

N-channel Enhancement Mode Power MOSFET

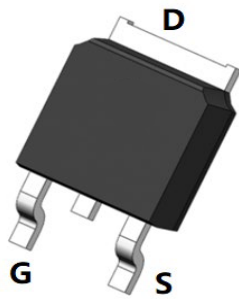
Features

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

General Features

- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free and Green Available

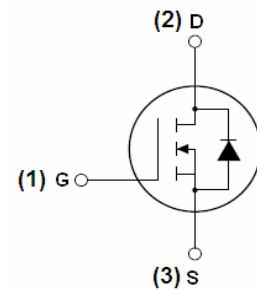
100% UIS TESTED!
 100% ΔV_{ds} TESTED!



TO-252-2L Top View



Pin Assignment



Schematic Diagram

Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$ unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|--------------------------|------------|------------------|
| Drain-Source Voltage | V_{DS} | 200 | |
| Gate-Source Voltage | V_{GS} | ± 20 | |
| Drain Current-Continuous | I_D | 8 | |
| Drain Current-Continuous($T_C = 100^\circ\text{C}$) | $I_D(100^\circ\text{C})$ | 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 | $^\circ\text{C}$ |

Thermal Characteristic

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

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

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|--------------|--|-----|-----|-----------|------------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 200 | 215 | - | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=200V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | - | - | ± 100 | nA |
| On Characteristics (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1 | | 3.0 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=10V, I_D=4.5A$ | - | 260 | | m Ω |
| Forward Transconductance | g_{FS} | $V_{DS}=25V, I_D=4.5A$ | 3 | - | - | S |
| Dynamic Characteristics (Note 4) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, V_{GS}=0V,$ $F=1.0\text{MHz}$ | | 540 | | PF |
| Output Capacitance | C_{oss} | | | 90 | | PF |
| Reverse Transfer Capacitance | C_{rss} | | | 35 | | PF |
| Switching Characteristics (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=100V, I_D=4.5A$ $V_{GS}=10V, R_{GEN}=5\Omega$ | - | 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, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

Typical Electrical and Thermal Characteristics (Curves)

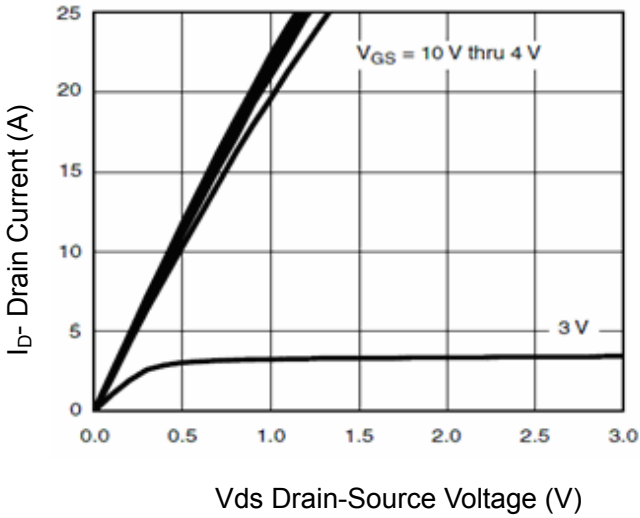


Figure 1 Output Characteristics

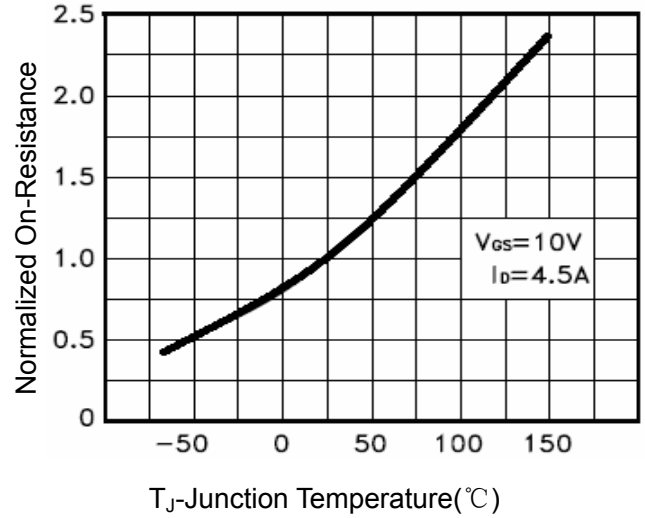


Figure 4 R_{dson} -Junction Temperature

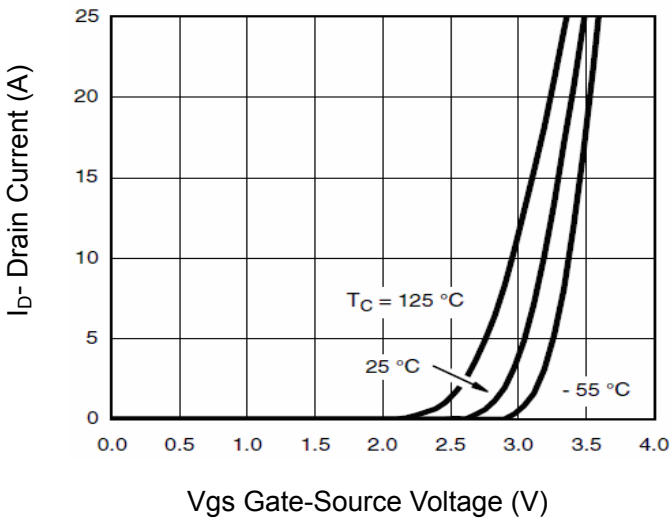


Figure 2 Transfer Characteristics

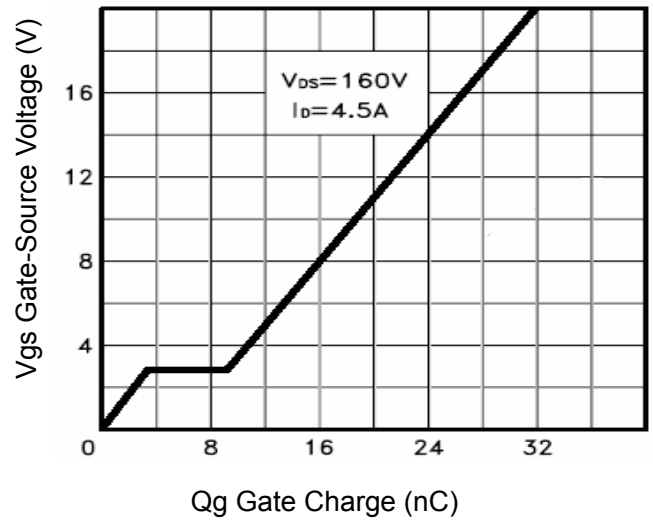


Figure 5 Gate Charge

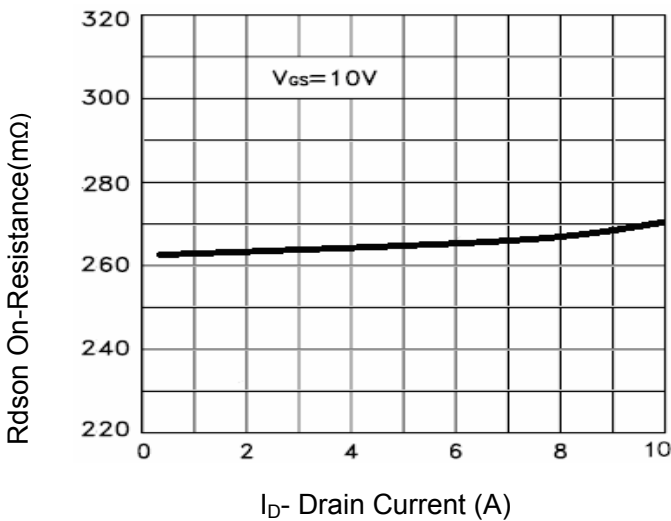


Figure 3 R_{dson} - Drain Current

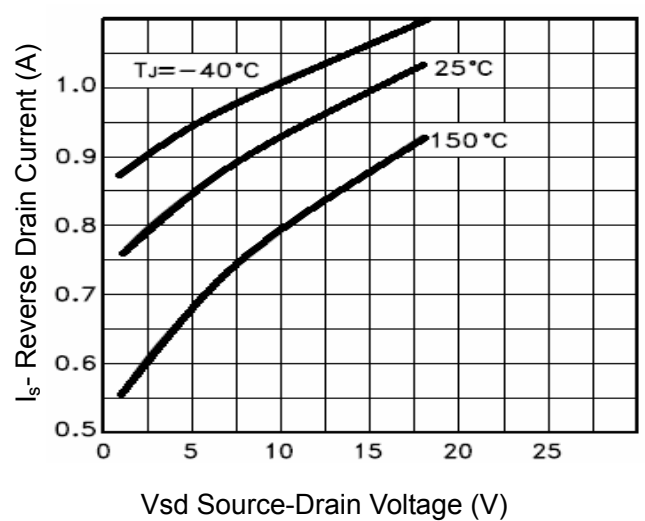


Figure 6 Source- Drain Diode Forward

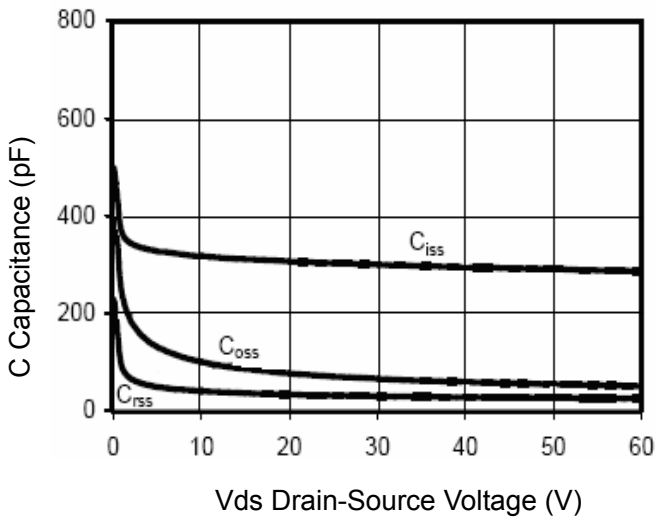


Figure 7 Capacitance vs Vds

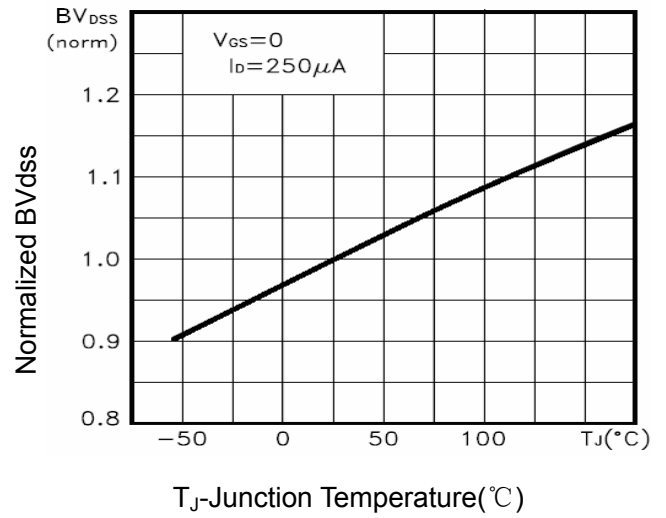


Figure 9 BV_{DSS} vs Junction Temperature

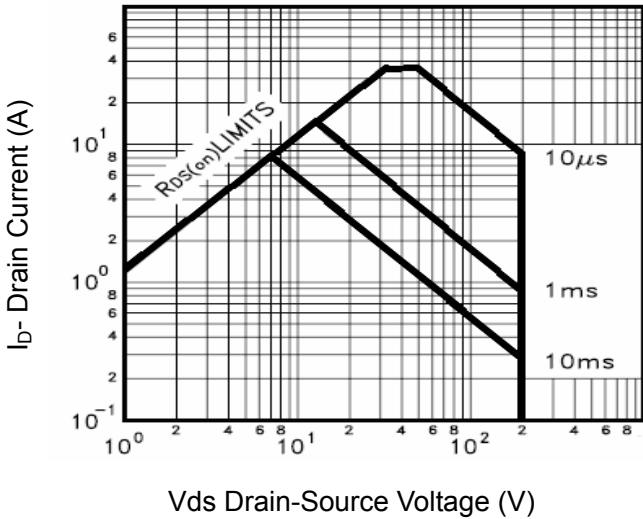


Figure 8 Safe Operation Area

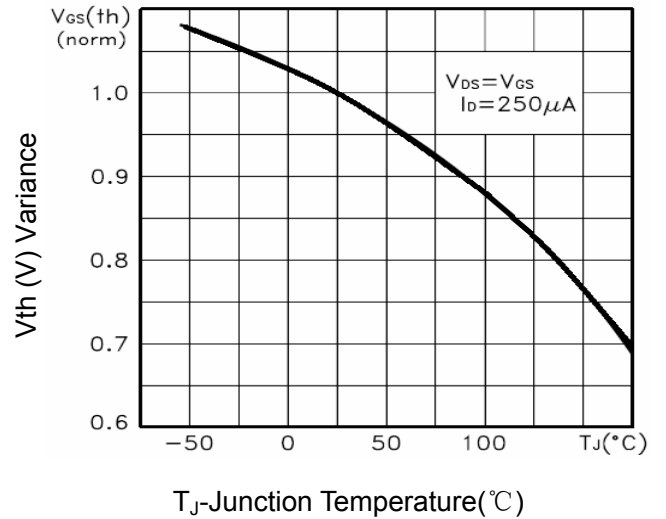


Figure 10 $V_{GS(th)}$ vs Junction Temperature

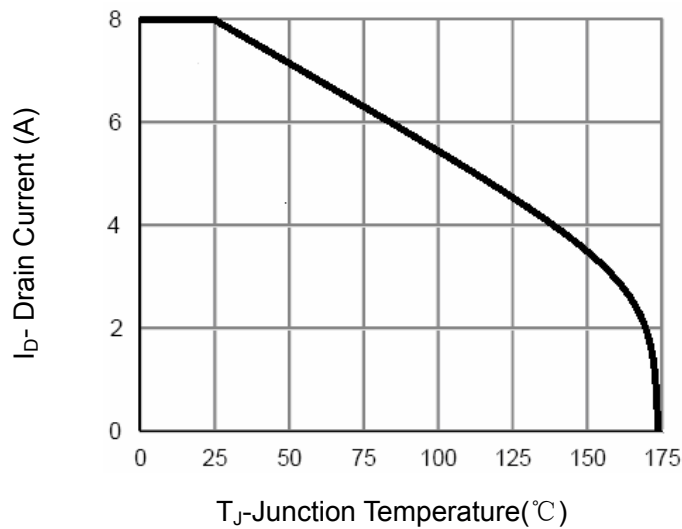


Figure 11 Current De-rating

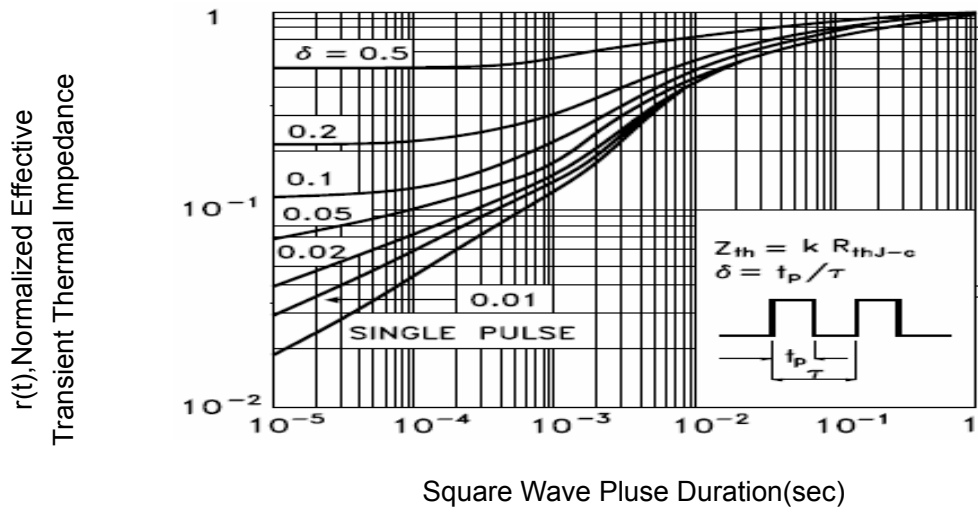


Figure 12 Normalized Maximum Transient Thermal Impedance