

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 switch mode power supplies and low power battery chargers.

FEATURES

- $V_{DSS} = 700V$, $I_D = 0.4A$
- Drain-Source ON Resistance :
 $R_{DS(ON)} = 9.0$ (Typ.), @ $V_{GS} = 10V$

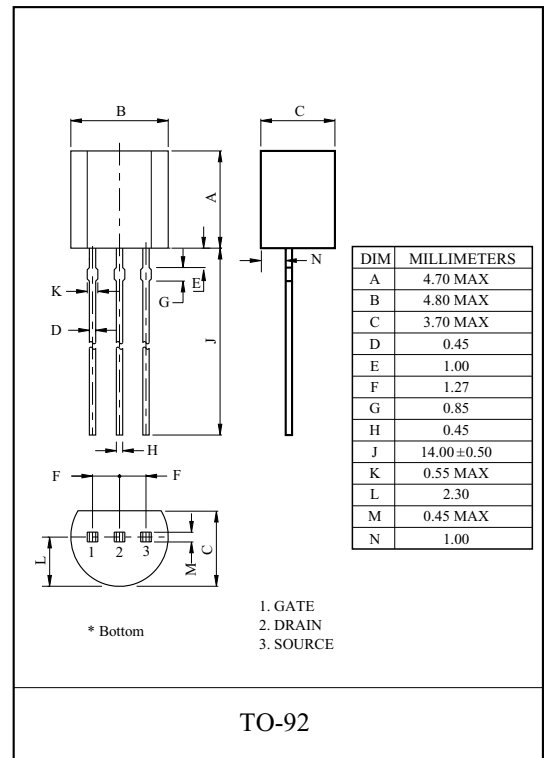
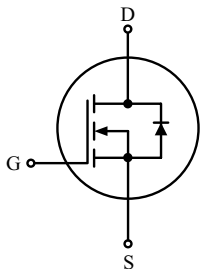
MOSFET MAXIMUM RATING (Ta=25 Unless otherwise noted)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	700	V
Gate-Source Voltage	V_{GSS}	± 30	V
Drain Current	DC	I_D 0.4	A
	Pulsed (Note1)	I_{DP} 1.6	A
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	25	mJ
Drain-Source Diode Forward Current	I_S	0.4	A
Drain Power Dissipation ($T_C=25$)	P_D	3	W
Maximum Junction Temperature	T_j	-55~150	
Storage Temperature Range	T_{stg}	-55~150	
Thermal Characteristics			
Thermal Resistance, Junction-to-Ambient	R_{thJA}	120	/W

Note 1) Pulse Test : Pulse width $10\mu s$, Duty cycle 1%

Note 2) Starting $T_j=25$, $I_D=1A$, $V_{DD}=50V$

Equivalent Circuit



KHB1D0N70G

MOSFET ELECTRICAL CHARACTERISTICS (Ta=25 Unless otherwise noted)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\ \mu A, V_{GS}=0V$	700	-	-	V
Drain Cut-off Current	I_{DSS}	$V_{DS}=700V, V_{GS}=0V$	-	-	100	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}, I_D=250\ \mu A$	2	-	4	V
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=0.5A$	-	9	10.5	
Forward Transconductance	g_{FS}	$V_{DS}=15V, I_D=0.5A$	-	1	-	S
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	156	-	pF
Output Capacitance	C_{oss}		-	23.5	-	
Reverse Transfer Capacitance	C_{rss}		-	3.8	-	
Total Gate Charge	Q_g	$V_{DS}=560V, I_D=1A, V_{GS}=10V$	-	7	9	nC
Gate-Source Charge	Q_{gs}		-	1.1	-	
Gate-Drain Charge	Q_{gd}		-	3.7	-	
Turn-on Delay time	$t_{d(on)}$	$V_{DD}=350V, I_D=1A, R_G=25$	-	6.5	-	ns
Turn-on Rise time	t_r		-	10	-	
Turn-off Delay time	$t_{d(off)}$		-	22	-	
Turn-off Fall time	t_f		-	40	-	

ELECTRICAL CHARACTERISTICS (Ta=25 Unless otherwise noted)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Diode Forward Voltage	V_{DS}	$I_{SD}=1A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	T_{rr}	$V_{GS}=0V, I_S=1A, dI_F/dt=100A/\mu s$	-	140	-	ns

Upper electrical characteristics can be changed because these are tentative specifications.

Graphs are omitted because these are tentative specifications.

KHB1D0N70G

Fig1. $I_D - V_{DS}$

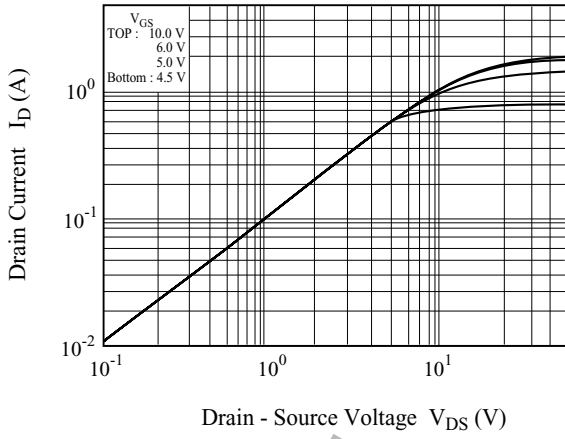


Fig2. $I_D - V_{GS}$

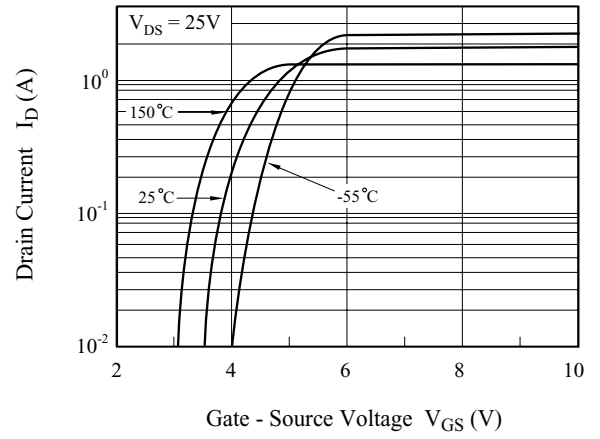


Fig3. $BV_{DSS} - T_j$

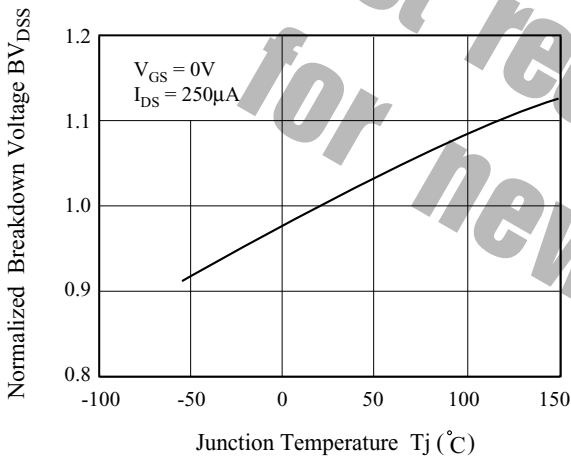


Fig4. $R_{DS(ON)} - I_D$

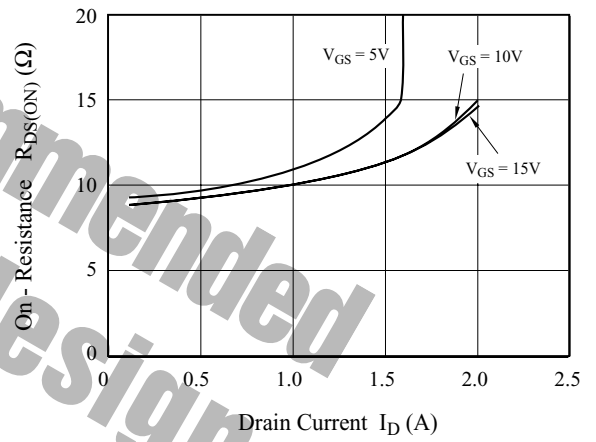


Fig5. $I_S - V_{SD}$

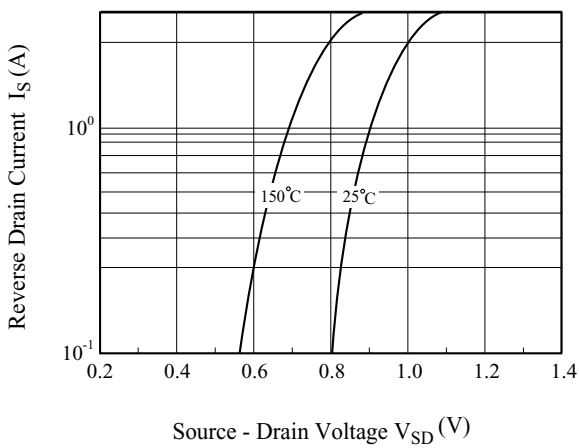
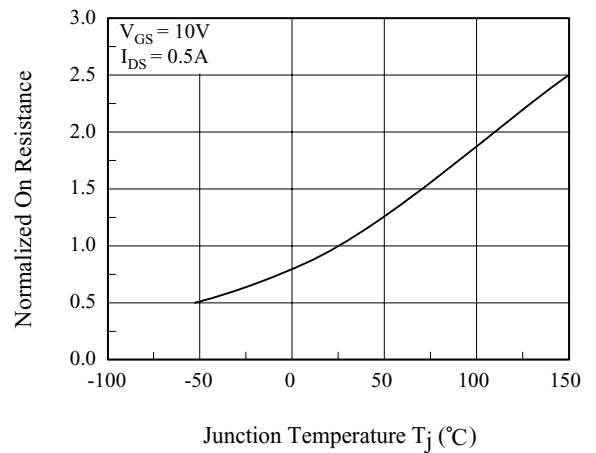
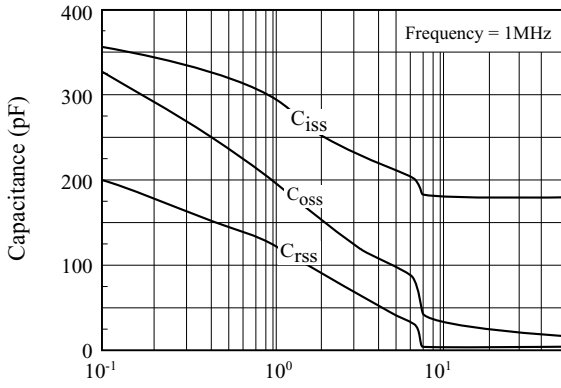


Fig6. $R_{DS(ON)} - T_j$



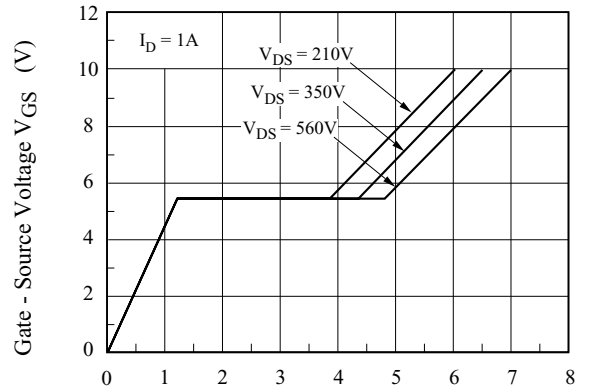
KHB1D0N70G

Fig7. C - V_{DS}



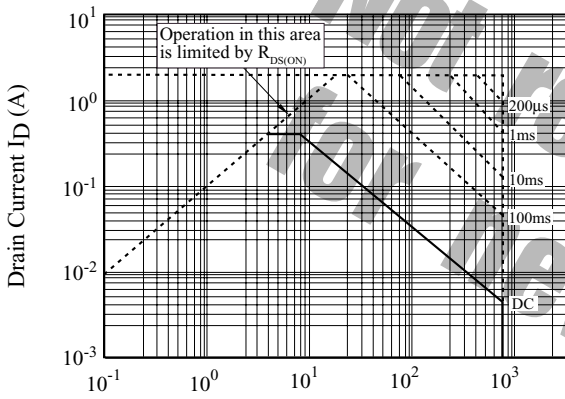
Drain - Source Voltage V_{DS} (V)

Fig8. Q_g - V_{GS}



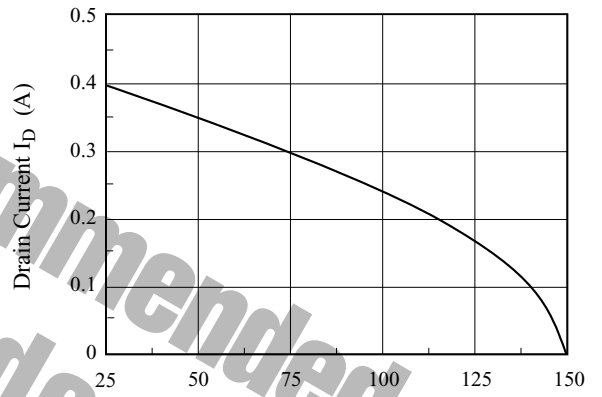
Gate - Charge Q_g (nC)

Fig9. Safe Operation Area



Drain - Source Voltage V_{DS} (V)

Fig10. I_D - T_C



Case Temperature T_C (°C)

Fig11. Transient Thermal Response Curve

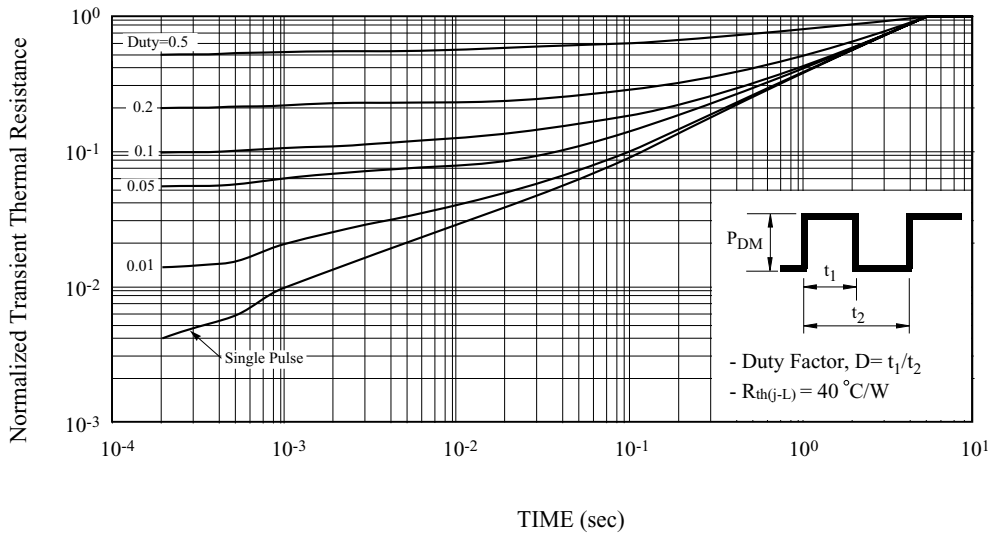


Fig12. Gate Charge

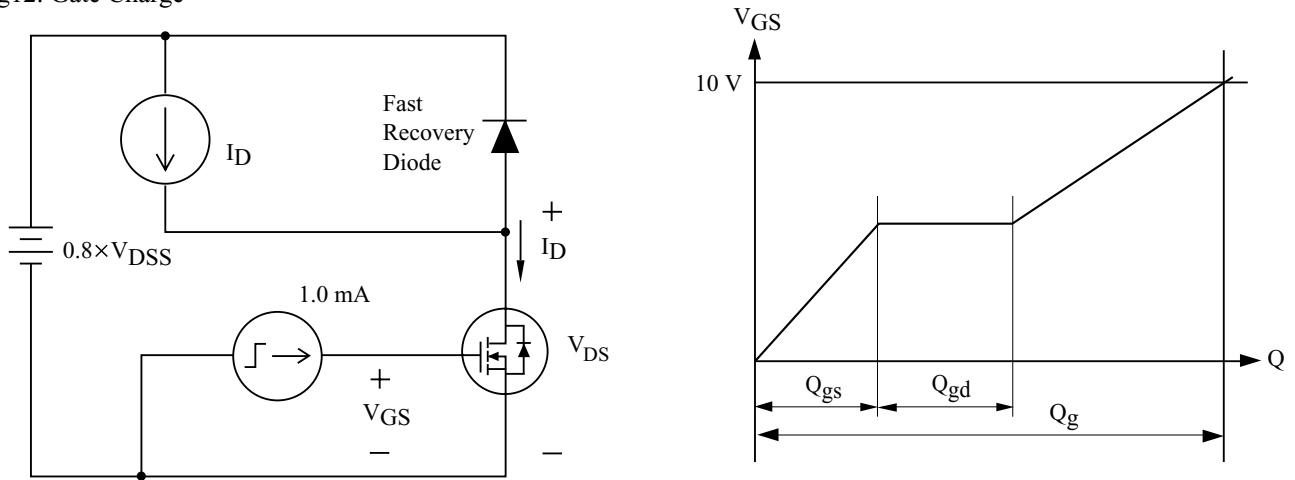


Fig13. Single Pulsed Avalanche Energy

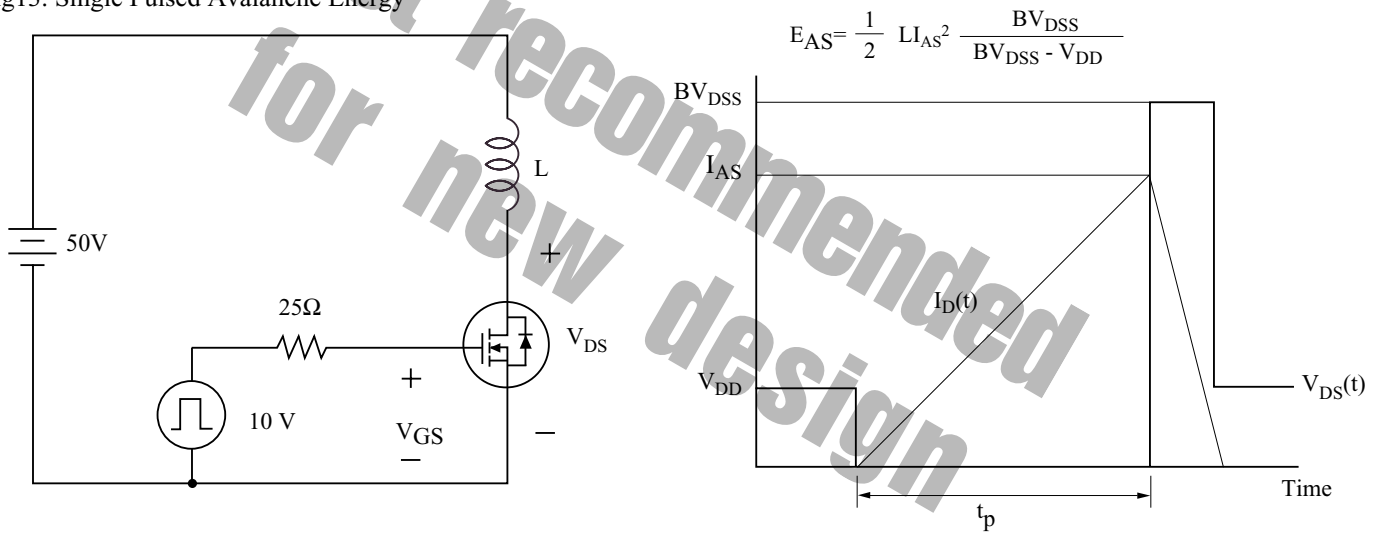


Fig14. Resistive Load Switching

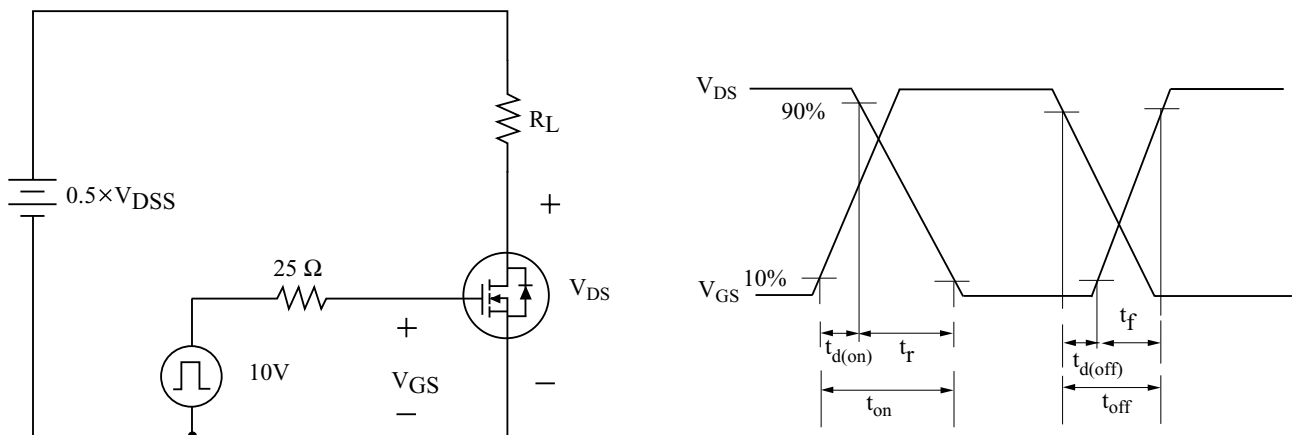
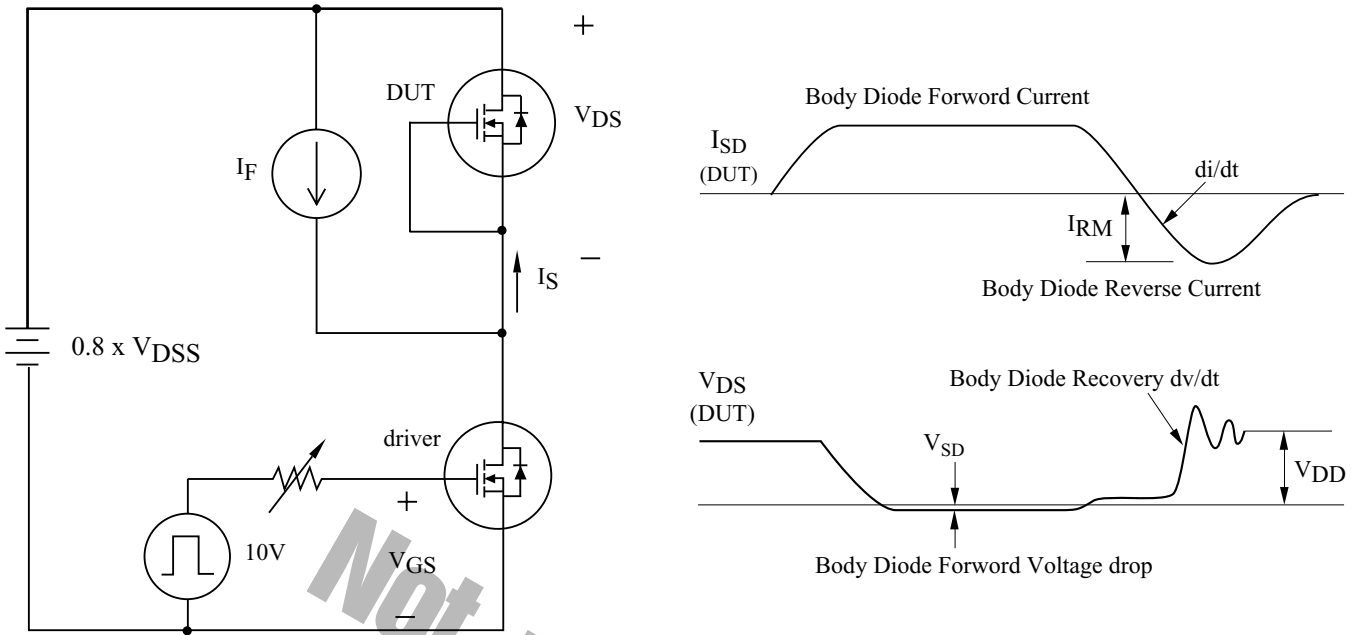


Fig15. Source - Drain Diode Reverse Recovery and dv/dt



Not recommended for new design