



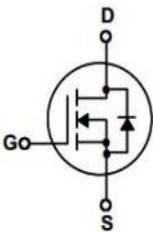
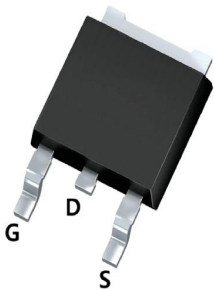
1.Features

- $R_{DS(ON)} \leq 17m\Omega$ @ $V_{GS}=10V$, $I_D=30A$
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Advanced trench technology
- Lead free product is acquired

2.Mechanical Data

- Case:Molded Plastic,TO-252;
- Epoxy:UL 94V-0 rate flame retardant
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: marked on body.
- Mounting Position : Any.

TO-252



1. Gate
2. Drain
3. Source

3.Maximum Ratings and Electrical Characteristics

Rating at 25°C Cambient temperature unless otherwise specified

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	60	V
Drain Current Continuous	$T_C=25^{\circ}C$	I_D	50	A
	$T_C=100^{\circ}C$		33	
Drain Current Pulsed(Note 1)		I_{DM}	200	A
Single Pulsed Avalanche Energy		E_{AS}	112	mJ
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation($T_C=25^{\circ}C$)		P_D	94	W
Maximum Junction Temperature		T_J	175	$^{\circ}C$
Storage Temperature Range		T_{stg}	-55 to +175	$^{\circ}C$
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	1.6	$^{\circ}C/W$



Characteristics	Symbol	Test conditions	Min	TYP	Max	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V,I _D =250μA	60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V,V _{GS} = 0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = 20V	-	-	100	nA
Gate-Source Leakage Current		V _{GS} = -20V	-	-	-100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS (th)}	V _{GS} = V _{DS} , I _D =250μA	1.0	1.6	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A	-	12	17	mΩ
		V _{GS} =4.5V, I _D =20A	-	16	25	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V V _{GS} =0V f=1.0MHZ	-	1980	-	pF
Output Capacitance	C _{oss}		-	175	-	
Reverse Transfer Capacitance	C _{rss}		-	150	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =30V, V _{GS} =10V R _G =1.8Ω; I _D =30A	-	7.3	-	ns
Turn-on Rise Time	t _r		-	5	-	
Turn-off Delay Time	t _{d(off)}		-	28	-	
Turn-off Fall Time	t _f		-	6	-	
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10A I _D =30A	-	49	-	nC
Gate-Source Charge	Q _{gs}		-	6.1	-	
Gate-Drain Charge	Q _{gd}		-	14	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	I _S =30A,V _{GS} =0V	-	-	1.2	V
Continuous Source Current	I _S		-	-	50	A
Pulsed Source Current	I _{SM}		-	-	200	
Reverse Recovery Time	T _{rr}	I _F =30A,	-	30	-	ns
Reverse Recovery Charge	Q _{rr}	dI/dt=100A/μS	-	42	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Essentially independent of operating temperature



4. Rating And Characteristic Curves

Fig.1 Output Characteristics

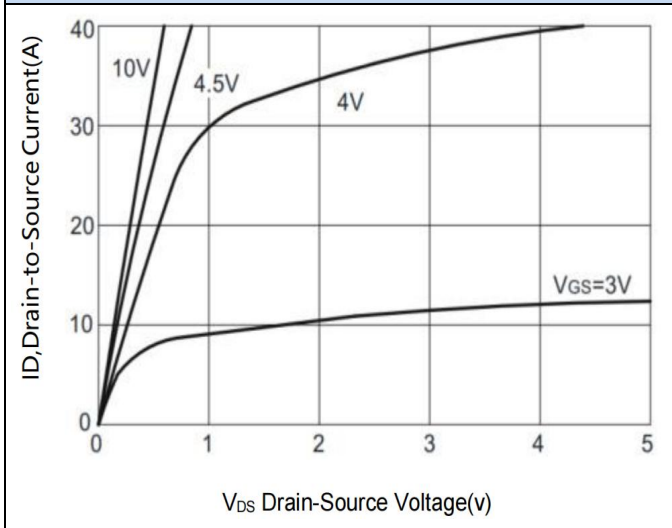


Fig.2 Transfer Characteristics

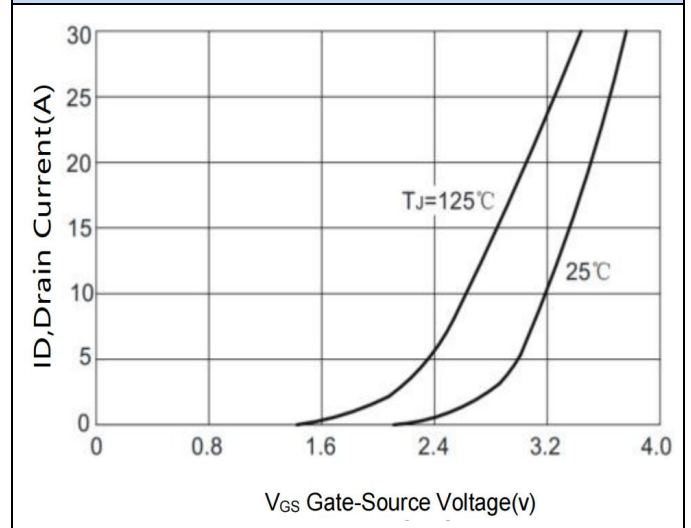


Fig.3 On-Resistance versus Drain Current

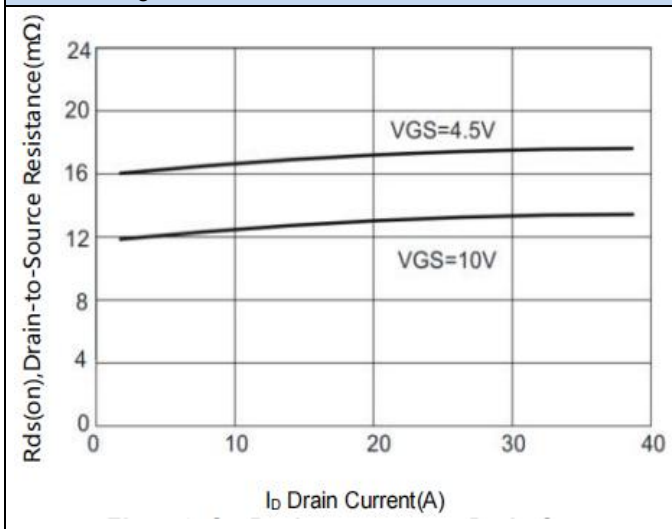


Fig.4 Diode forward voltage versus Current

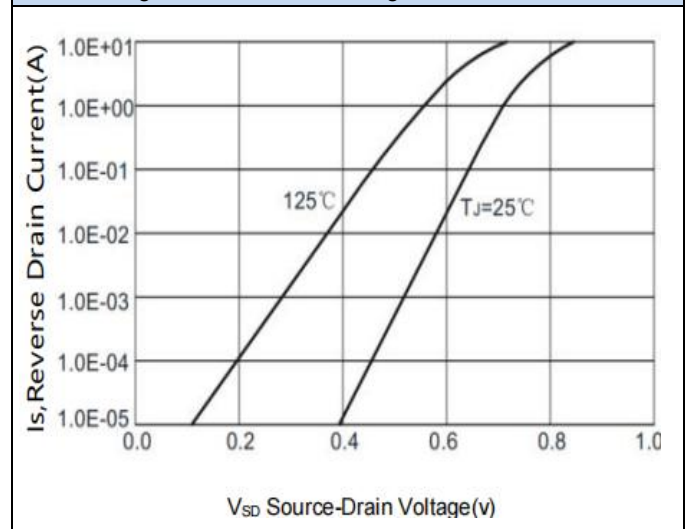


Fig.5 Typical Capacitance versus V_{DS}

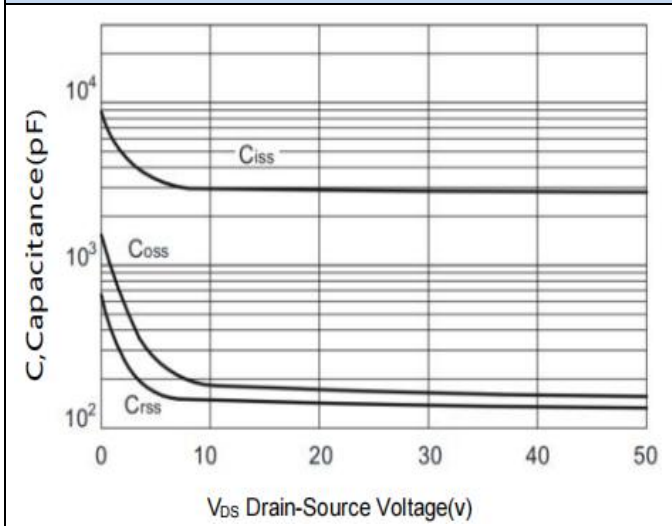


Fig.6 Typical Gate Charge versus V_{GS}

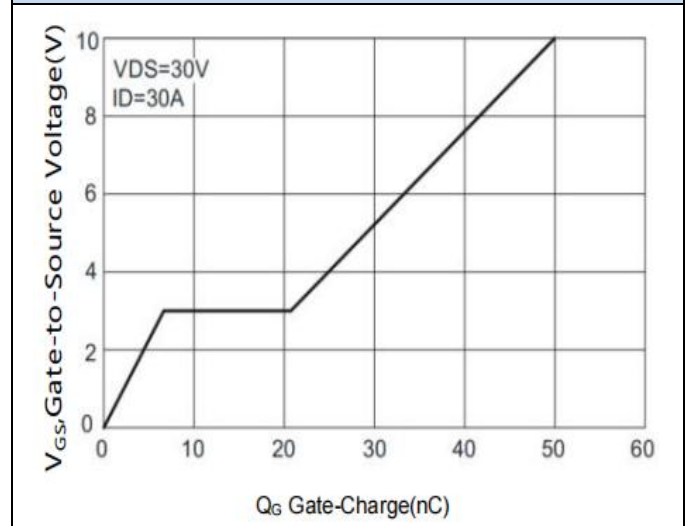




Fig.7 BV_{DSS} Variation with Temperature

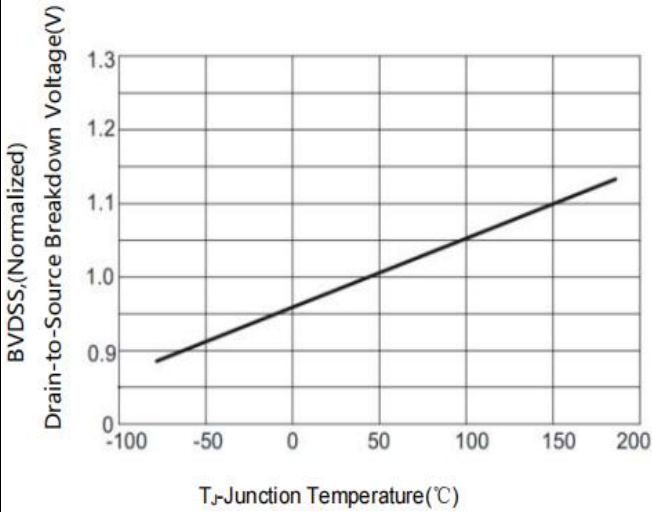


Fig.8 On-Resistance Variation with Temperature

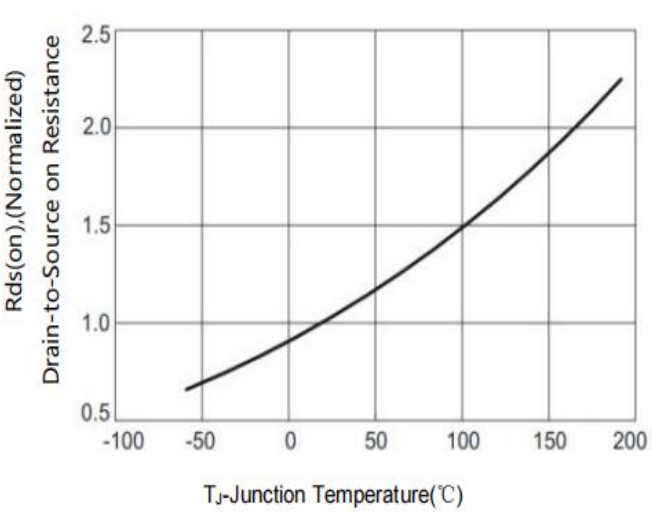


Fig.9 Maximum Safe Operating Area

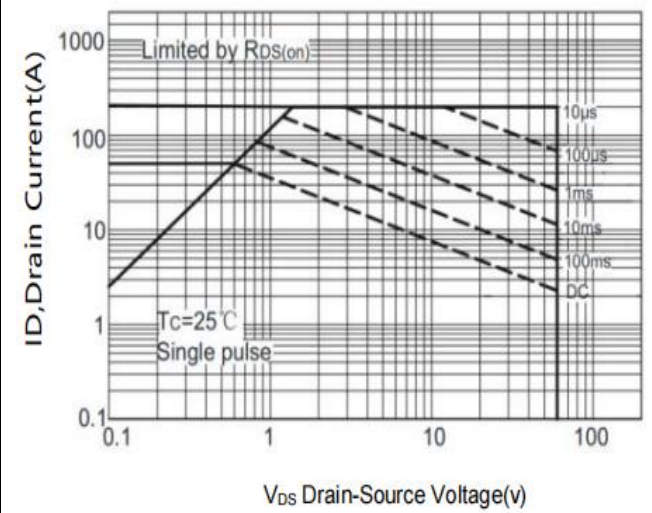
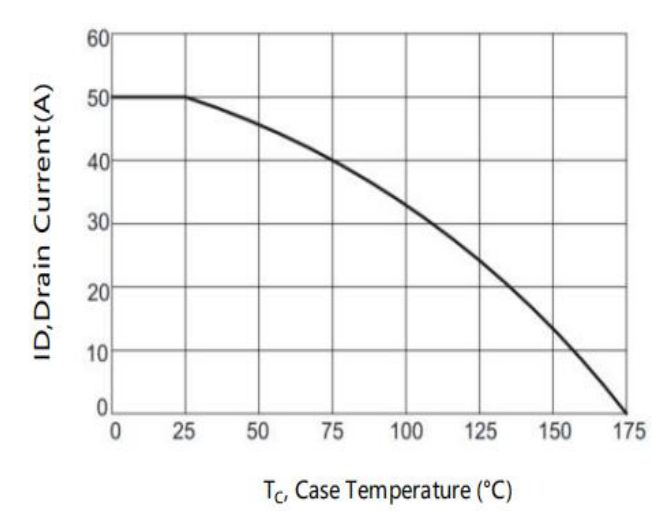
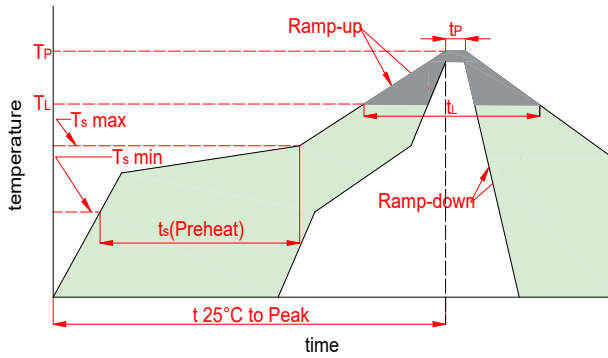


Fig.10. Drain Current versus Case Temperature



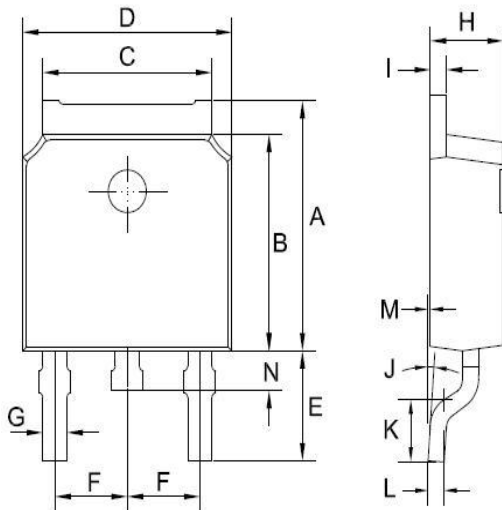


5. Soldering Parameters



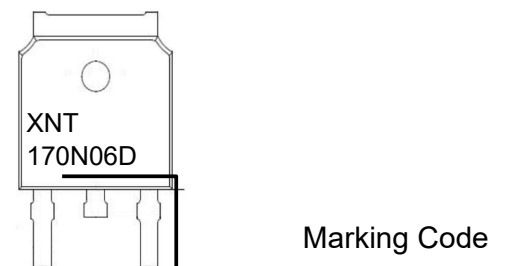
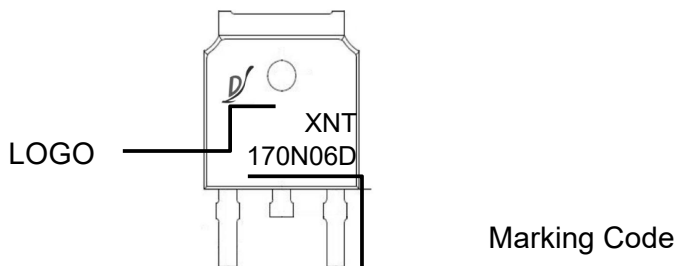
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150℃
	Temp. max(T_s (min))	200℃
	Time(min to max)(t_s)	60~180s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
T_s (max) to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp.(T_L)(Liquidus)	217℃
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe.(T_P)		8 minutes max
Do not exceed		260℃

6.Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.270	0.292	6.85	7.41
B	0.232	0.248	5.90	6.30
C	0.202	0.218	5.13	5.53
D	0.252	0.268	6.40	6.80
E	0.086	0.146	2.18	3.71
F	0.086	0.094	2.19	2.39
G	0.018	0.033	0.45	0.85
H	0.083	0.098	2.10	2.50
I	0.016	0.024	0.41	0.61
J	0°	8°	0°	8°
K	0.057	0.073	1.45	1.85
L	0.016	0.024	0.41	0.61
M	0.000	0.005	0.00	0.12
N	0.024	0.039	0.60	1.00

7. Part Marking System

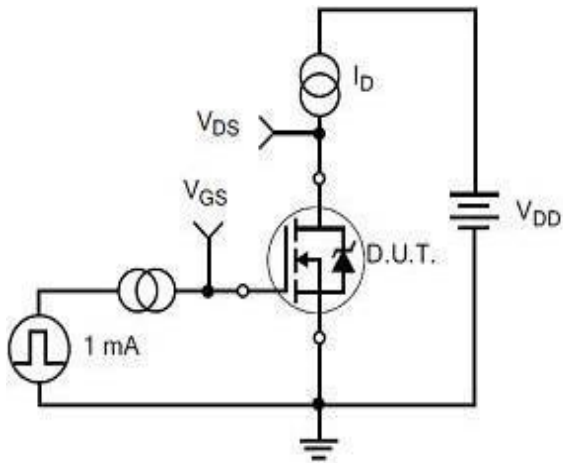


8. Package Information

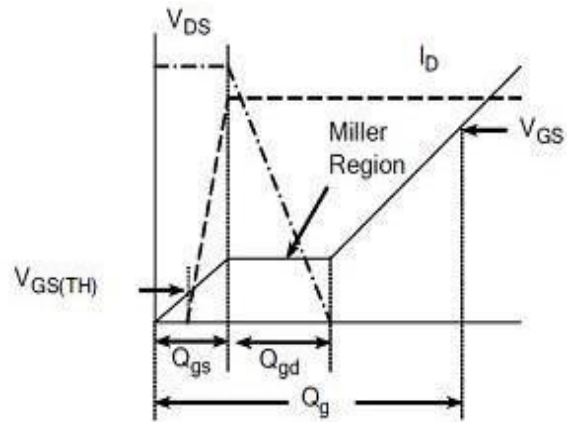
Package	Part Number
XNT170N06D	2500



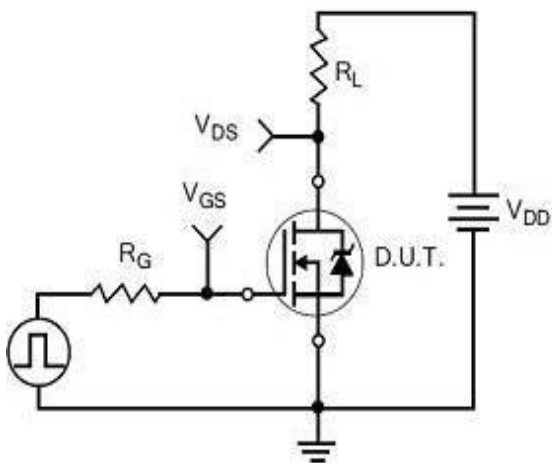
9. Test circuits



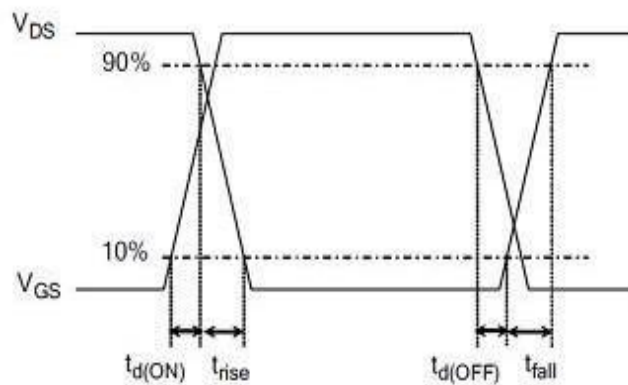
Gate Charge Test Circuit



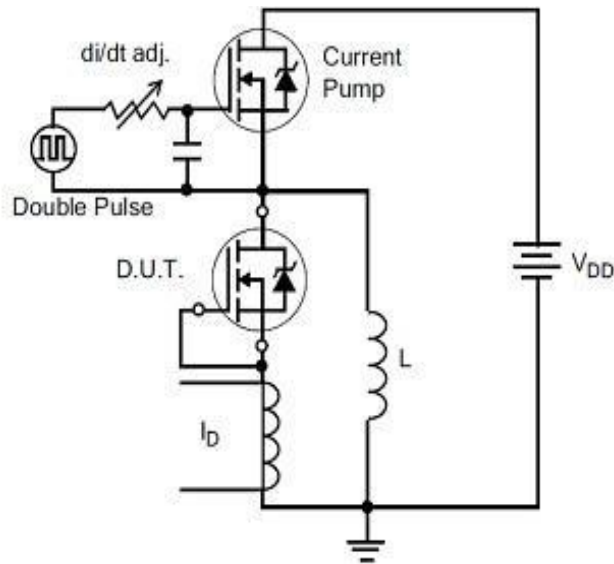
Gate Charge Waveform



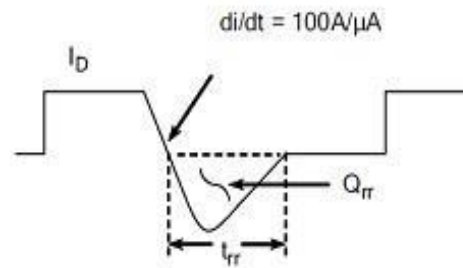
Resistive Switching Test Circuit



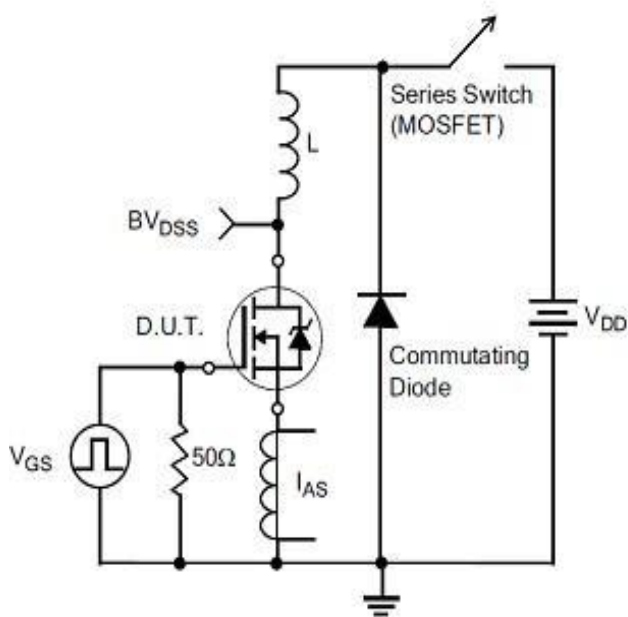
Resistive Switching Waveforms



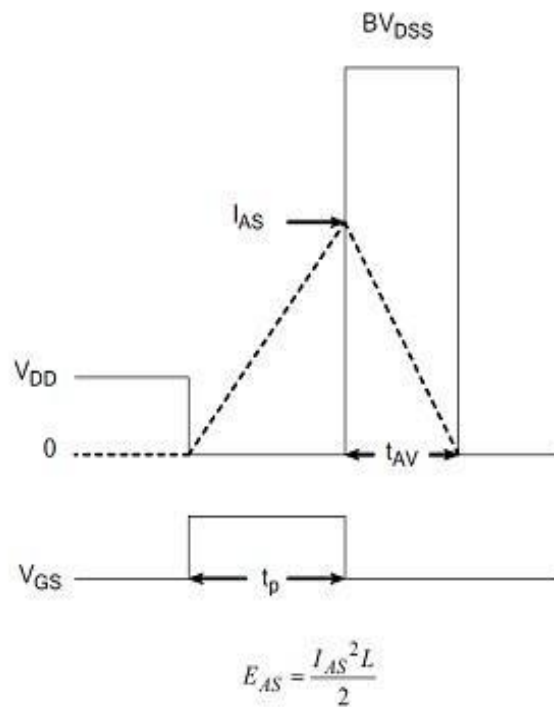
Diode Reverse Recovery Test Circuit



Diode Reverse Recovery Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



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