

General Description

This Trench MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for DC/DC Converter, Synchronous Rectification and a load switch in battery powered applications

FEATURES

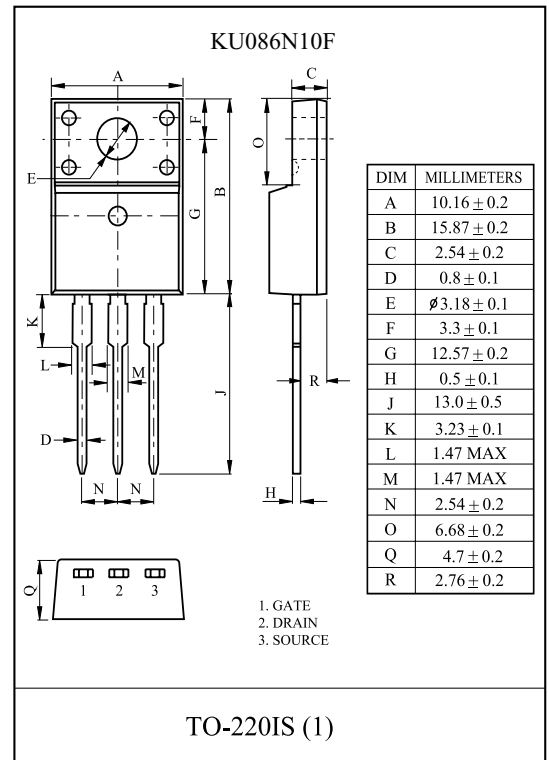
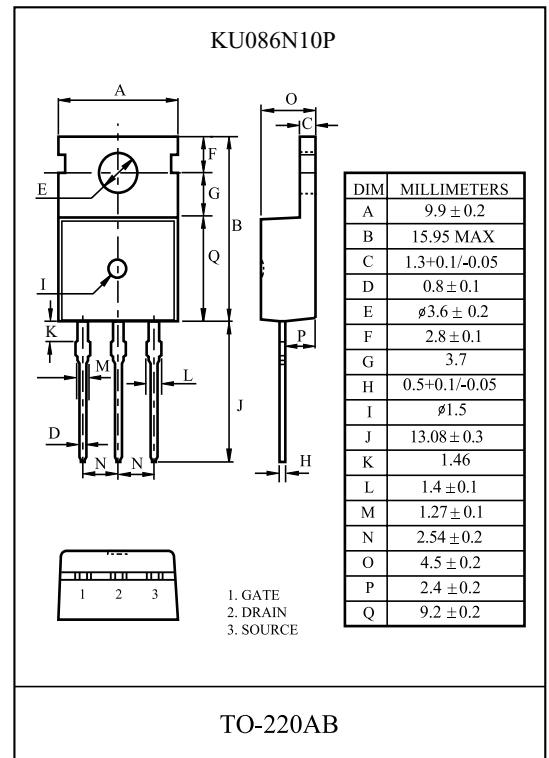
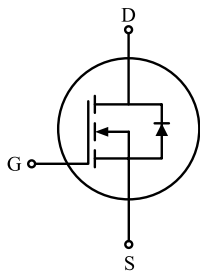
- $V_{DSS} = 100V$, $I_D = 95A$
- Drain-Source ON Resistance :
 $R_{DS(ON)} = 8.6m$ (Max.) @ $V_{GS} = 10V$

MAXIMUM RATING (Tc=25)

CHARACTERISTIC	SYMBOL	RATING		UNIT
		KU086N10P	KU086N10F	
Drain-Source Voltage	V_{DSS}	100		V
Gate-Source Voltage	V_{GSS}	± 20		V
Drain Current	@T _c =25	95	50	A
	@T _c =100	60	32.5	
	Pulsed (Note1)	400*		
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	570		mJ
Repetitive Avalanche Energy (Note 1)	E_{AR}	7.1		mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5		V/ns
Drain Power Dissipation	T _c =25	167	50	W
	Derate above 25	1.33	0.4	
Maximum Junction Temperature	T _j	150		
Storage Temperature Range	T _{stg}	-55 ~ 150		
Thermal Characteristics				
Thermal Resistance, Junction-to-Case	R _{thJC}	0.75	2.5	/W
Thermal Resistance, Junction-to-Ambient	R _{thJA}	62.5		/W

* : Drain current limited by maximum junction temperature.

PIN CONNECTION



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ELECTRICAL CHARACTERISTICS (Tc=25)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\ \mu A, V_{GS}=0V$	100	-	-	V
Breakdown Voltage Temperature Coefficient	BV_{DSS}/T_j	$I_D=5mA$, Referenced to 25	-	0.09	-	V/
Drain Cut-off Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V$,	-	-	10	μA
Gate Threshold Voltage	V_{th}	$V_{DS}=V_{GS}, I_D=250\ \mu A$	2.0	-	4.0	V
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain-Source ON Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=47.5A$	-	7.3	8.6	m
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=80V, I_D=80A$ $V_{GS}=10V$ (Note4,5)	-	200	-	nC
Gate-Source Charge	Q_{gs}		-	35	-	
Gate-Drain Charge	Q_{gd}		-	60	-	
Turn-on Delay time	$t_{d(on)}$	$V_{DD}=50V$ $I_D=80A$ $R_G=25$ (Note4,5)	-	120	-	ns
Turn-on Rise time	t_r		-	230	-	
Turn-off Delay time	$t_{d(off)}$		-	520	-	
Turn-off Fall time	t_f		-	200	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1.0MHz$	-	8800	-	pF
Output Capacitance	C_{oss}		-	630	-	
Reverse Transfer Capacitance	C_{rss}		-	340	-	
Source-Drain Diode Ratings						
Continuous Source Current	I_S	$V_{GS}<V_{th}$	-	-	95	A
Pulsed Source Current	I_{SP}		-	-	380	
Diode Forward Voltage	V_{SD}	$I_S=95A, V_{GS}=0V$	-	-	1.4	V
Reverse Recovery Time	t_{rr}	$I_S=80A, V_{GS}=0V$,	-	65	-	ns
Reverse Recovery Charge	Q_{rr}	$dI_S/dt=300A/\mu s$	-	0.32	-	μC

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

Note 2) $L=70\ \mu H, I_S=80A, V_{DD}=80V, R_G=25$, Starting $T_j=25$.

Note 3) $I_S=80A, dI/dt=200A/\mu s, V_{DD}=BV_{DSS}$, Starting $T_j=25$.

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

Note 5) Essentially independent of operating temperature.

Marking

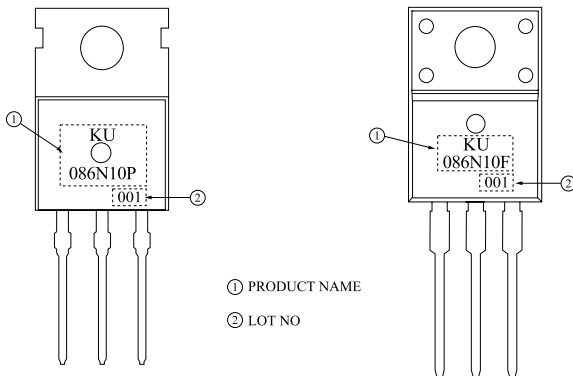


Fig1. $I_D - V_{DS}$

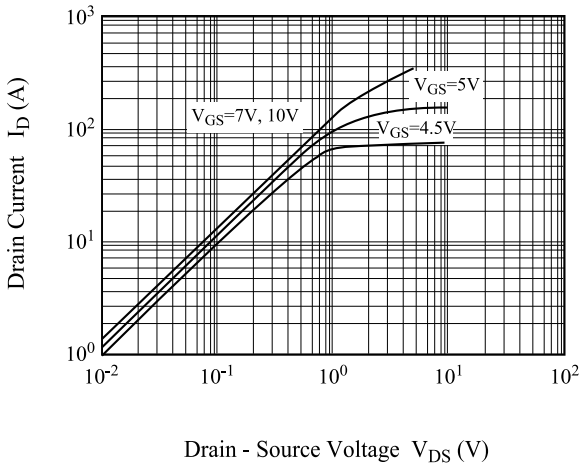


Fig2. $I_D - V_{GS}$

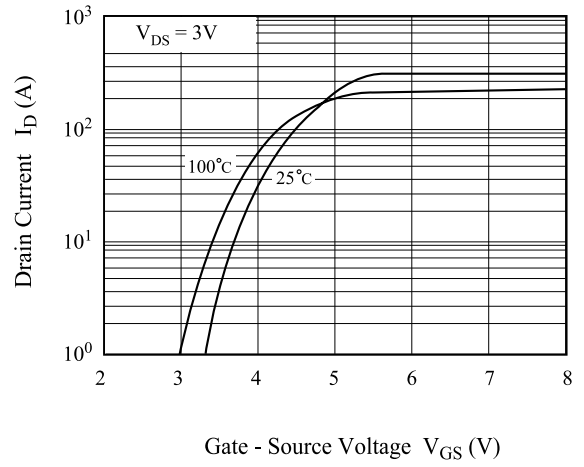


Fig3. $BV_{DSS} - T_j$

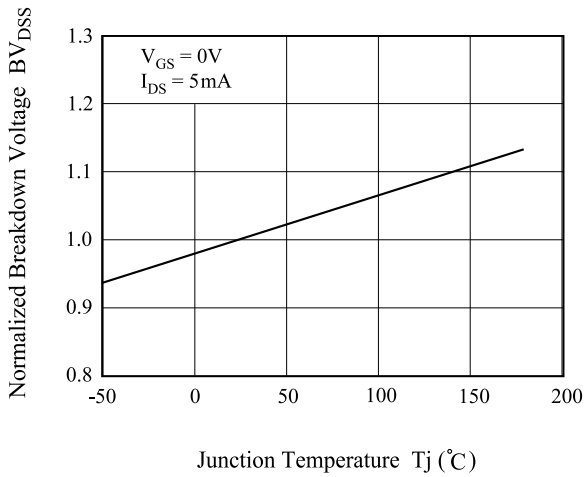


Fig4. $R_{DS(ON)} - T_j$

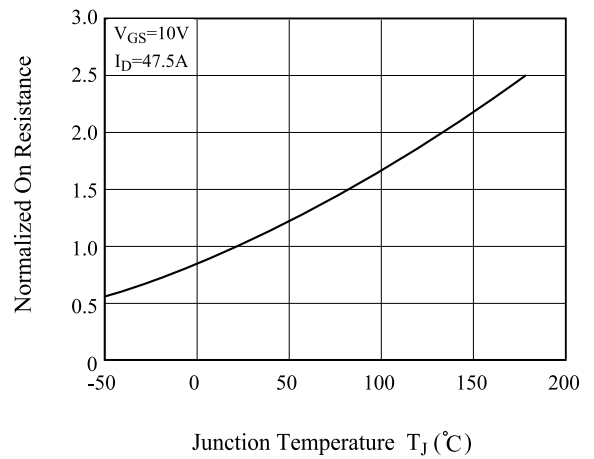


Fig5. $I_S - V_{SD} - I$

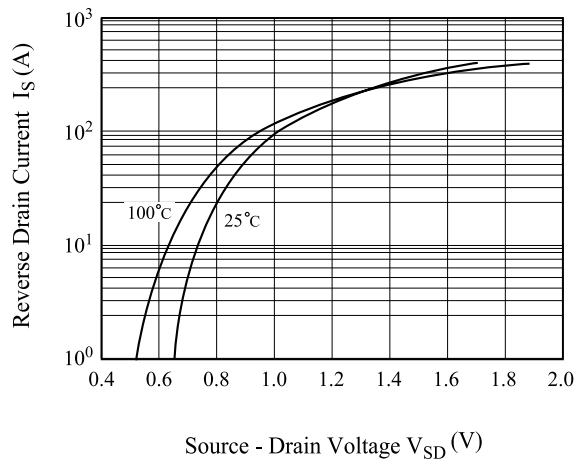
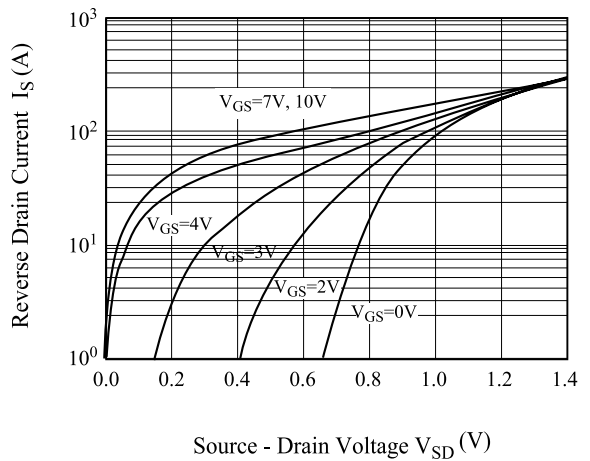


Fig6. $I_S - V_{SD} - II$



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Fig7. $R_{DS(ON)} - I_D$

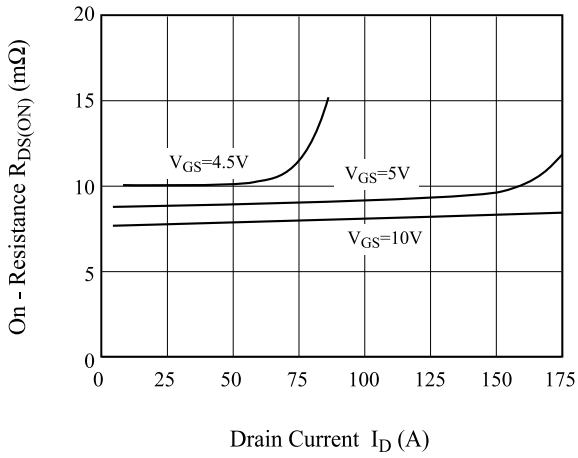


Fig8. $I_D - T_j$

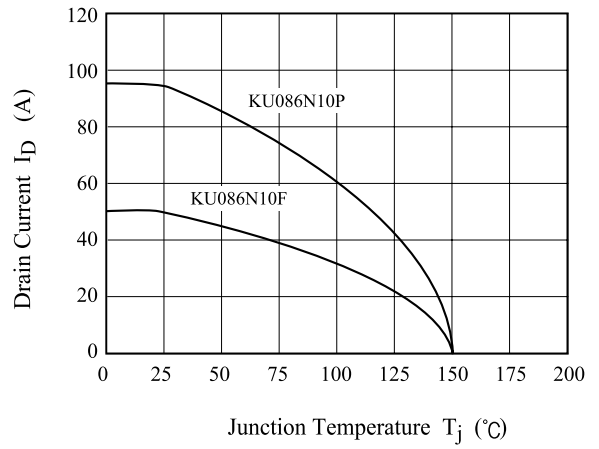


Fig 9. C - V_{DS}

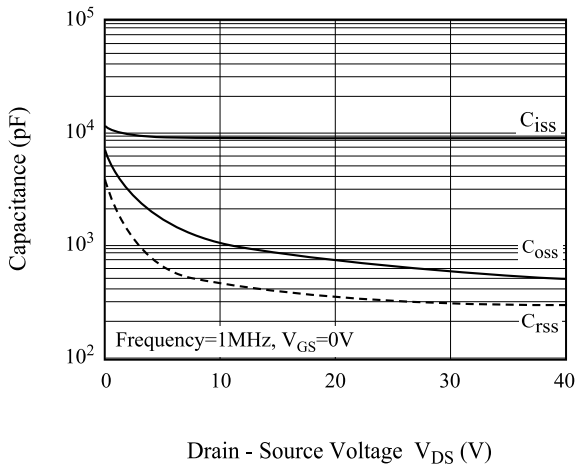


Fig10. $Q_g - V_{GS}$

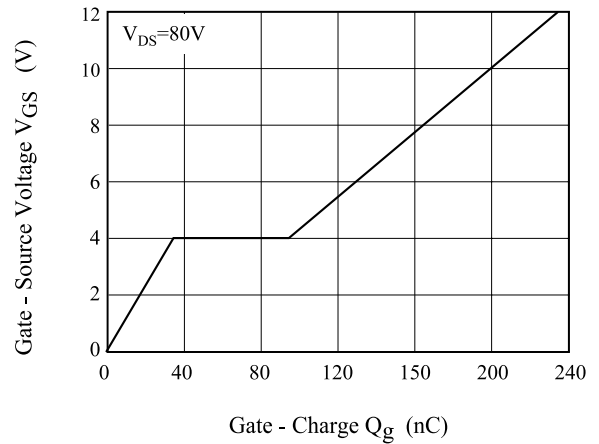


Fig11. Safe Operation Area

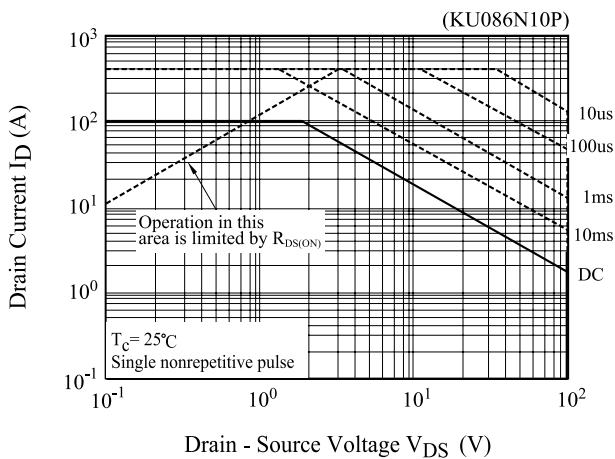


Fig12. Safe Operation Area

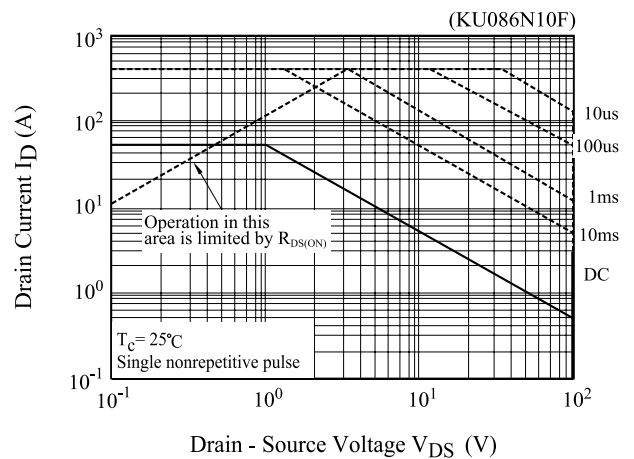


Fig13. Transient Thermal Response Curve

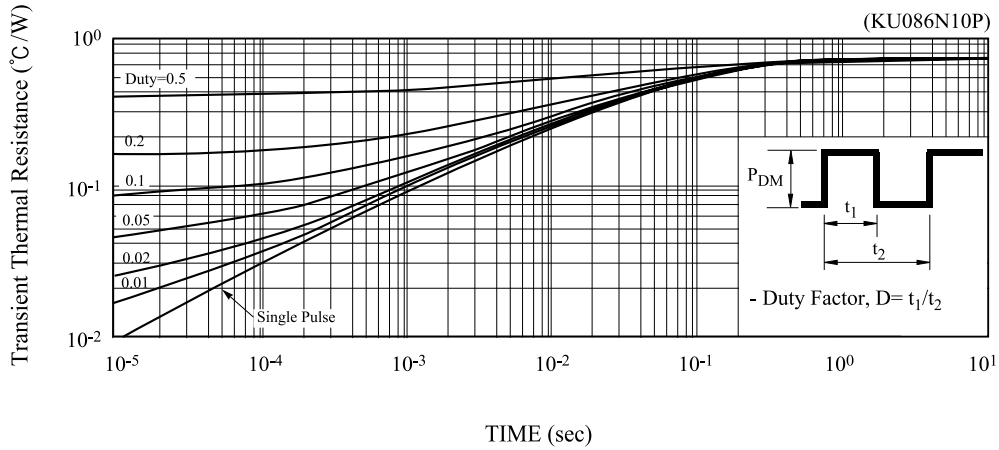


Fig14. Transient Thermal Response Curve

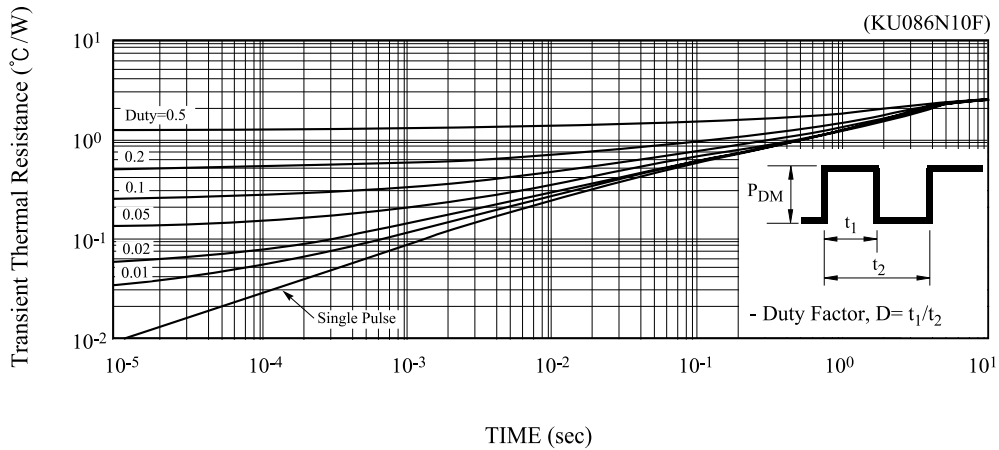


Fig15. Gate Charge

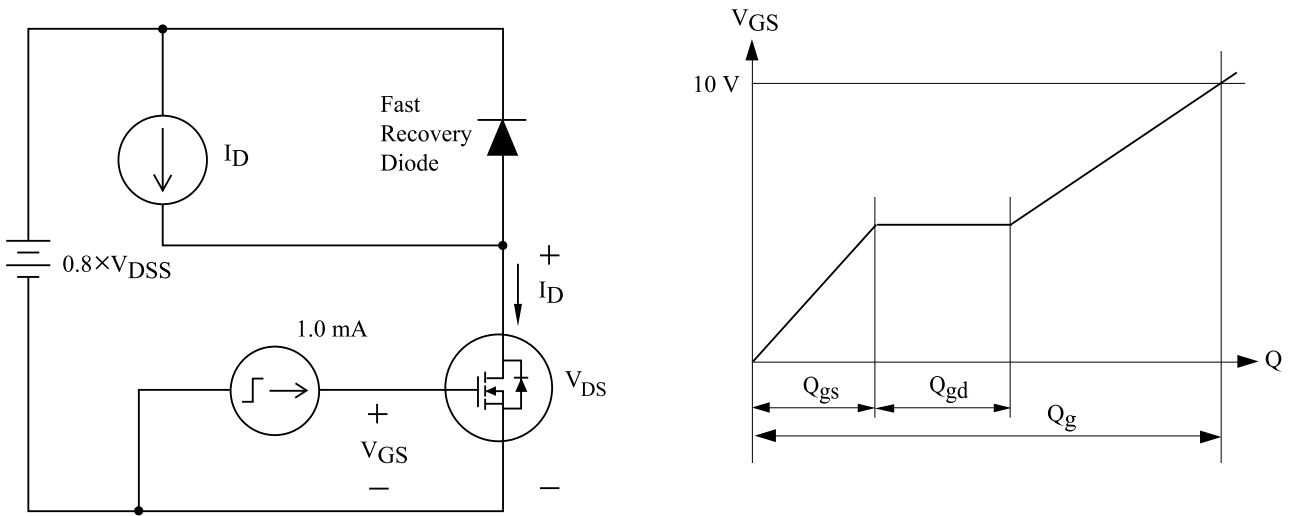


Fig16. Single Pulsed Avalanche Energy

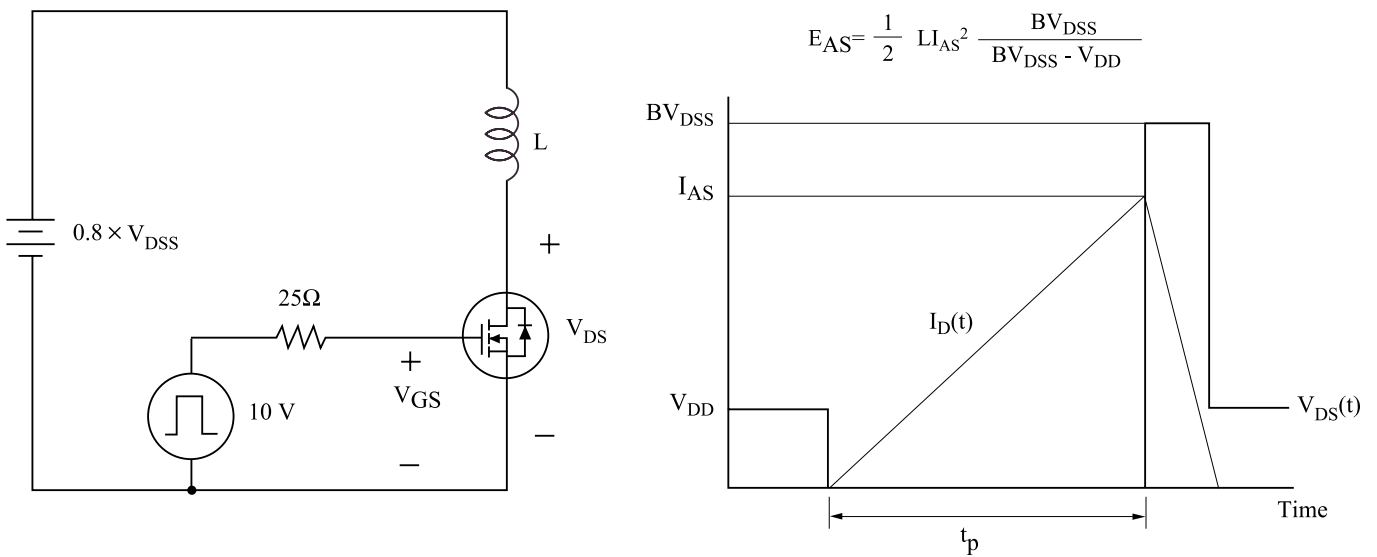


Fig17. Resistive Load Switching

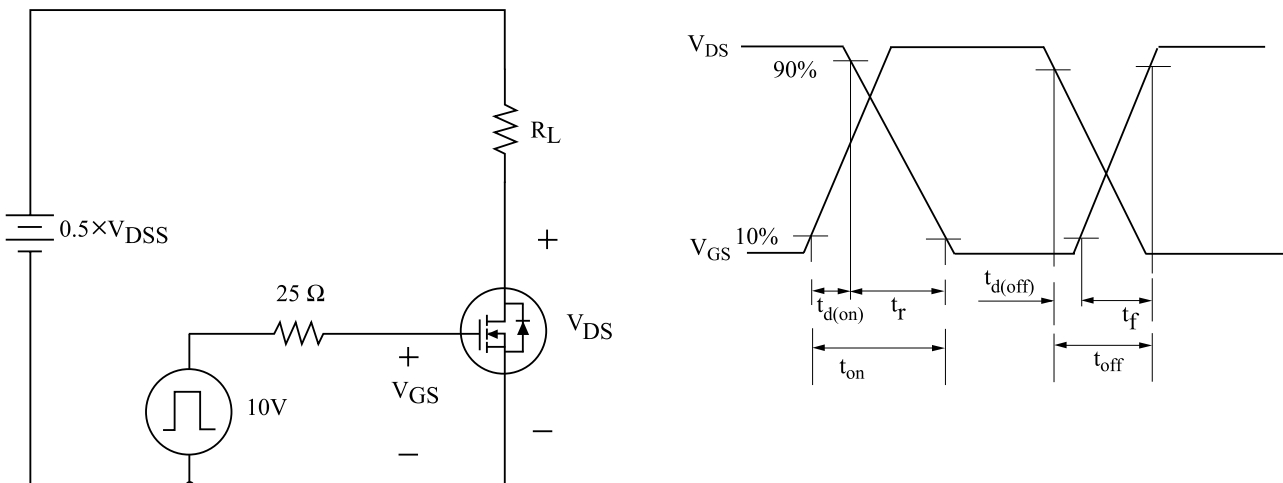


Fig18. Source - Drain Diode Reverse Recovery and dv/dt

