

**DESCRIPTION**

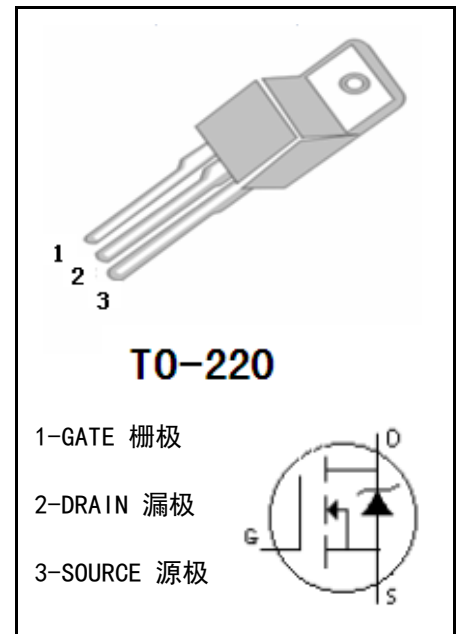
- ELECTRONIC BALLAST
- ELECTRONIC TRANSFORMER
- SWITCH MODE POWER SUPPLY

**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              | 100     | V    |
| gate-source Voltage                             | VGS              | ±20     | V    |
| Continuous Drain Current (T <sub>C</sub> =25°C) | ID               | 160     | A    |
| Drain Current-Pulsed                            | IDM              | 580     | A    |
| Total Dissipation                               | PD               | 370     | W    |
| Junction Temperature                            | T <sub>j</sub>   | 175     | °C   |
| Storage Temperature                             | T <sub>stg</sub> | -55-175 | °C   |
| Single Pulse Avalanche Energy<br>(L=0.5mH)      | EAS              | 1400    | 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  | 100 |      | V    |
| Gate Threshold Voltage              | VGS (TH) | VGS=VDS, ID=250 μ A | 2   | 4    | V    |
| Drain-source Leakage Current        | IDSS     | VDS=100V, VGS=0V    |     | 1    | uA   |
| Drain-Source Diode Forward Voltage  | VSD      | VGS=0V, IS=20A      |     | 1.2  | V    |
| Gate-body Leakage Current (VDS = 0) | IGSS     | VGS=±20V            |     | ±100 | nA   |
| Static Drain-source On Resistance   | RDS (ON) | VGS=10V, ID=20A     |     | 6    | mΩ   |
| Thermal Resistance Junction-case    | RthJ-c   |                     |     | 0.4  | °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 | -   | 8150 | -   | pF   |
| output Capacitance           | C <sub>oss</sub> |  | -   | 885  | -   | pF   |
| Reverse Transfer Capacitance | C <sub>rss</sub> |  | -   | 588  | -   | pF   |

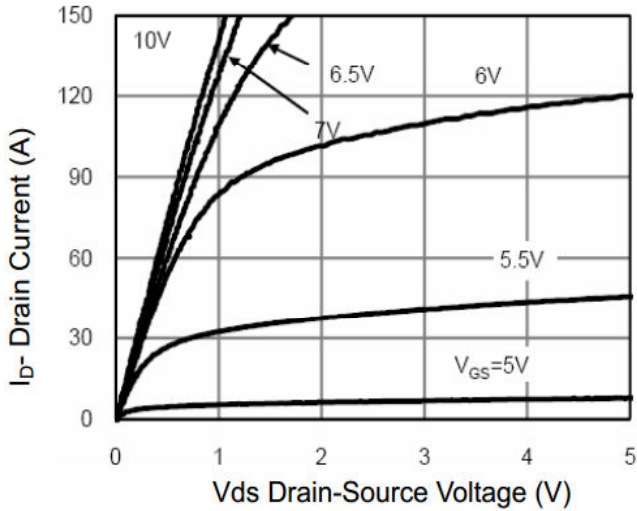
**■ SWITCHING CHARACTERISTICS (T<sub>c</sub>=25°C)**

| CHARACTERISTICS     | SYMBOL              | TEST CONDITION  | MIN | TYP | MAX | UNIT |
|---------------------|---------------------|---|-----|-----|-----|------|
| Turn-On Delay Time  | t <sub>d(on)</sub>  | V <sub>DS</sub> =50V, R <sub>L</sub> =2.5Ω,<br>V <sub>GS</sub> =10V, R <sub>G</sub> =2.5Ω | -   | 30  | -   | ns   |
| Turn-On Rise Time   | t <sub>r</sub>      |   | -   | 23  | -   | ns   |
| Turn-Off Delay Time | t <sub>d(off)</sub> |   | -   | 42  | -   | ns   |
| Turn-Off Rise Time  | t <sub>f</sub>      |   | -   | 16  | -   | ns   |
| Total Gate Charge   | Q <sub>g</sub>      | V <sub>DS</sub> =50V, I <sub>D</sub> =20A,<br>V <sub>GS</sub> =10V                        | -   | 142 |     | nC   |
| Gate-Source Charge  | Q <sub>gs</sub>     |   | -   | 33  |     | nC   |
| Gate-Drain Charge   | Q <sub>gd</sub>     |   | -   | 55  |     | nC   |

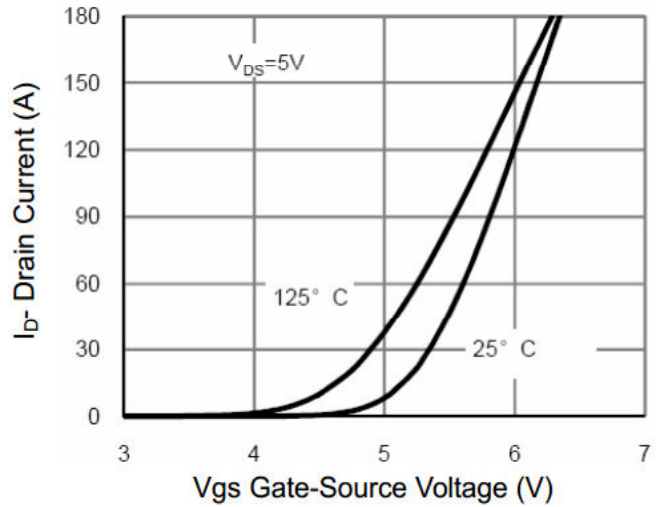
**■ DRAIN-SOURCE DIODE MAXIMUM RATINGS AND CHARACTERISTICS (T<sub>c</sub>=25°C)**

| CHARACTERISTICS         | SYMBOL          | TEST CONDITION   | MIN | TYP | MAX | UNIT |
|-------------------------|-----------------|--|-----|-----|-----|------|
| Diode Forward Voltage   | V <sub>SD</sub> | V <sub>GS</sub> =0V, I <sub>S</sub> =20A                                 | -   | -   | 1.2 | V    |
| Reverse Recovery Time   | t <sub>rr</sub> | V <sub>GS</sub> =0V, I <sub>S</sub> =20A,<br>dI <sub>F</sub> /dt=100A/μs | -   | 62  |     | ns   |
| Reverse Recovery Charge | Q <sub>rr</sub> |  | -   | 180 |     | μC   |

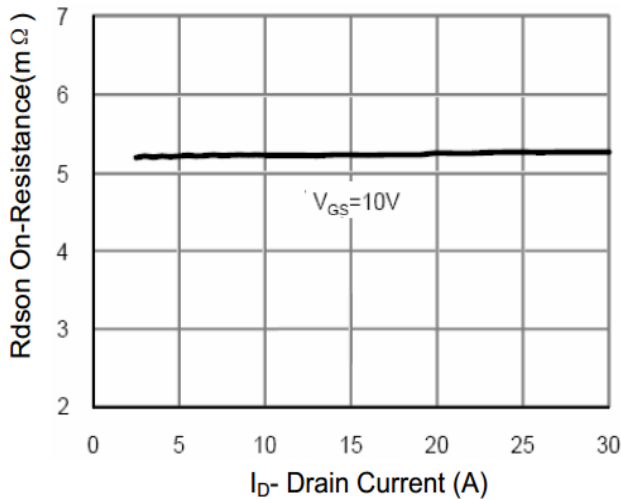
**CHARACTERISTICS CURVE**



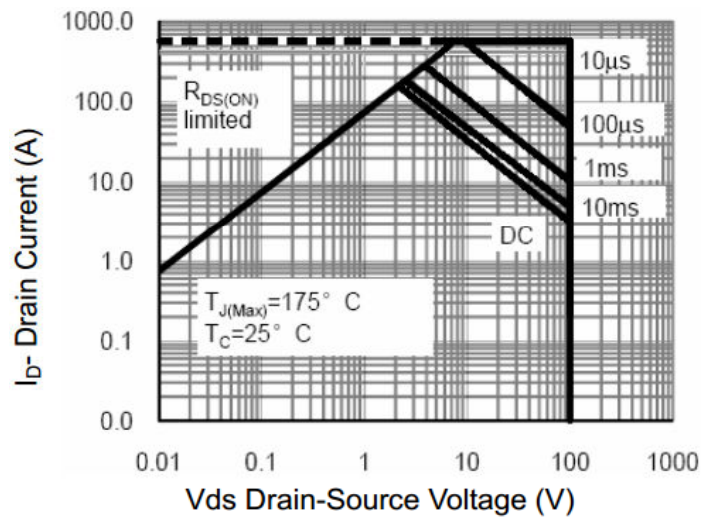
**Output Characteristic**



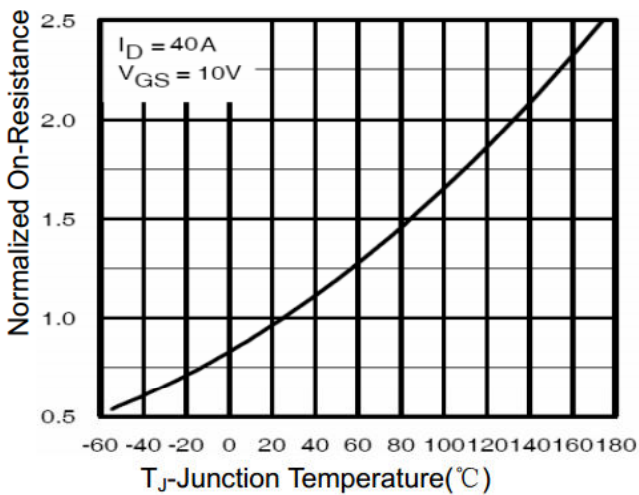
**Transfer Characteristic**



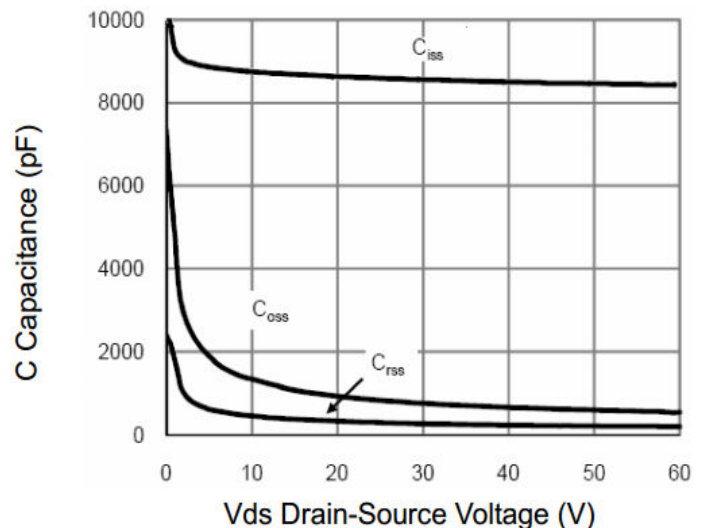
**On Resistance Vs Drain Current**



**Safe Operation Area**

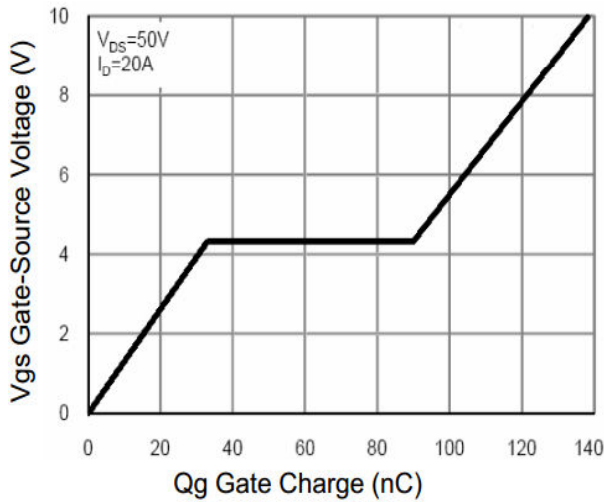


**On Resistance Vs Junction Temperature**

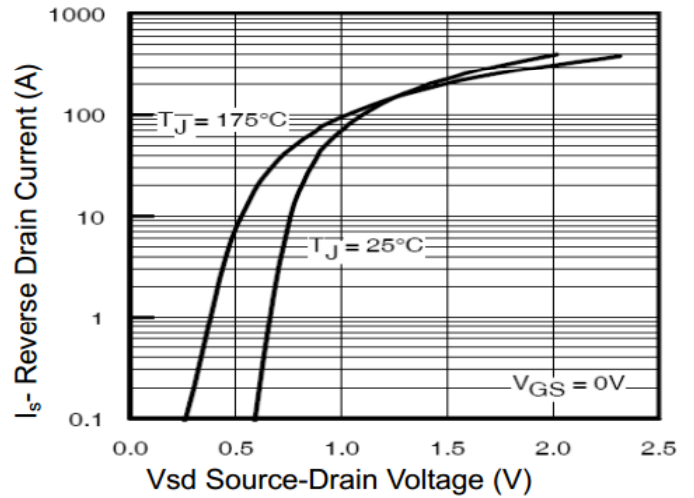


**Capacitance**

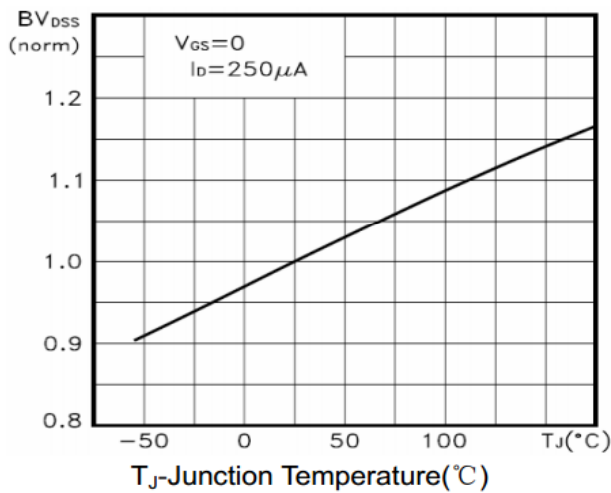
■ CHARACTERISTICS CURVE



Gate Charge Waveform



Source-Drain Diode Forward Voltage



Breakdown Voltage Vs Junction Temperature



TO-220 MECHANICAL DATA

UNIT: mm

| SYMBOL | MIN  | NOM | MAX  | SYMBOL | MIN  | NOM  | MAX  |
|--------|------|-----|------|--------|------|------|------|
| A      | 4    |     | 4.8  | e      | 2.44 | 2.54 | 2.64 |
| B      | 1.2  |     | 1.4  | F      | 1.1  |      | 1.4  |
| B1     | 1    |     | 1.4  | L      | 12.5 |      | 14.5 |
| b1     | 0.75 |     | 0.95 | L1     | 3    | 3.5  | 4    |
| c      | 0.4  |     | 0.55 | ΦP     | 3.7  | 3.8  | 3.9  |
| D      | 15   |     | 16.5 | Q      | 2.5  |      | 3    |
| D1     | 5.9  |     | 6.9  | Q1     | 2    |      | 2.9  |
| E      | 9.9  |     | 10.7 |        |      |      |      |

