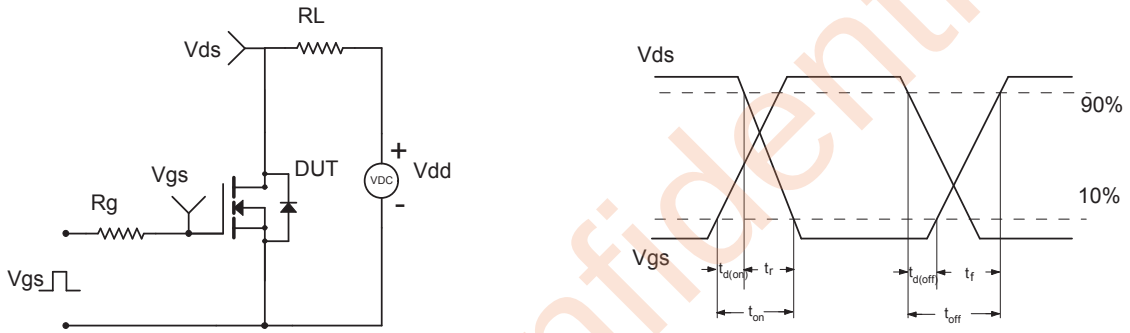
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
a	2.90	3.10	0.114	0.122
J	5.10	5.30	0.201	0.209
K	1.17	1.37	0.046	0.054
X	2.10	2.30	0.083	0.091
X1	7.30	7.50	0.287	0.295
Y	0.50	0.70	0.020	0.028
Y1	3.71	3.91	0.146	0.154

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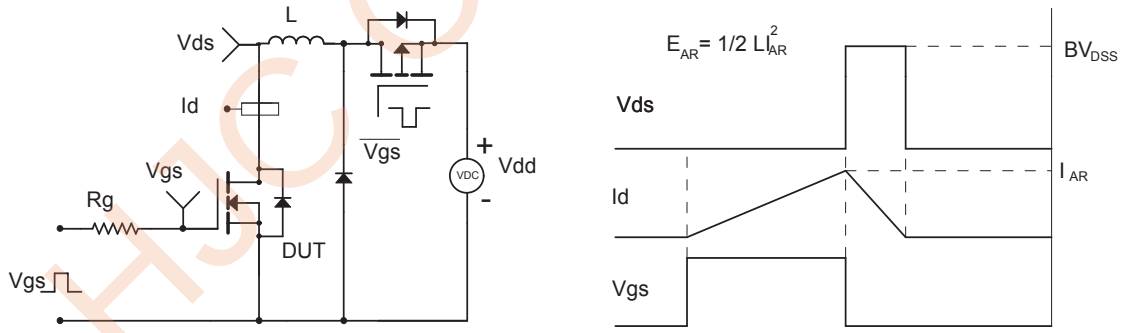
1.Gate Charge Test Circuit & Waveforms



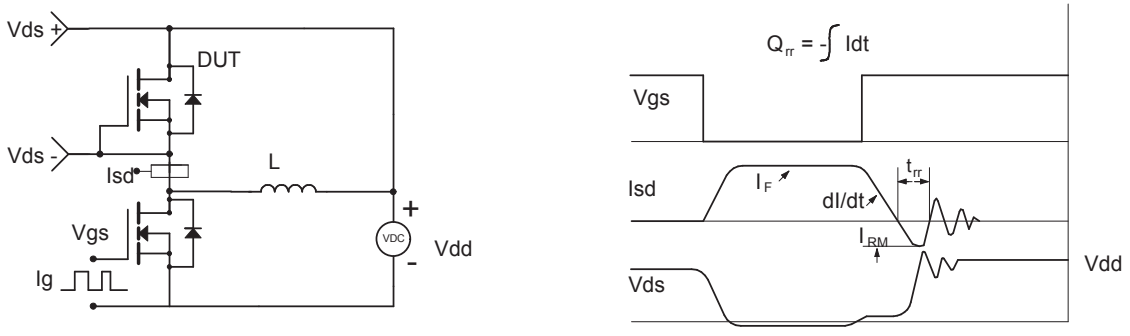
2. Resistive Switching Test Circuit & Waveforms



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



4.Diode Recovery Test Circuit & Waveforms



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