

General Description

This planar stripe MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for electronic ballast and switch mode power supplies.

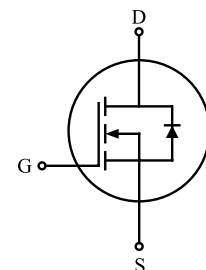
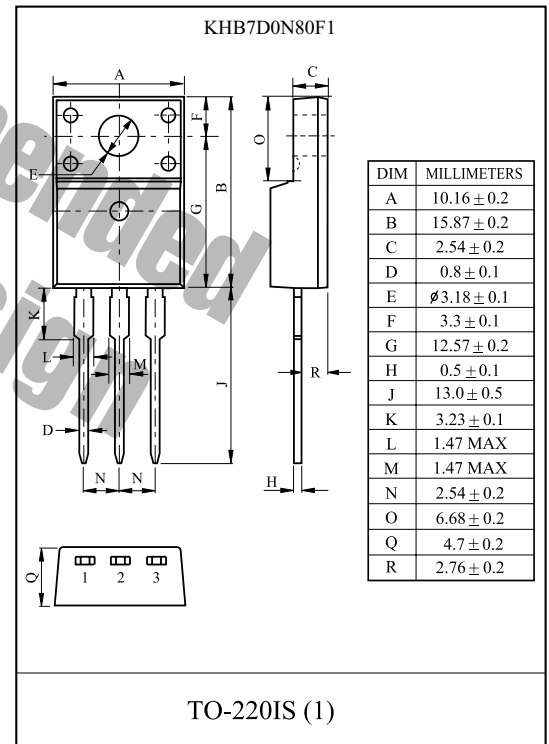
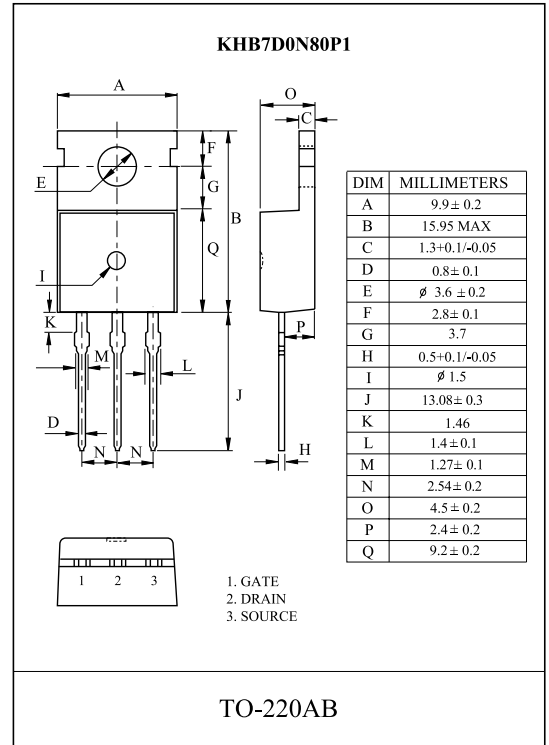
FEATURES

- $V_{DSS}=800V$, $I_D=7A$
- Drain-Source ON Resistance
: $R_{DS(ON)}=1.55$ @ $V_{GS} = 10V$
- $Qg(\text{typ.})=51.5nC$

MAXIMUM RATING ($T_c=25$)

CHARACTERISTIC	SYMBOL	RATING		UNIT	
		KHB7D0N80P1	KHB7D0N80F1		
Drain-Source Voltage	V_{DSS}	800		V	
Gate-Source Voltage	V_{GSS}	± 30		V	
Drain Current	@ $T_c=25$	I_D	7.0	7.0*	A
	Pulsed (Note1)	I_{DP}	28	28*	
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	580		mJ	
Repetitive Avalanche Energy (Note 1)	E_{AR}	16.7		mJ	
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5		V/ns	
Drain Power Dissipation	$T_c=25$	P_D	167	56	W
	Derate above 25		1.33	0.44	W/
Maximum Junction Temperature	T_j	150			
Storage Temperature Range	T_{stg}	-55	150		
Thermal Characteristics					
Thermal Resistance, Junction-to-Case	R_{thJC}	0.75	2.25	/W	
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	62.5	/W	

* : Drain current limited by maximum junction temperature.



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ELECTRICAL CHARACTERISTICS (Tc=25)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\ \mu A, V_{GS}=0V$	800	-	-	V
Breakdown Voltage Temperature Coefficient	BV_{DSS}/T_j	$I_D=250\ \mu A$, Referenced to 25	-	0.93	-	V/
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}, I_D=250\ \mu A$	2.0	-	4.0	V
Drain Cut-off Current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V$,	-	-	10	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=3.5A$	-	1.25	1.55	
Forward Transconductance	g_{FS}	$V_{DS}=50V, I_D=3.5A$ (Note4)	-	5.5	-	S
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=640V, I_D=7.0A$ $V_{GS}=10V$ (Note4, 5)	-	51.5	64	nC
Gate-Source Charge	Q_{gs}		-	85	-	
Gate-Drain Charge	Q_{gd}		-	19.5	-	
Turn-on Delay time	$t_{d(on)}$	$V_{DD}=400V, R_G=25$ $I_D=7.0A$ (Note4, 5)	-	39	88	ns
Turn-on Rise time	t_r		-	63.5	137	
Turn-off Delay time	$t_{d(off)}$		-	195.5	401	
Turn-off Fall time	t_f		-	83	176	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	1863	2422	pF
Output Capacitance	C_{oss}		-	141	184	
Reverse Transfer Capacitance	C_{rss}		-	17	23	
Source-Drain Diode Ratings						
Continuous Source Current	I_S	$V_{GS}<V_{th}$	-	-	7.0	A
Pulsed Source Current	I_{SP}		-	-	28	
Diode Forward Voltage	V_{SD}	$I_S=7.0A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	t_{rr}	$I_S=7.0A, V_{GS}=0V$,	-	650	-	ns
Reverse Recovery Charge	Q_{rr}	$dI_S/dt=100A/\mu s$ (Note 4)	-	7.0	-	μC

Note 1) Repetivity rating : Pulse width limited by junction temperature.

Note 2) $L=22mH, I_{AS}=7A, V_{DD}=50V, R_G=25$, Starting $T_j=25$.

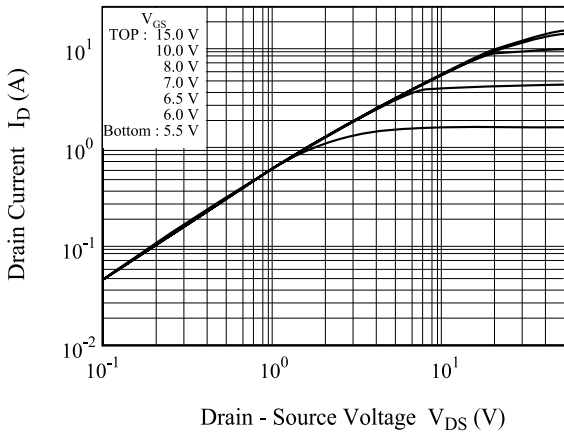
Note 3) $I_S=8.0A, dI/dt=200A/\mu s, V_{DD}=BV_{DSS}$, Starting $T_j=25$.

Note 4) Pulse Test : Pulse width $300\mu s$, Duty Cycle 2%.

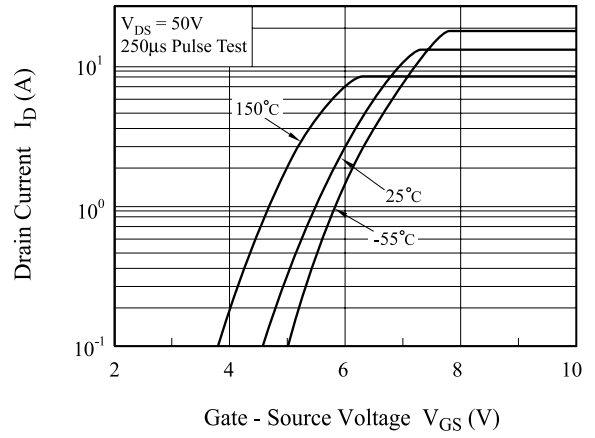
Note 5) Essentially independent of operating temperature.

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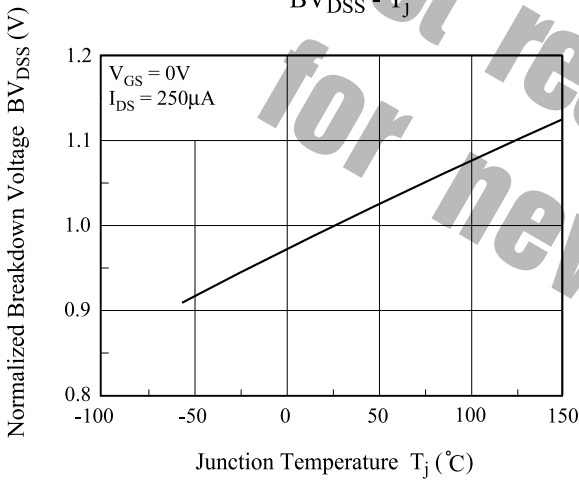
$I_D - V_{DS}$



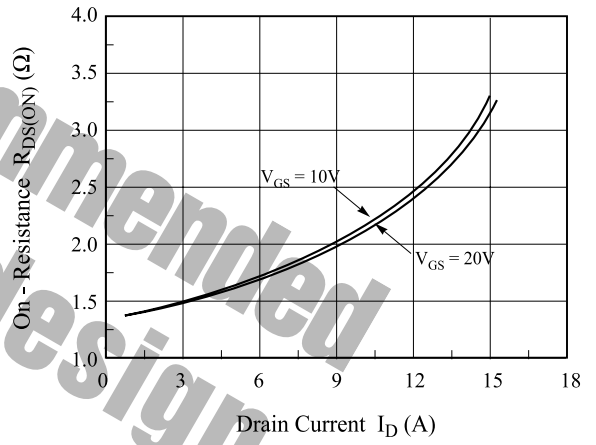
$I_D - V_{GS}$



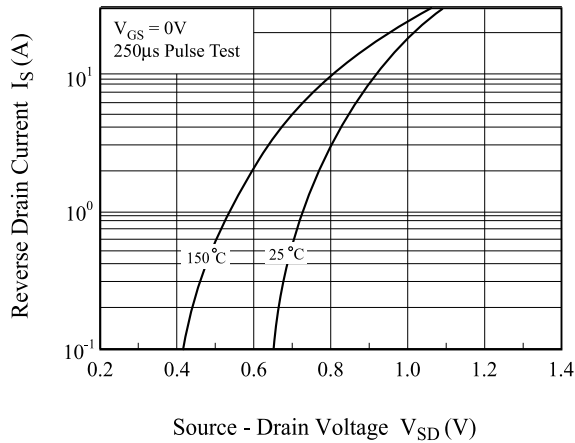
$BV_{DSS} - T_j$



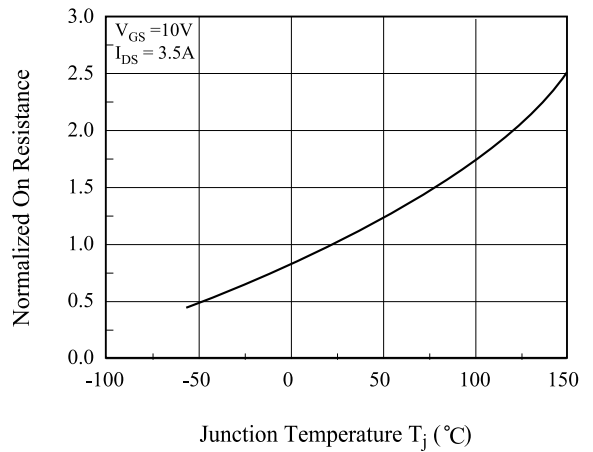
$R_{DS(ON)} - I_D$



$I_S - V_{SD}$

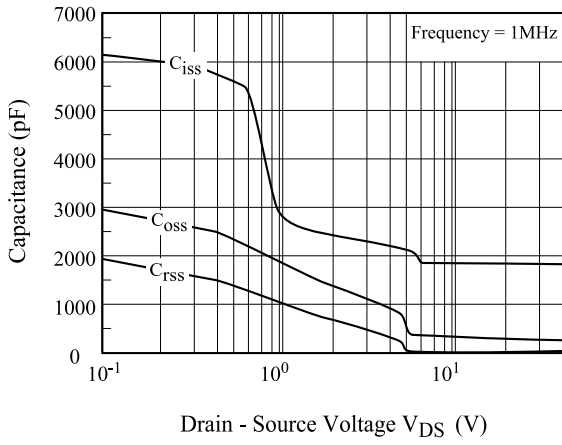


$R_{DS(ON)} - T_j$

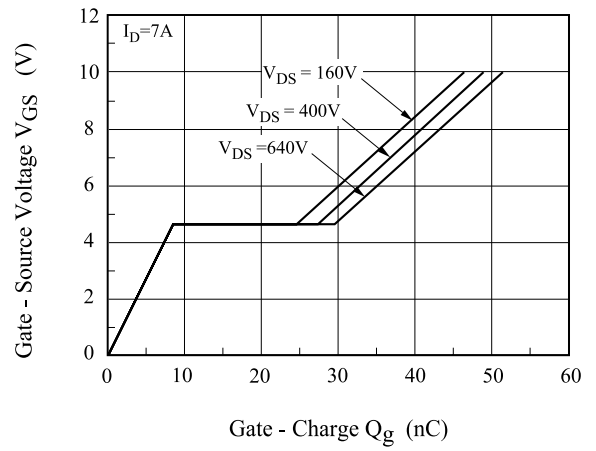


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C - V_{DS}

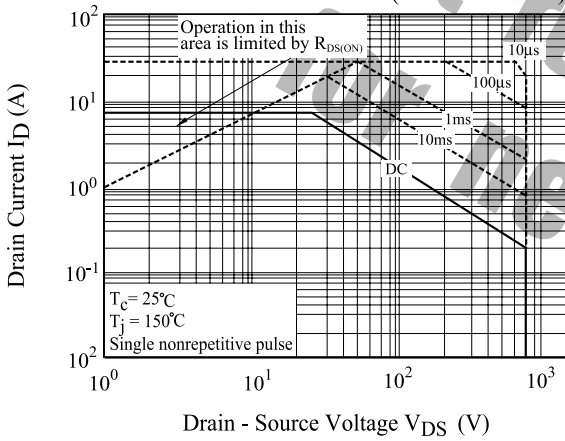


Q_g - V_{GS}



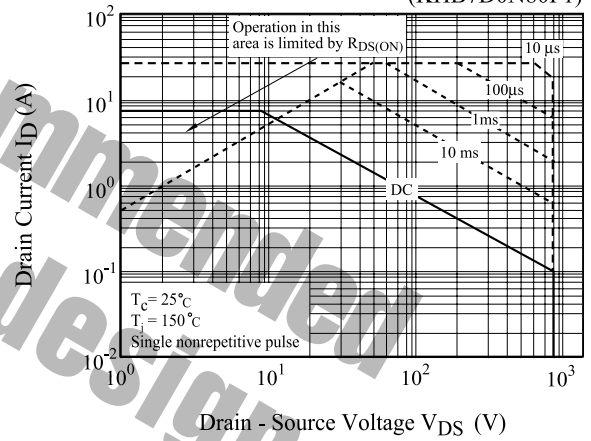
Safe Operation Area

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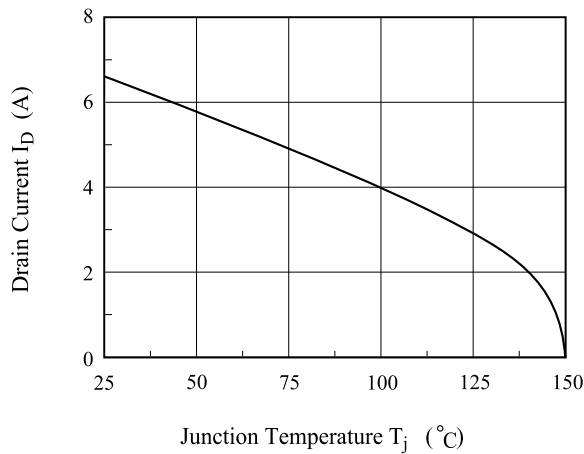


Safe Operation Area

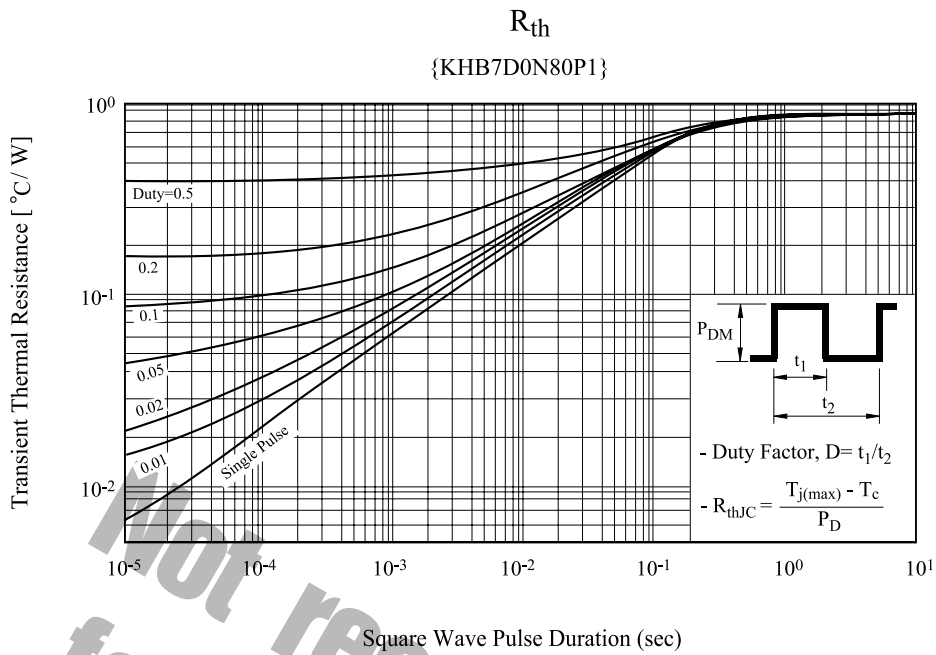
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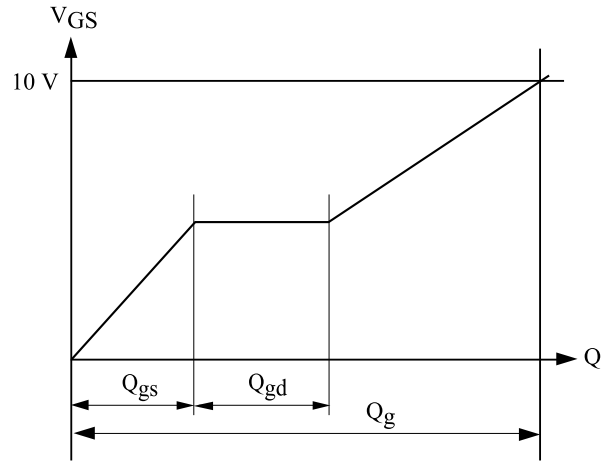
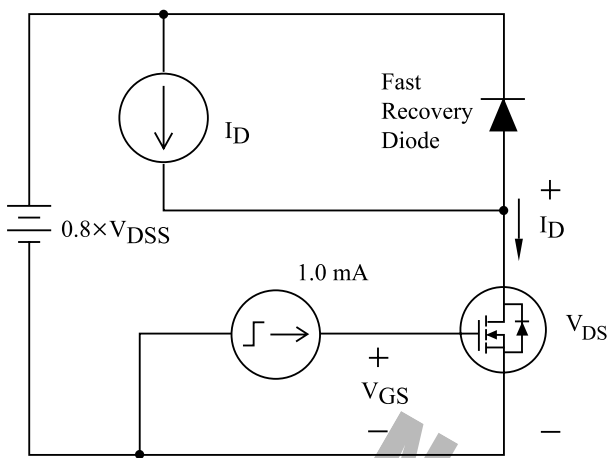
I_D - T_j



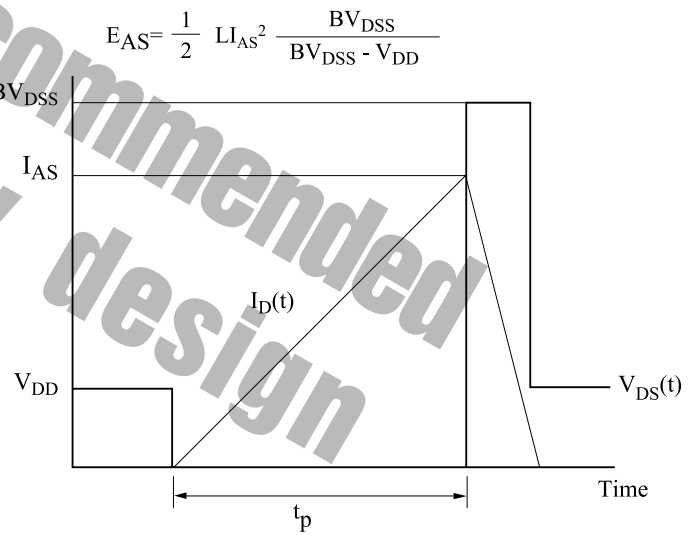
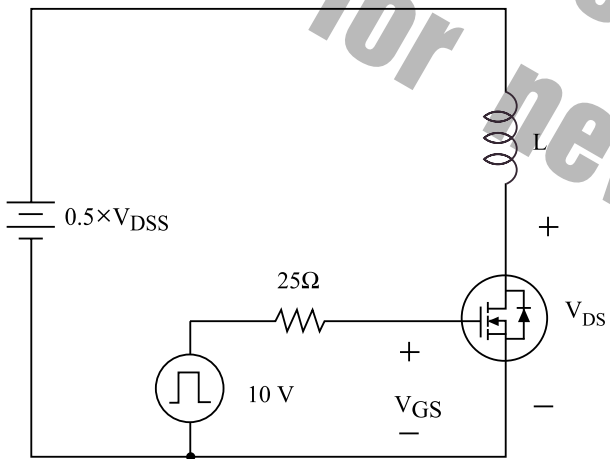
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- Gate Charge

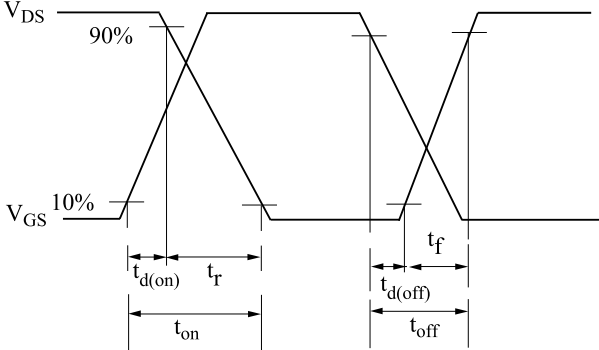
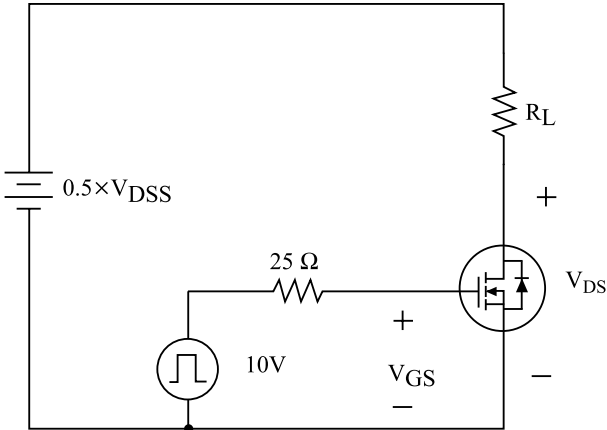


- Single Pulsed Avalanche Energy



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- Resistive Load Switching



- Source - Drain Diode Reverse Recovery and dv /dt

