# N-channel Enhancement Mode Power MOSFET

## Features

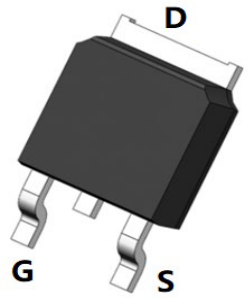
- $V_{DS}$= 200 V, $I_D$= 8 A
  $R_{DS(ON)}$ < 260 mΩ @ $V_{GS}$ = 10V
  $R_{DS(ON)}$ < 300 mΩ @ $V_{GS}$ =4.5V

## General Features

- Advanced Trench Technology
- Provide Excellent RDS(ON) and Low Gate Charge
- Lead Free and Green Available

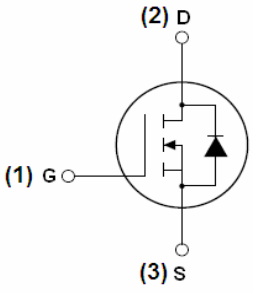
*100% UIS TESTED!*
*100% ΔVds TESTED!*

RoHS




**TO-252-2L Top View**


**Pin Assignment**




**Schematic Diagram**

## Absolute Maximum Ratings ($T_C$=25℃unless otherwise noted)

| Parameter | ymbol | Limit | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 200 | |
| Gate-Source Voltage | $V_{GS}$ | ±20 | |
| Drain Current-Continuous | $I_D$ | 8 | |
| Drain Current-Continuous($T_C$=100℃) | $_D$(100℃) | 5. | A |
| Pulsed Drain Current | $I_{DM}$ | 20 | |
| Maximum Power Dissipation | $P_D$ | 55 | |
| Operating Junction and Storage Temperature Range | $T_J$,$T_{STG}$ | -55 To 150 | ℃ |

## Thermal Characteristic

| | | | |
|---|---|---|---|
| Thermal Resistance,Junction-to-Case(Note 2) | $R_{\theta JC}$ | 2.3 | ℃/W |

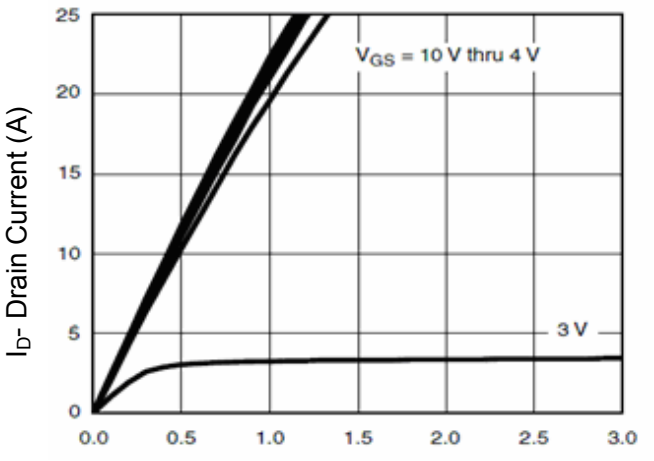
## Electrical Characteristics ($T_C$=25℃unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250μA | 200 | 215 | - | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=200V,$V_{GS}$=0V | - | - | 1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±20V,$V_{DS}$=0V | - | - | ±100 | nA |
| **On Characteristics** (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 1 | | 3.0 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=4.5A | - | 260 | | mΩ |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=25V,$I_D$=4.5A | 3 | - | - | S |
| **Dynamic Characteristics** (Note4) | | | | | | |
| Input Capacitance | $C_{lss}$ | $V_{DS}$=25V,$V_{GS}$=0V, F=1.0MHz | | 540 | | PF |
| Output Capacitance | $C_{oss}$ | | | 90 | | PF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 35 | | PF |
| **Switching Characteristics** (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$=100V,$I_D$=4.5A $V_{GS}$=10V,$R_{GEN}$=5Ω | - | 6.4 | - | nS |
| Turn-on Rise Time | $t_r$ | | - | 11 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 20 | - | nS |
| Turn-Off Fall Time | $t_f$ | | - | 12 | - | nS |
| Total Gate Charge | $Q_g$ | $V_{DS}$=160V,$I_D$=4.5A, $V_{GS}$=10V | - | 16 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 3.4 | - | nC |
| Gate-Drain Charge | $Q_{gd}$ | | - | 5.1 | - | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| Diode Forward Voltage (Note 3) | $V_{SD}$ | $V_{GS}$=0V,$I_S$=8A | - | - | 1.2 | V |
| Diode Forward Current (Note 2) | $I_S$ | | - | - | 8 | A |

Notes:

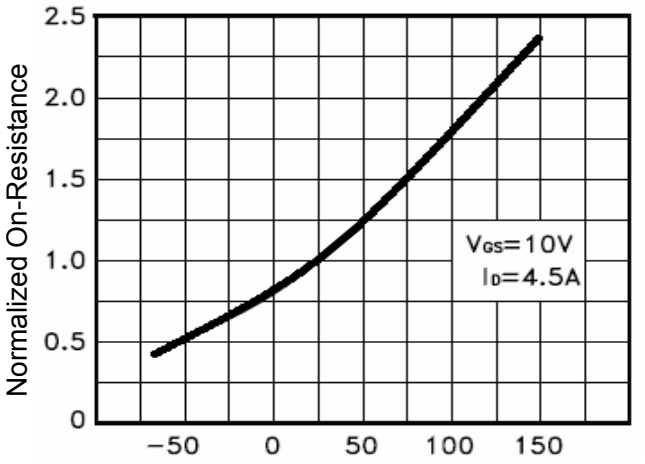
**1.** Repetitive Rating: Pulse width limited by maximum junction temperature.
**2.** Surface Mounted on FR4 Board, t ≤ 10 sec.
**3.** Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
**4.** Guaranteed by design, not subject to production

## Typical Electrical and Thermal Characteristics (Curves)



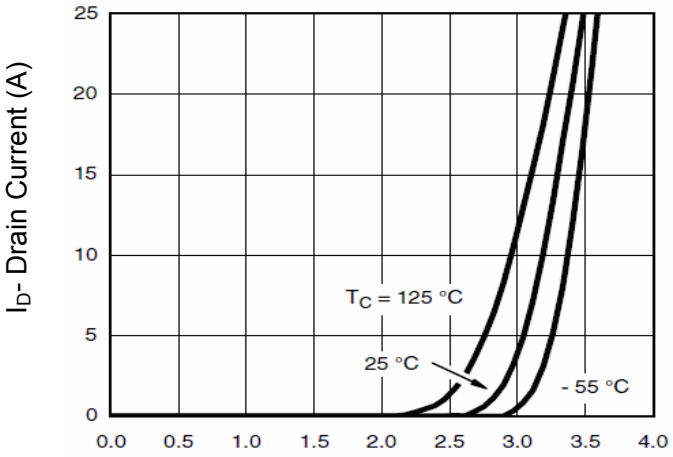

Vds Drain-Source Voltage (V)

**Figure 1 Output Characteristics**



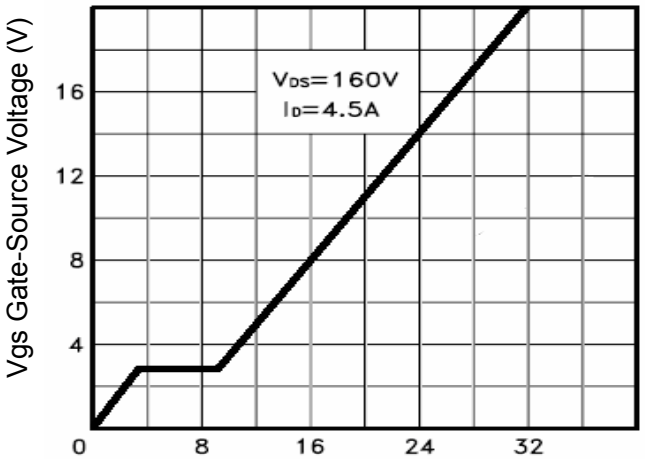

$T_J$-Junction Temperature(℃)

**Figure 4 Rdson-JunctionTemperature**



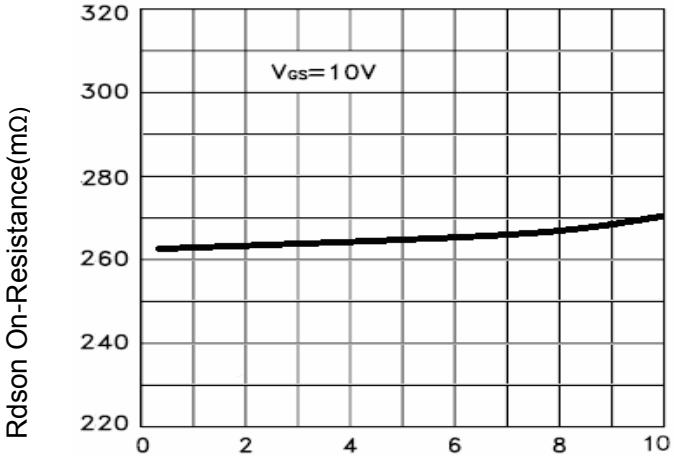

Vgs Gate-Source Voltage (V)

**Figure 2 Transfer Characteristics**



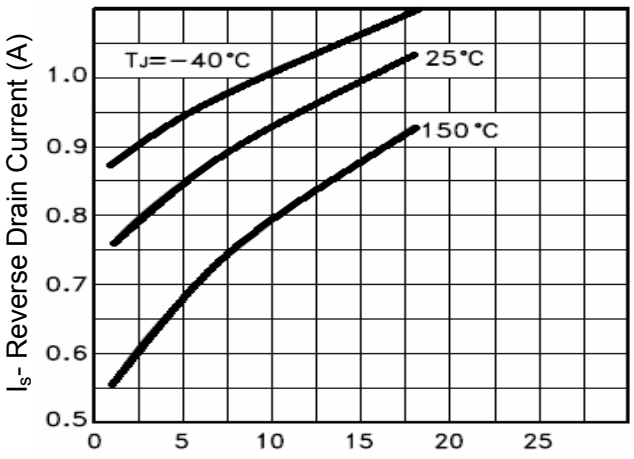

Qg Gate Charge (nC)

**Figure 5 Gate Charge**




$I_D$- Drain Current (A)

**Figure 3 Rdson- Drain Current**




Vsd Source-Drain Voltage (V)

**Figure 6 Source- Drain Diode Forward**

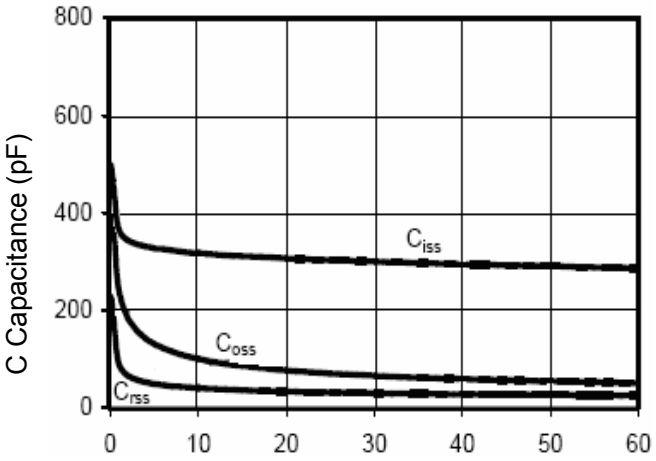



**Figure 7 Capacitance vs Vds**

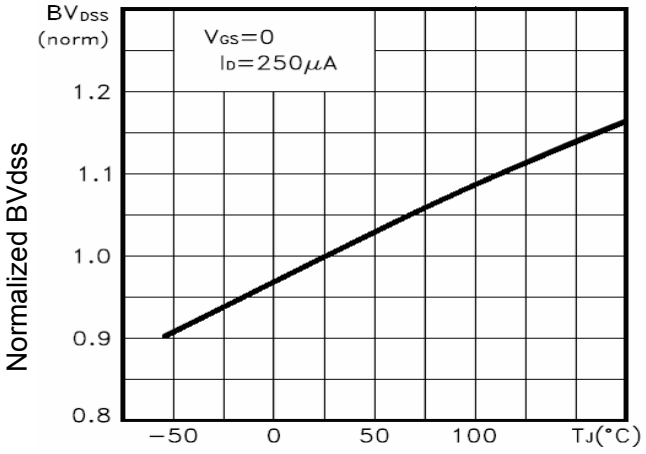



**Figure 9 $BV_{DSS}$ vs Junction Temperature**

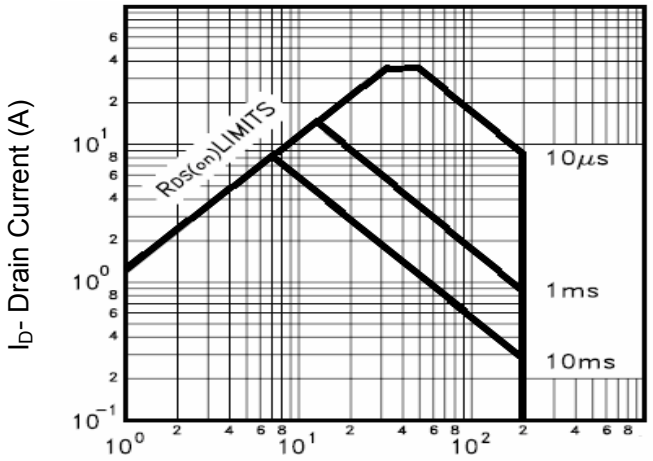



**Figure 8 Safe Operation Area**

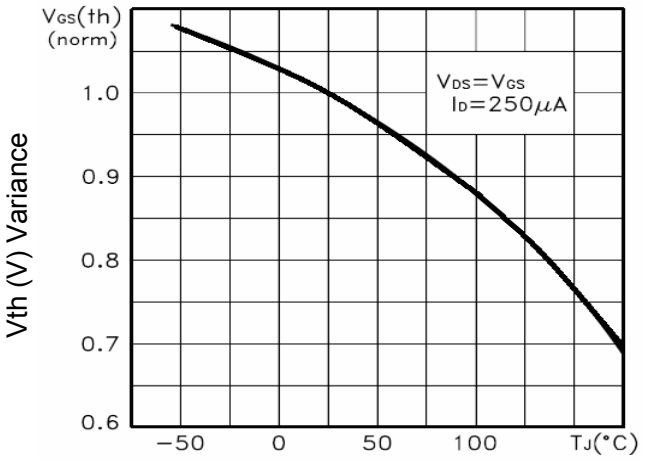



**Figure 10 $V_{GS(th)}$ vs Junction Temperature**

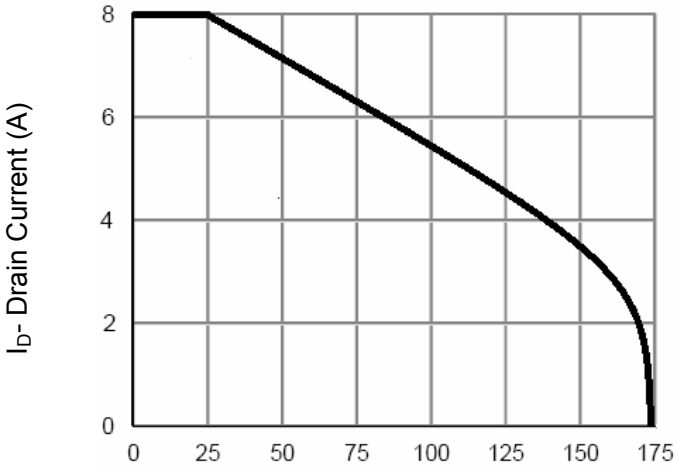



**Figure 11 Current De-rating**

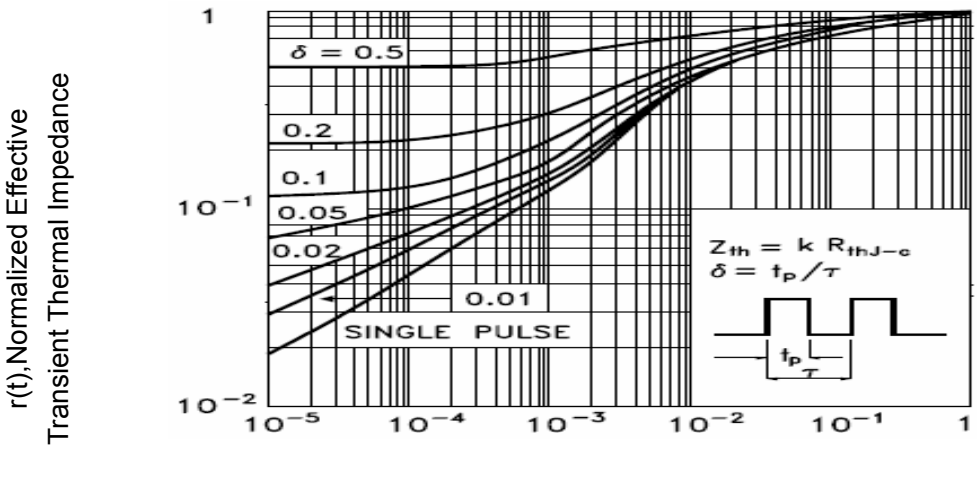



**Figure 12 Normalized Maximum Transient Thermal Impedance**