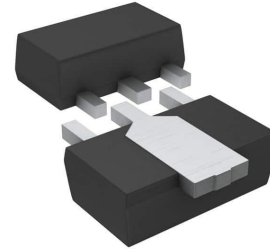


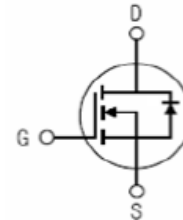
Features

- **Fast Switching**
- **Low ON Resistance**($R_{ds(on)} \leq 0.65\Omega$)
- **Low Gate Charge** (Typical Data:7nC)
- **Low Reverse transfer capacitances**(Typical:8pF)
- **100% Single Pulse avalanche energy Test**



V_{DSS}	200	V
I_D	4.8	A
P_D ($T_C=25^\circ\text{C}$)	40	W
$R_{DS(ON)Typ}$	0.49	Ω

Inner Equivalent Principium Chart



Applications

Power switch circuit of adaptor and charger.

Absolute ($T_J = 25^\circ\text{C}$ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	200	V
I_D	Continuous Drain Current $T_C = 25^\circ\text{C}$	4.8	A
	Continuous Drain Current $T_C = 100^\circ\text{C}$	3.4	A
I_{DM}^{a1}	Pulsed Drain Current $T_C = 25^\circ\text{C}$	19.2	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}^{a2}	Single Pulse Avalanche Energy	125	mJ
dv/dt^{a3}	Peak Diode Recovery dv/dt	5	V/ns
P_D	Power Dissipation $T_C = 25^\circ\text{C}$	40	W
	Derating Factor above 25°C	0.32	W/ $^\circ\text{C}$
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^\circ\text{C}$

Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise specified):

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	200	--	--	V
$\Delta BV_{DSS} / \Delta T_J$	Bvdss Temperature Coefficient	$I_D=250\mu A, \text{Reference } 25^\circ\text{C}$	--	0.26	--	V/ $^\circ\text{C}$
I_{DSS}	Drain to Source Leakage Current	$V_{DS} = 200V, V_{GS}= 0V, T_J = 25^\circ\text{C}$	--	--	1	μA
		$V_{DS} = 160V, V_{GS}= 0V, T_J = 125^\circ\text{C}$			10	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}= 30V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS} = -30V$	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=10V, I_D=2.9A$	--	0.49	0.65	Ω
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0		4.0	V
Pulse width $t_p \leq 300\mu s, \delta \leq 2\%$						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Trans conductance	$V_{DS}=15V, I_D = 2.9A$		2.0	--	S
C_{iss}	Input Capacitance	$V_{GS} = 0V, V_{DS} = 25V$ $f = 1.0MHz$	--	255		pF
C_{oss}	Output Capacitance		--	52		
C_{rss}	Reverse Transfer Capacitance		--	8		

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = 4.8A, V_{DD} = 100V$ $V_{GS} = 10V, R_G = 10\Omega$	--	7	--	ns
t_r	Rise Time		--	13	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	27	--	
t_f	Fall Time		--	11	--	
Q_g	Total Gate Charge	$I_D = 4.8A, V_{DD} = 100V$ $V_{GS} = 10V$	--	7		nC
Q_{gs}	Gate to Source Charge		--	2		
Q_{gd}	Gate to Drain ("Miller") Charge		--	3		

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I _S	Continuous Source Current (Body Diode)	T _C = 25 °C	--	--	4.8	A
I _{SM}	Maximum Pulsed Current (Body Diode)		--	--	19.2	A
V _{SD}	Diode Forward Voltage	I _S =1.8A, V _{GS} =0V	--	--	1.5	V
trr	Reverse Recovery Time	I _S =4.8A, T _J = 25° C dI _F /dt=100A/us, V _{GS} =0V	--	105	--	ns
Q _{rr}	Reverse Recovery Charge		--	380	--	nC
I _{RRM}	Reverse Recovery Current		--	7.2	--	A
Pulse width tp≤300 μs, δ ≤2%						

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Junction-to-Case	3.13	$^{\circ}\text{C}/\text{W}$
$R_{\theta JA}$	Junction-to-Ambient	62.5	$^{\circ}\text{C}/\text{W}$

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

^{a2}: $L=10.0\text{mH}$, $I_D=5\text{A}$, Start $T_J=25\text{ }^{\circ}\text{C}$

^{a3}: $I_{SD}=4.8\text{A}$, $di/dt \leq 100\text{A}/\mu\text{s}$, $V_{DD} \leq BV_{DS}$, Start $T_J=25\text{ }^{\circ}\text{C}$

^{a4}: Recommend soldering temperature defined by IPC/JEDEC J-STD 020

Characteristics Curve:

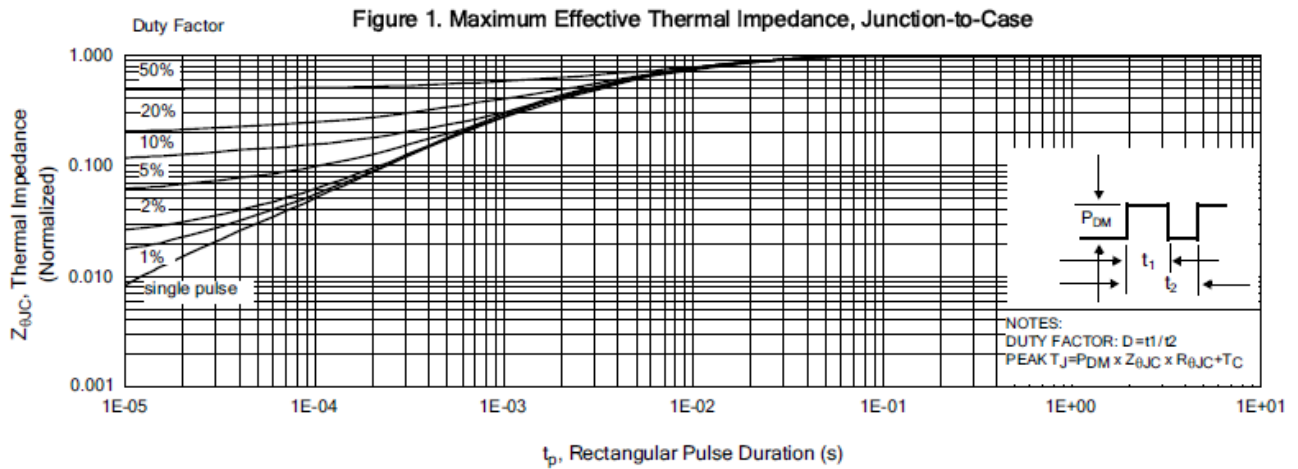


Figure 2. Maximum Power Dissipation vs Case Temperature

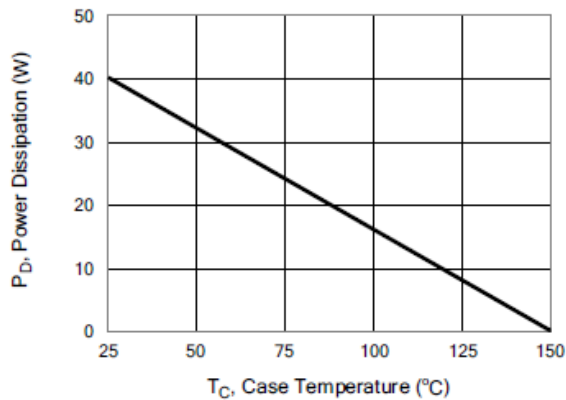


Figure3. Maximum Continuous Drain Current vs Case Temperature

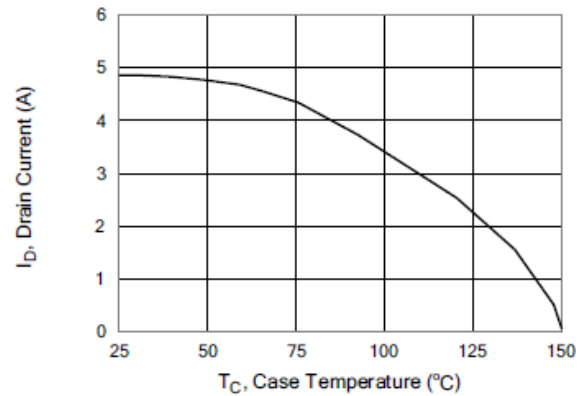


Figure 4. Typical Output Characteristics

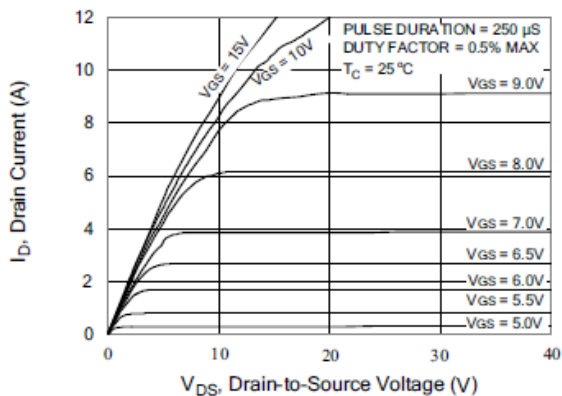


Figure5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current

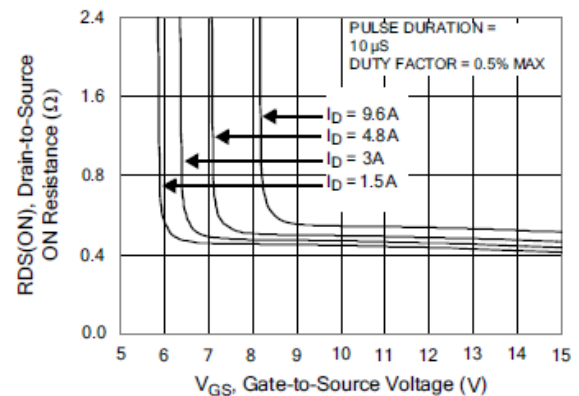


Figure 6. Maximum Peak Current Capability

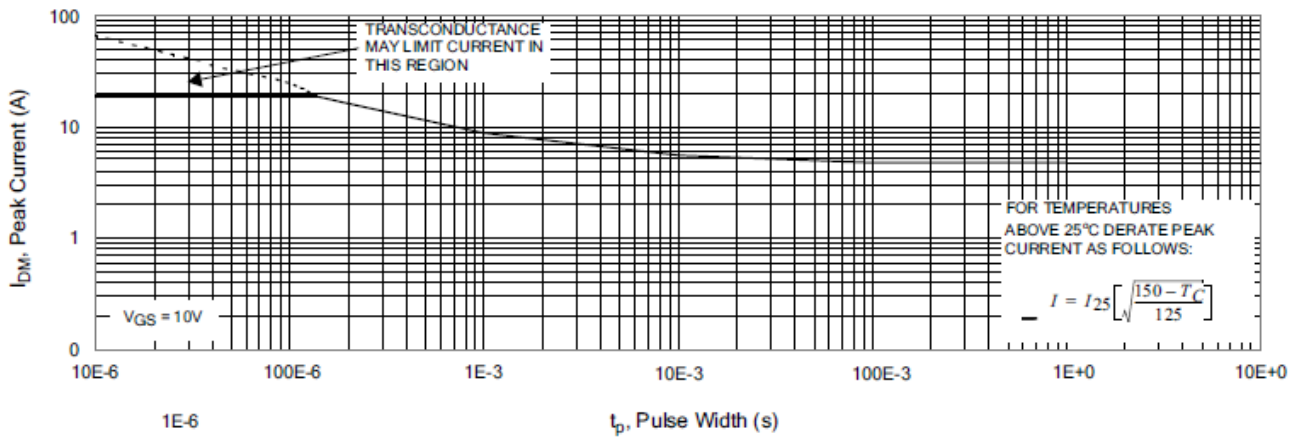


Figure 7. Typical Transfer Characteristics

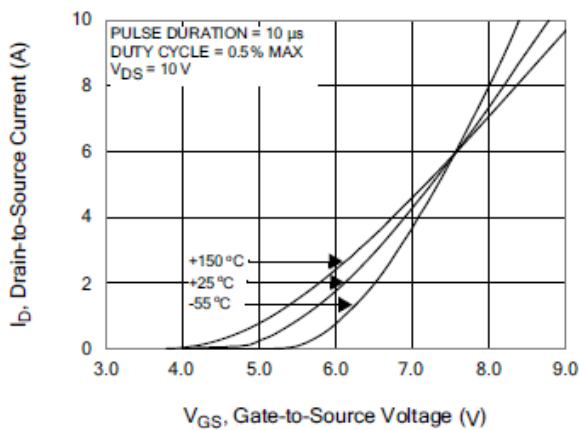


Figure 8. Unclamped Inductive Switching Capability

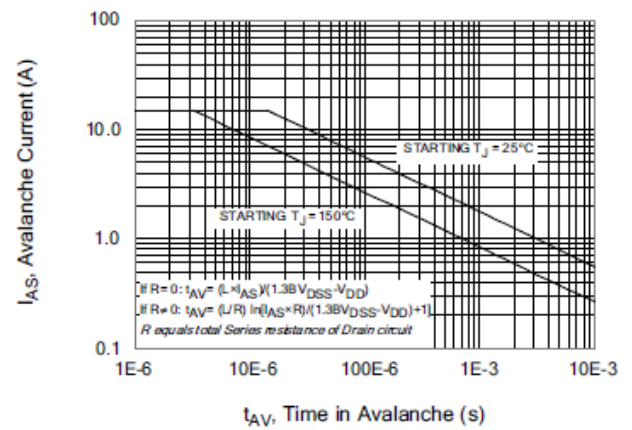


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

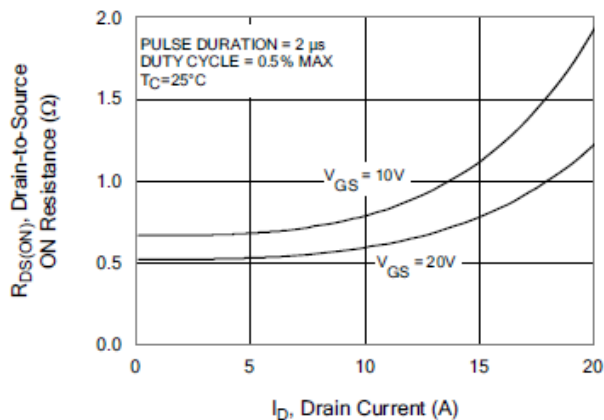


Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature

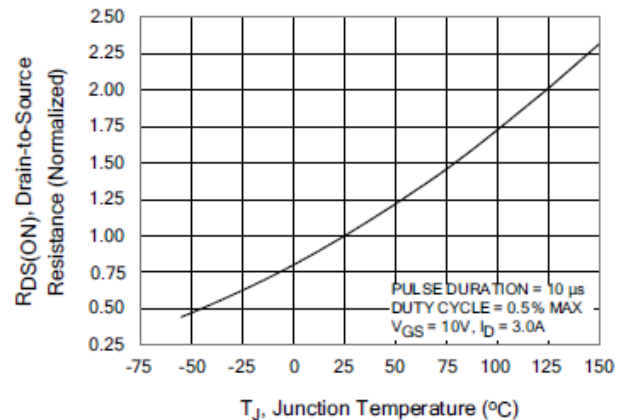


Figure 11. Typical Breakdown Voltage vs Junction Temperature

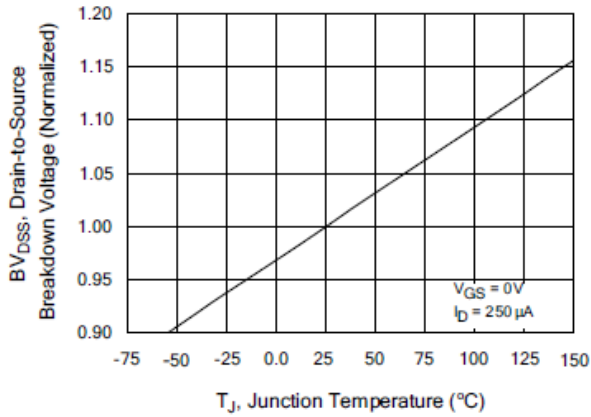


Figure 12. Typical Threshold Voltage vs Junction Temperature

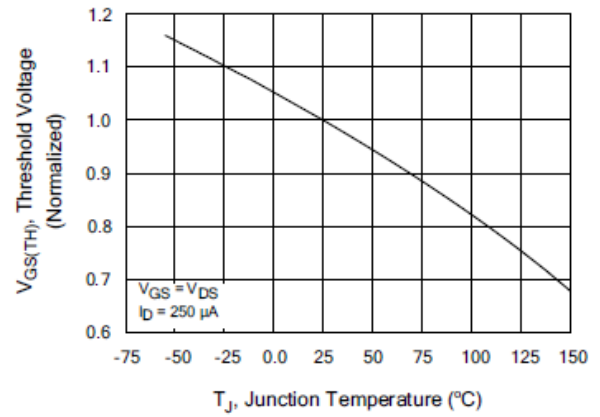


Figure 13. Maximum Forward Bias Safe Operating Area

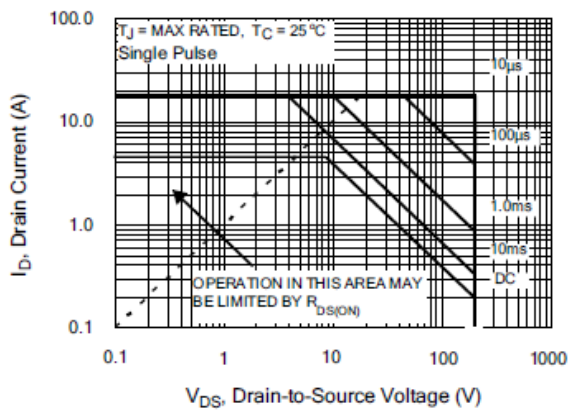


Figure 14. Typical Capacitance vs Drain-to-Source Voltage

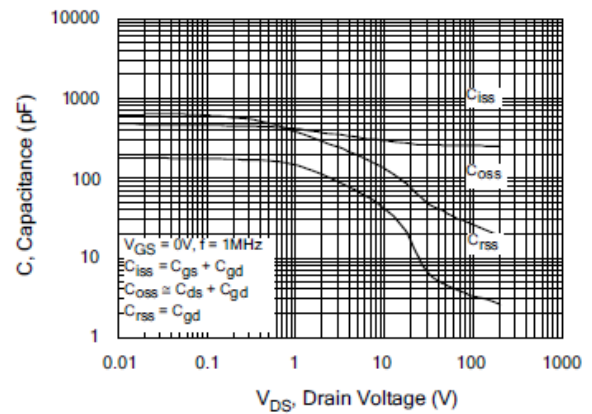


Figure 15. Typical Gate Charge vs Gate-to-Source Voltage

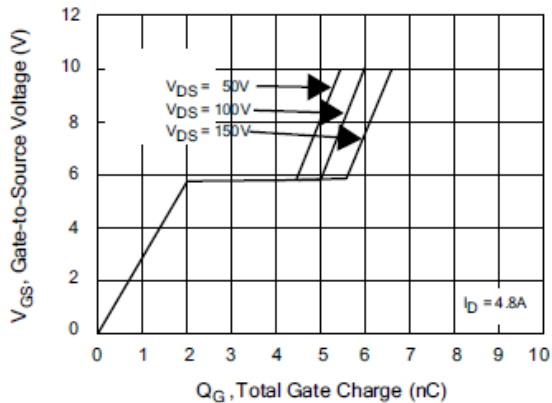
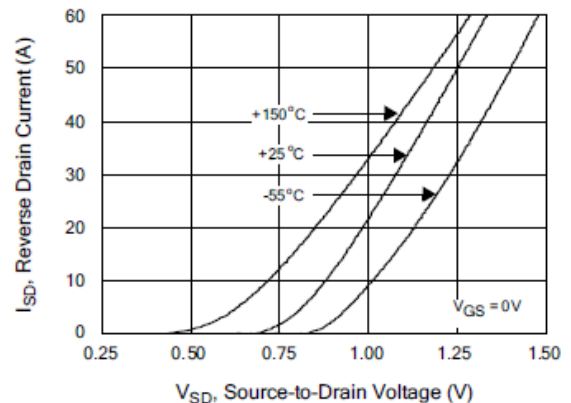


Figure 16. Typical Body Diode Transfer Characteristics



Test Circuit and Waveform

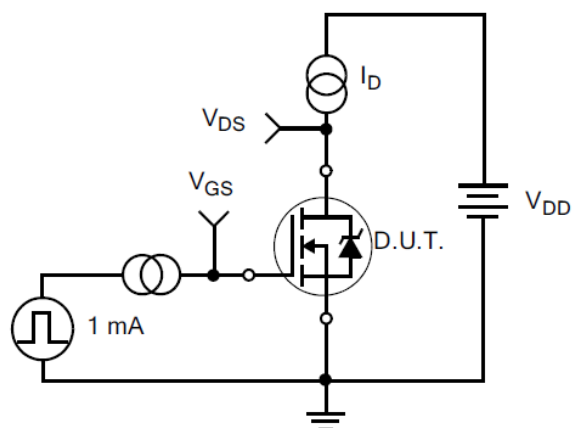


Figure 17. Gate Charge Test Circuit

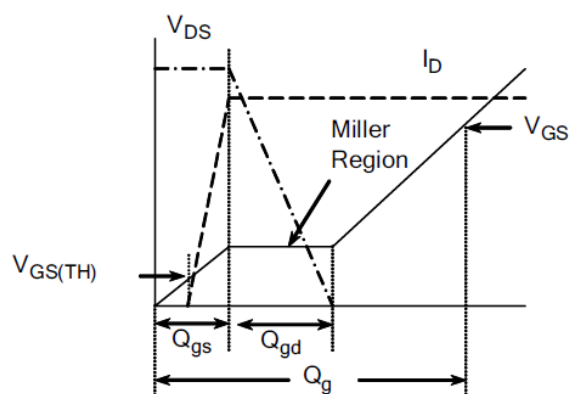


Figure 18. Gate Charge Waveform

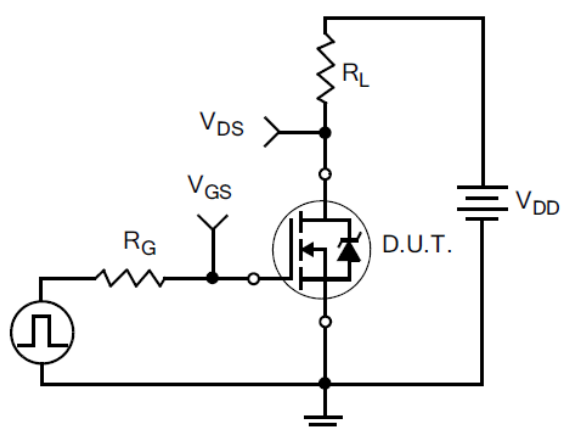


Figure 19. Resistive Switching Test Circuit

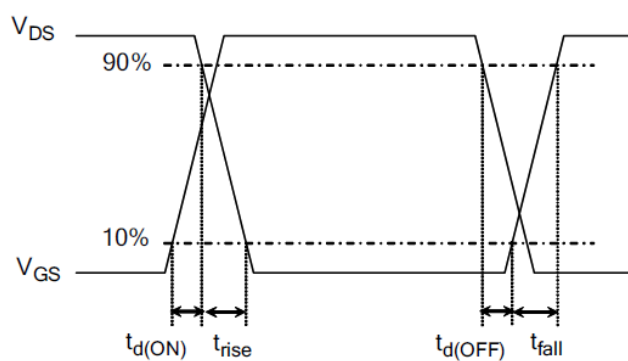


Figure 20. Resistive Switching Waveforms

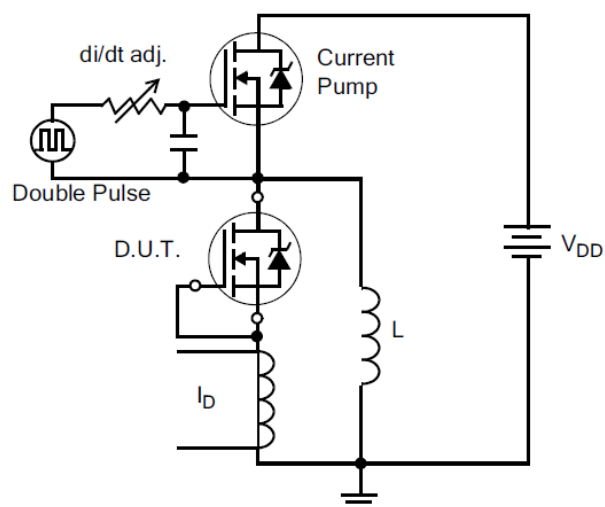


Figure 21. Diode Reverse Recovery Test Circuit

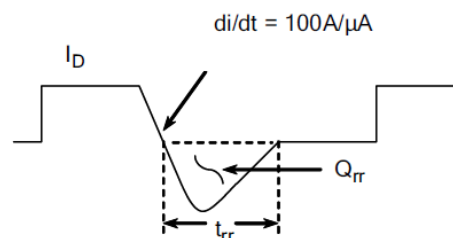


Figure 22. Diode Reverse Recovery Waveform

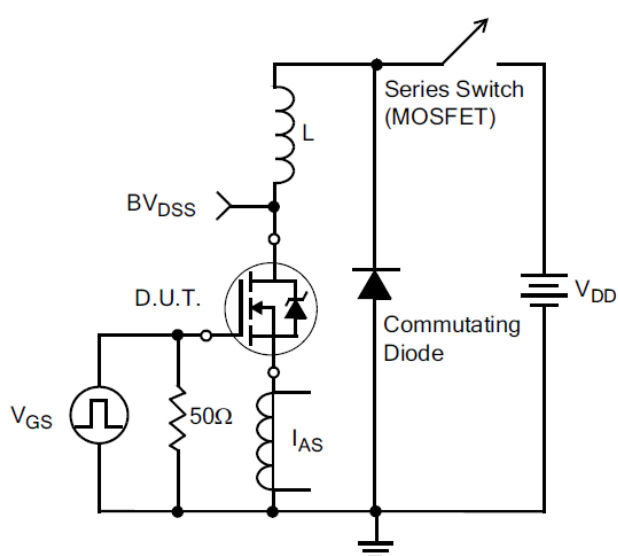


Figure 23. Unclamped Inductive Switching Test Circuit

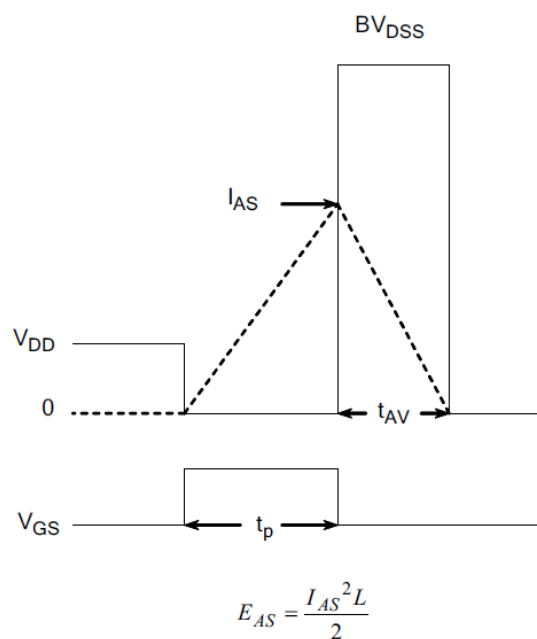
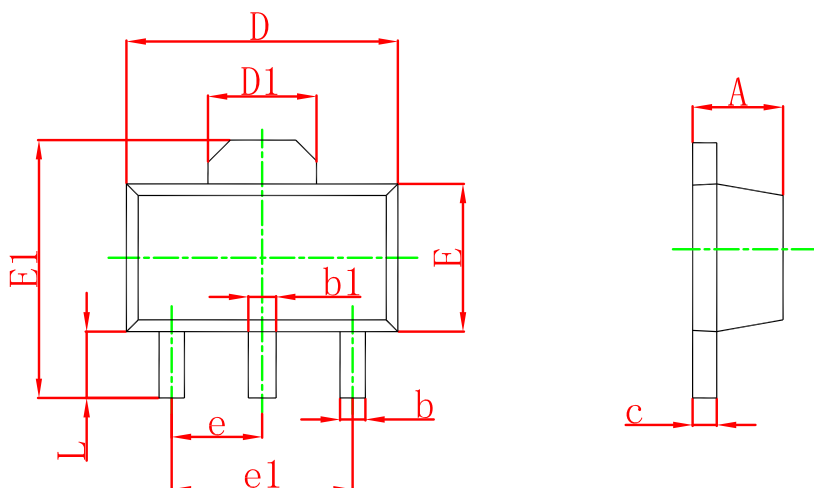


Figure 24. Unclamped Inductive Switching Waveforms

SOT-89-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047