

**DESCRIPTION**

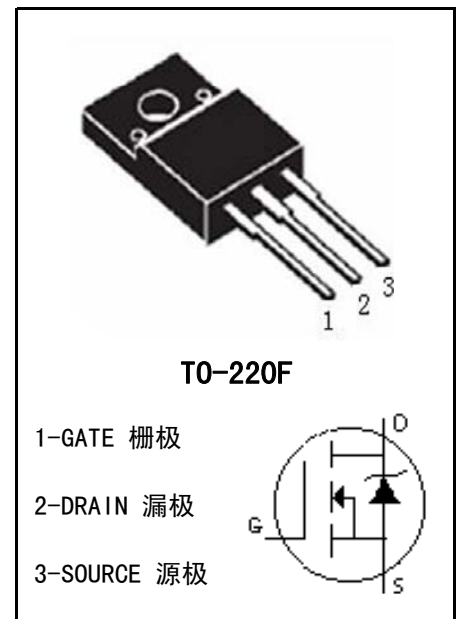
- ELECTRONIC BALLAST
- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

**FEATURES:**

- LOW THERMAL RESISTANCE
- HIGH INPUT RESISTANCE
- FAST SWITCHING
- ROHS COMPLIANT

**MAXIMUM RATINGS (T<sub>c</sub>=25°C)**

| PARAMETER                                       | SYMBOL           | VALUE   | UNIT |
|---|------------------|---------|------|
| Drain-source Voltage                            | VDS              | 800     | V    |
| gate-source Voltage                             | VGS              | ±30     | V    |
| Continuous Drain Current (T <sub>C</sub> =25°C) | ID               | 5       | A    |
| Drain Current-Pulsed                            | IDM              | 20      | A    |
| Total Dissipation                               | PD               | 40      | W    |
| Junction Temperature                            | T <sub>j</sub>   | 150     | °C   |
| Storage Temperature                             | T <sub>stg</sub> | -55-150 | °C   |
| Single Pulse Avalanche Energy                   | EAS              | 260     | mJ   |

**MECHANICAL**

**ELECTRONIC CHARACTERISTICS (T<sub>c</sub>=25°C)**

| CHARACTERISTICS                    | SYMBOL   | TEST CONDITION      | MIN | MAX  | UNIT |
|------------------------------------|----------|---------------------|-----|------|------|
| Drain-source Breakdown Voltage     | BVDSS    | VGS=0V, ID=250 μ A  | 800 |      | V    |
| Gate Threshold Voltage             | VGS (TH) | VGS=VDS, ID=250 μ A | 2   | 4    | V    |
| Drain-source Leakage Current       | IDSS     | VDS=800V, VGS=0V    |     | 1    | uA   |
| Drain-Source Diode Forward Voltage | VSD      | VGS=0V, IS=5A       |     | 1.4  | V    |
| Gate-body Leakage Current (VDS= 0) | IGSS     | VGS=±30V            |     | ±100 | nA   |
| Forward Transconductance           | gfs      | Vds=10V Id=2.5A     | 0.5 |      | S    |
| Static Drain-source On Resistance  | RDS (ON) | VGS=10V, ID=2.5A    |     | 2.6  | Ω    |
| Thermal Resistance Junction-case   | RthJ-c   |                     |     | 2.8  | °C/W |

**■ DYNAMIC CHARACTERISTICS (T<sub>c</sub>=25°C)**

| CHARACTERISTICS              | SYMBOL           | TEST CONDITION   | MIN | TYP  | MAX  | UNIT |
|------------------------------|------------------|--|-----|------|------|------|
| Input Capacitance            | C <sub>iss</sub> | V <sub>DS</sub> =25V, V <sub>GS</sub> =0V,<br>f=1.0MHz | -   | 1150 | 1500 | pF   |
| output Capacitance           | C <sub>oss</sub> |  | -   | 80   | 130  | pF   |
| Reverse Transfer Capacitance | C <sub>rss</sub> |  | -   | 10   | 19   | pF   |

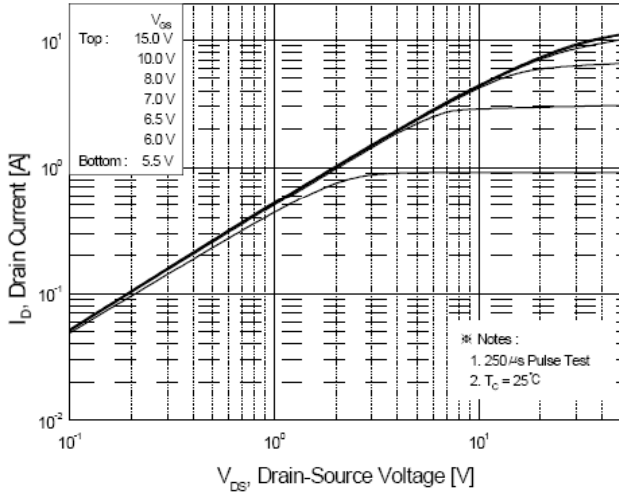
**■ SWITCHING CHARACTERISTICS (T<sub>c</sub>=25°C)**

| CHARACTERISTICS     | SYMBOL              | TEST CONDITION   | MIN | TYP | MAX | UNIT |
|---------------------|---------------------|--|-----|-----|-----|------|
| Turn-On Delay Time  | t <sub>d(on)</sub>  | V <sub>DD</sub> =400V, I <sub>D</sub> =5.0A,<br>R <sub>G</sub> =25Ω  | -   | 30  | 70  | ns   |
| Turn-On Rise Time   | t <sub>r</sub>      |  | -   | 85  | 180 | ns   |
| Turn-Off Delay Time | t <sub>d(off)</sub> |  | -   | 45  | 100 | ns   |
| Turn-Off Rise Time  | t <sub>f</sub>      |  | -   | 55  | 120 | ns   |
| Total Gate Charge   | Q <sub>g</sub>      | V <sub>DS</sub> =640V, I <sub>D</sub> =5.0A,<br>V <sub>GS</sub> =10V | -   | 30  | 39  | nC   |
| Gate-Source Charge  | Q <sub>gs</sub>     |  | -   | 6   | -   | nC   |
| Gate-Drain Charge   | Q <sub>gd</sub>     |  | -   | 15  | -   | nC   |

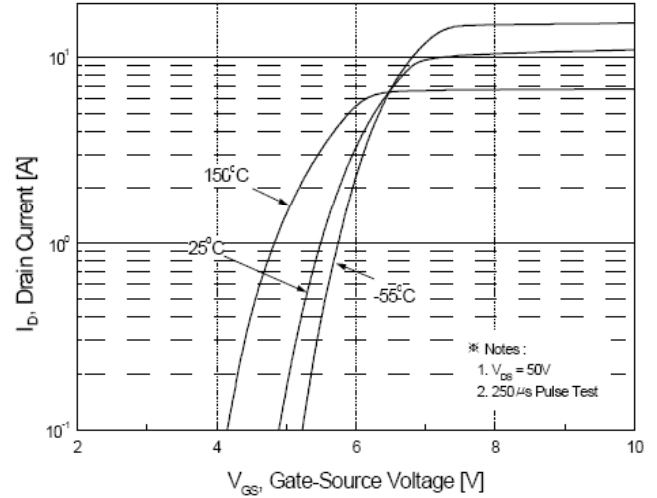
**■ DRAIN-SOURCE DIODE MAXIMUM RATINGS AND CHARACTERISTICS (T<sub>c</sub>=25°C)**

| CHARACTERISTICS             | SYMBOL          | TEST CONDITION  | MIN | TYP | MAX | UNIT |
|-----------------------------|-----------------|---|-----|-----|-----|------|
| Max. Diode Forward Current  | I <sub>s</sub>  |   | -   | -   | 5   | A    |
| Max. Pulsed Forward Current | I <sub>SM</sub> |   | -   | -   | 20  | A    |
| Diode Forward Voltage       | V <sub>SD</sub> | V <sub>GS</sub> =0V, I <sub>S</sub> =5.0A                                 | -   | -   | 1.4 | V    |
| Reverse Recovery Time       | t <sub>rr</sub> | V <sub>GS</sub> =0V, I <sub>S</sub> =5.0A,<br>dI <sub>F</sub> /dt=100A/μs | -   | 250 | -   | ns   |
| Reverse Recovery Charge     | Q <sub>rr</sub> |   | -   | 1.5 | -   | μC   |

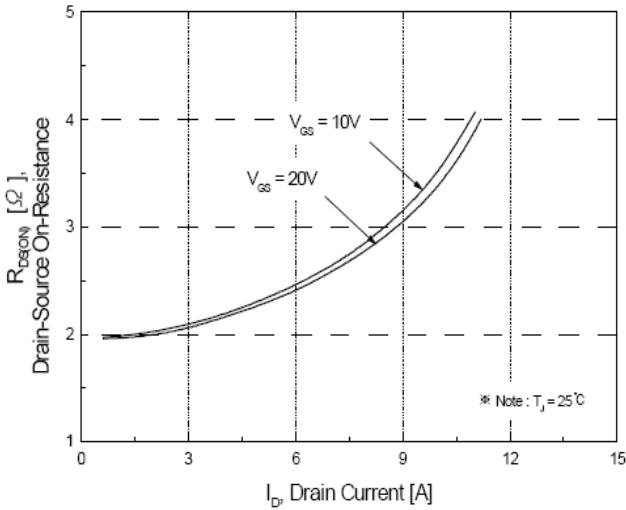
**CHARACTERISTICS CURVE**



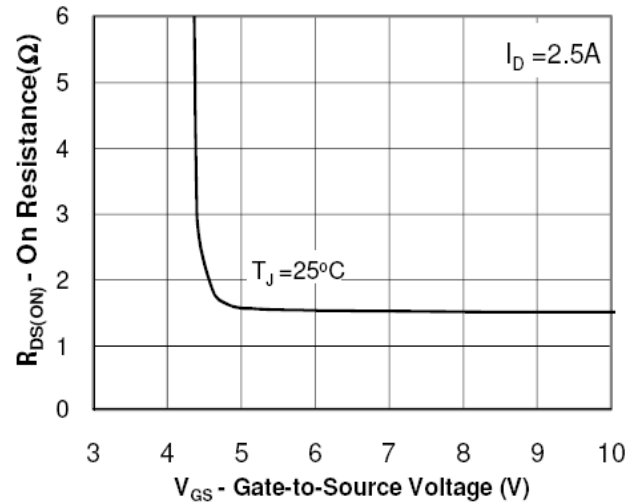
**Output Characteristic**



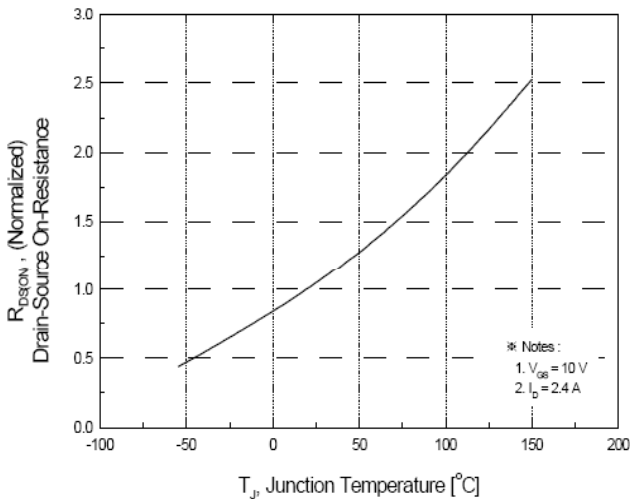
**Transfer Characteristic**



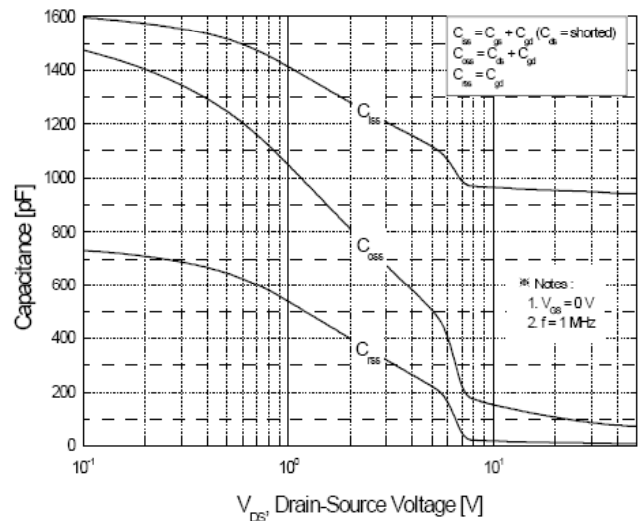
**On Resistance Vs Drain Current**



**On Resistance Vs Gate Source Voltage**



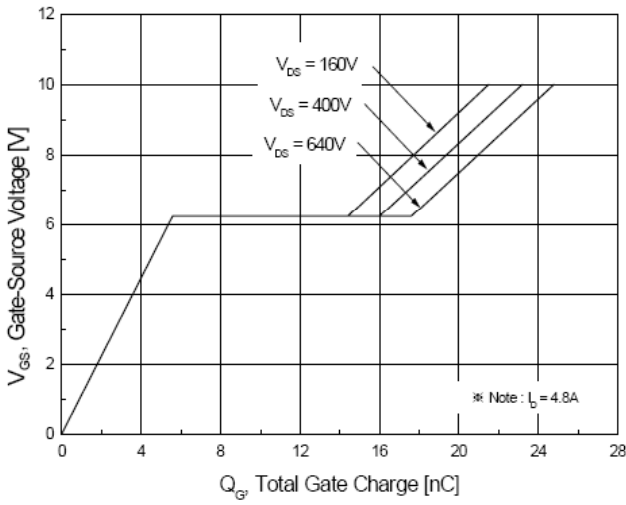
**On Resistance Vs Junction Temperature**



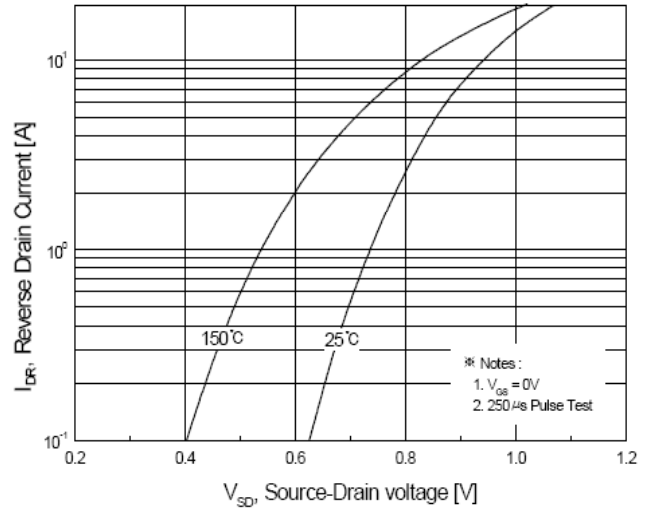
**Capacitance**



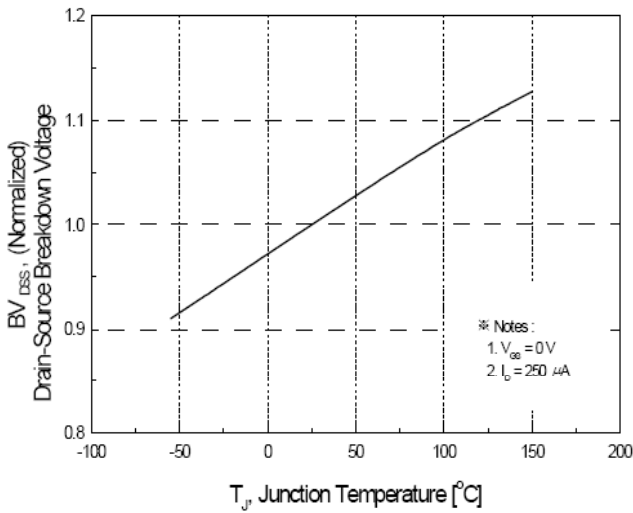
CHARACTERISTICS CURVE



Gate Charge Waveform



Source-Drain Diode Forward Voltage



Breakdown Voltage Vs Junction Temperature

**TO-220F MECHANICAL DATA**

UNIT: mm

| SYMBOL | MIN  | NOM | MAX  | SYMBOL | MIN  | NOM  | MAX   |
|--------|------|-----|------|--------|------|------|-------|
| A      | 4.5  |     | 4.9  | E1     | 6.5  | 7    | 7.5   |
| A1     | 2.3  |     | 2.9  | e      | 2.44 | 2.54 | 2.64  |
| b      | 0.65 |     | 0.9  | L      | 12.5 |      | 14.3  |
| b1     | 1.1  |     | 1.7  | L1     | 9.45 |      | 10.05 |
| b2     | 1.2  |     | 1.4  | L2     | 15   |      | 16    |
| c      | 0.35 |     | 0.65 | L3     | 3.2  |      | 4.4   |
| D      | 14.5 |     | 16.5 | ΦP     | 3    |      | 3.3   |
| D1     | 6.1  |     | 6.9  | Q      | 2.5  |      | 2.9   |
| E      | 9.6  |     | 10.3 |        |      |      |       |

