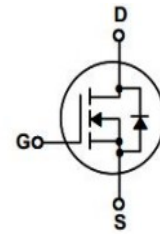
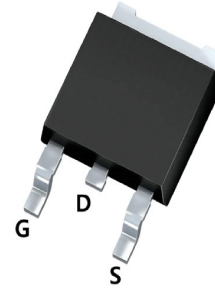




1.Features

- $R_{DS(ON)} \leq 6.0m\Omega$ @ $V_{GS}=10V$
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Advanced trench technology
- Lead free product is acquired

TO-252



1. Gate
2. Drain
3. Source

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.

3.Maximum Ratings and Electrical Characteristics

Rating at 25°C Ambient temperature unless otherwise specified

Characteristics		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Drain Current Continuous	$T_C=25^{\circ}C$	I_D	80	A
	$T_C=100^{\circ}C$		52	
Drain Current Pulsed(Note 1)		I_{DM}	240	A
Single Pulsed Avalanche Energy		E_{AS}	100	mJ
Gate-Source Voltage		V_{GS}	± 20	V
Power Dissipation($T_C=25^{\circ}C$)		P_D	80	W
Maximum Junction Temperature		T_J	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	-55 to +150	$^{\circ}C$
Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	1.56	$^{\circ}C/W$



Characteristics	Symbol	Test conditions	Min	TYP	Max	Unit
Off Characteristics						
Drain -Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V,I _D =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V,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	1.5	2.5	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A	-	4.5	6	mΩ
		V _{GS} =4.5V, I _D =20A	-	6	15	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DB} =15V	-	1920	-	pF
Output Capacitance	C _{oss}	V _{GS} =0V	-	310	-	
Reverse Transfer Capacitance	C _{rss}	f=1.0MHZ	-	203	-	
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, V _{GS} =10V R _G =3Ω; I _D =20A	-	20	-	ns
Turn-on Rise Time	t _r		-	45	-	
Turn-off Delay Time	t _{d(off)}		-	58	-	
Turn-off Fail Time	t _f		-	40	-	
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10A I _D =20A	-	46	-	nc
Gate-Source Charge	Q _{gs}		-	3	-	
Gate-Drain Charge	Q _{gd}		-	15	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	I _S =20A,V _{GS} =0V	-	-	1.4	V
Continuous Source Current	I _S		-	-	60	A
Pulsed Source Current	I _{SM}		-	-	240	

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

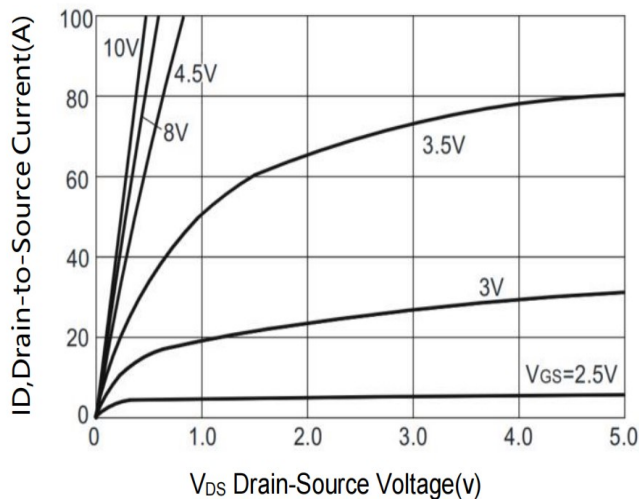


Fig.2 Transfer Characteristics

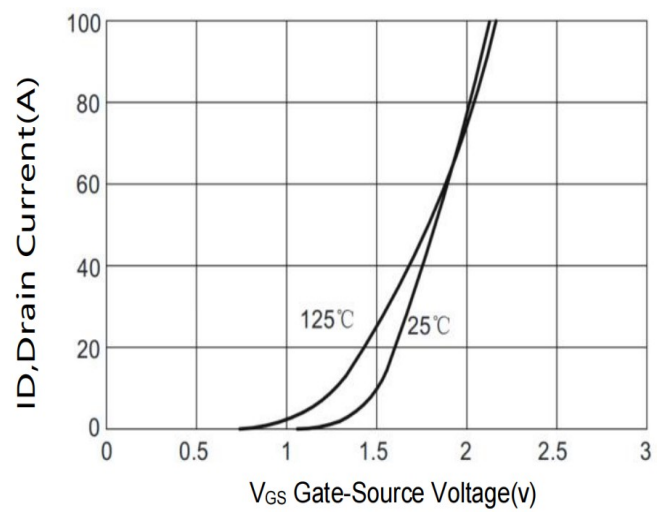


Fig.3 On-Resistance versus Drain Current

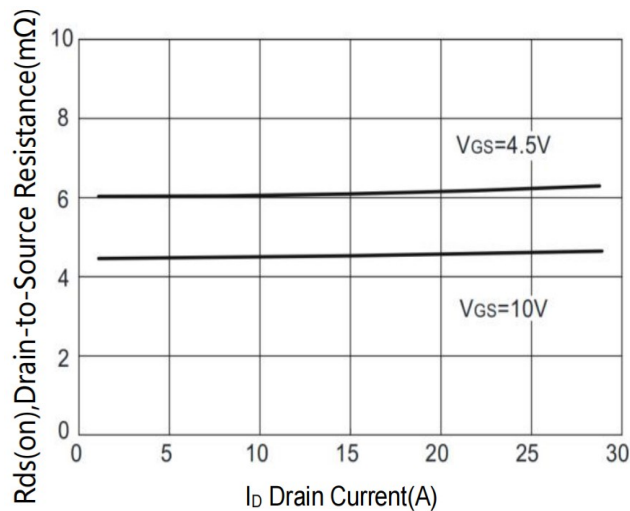


Fig.4 Diode forward voltage versus Current

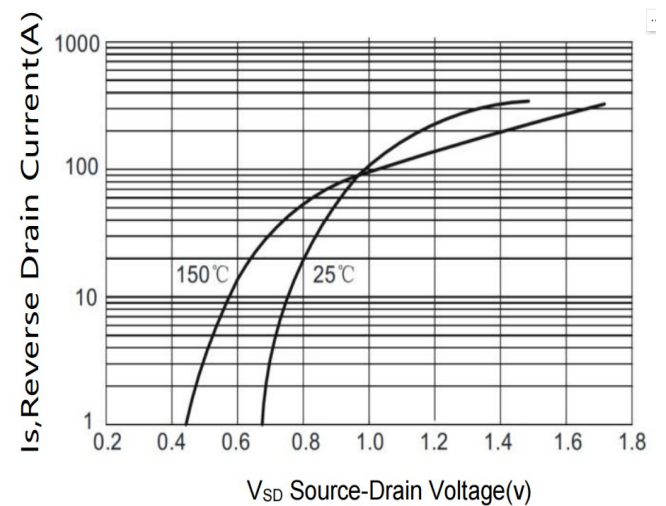


Fig.5 Typical Capacitance versus VDS

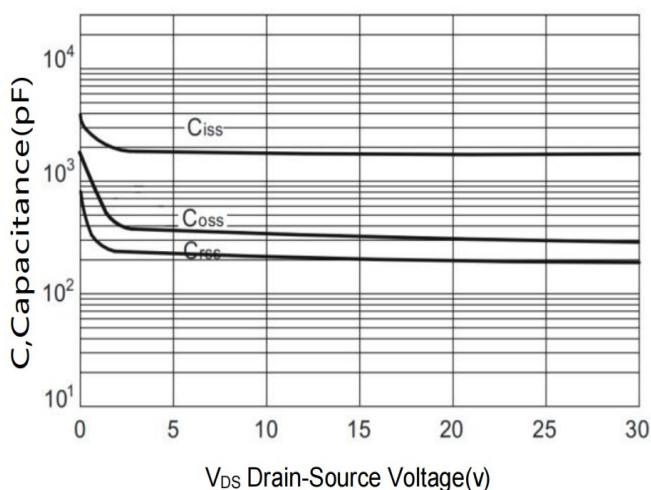


Fig.6 Typical Gate Charge versus VGS

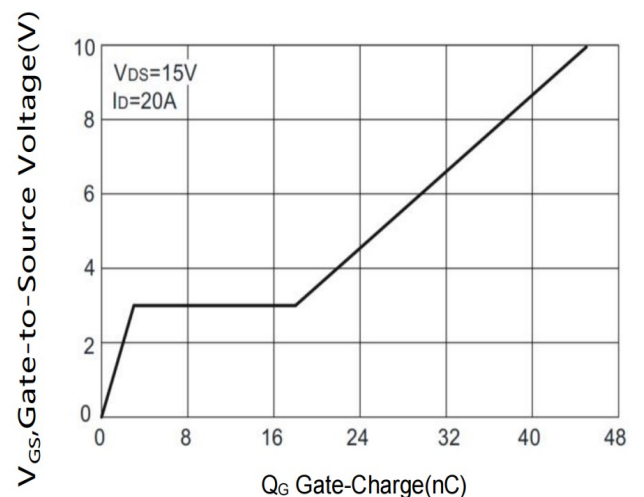




Fig.7 BV_{DSS} Variation with Temperature

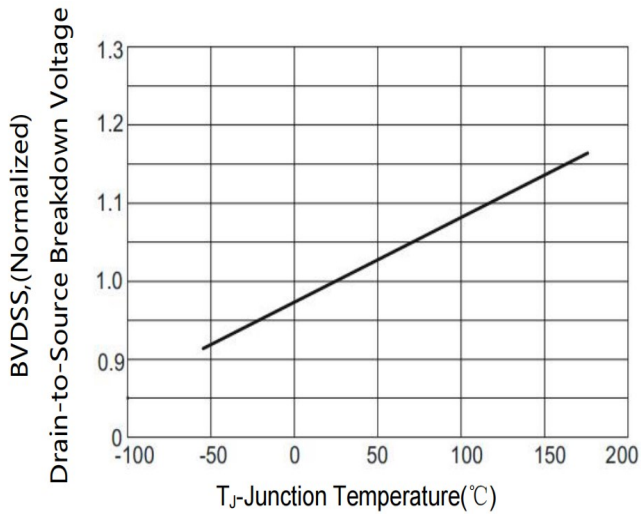


Fig.8 On-Resistance Variation with Temperature

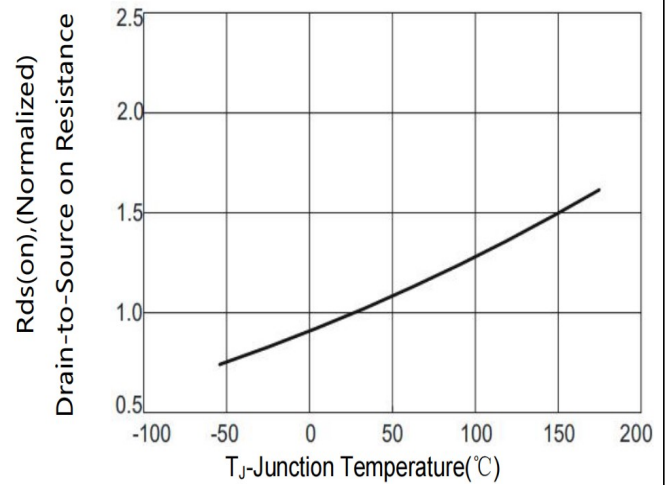


Fig.9 Maximum Safe Operating Area

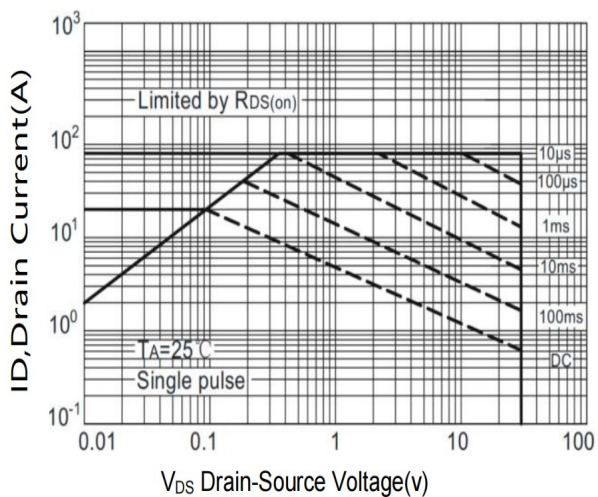
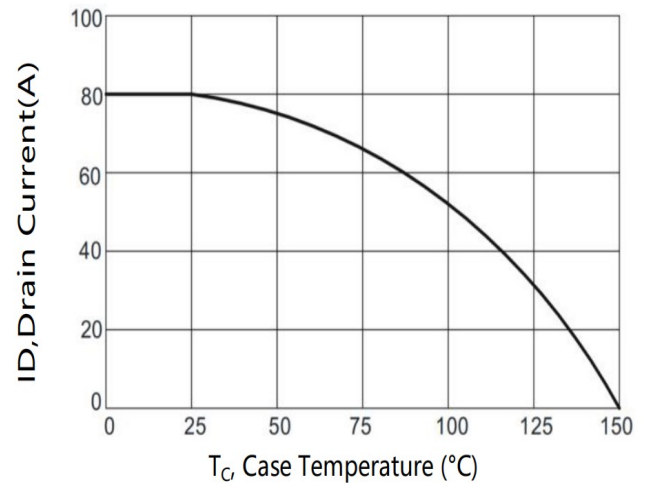
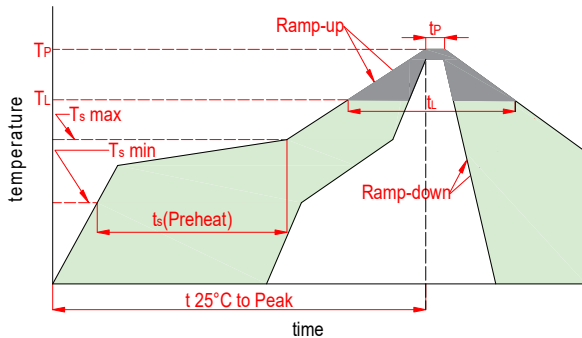


Fig.10. Drain Current versus Case Temperature





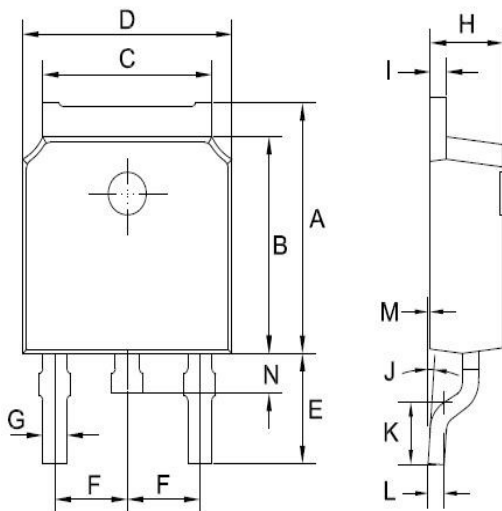
5. Soldering Parameters



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

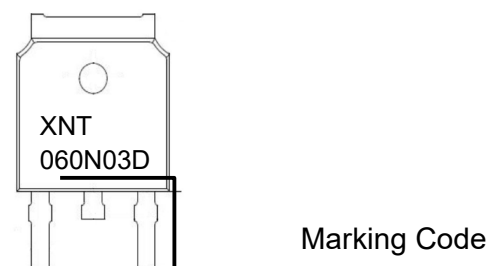
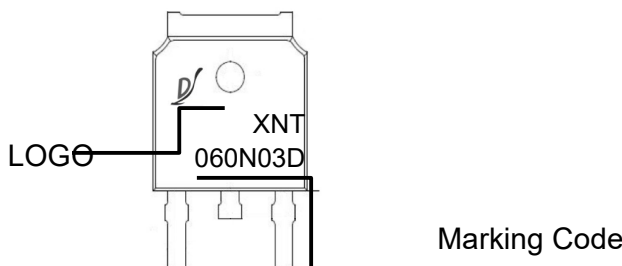
6.Dimensions

TO-252 Mechanical Drawing



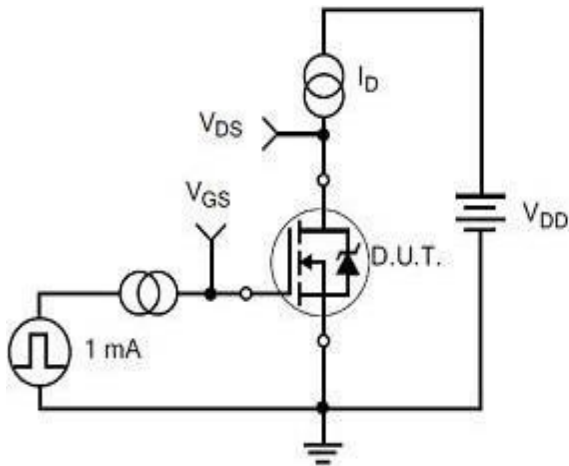
Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.270	0.285	6.85	7.25
B	0.232	0.248	5.90	6.30
C	0.202	0.218	5.13	5.53
D	0.252	0.268	6.40	6.80
E	0.114	0.130	2.90	3.30
F	0.086	0.094	2.19	2.39
G	0.018	0.033	0.45	0.85
H	0.087	0.094	2.20	2.40
I	0.016	0.024	0.41	0.61
J	0°	8°	0°	8°
K	0.057	0.073	1.45	1.85
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

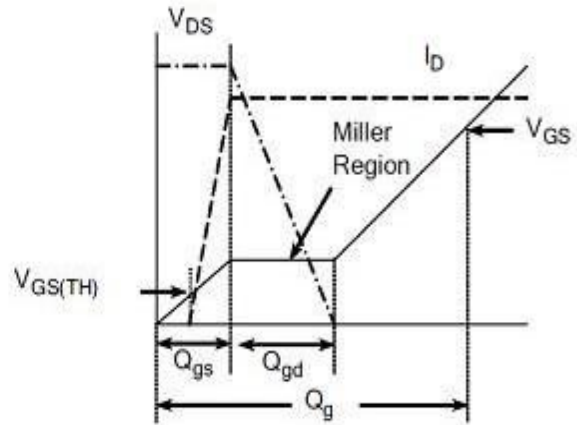




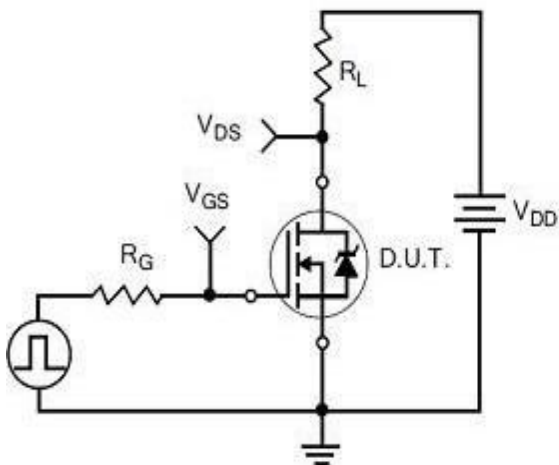
8. Test circuits



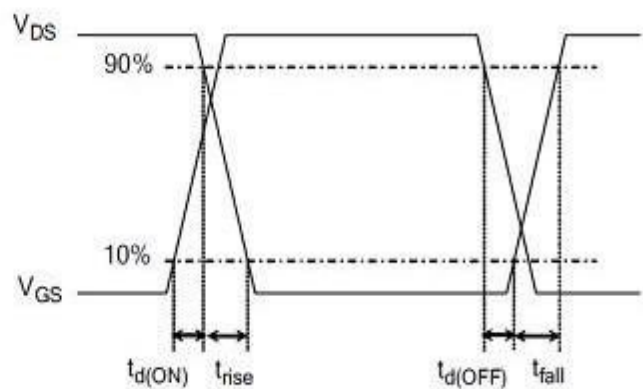
Gate Charge Test Circuit



Gate Charge Waveform



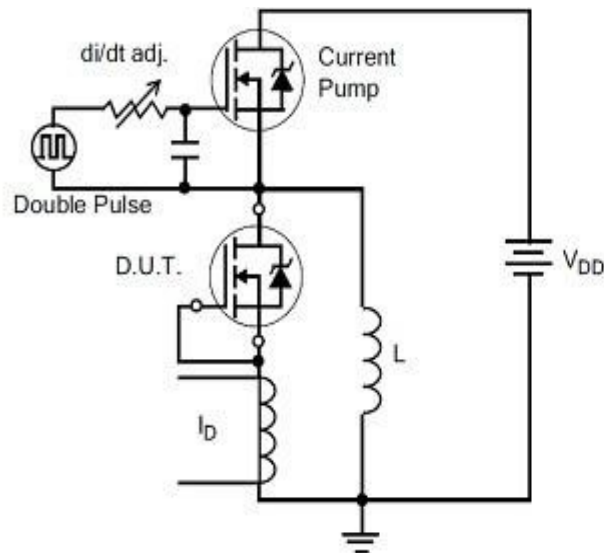
Resistive Switching Test Circuit



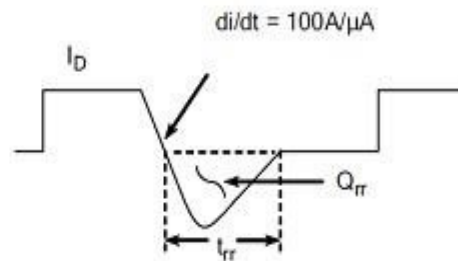
Resistive Switching Waveforms



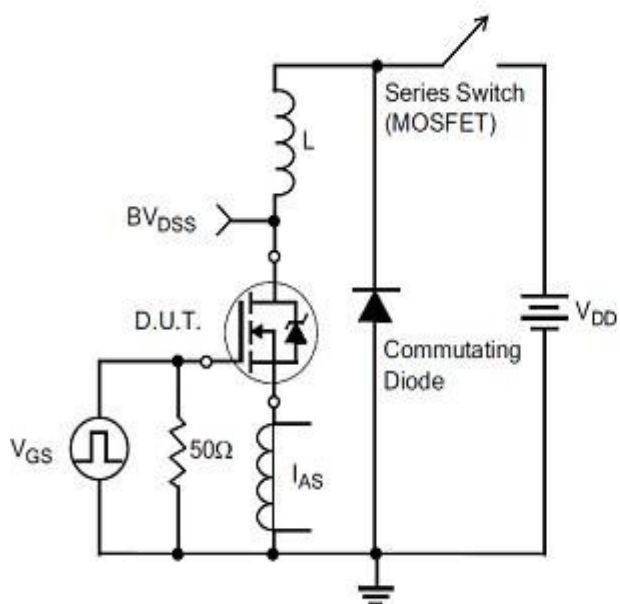
30V 80A N-CHANNEL POWER MOSFET



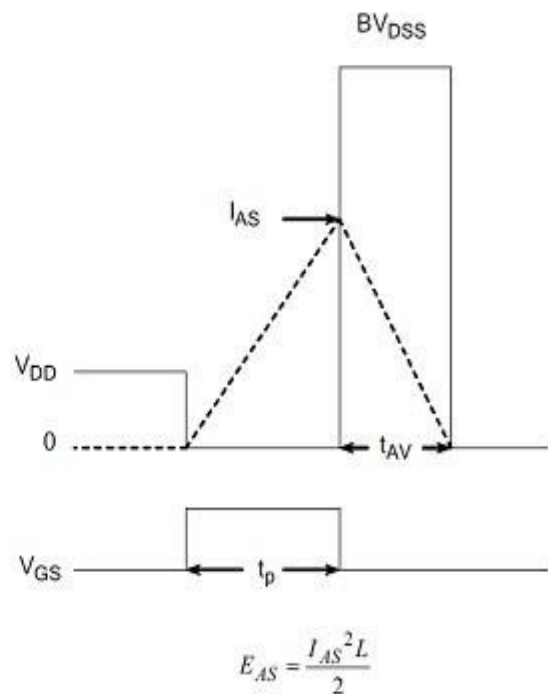
Diode Reverse Recovery Test Circuit



Diode Reverse Recovery Waveform



Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms



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