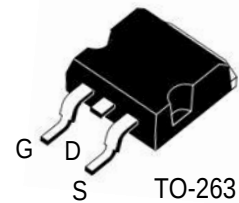
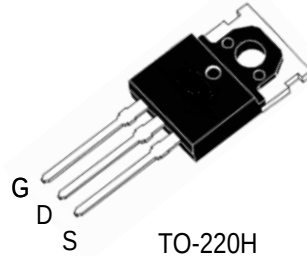


## POWER MOSFET

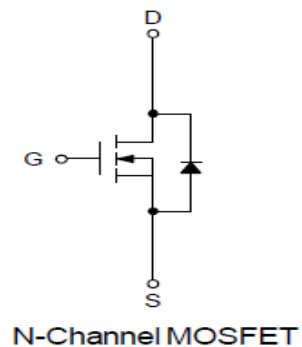
### Features

- 68V,80A N-Channel MOSFET
- $R_{DS(on)(typ.)}=6.5m\Omega @V_{GS}=10V$
- High ruggedness
- Fast switching
- 100% avalanche tested
- Exceptional dv/dt capability



### Applications

- Switching application



### Absolute Maximum Ratings

| Symbol    | Parameter                                       | Value       | Units      |
|-----------|-------------------------------------------------|-------------|------------|
| $V_{DSS}$ | Drain-Source Voltage                            | 68          | V          |
| $V_{GS}$  | Gate-Source Voltage                             | $\pm 25$    | V          |
| $I_D$     | Continuous Drain Current( $T_C=25^\circ C$ )    | 70          | A          |
| $I_{DM}$  | Pulsed Drain Current(Note 1 )                   | 240         | A          |
| EAS       | Single Pulsed Avalanche Energy(Note 2)          | 256         | mJ         |
| $P_D$     | Maximum Power Dissipation ( $T_C=25^\circ C$ )  | 65          | W          |
|           | Maximum Power Dissipation ( $T_C=100^\circ C$ ) | 32          | W          |
| $T_J$     | Operating Junction Temperature Range            | -55 to +175 | $^\circ C$ |
| $T_{STG}$ | Storage Temperature Range                       | -55 to +175 | $^\circ C$ |

#### Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Starting  $T_J=25^\circ C$ ,  $L=1.0mH$ ,  $R_G=50\Omega$ ,  $I_D=37A$ ,  $V_{GS}=10V$

**Thermal data**

| Symbol       | Parameter                            | Max. | Units         |
|--------------|--------------------------------------|------|---------------|
| $R_{th J-C}$ | Thermal Resistance, Junction to case | 2.2  | $^{\circ}C/W$ |
|              |                                      |      |               |
|              |                                      |      |               |

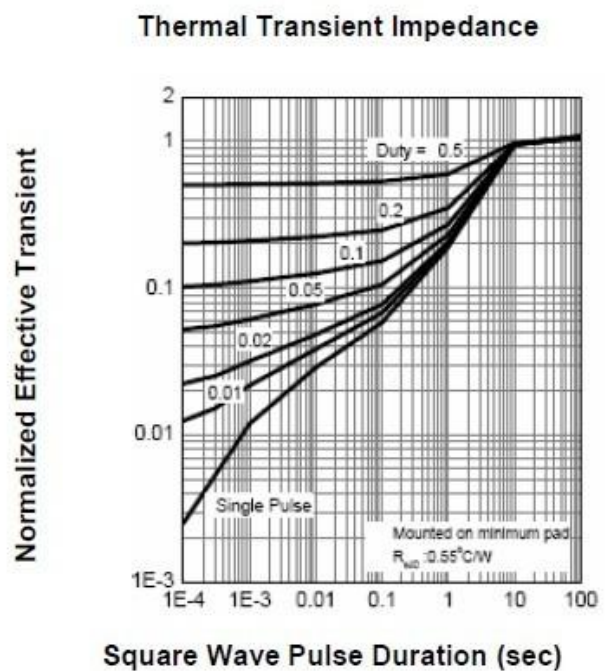
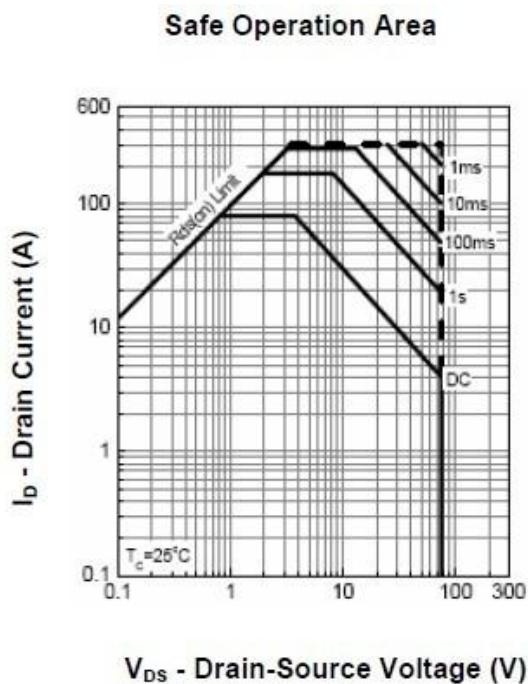
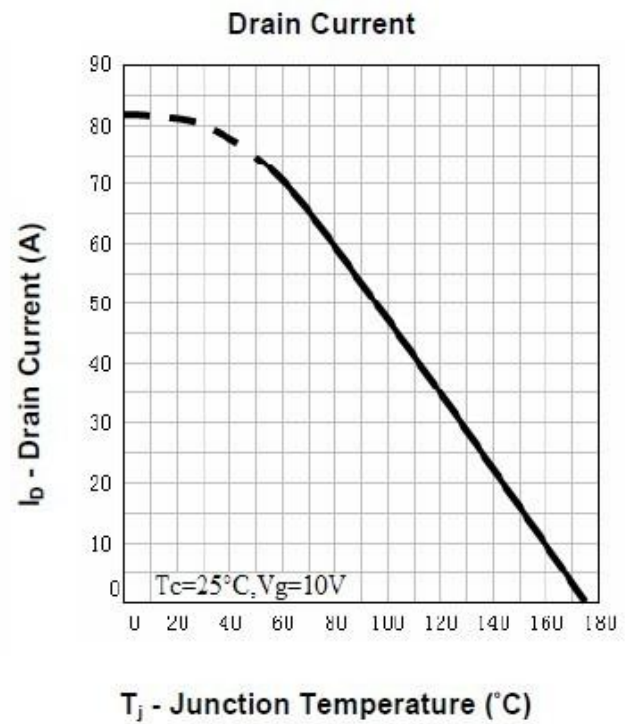
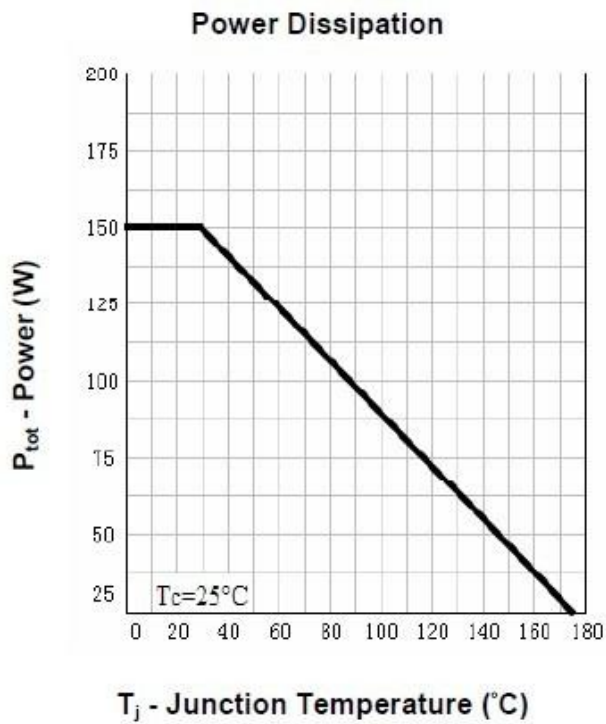
**Electrical Characteristics** ( $T_C=25^{\circ}C$  unless otherwise noted)

| Symbol       | Parameter                            | Test Conditions                                              | Min. | Typ. | Max. | Units      |
|--------------|--------------------------------------|--------------------------------------------------------------|------|------|------|------------|
| $BV_{DSS}$   | Drain-Source Breakdown Voltage       | $V_{GS}=0V, I_D=250\mu A$                                    | 68   |      |      | V          |
| $I_{DSSS}$   | Drain-Source Leakage Current         | $V_{DS}=68V, V_{GS}=0V$                                      |      |      | 1    | $\mu A$    |
| $I_{GSS}$    | Gate Leakage Current, Forward        | $V_{GS}=25V, V_{DS}=0V$                                      |      |      | 100  | nA         |
|              | Gate Leakage Current, Reverse        | $V_{GS}=-25V, V_{DS}=0V$                                     |      |      | -100 | nA         |
| $V_{GS(th)}$ | Gate Threshold Voltage               | $V_{GS}=V_{DS}, I_D=250\mu A$                                | 2    | 3    | 4    | V          |
| $R_{DS(on)}$ | Collector-Emitter Saturation Voltage | $V_{GS}=10V, I_D=40A$                                        |      | 6.5  | 8    | m $\Omega$ |
| $g_{fs}$     | Forward Transconductance             | $V_{DS}=15V, I_D=30A$                                        |      | 28   |      | S          |
| $Q_g$        | Total Gate Charge                    | $V_{DD}=68V$<br>$V_{GS}=10V$<br>$I_D=40A$                    |      | 76   |      | nC         |
| $Q_{gs}$     | Gate-Source Charge                   |                                                              |      | 17   |      | nC         |
| $Q_{gd}$     | Gate-Drain Charge                    |                                                              |      | 24   |      | nC         |
| $t_{d(on)}$  | Turn-on Delay Time                   | $V_{DD}=35V$<br>$V_{GS}=10V$<br>$I_D=25A$<br>$R_G=3.5\Omega$ | -    | 37   | -    | ns         |
| $t_r$        | Turn-on Rise Time                    |                                                              | -    | 35   | -    | ns         |
| $t_{d(off)}$ | Turn-off Delay Time                  |                                                              | -    | 110  | -    | ns         |
| $t_f$        | Turn-off Fall Time                   |                                                              | -    | 77   | -    | ns         |
| $C_{iss}$    | Input Capacitance                    | $V_{DS}=30V$<br>$V_{GS}=0V$<br>$f=1MHz$                      | -    | 3250 | -    | pF         |
| $C_{oss}$    | Output Capacitance                   |                                                              | -    | 580  | -    | pF         |
| $C_{rss}$    | Reverse Transfer Capacitance         |                                                              | -    | 165  | -    | pF         |
| $R_{Gint}$   | Integrated gate resistor             |                                                              |      | 1.5  |      | $\Omega$   |

**Source-Drain Ratings and Characteristics** ( $T_C=25^{\circ}C$  unless otherwise noted)

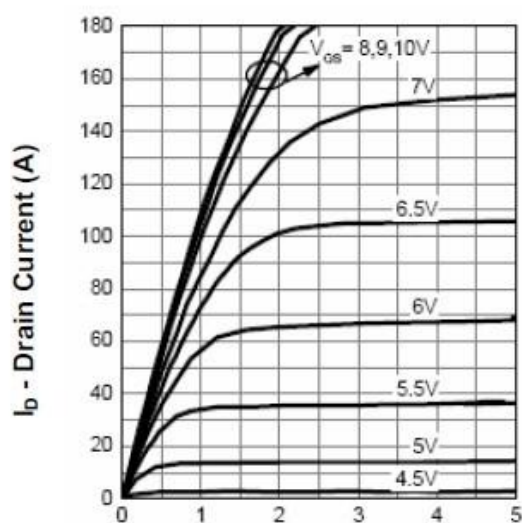
| Symbol   | Parameter                        | Test Conditions                               | Min. | Typ. | Max. | Units |
|----------|----------------------------------|-----------------------------------------------|------|------|------|-------|
| $V_{SD}$ | Forward On Voltage               | $V_{GS}=0V, I_S=20A$                          | -    |      | 1.2  | V     |
| $I_S$    | Continuous Diode Forward Current |                                               |      |      | 85   | A     |
| $t_{rr}$ | Reverse Recovery Time            | $V_{DD}=25V, I_S=40A$<br>$dI_F/dt=100A/\mu s$ | -    | 42   |      | ns    |
| $Q_{rr}$ | Reverse Recovery Charge          |                                               | -    | 70   |      | nC    |

## Typical Characteristics



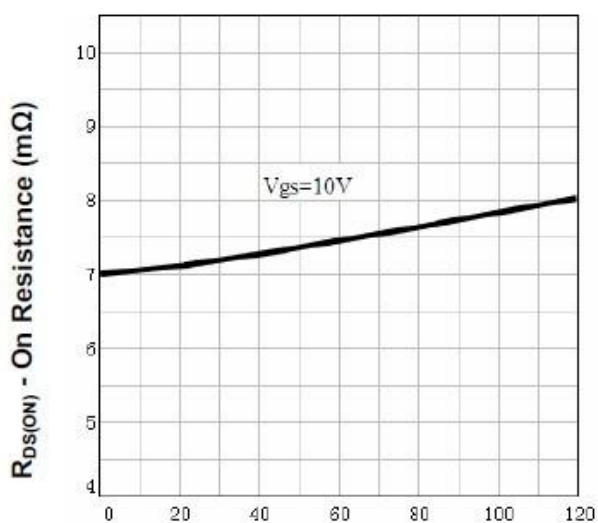
## Typical Characteristics

Output Characteristics



$V_{DS}$  - Drain-Source Voltage (V)

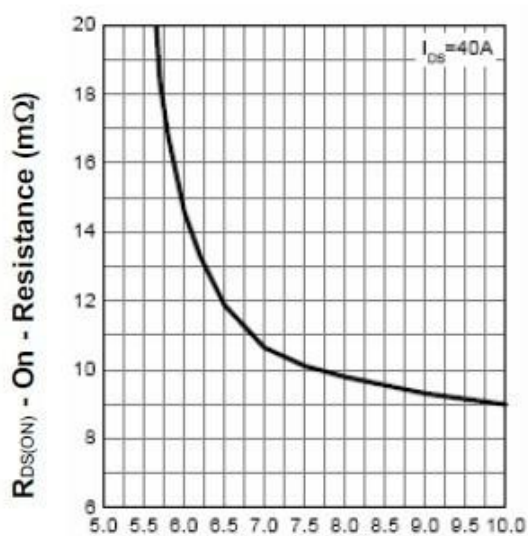
Drain-Source On Resistance



$I_D$  - Drain Current (A)

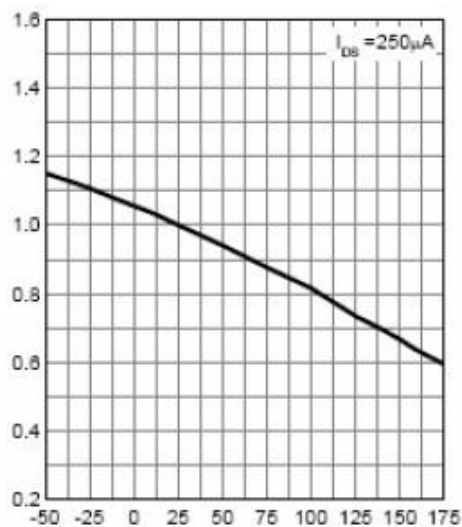
Drain-Source On Resistance

Gate Threshold Voltage



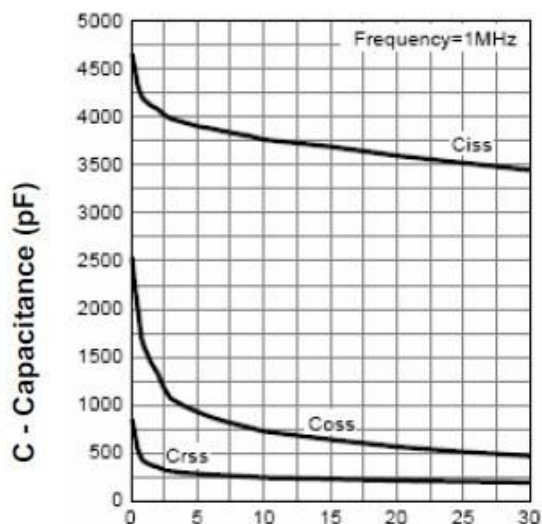
$V_{GS}$  - Gate-Source Voltage (V)

Normalized Threshold Voltage

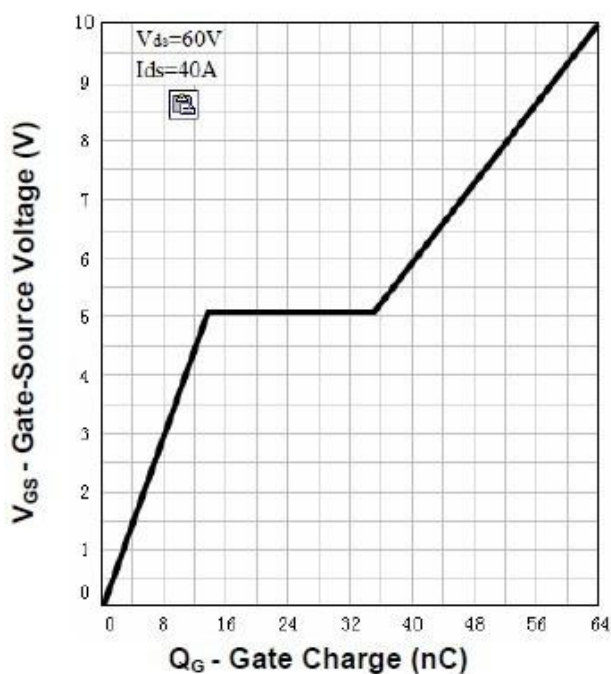


$T_j$  - Junction Temperature ( $^{\circ}C$ )

Capacitance

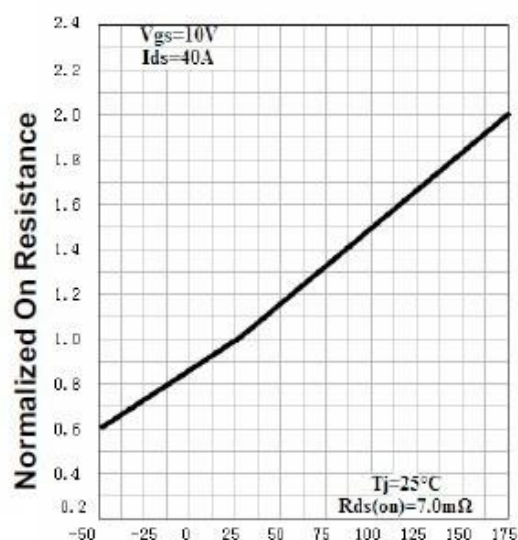


Gate Charge

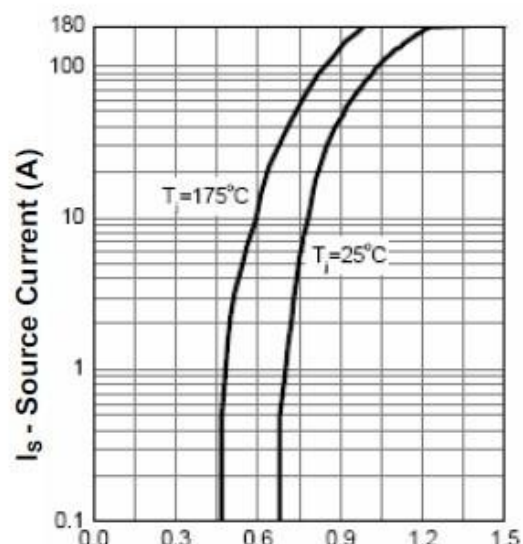


## Typical Characteristics

Drain-Source On Resistance

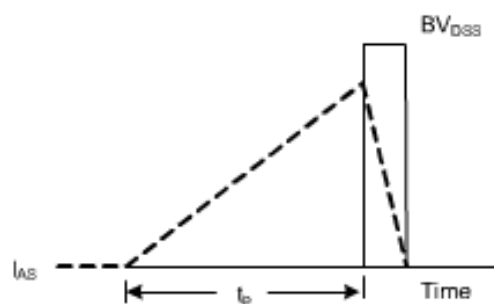
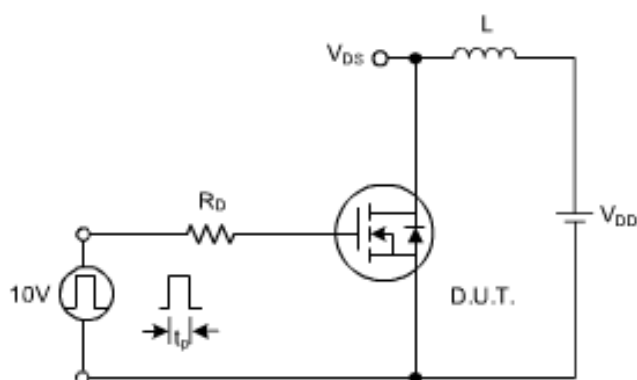


Source-Drain Diode Forward

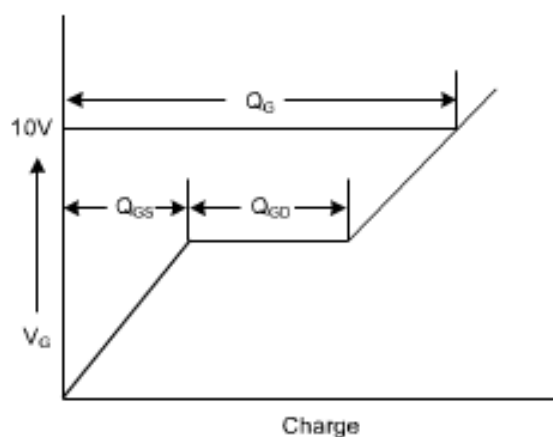
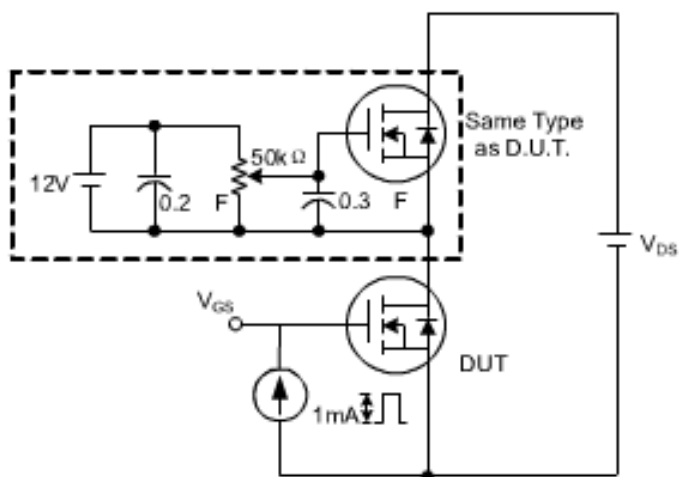


## Test Circuits

### Avalanche test circuits and waveforms



### Gate charge test circuits and waveforms





## Switching time test circuits and waveforms

