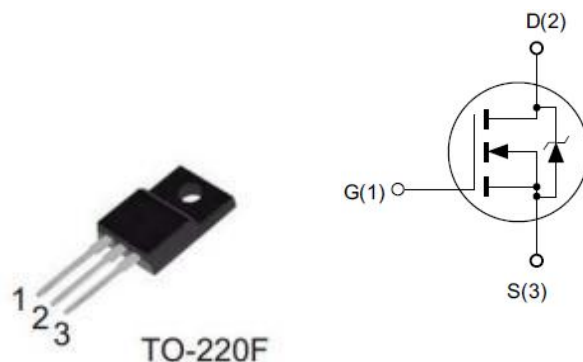


### Features

- ◆ 900V, 6A,  $R_{DS(ON)}(Typ.) = 1.95\Omega @ V_{GS} = 10V$ .
- ◆ Low ON Resistance
- ◆ Low Gate Charge
- ◆ Low Reverse transfer capacitance
- ◆ Fast Switching
- ◆ 100% Avalanche Tested



### Application

- ◆ Power switch circuit of adaptor and charger

### Absolute Maximum Ratings $T_c = 25^\circ C$ unless otherwise noted

| Symbol         | Parameter                                      | Limit      | Unit       |
|----------------|------------------------------------------------|------------|------------|
| $V_{DS}$       | Drain-Source Voltage <sup>a</sup>              | 900        | V          |
| $V_{GS}$       | Gate-Source Voltage                            | $\pm 30$   | V          |
| $I_D$          | Drain Current-Continuous, $T_c = 25^\circ C$   | 6          | A          |
|                | Drain Current-Continuous, $T_c = 100^\circ C$  | 3.7        | A          |
| $I_{DM}$       | Drain Current-Pulsed <sup>b</sup>              | 24         | A          |
| $P_D$          | Maximum Power Dissipation @ $T_J = 25^\circ C$ | 33         | W          |
| EAS            | Single Pulsed Avalanche Energy <sup>d</sup>    | 466        | mJ         |
| $T_J, T_{STG}$ | Operating and Store Temperature Range          | -55 to 150 | $^\circ C$ |

### Thermal Characteristics

| Symbol          | Parameter                                | Value | Unit         |
|-----------------|------------------------------------------|-------|--------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction-Case Max.   | 3.8   | $^\circ C/W$ |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient Max. | 62.5  | $^\circ C/W$ |

### Electrical Characteristics $T_J = 25^\circ C$ unless otherwise noted

#### Off Characteristics

| Symbol     | Parameter                         | Test Condition                  | Min. | Typ. | Max.      | Unit    |
|------------|-----------------------------------|---------------------------------|------|------|-----------|---------|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage    | $V_{GS} = 0V, I_D = 250\mu A$   | 900  | -    | -         | V       |
| $I_{DSS}$  | Zero Gate Voltage Drain Current   | $V_{DS} = 900V, V_{GS} = 0V$    | -    | -    | 1         | $\mu A$ |
| $I_{GSS}$  | Forward Gate Body Leakage Current | $V_{DS} = 0V, V_{GS} = \pm 30V$ | -    | -    | $\pm 100$ | $\mu A$ |

### ■ On Characteristics

| Symbol       | Parameter                                      | Test Condition                    | Min. | Typ. | Max. | Unit     |
|--------------|------------------------------------------------|-----------------------------------|------|------|------|----------|
| $V_{GS(th)}$ | Gate Threshold Voltage                         | $V_{DS} = V_{GS}, I_D = 250\mu A$ | 2    | -    | 4    | V        |
| $R_{DS(on)}$ | Static Drain-Source On-Resistance <sup>c</sup> | $V_{GS} = 10V, I_D = 3A$          | -    | 1.95 | 2.3  | $\Omega$ |

### ■ Dynamic Characteristics

| Symbol | Parameter                    | Test Condition                                    | Min. | Typ. | Max. | Unit |
|--------|------------------------------|---------------------------------------------------|------|------|------|------|
| Ciss   | Input Capacitance            | $V_{DS} = 25V,$<br>$V_{GS} = 0V,$<br>$f = 1.0MHz$ | -    | 1435 | -    | pF   |
| Coss   | Output Capacitance           |                                                   | -    | 100  | -    | pF   |
| Crss   | Reverse Transfer Capacitance |                                                   | -    | 5.2  | -    | pF   |

### ■ On Characteristics

| Symbol       | Parameter           | Test Condition                                               | Min. | Typ. | Max. | Unit |
|--------------|---------------------|--------------------------------------------------------------|------|------|------|------|
| $t_{d(on)}$  | Turn-On Delay Time  | $V_{DD} = 450V, I_D = 6A,$<br>$R_G = 10\Omega, V_{GS} = 10V$ | -    | 17.6 | -    | ns   |
| $t_r$        | Turn-On Rise Time   |                                                              | -    | 17.2 | -    | ns   |
| $t_{d(off)}$ | Turn-Off Delay Time |                                                              | -    | 43.6 | -    | ns   |
| $t_f$        | Turn-Off Fall Time  |                                                              | -    | 20.2 | -    | ns   |
| Qg           | Total Gate Charge   | $V_{DS} = 720V, I_D = 6A,$<br>$V_{GS} = 10V$                 | -    | 31.1 | -    | nC   |
| Qgs          | Gate-Source Charge  |                                                              | -    | 13.6 | -    | nC   |
| Qgd          | Gate-Drain Charge   |                                                              | -    | 6.3  | -    | nC   |

### ■ Drain-Source Diode Characteristics

| Symbol   | Parameter                                     | Test Condition                                                           | Min. | Typ. | Max. | Unit    |
|----------|-----------------------------------------------|--------------------------------------------------------------------------|------|------|------|---------|
| $I_S$    | Drain-Source Diode Forward Continuous Current | $V_{GS} = 0V$                                                            | -    | -    | 6    | A       |
| $I_{SM}$ | Maximum Pulsed Current                        | $V_{GS} = 0V$                                                            | -    | -    | 24   | A       |
| $V_{SD}$ | Drain-Source Diode Forward Voltage            | $V_{GS} = 0V, I_S = 6A$                                                  | -    | -    | 1.5  | V       |
| trr      | Reverse Recovery Time                         | $I_S = 6A, T_J = 25^\circ C$<br>$dI_F/dt = 100A/\mu s,$<br>$V_{GS} = 0V$ | -    | 727  | -    | ns      |
| Qrr      | Reverse Recovery Charge                       |                                                                          | -    | 5.26 | -    | $\mu C$ |

Notes:

- $T_J = +25^\circ C$  to  $+150^\circ C$
- Repetitive rating; pulse width limited by maximum junction temperature.
- Pulse width  $\leq 300\mu s$ ; duty cycle  $\leq 2\%$
- $L = 10mH, V_{DD} = 50V, I_{AS} = 9.7A, R_G = 25\Omega$  Starting  $T_J = 25^\circ C$

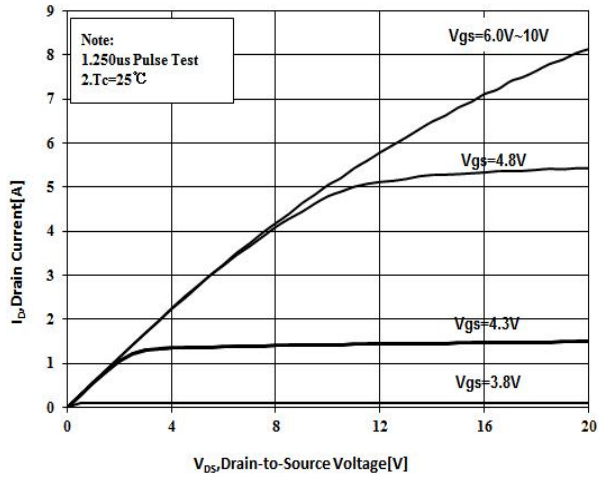


Figure 1. Typical Output Characteristics

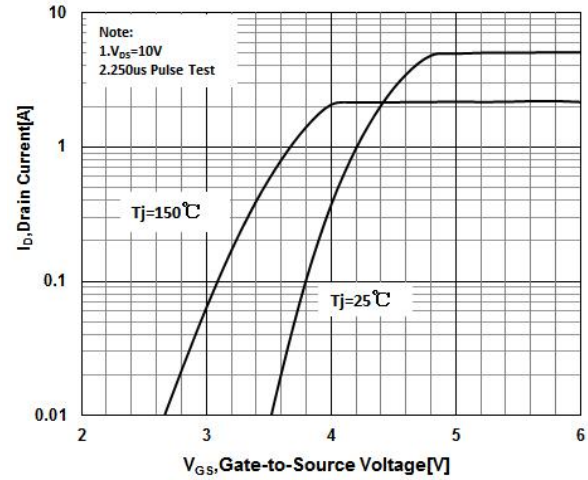


Figure 2. Typical Transfer Characteristics

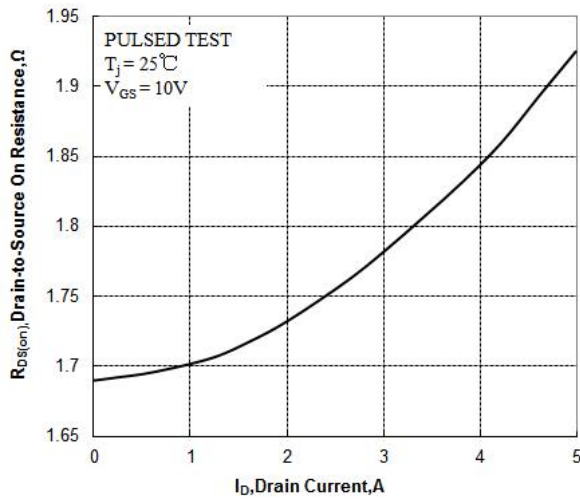


Figure 3. On-Resistance vs. Drain Current

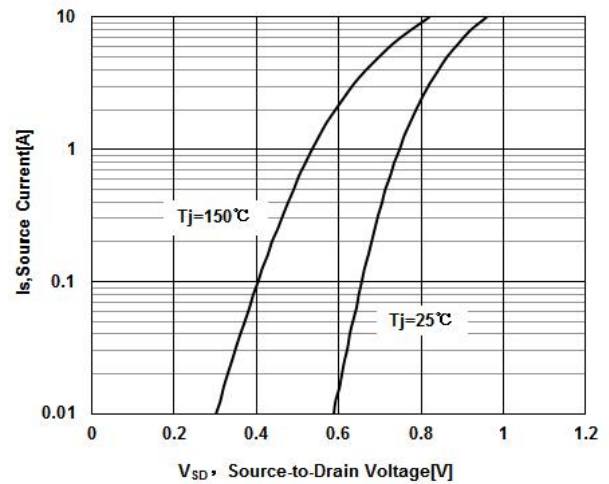


Figure 4. Body-Diode Characteristics

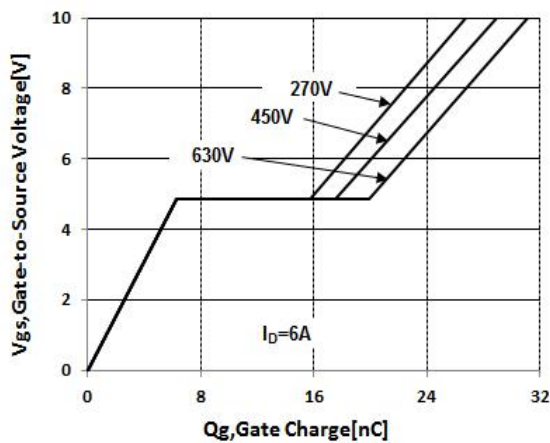


Figure 5. Gate-Charge Characteristics

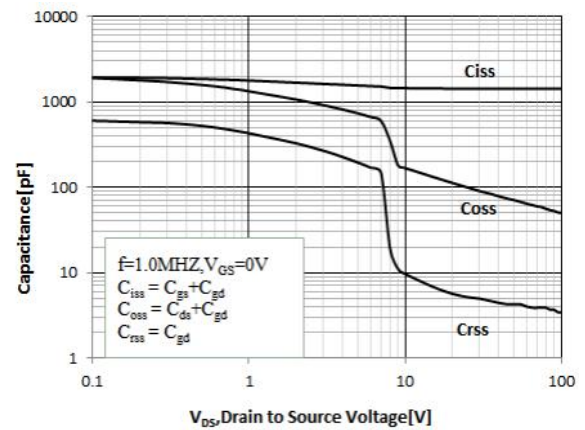
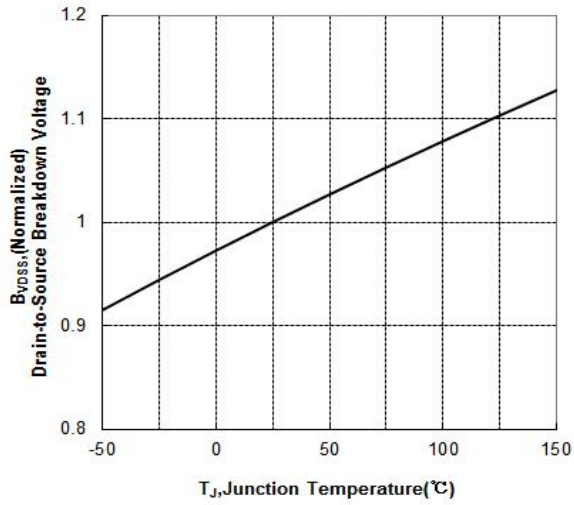
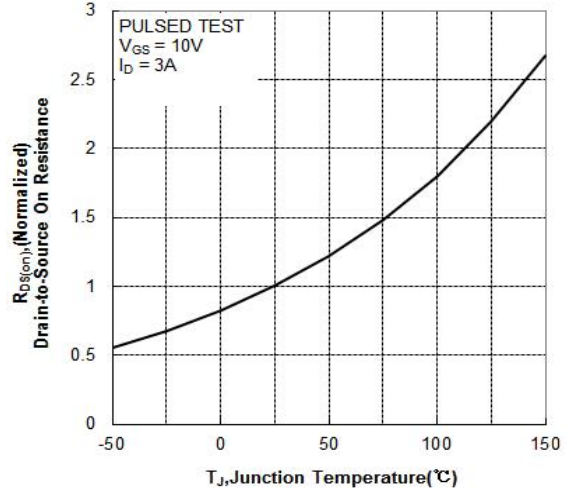


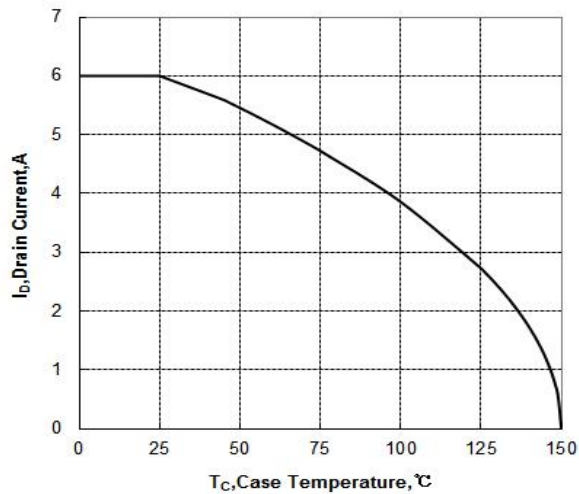
Figure 6. Capacitance Characteristics



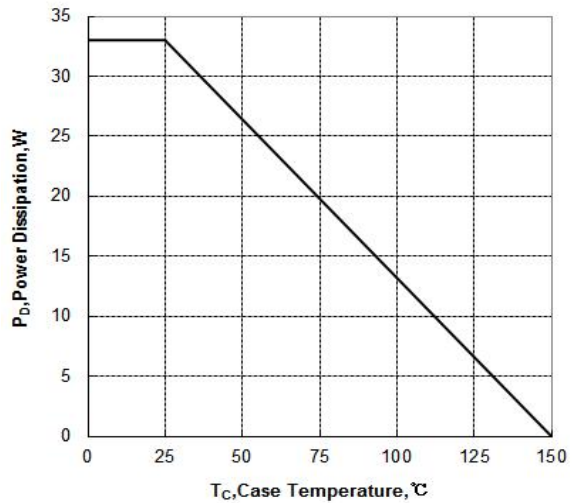
**Figure 7. Normalized Breakdown voltage vs. Junction Temperature**



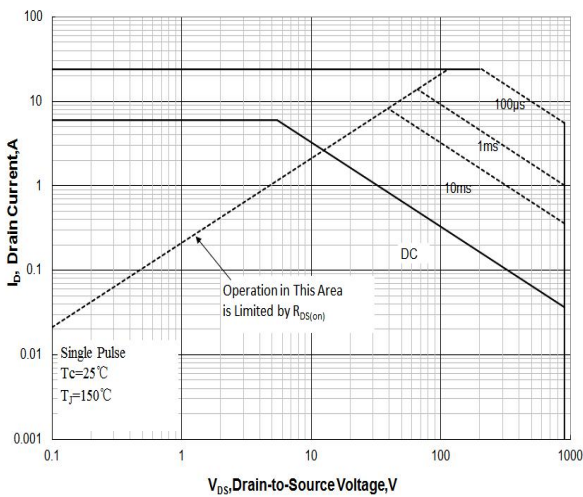
**Figure 8. Normalized on Resistance vs. Junction Temperature**



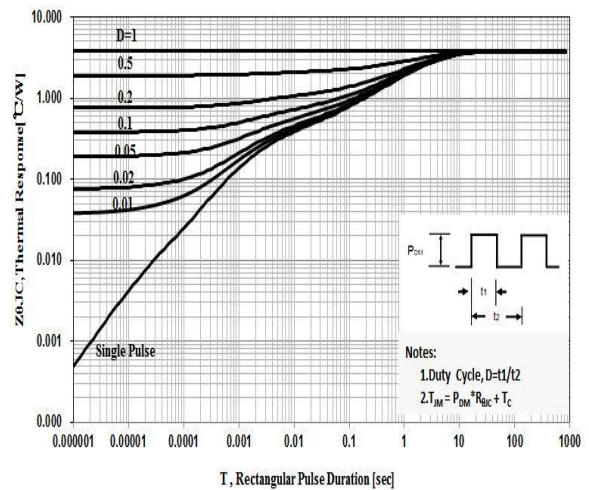
**Figure 9: Maximum Continuous Drain Current vs. Case Temperature**



**Figure 10: Maximum Power Dissipation vs. Case Temperature**



**Figure 11. Maximum Safe Operating Area**



**Figure 12: Normalized Maximum Transient Thermal Impedance**

### ■ Package Information

