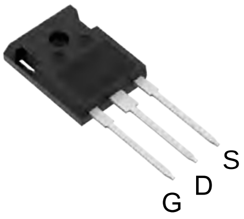
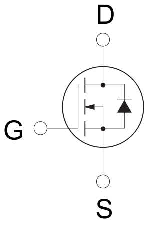
SMOS3N150B2

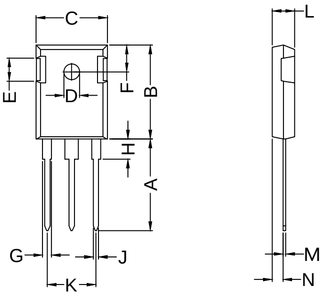
Power MOSFETs





G=Gate, D=Drain,
S=Source

Dimensions TO-247AD



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.620	0.640
ØD	3.15	3.65	0.124	0.144
E	4.32	5.49	0.170	0.216
F	5.40	6.30	0.213	0.248
G	1.65	2.18	0.065	0.086
H	3.80	4.50	0.150	0.177
J	1.00	1.40	0.039	0.055
K	10.80	11.10	0.425	0.437
L	4.70	5.30	0.185	0.209
M	0.40	0.80	0.016	0.031
N	1.50	2.49	0.059	0.098

Symbol	Test Conditions	Maximum Ratings	Unit
V_{DSS}	T_J=25^{o}C to 150^{o}C	1500	V
V_{DGR}	T_J=25^{o}C to 150^{o}C; R_{GS}=1MΩ	1500	
V_{GS}	Continuous	±20	V
V_{GSM}	Transient	±30	
I_D	T_C=25^{o}C	3	A
	T_C=100^{o}C	1.8	A
I_{DM}	T_C=25^{o}C; pulse width limited by T_{JM}	12	A
I_{AR}	T_C=25^{o}C	3	A
E_{AS}	T_C=25^{o}C ,Single Pulse Avalanche Energy	227	mJ
dv/dt	$I_S \le I_{DM}$; di/dt≤100A/us; $V_{DD} \le V_{DSS'}$ $T_J \le 150^o$C; R_G=2Ω	5	V/ns
P_D	T_C=25^{o}C	230	W
T_J		-55...+150	^{o}C
T_{JM}		150	
T_{stg}		-55...+150	
T_L	1.6mm(0.062 in.) from case for 10s	300	^{o}C
M_d	Mounting torque	1.13/10	Nm/lb.in.
Weight	typical	6	g

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
V_{DSS}	V_{GS}=0V; I_D=250uA	1500			V
$V_{GS(th)}$	V_{DS}=V_{GS}; I_D=250uA	3		5	V
I_{GSS}	V_{GS}=±30V_{DC}; V_{DS}=0			±100	nA
I_{DSS}	V_{DS}=0.8V_{DSS}; T_J=25°C			500	uA
	V_{GS}=0V; T_J=125°C			1	mA

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions	Characteristic Values			Unit
		min.	typ.	max.	
$R_{DS(on)}$	V_{GS}=10V; I_D=1.5A Pulse test, t≤300us, duty cycle≤2%		5.00	6.50	Ω
g_{fs}	V_{DS}=10V; I_D=0.5I_{D25}; pulse test		4.5		S
C_{ies}	V_{GS}=0V; V_{DS}=25V; f=1MHz		2000		pF
C_{oes}			95		
C_{res}			2.8		
$Q_{g(on)}$	V_{GS}=10V; V_{DS}=0.5$V_{DSS'}$; I_D=0.5I_{D25}		37		nC
Q_{gs}			9.9		
Q_{gd}			14.4		
$t_{d(on)}$	V_{GS}=10V; V_{DS}=750V; I_D=3A R_G=10Ω(External)		35.5		ns
t_r			19		ns
$t_{d(off)}$			56		ns
t_f			31		ns
R_{thJC}				0.54	K/W
R_{thJA}				40	K/W

Source-Drain Diode

(T_J=25°C, unless otherwise specified)

Symbol	Test Conditions		Characteristic Values			Unit
			min.	typ.	max.	
I_S	V_{GS}=0V				3	A
I_{SM}	Repetitive; pulse width limited by T_{JM}				12	A
V_{SD}	I_F=3A; V_{GS}=0V; Pulse test, t≤300us, duty cycle d≤2%				1.5	V
t_{rr}	I_F=3A; -di/dt=100A/us; V_R=100V;	T_J=25°C		880		ns
Q_{RM}		T_J=25°C		6.5		uC
I_{RM}		T_J=25°C		14		A

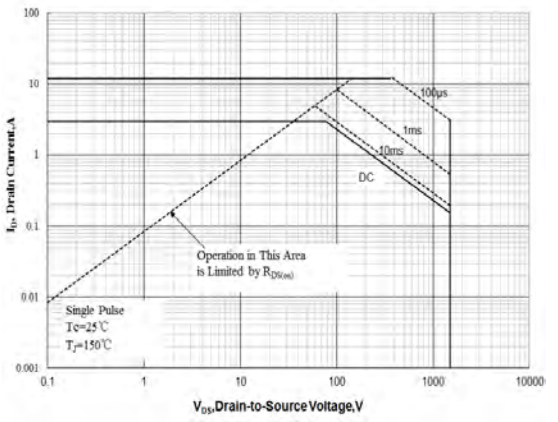


Figure 1. Maximum Forward Bias Safe Operating Area

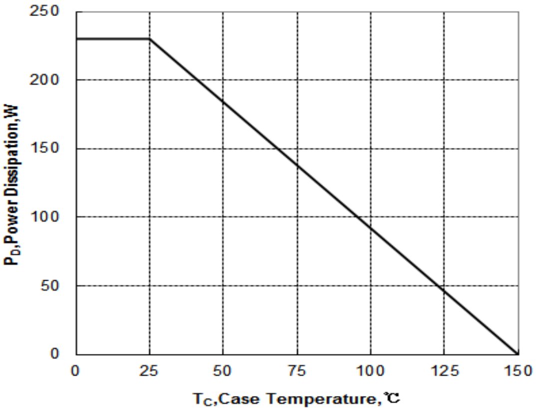


Figure 2. Maximum Power dissipation vs Case Temperature

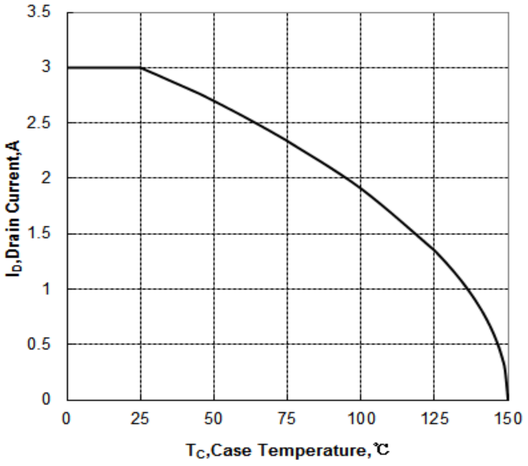


Figure 3. Maximum Continuous Drain Current vs Case Temperature

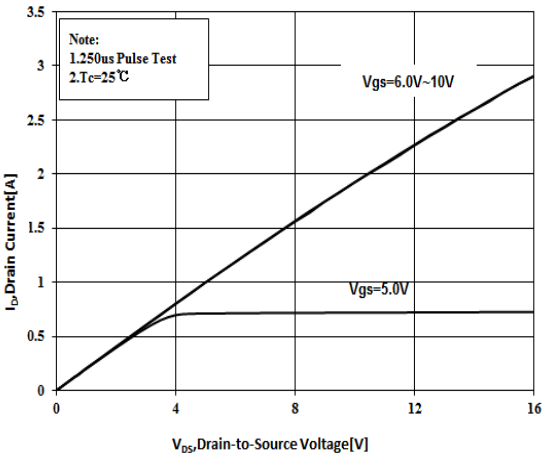


Figure 4. Typical Output Characteristics

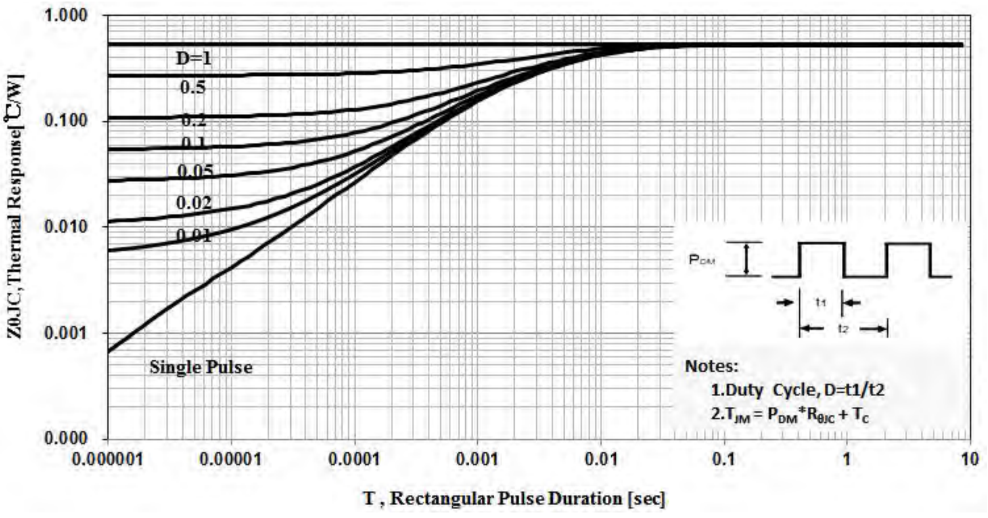


Figure 5. Maximum Effective Thermal Impedance , Junction to Case

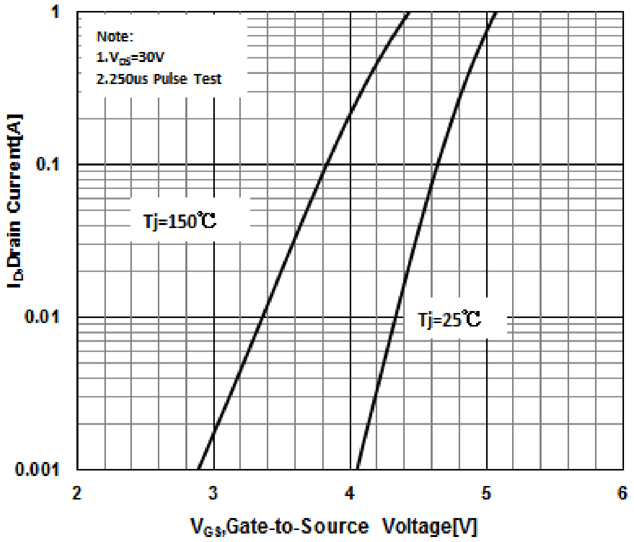


Figure 6. Typical Transfer Characteristics

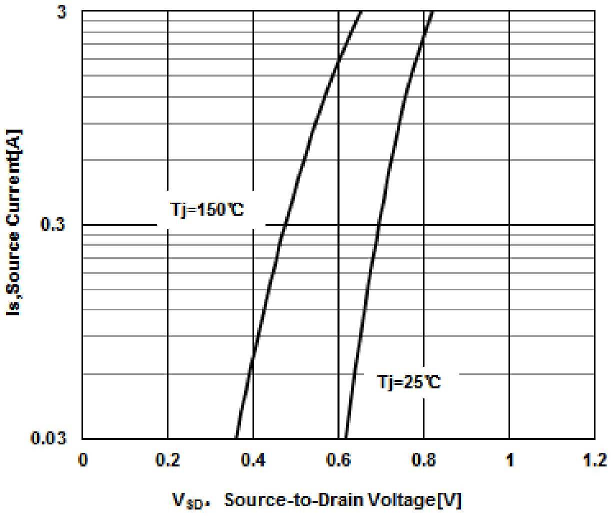


Figure 7. Typical Body Diode Transfer Characteristics

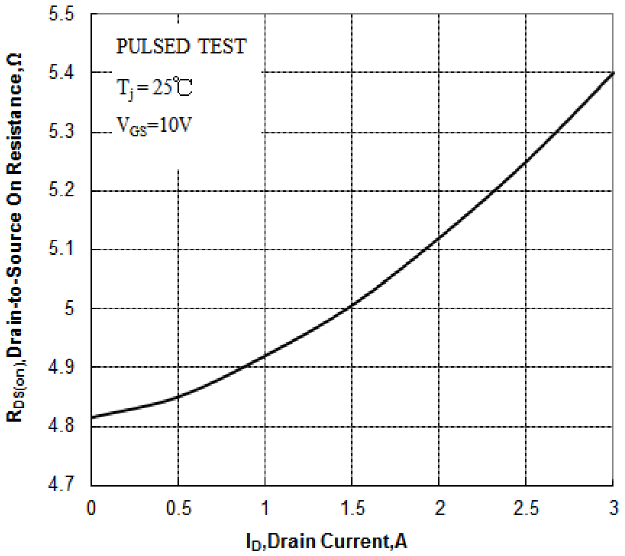


Figure 8. Typical Drain to Source ON Resistance
vs Drain Current

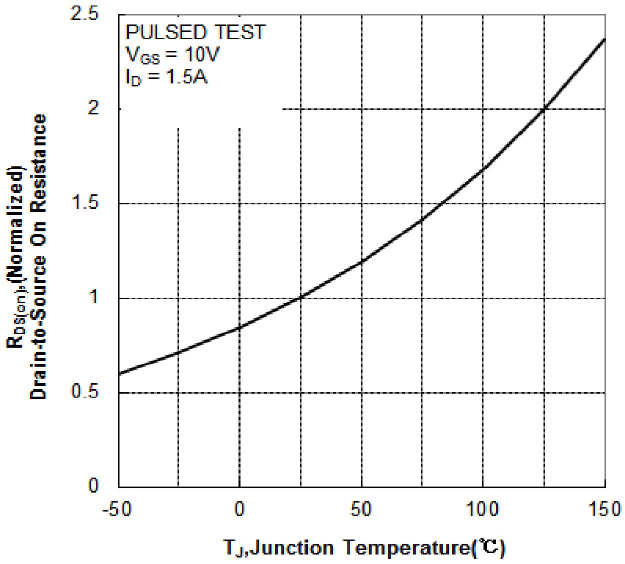


Figure 9. Typical Drian to Source on Resistance
vs Junction Temperature

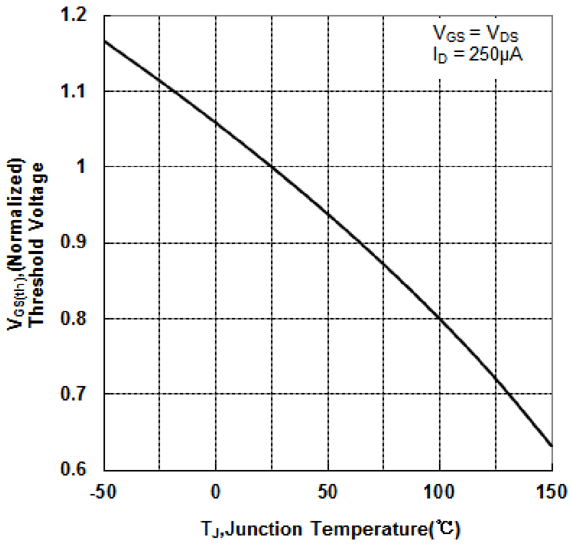


Figure 10. Typical Theshold Voltage vs Junction Temperature

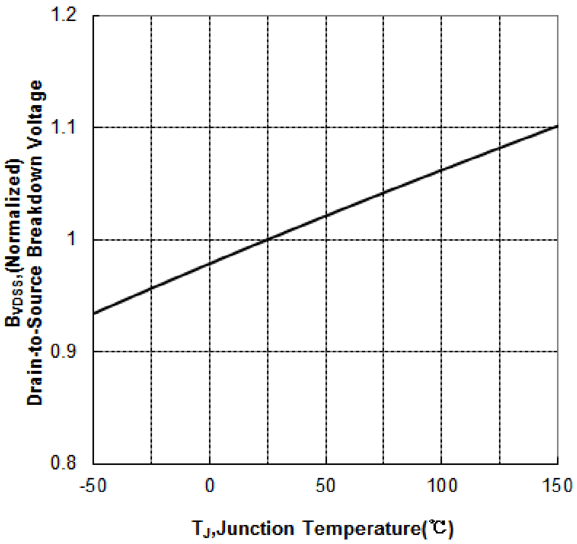


Figure 11. Typical Breakdown Voltage vs Junction Temperature

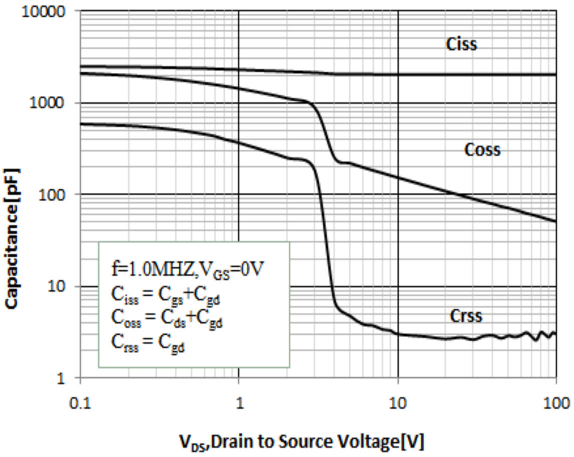


Figure 12.Typical Capacitance vs Drain to Source Voltage

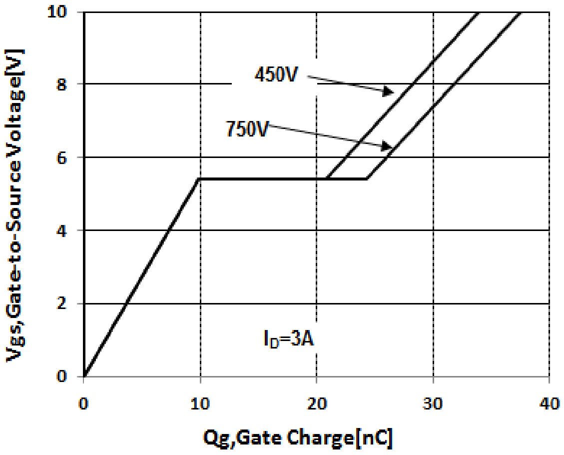


Figure 13. Typical Gate Charge vs Gate to Source Voltage

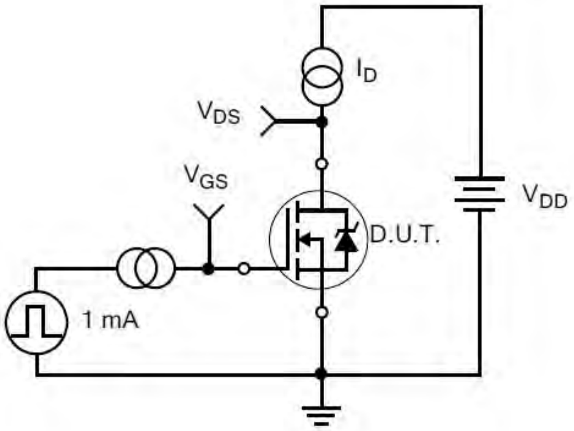


Figure 14. Gate Charge Test Circuit

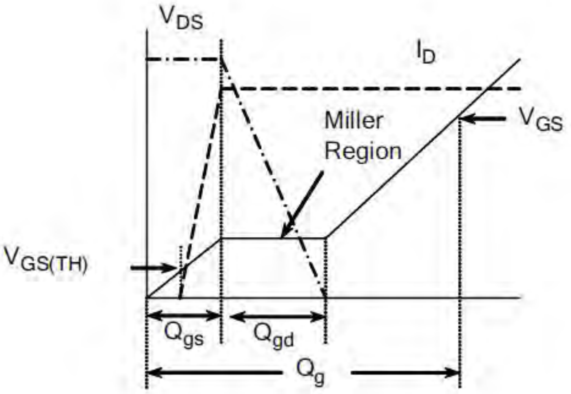


Figure 15. Gate Charge Waveforms

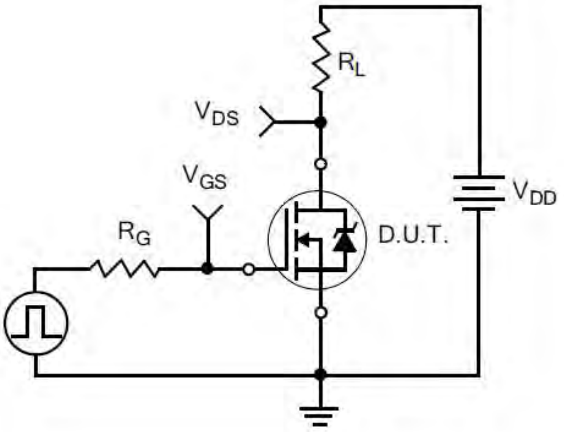


Figure 16. Resistive Switching Test Circuit

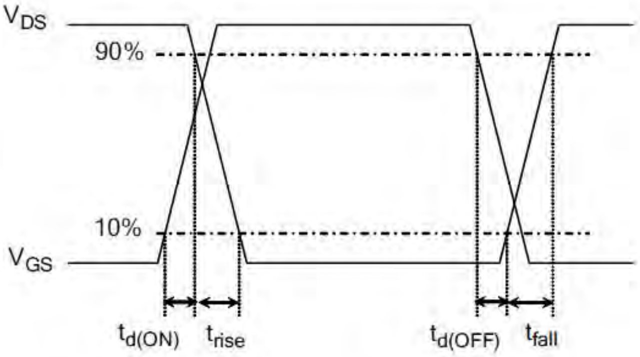


Figure 17. Resistive Switching Waveforms

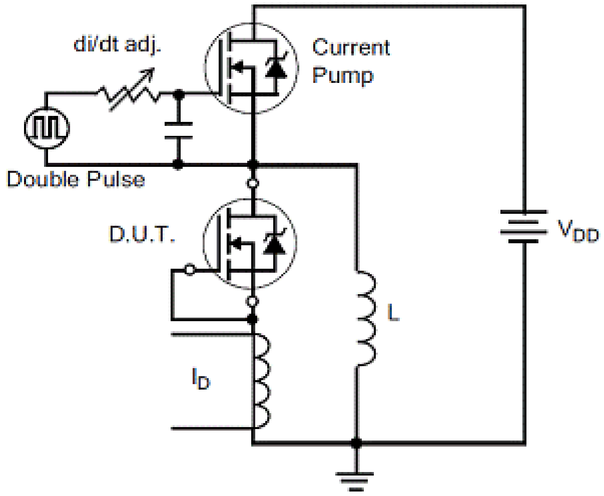


Figure 18. Diode Reverse Recovery Test Circuit

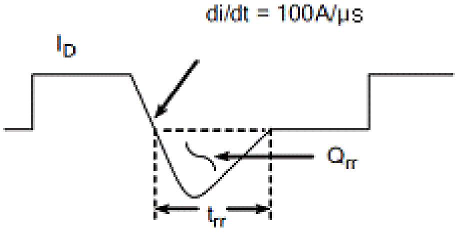


Figure 19. Diode Reverse Recovery Waveform

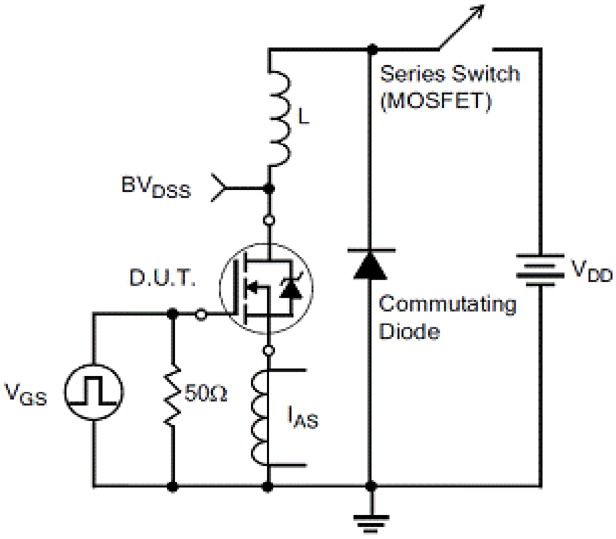
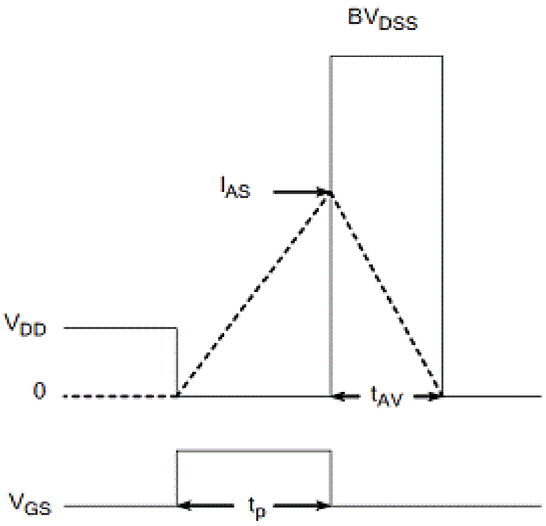


Figure20.Unclamped Inductive Switching Test Circuit



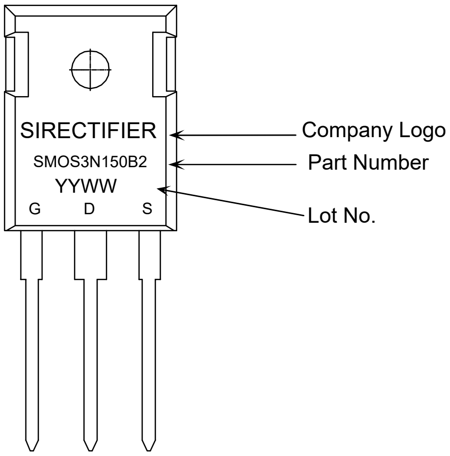
$$E_{AS} = \frac{{I_{AS}}^2 L}{2}$$

Figure21.Unclamped Inductive Switching Waveform

SMOS3N150B2

Power MOSFETs

MARKING



ORDERING INFORMATION

Part Number	Package	Shipping	Marking Code
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