

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

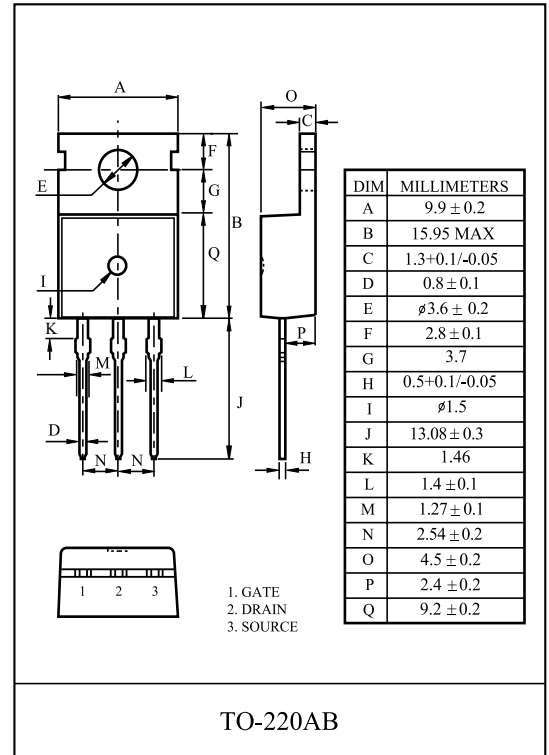
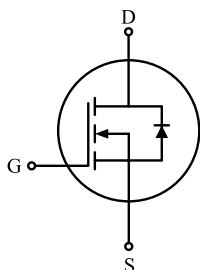
- $V_{DSS}=75V$, $I_D=170A$
- Drain-Source ON Resistance :
 $R_{DS(ON)}=3.4m$ (Max.) @ $V_{GS} = 10V$

MAXIMUM RATING (Tc=25)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|-----------------|-----------|------|
| Drain-Source Voltage | V_{DSS} | 75 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Drain Current | @Tc=25 | 170* | A |
| | @Tc=100 | 106 | |
| | Pulsed (Note1) | 424* | |
| Single Pulsed Avalanche Energy (Note 2) | E_{AS} | 1,000 | mJ |
| Repetitive Avalanche Energy (Note 1) | E_{AR} | 19 | mJ |
| Peak Diode Recovery dv/dt (Note 3) | dv/dt | 4.5 | V/ns |
| Drain Power Dissipation | Tc=25 | 192 | W |
| | Derate above 25 | 1.54 | W/ |
| Maximum Junction Temperature | T_j | 150 | |
| Storage Temperature Range | T_{stg} | -55 ~ 150 | |
| Thermal Characteristics | | | |
| Thermal Resistance, Junction-to-Case | R_{thJC} | 0.65 | /W |
| Thermal Resistance, Junction-to-Ambient | R_{thJA} | 62.5 | /W |

* : Drain current limited by maximum junction temperature.
Calculated continuous Current based on maximum allowable junction temperature

PIN CONNECTION



KU034N08P

ELECTRICAL CHARACTERISTICS (Tc=25)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|----------------|---|------|--------|-----------|---------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $I_D=250\ \mu A, V_{GS}=0V$ | 75 | - | - | V |
| Breakdown Voltage Temperature Coefficient | BV_{DSS}/T_j | $I_D=5mA$, Referenced to 25 | - | 0.07 | - | V/ |
| Drain Cut-off Current | I_{DSS} | $V_{DS}=75V, V_{GS}=0V$, | - | - | 10 | μA |
| Gate Threshold Voltage | V_{th} | $V_{DS}=V_{GS}, I_D=250\ \mu A$ | 2.0 | - | 4.0 | V |
| Gate Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 100 | nA |
| Drain-Source ON Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=80A$ | - | 3.0 | 3.4 | m |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=60V, I_D=80A$ $V_{GS}=10V$ (Note4,5) | - | 185 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 45 | - | |
| Gate-Drain Charge | Q_{gd} | | - | 60 | - | |
| Turn-on Delay time | $t_{d(on)}$ | $V_{DD}=37V$ $I_D=80A$ $R_G=25$ (Note4,5) | - | 160 | - | ns |
| Turn-on Rise time | t_r | | - | 250 | - | |
| Turn-off Delay time | $t_{d(off)}$ | | - | 550 | - | |
| Turn-off Fall time | t_f | | - | 230 | - | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V, f=1.0MHz$ | - | 10,900 | - | pF |
| Output Capacitance | C_{oss} | | - | 1,150 | - | |
| Reverse Transfer Capacitance | C_{rss} | | - | 470 | - | |
| Source-Drain Diode Ratings | | | | | | |
| Continuous Source Current | I_S | $V_{GS}<V_{th}$ | - | - | 137 | A |
| Pulsed Source Current | I_{SP} | | - | - | 548 | |
| Diode Forward Voltage | V_{SD} | $I_S=80A, V_{GS}=0V$ | - | - | 1.4 | V |
| Reverse Recovery Time | t_{rr} | $I_S=80A, V_{GS}=0V$, $dI_S/dt=300A/\mu s$ | - | 75 | - | ns |
| Reverse Recovery Charge | Q_{rr} | | - | 0.5 | - | μC |

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

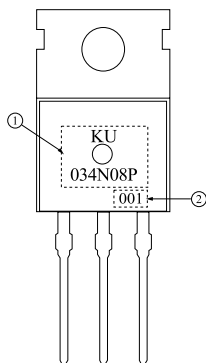
Note 2) $L=100\mu H, I_S=100A, V_{DD}=60V, R_G=25$, Starting $T_j=25$.

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



① PRODUCT NAME

② LOT NO

Fig1. $I_D - V_{DS}$

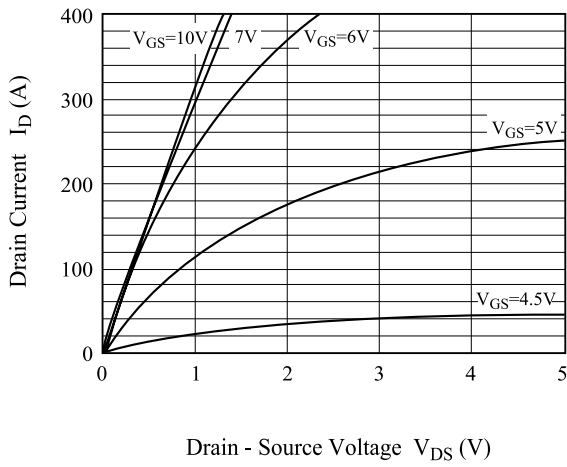


Fig2. $I_D - V_{GS}$

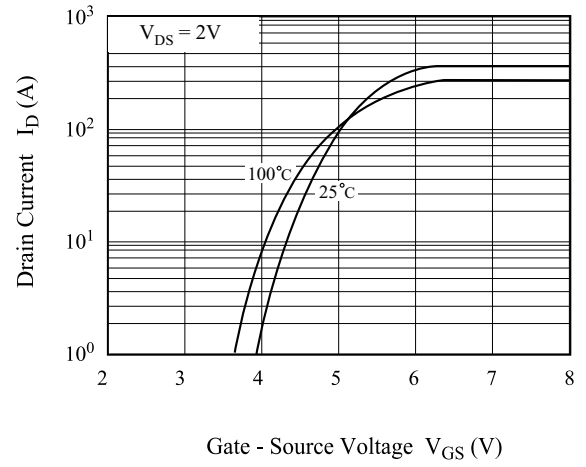


Fig3. $BV_{DSS} - T_j$

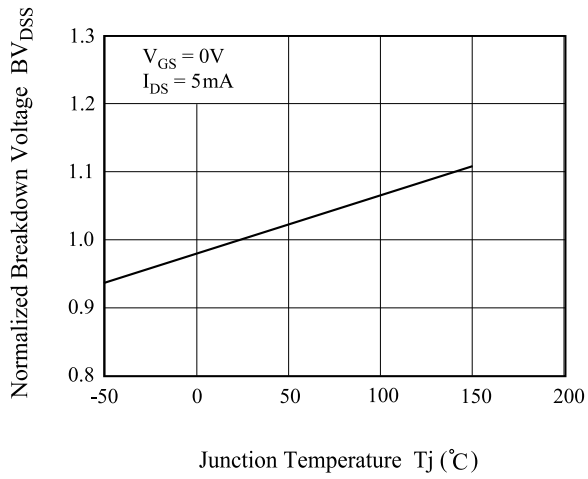


Fig4. $R_{DS(ON)} - I_D$

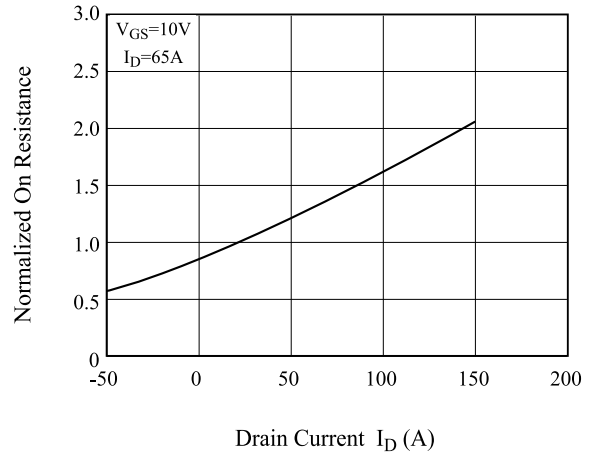


Fig5. $I_S - V_{SD} - I$

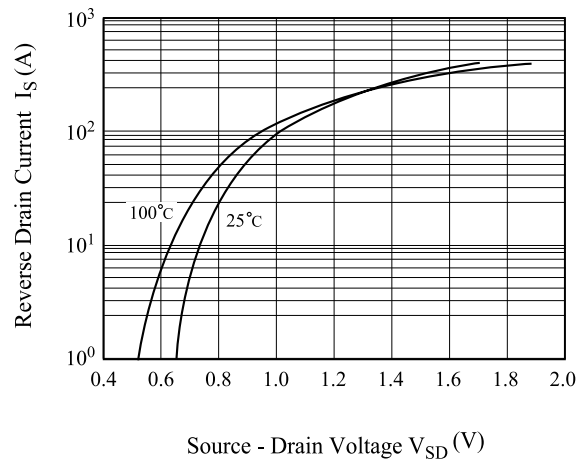
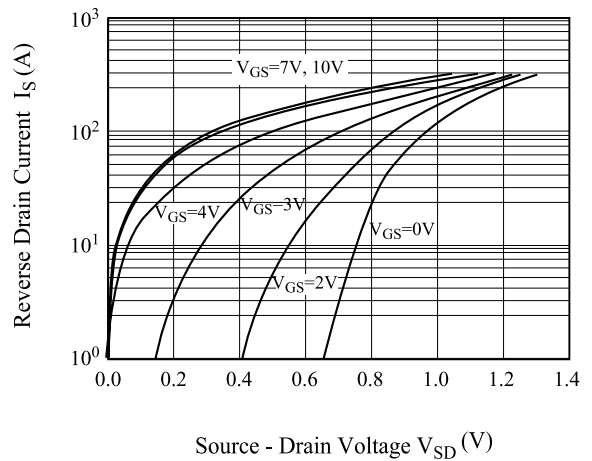


Fig6. $I_S - V_{SD} - II$



KU034N08P

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

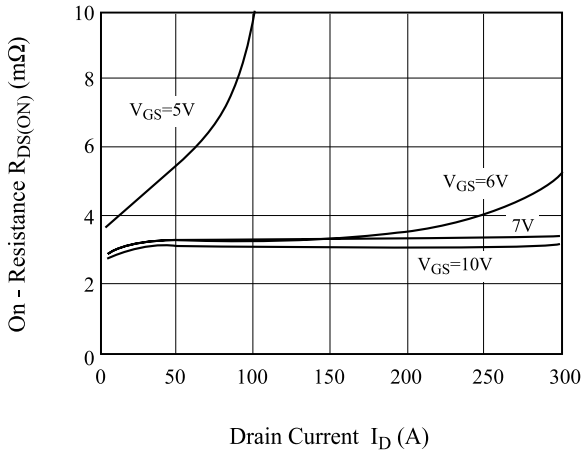


Fig8. $I_D - T_j$

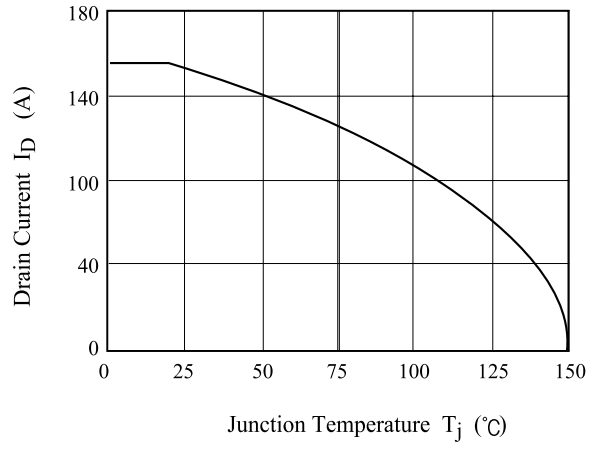


Fig 9. C - V_{DS}

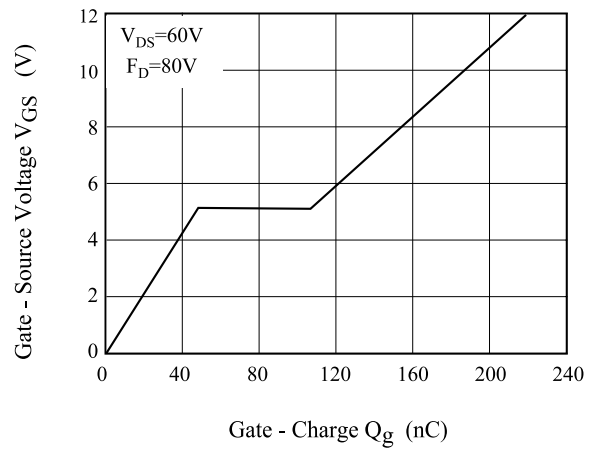
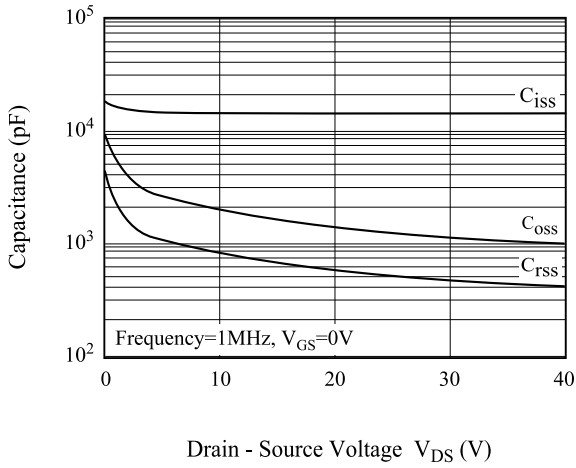


Fig11. Safe Operation Area

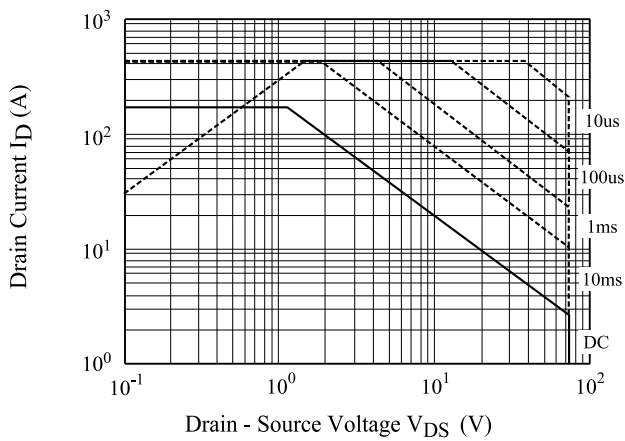


Fig12. Transient Thermal Response Curve

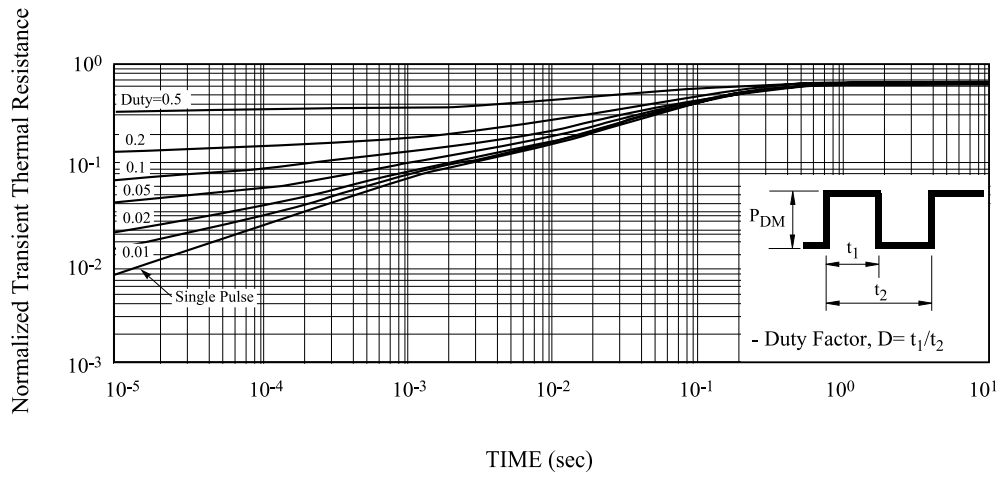


Fig13. Gate Charge

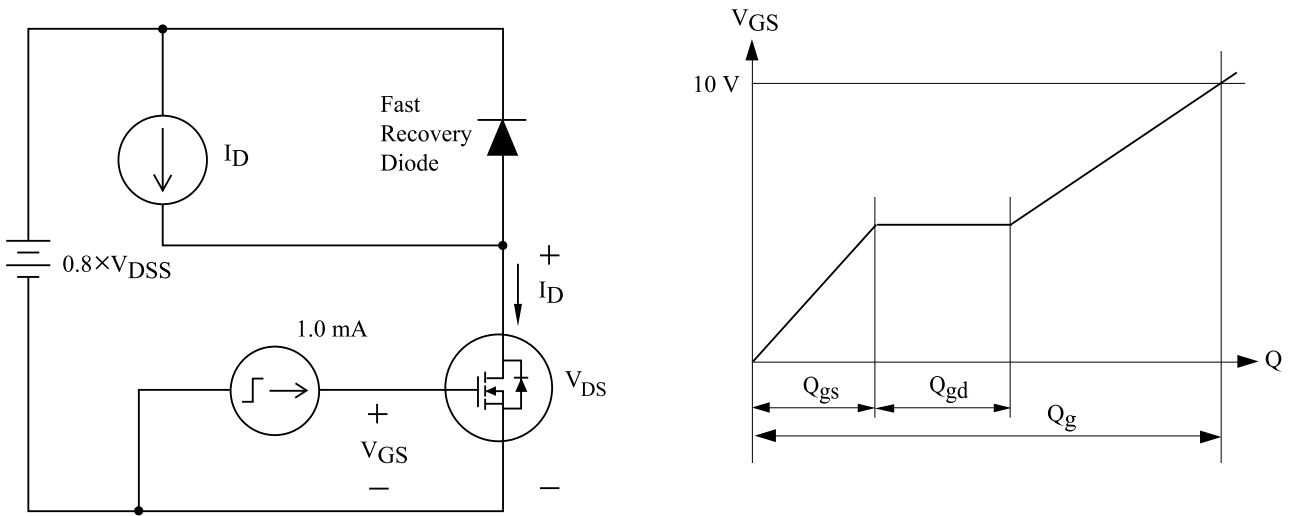


Fig14. Single Pulsed Avalanche Energy

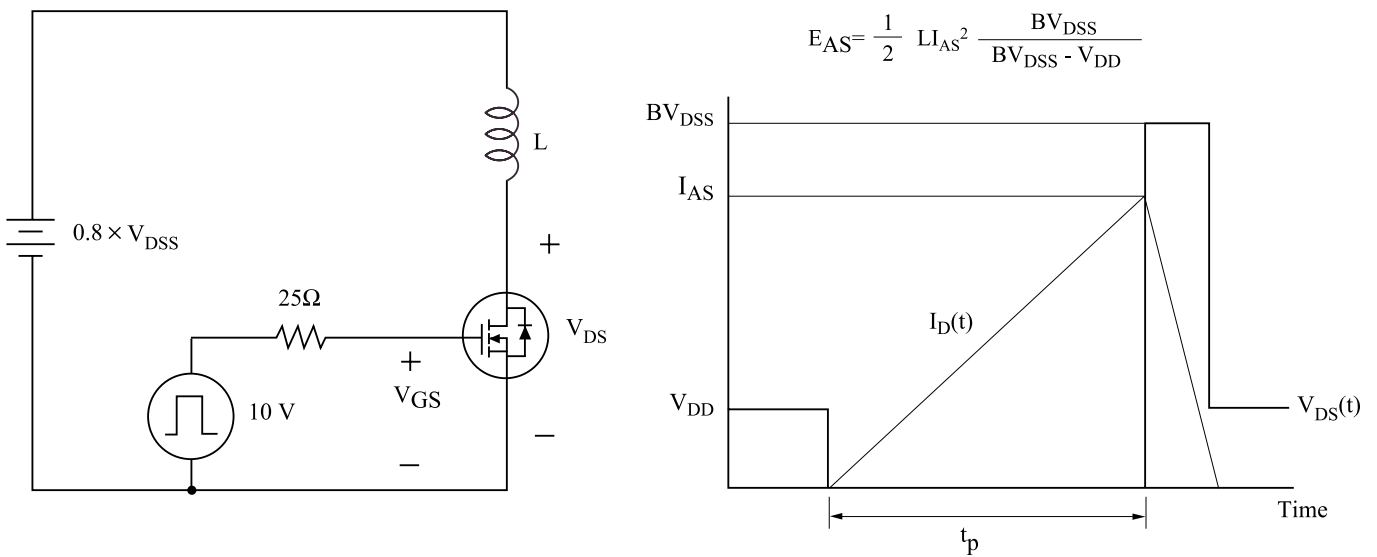


Fig15. Resistive Load Switching

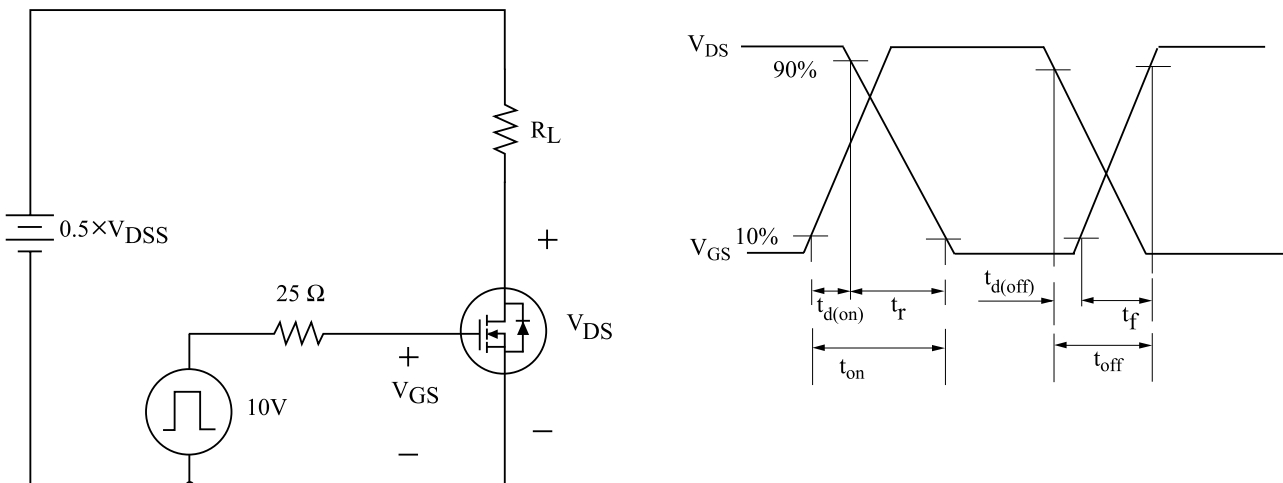


Fig16. Source - Drain Diode Reverse Recovery and dv/dt

