

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

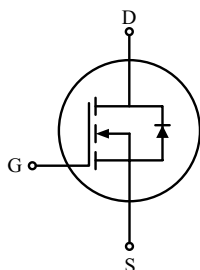
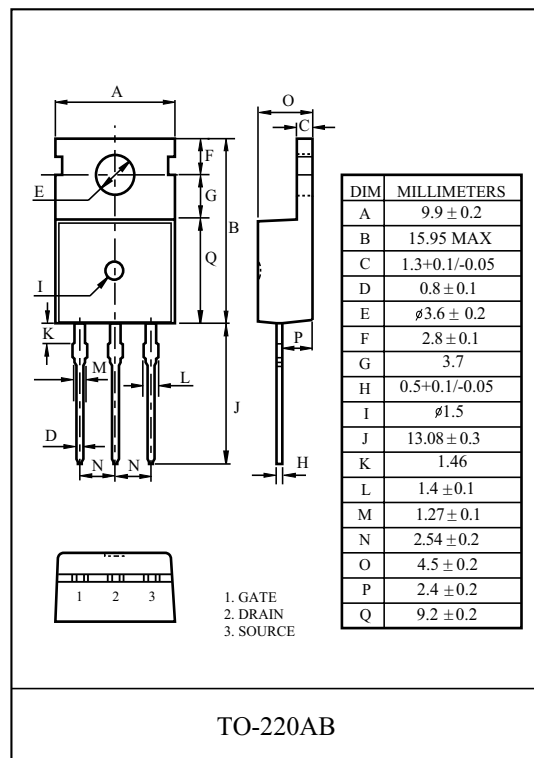
- $V_{DS} = 75V$, $I_D = 130A$
- Drain-Source ON Resistance :
 $R_{DS(ON)} = 4.7m\Omega (Max.) @ V_{GS} = 10V$

MAXIMUM RATING ($T_c = 25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	75	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current	@ $T_c = 25^\circ C$	I_D 130	A
	@ $T_c = 100^\circ C$	83	
	Pulsed (Note1)	I_{DP} 400*	
Single Pulsed Avalanche Energy (Note 2)	E_{AS}	700	mJ
Repetitive Avalanche Energy (Note 1)	E_{AR}	9	mJ
Peak Diode Recovery dv/dt (Note 3)	dv/dt	4.5	V/ns
Drain Power Dissipation	$T_c = 25^\circ C$	P_D 167	W
	Derate above $25^\circ C$	1.33	W/ $^\circ C$
Maximum Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55 ~ 150	$^\circ C$
Thermal Characteristics			
Thermal Resistance, Junction-to-Case	R_{thJC}	0.75	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	62.5	$^\circ C/W$

* : Drain current limited by maximum junction temperature.

PIN CONNECTION



KU047N08P

ELECTRICAL CHARACTERISTICS (Tc=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D =250 μA, V _{GS} =0V	75	-	-	V
Breakdown Voltage Temperature Coefficient	Δ BV _{DSS} / Δ T _j	I _D =5mA, Referenced to 25°C	-	0.07	-	V/°C
Drain Cut-off Current	I _{DSS}	V _{DS} =75V, V _{GS} =0V,	-	-	10	μA
Gate Threshold Voltage	V _{th}	V _{DS} =V _{GS} , I _D =250 μA	2.0	-	4.0	V
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Drain-Source ON Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =65A	-	3.9	4.7	mΩ
Dynamic						
Total Gate Charge	Q _g	V _{DS} =60V, I _D =80A V _{GS} =10V (Note4,5)	-	200	-	nC
Gate-Source Charge	Q _{gs}		-	40	-	
Gate-Drain Charge	Q _{gd}		-	65	-	
Turn-on Delay time	t _{d(on)}	V _{DD} =37V I _D =80A R _G =25Ω (Note4,5)	-	140	-	ns
Turn-on Rise time	t _r		-	200	-	
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}		-	815	-	
Reverse Transfer Capacitance	C _{rss}		-	390	-	
Source-Drain Diode Ratings						
Continuous Source Current	I _S	V _{GS} <V _{th}	-	-	130	A
Pulsed Source Current	I _{SP}		-	-	520	
Diode Forward Voltage	V _{SD}	I _S =130A, 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/ μs	-	0.18	-	μC

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

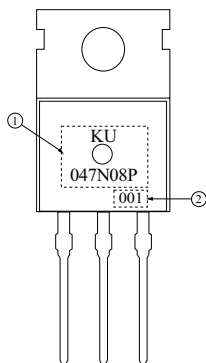
Note 2) $L=50\mu H$, $I_S=80A$, $V_{DD}=60V$, $R_G=25\Omega$, Starting $T_j=25^\circ C$.

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

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

Note 5) Essentially independent of operating temperature.

Marking



① PRODUCT NAME

② LOT NO

Fig1. $I_D - V_{DS}$

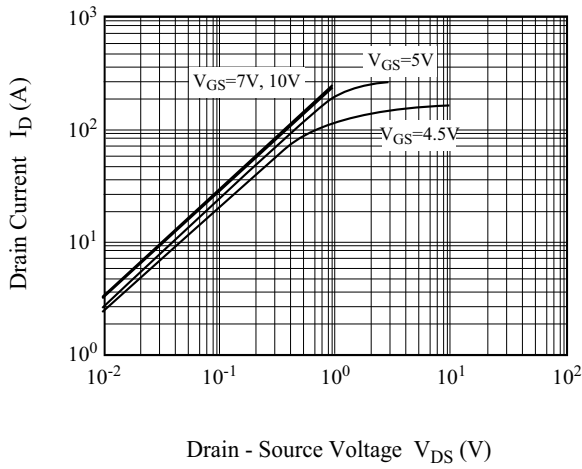


Fig2. $I_D - V_{GS}$

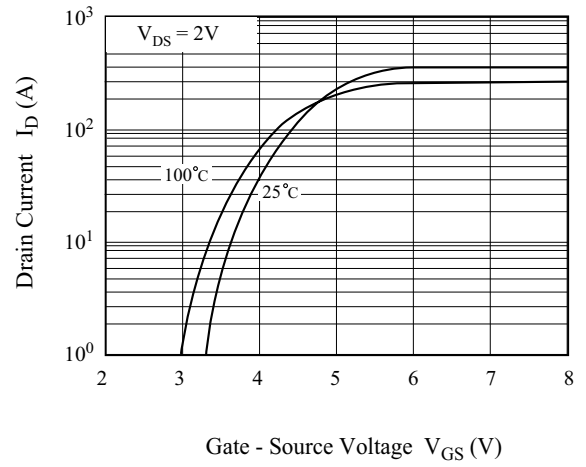


Fig3. $BV_{DSS} - T_j$

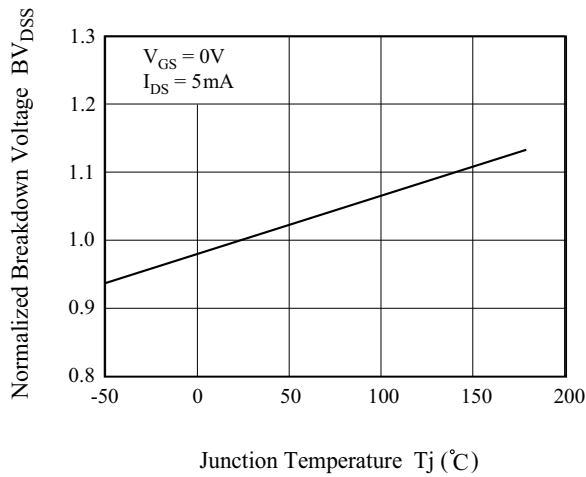


Fig4. $R_{DS(ON)} - I_D$

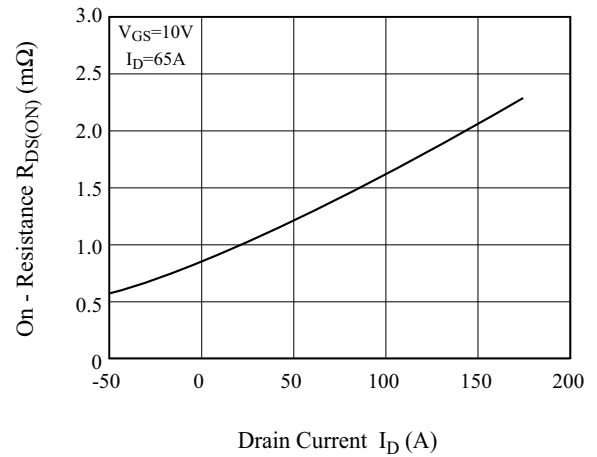


Fig5. $I_S - V_{SD} - I$

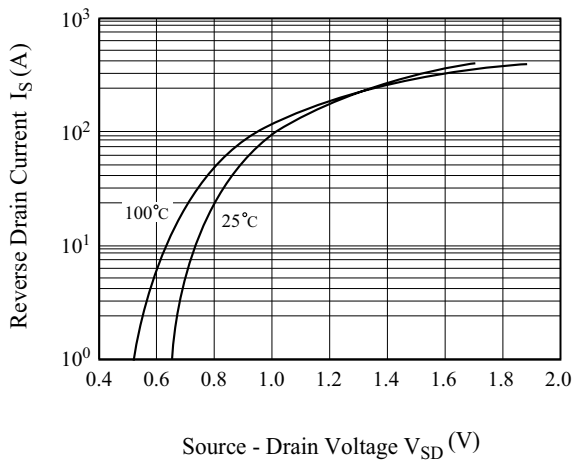


Fig6. $I_S - V_{SD} - II$

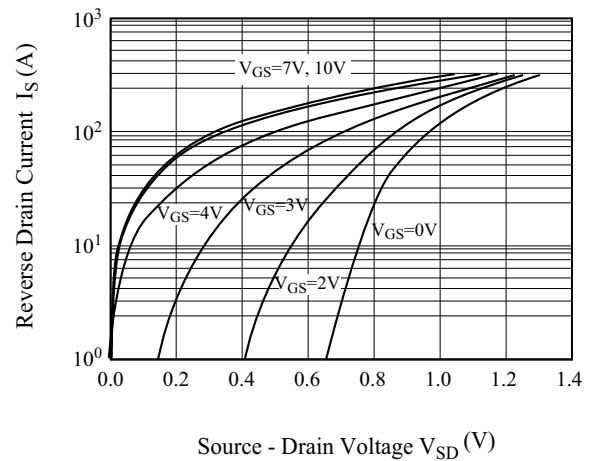


Fig7. $R_{DS(ON)} - I_D$

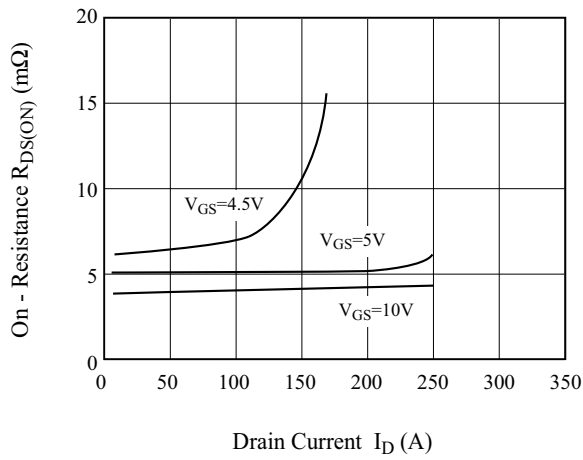


Fig8. $I_D - T_j$

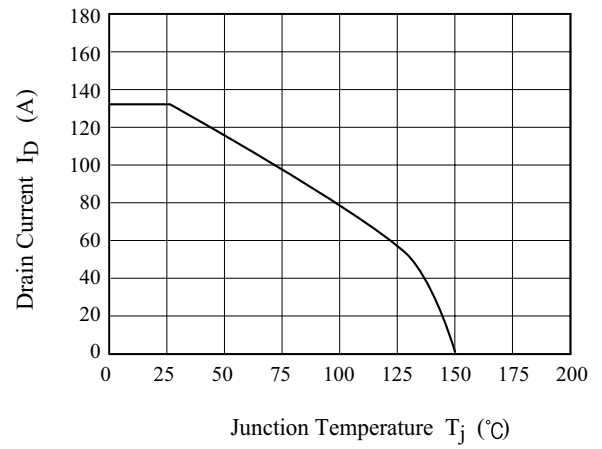


Fig 9. C - V_{DS}

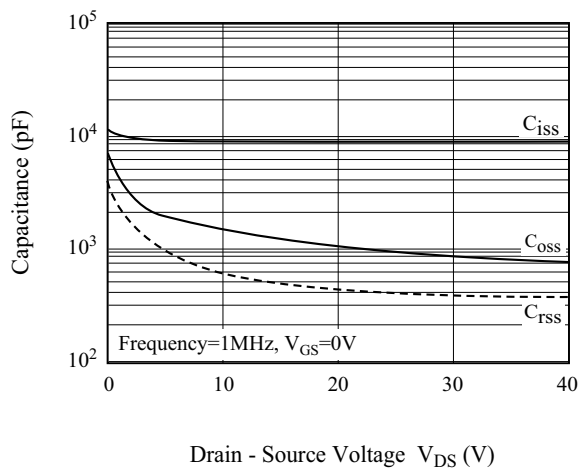


Fig10. $Q_g - V_{GS}$

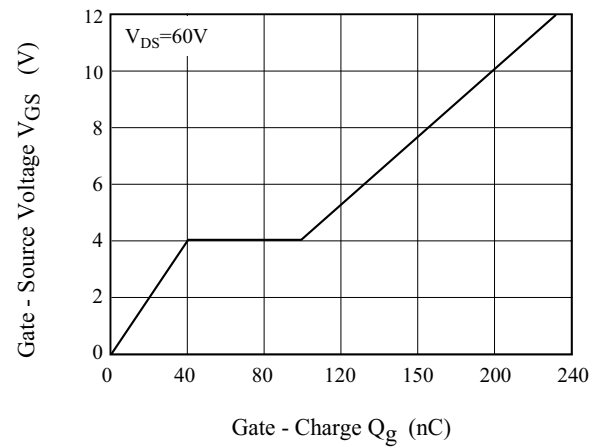


Fig11. Safe Operation Area

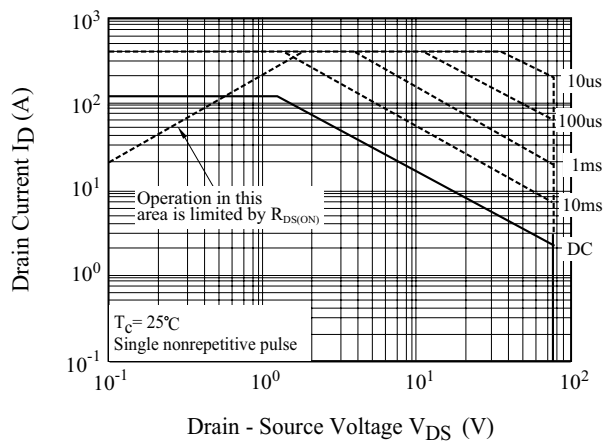


Fig12. Transient Thermal Response Curve

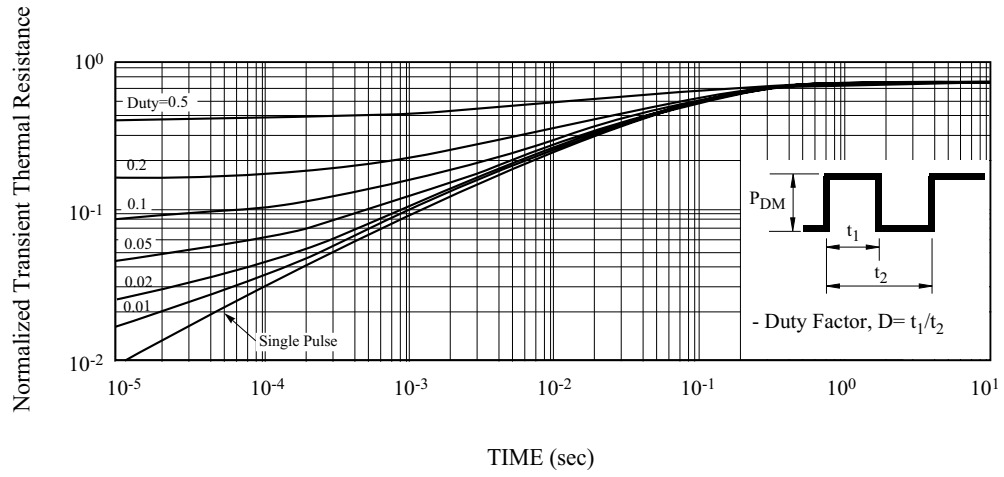


Fig13. Gate Charge

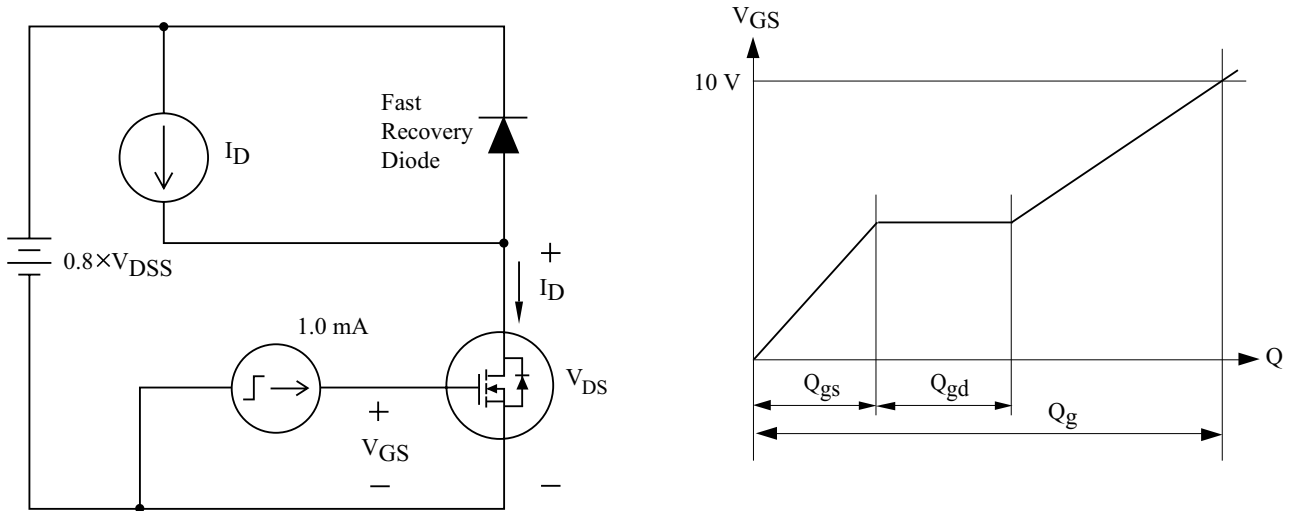


Fig14. Single Pulsed Avalanche Energy

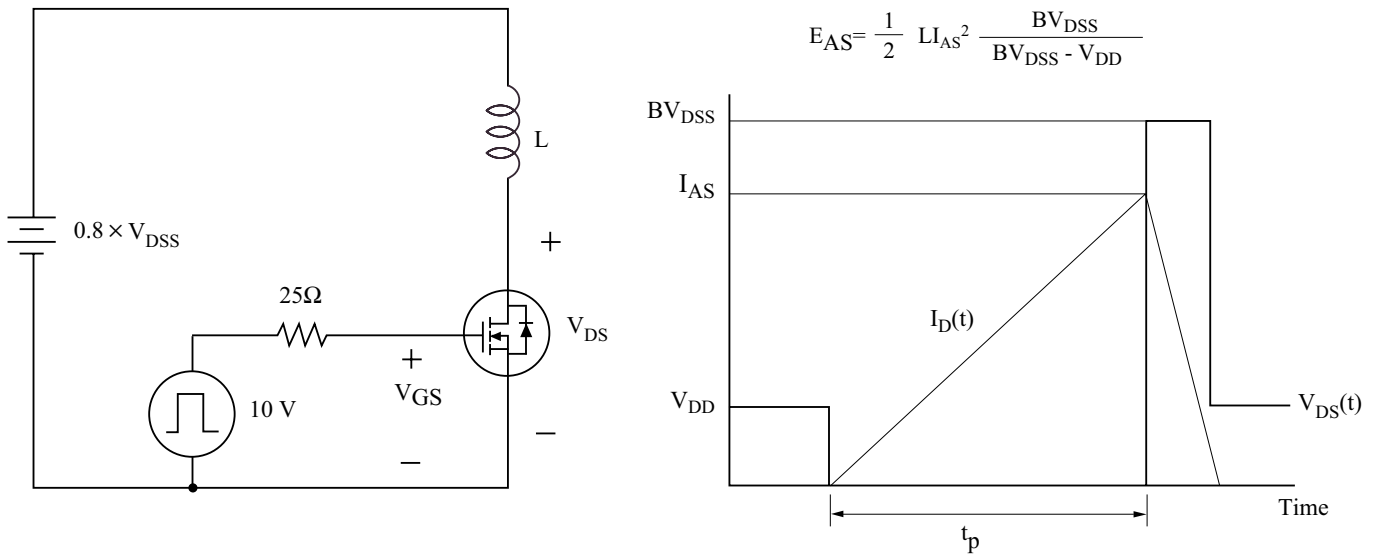


Fig15. Resistive Load Switching

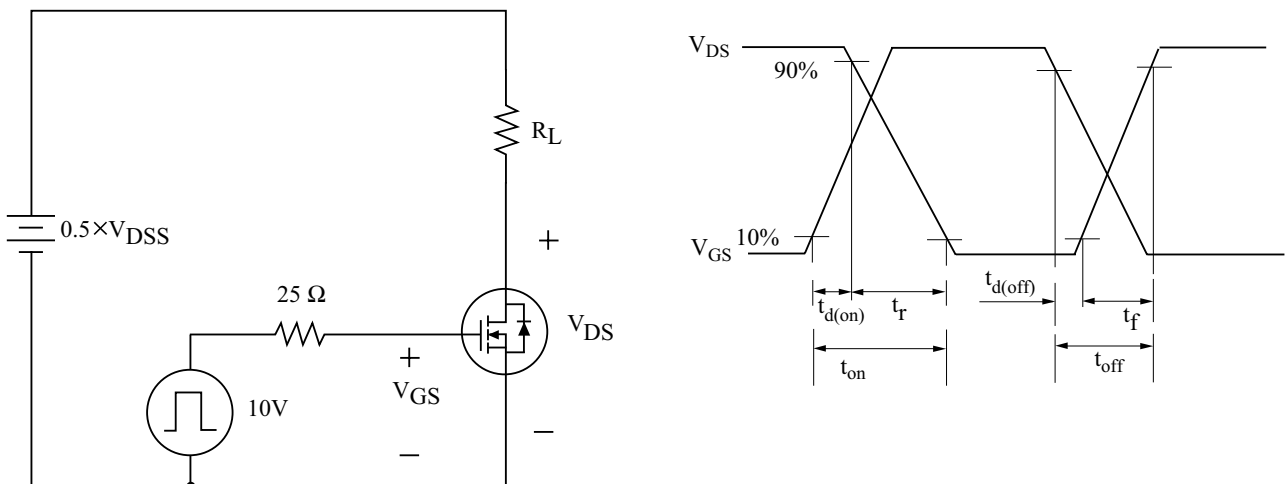


Fig16. Source - Drain Diode Reverse Recovery and dv/dt

