# N & P-Channel 150-V (D-S) MOSFET

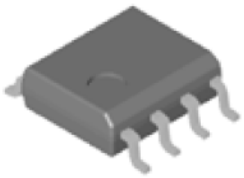
| PRODUCT SUMMARY | | |
|---|---|---|
| $V_{DS}$ (V) | $r_{DS(on)}$ (mΩ) | $I_D$ (A) |
| 150 | 255 @ $V_{GS}$ = 10V | 2.3 |
| | 290 @ $V_{GS}$ = 4.5V | 2.2 |
| -150 | 500 @ $V_{GS}$ = -10V | -1.7 |
| | 530 @ $V_{GS}$ = -4.5V | -1.6 |

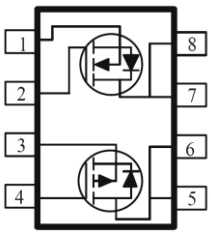
**Key Features:**
- Low $r_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed

**Typical Applications:**
- White LED boost converters
- Automotive Systems
- Industrial DC/DC Conversion Circuits

Pb-free
RoHS COMPLIANT
HALOGEN FREE

SO-8






| ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25°C UNLESS OTHERWISE NOTED) | | | | | |
|---|---|---|---|---|---|
| **Parameter** | | **Symbol** | **Nch Limit** | **Pch Limit** | **Units** |
| Drain-Source Voltage | | $V_{DS}$ | 150 | -150 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±20 | ±20 | |
| Continuous Drain Current [a] | $T_A$=25°C | $I_D$ | 2.3 | -1.7 | A |
| | $T_A$=70°C | | 1.8 | -1.3 | |
| Pulsed Drain Current [b] | | $I_{DM}$ | 9 | -7 | |
| Continuous Source Current (Diode Conduction) [a] | | $I_S$ | 2.5 | -2.3 | A |
| Power Dissipation [a] | $T_A$=25°C | $P_D$ | 2.1 | 2.1 | W |
| | $T_A$=70°C | | 1.3 | 1.3 | |
| Operating Junction and Storage Temperature Range | | $T_J$, $T_{stg}$ | -55 to 150 | | °C |

| THERMAL RESISTANCE RATINGS | | | | |
|---|---|---|---|---|
| **Parameter** | | **Symbol** | **Maximum** | **Units** |
| Maximum Junction-to-Ambient [a] | t <= 10 sec | $R_{\theta JA}$ | 62.5 | °C/W |
| | Steady State | | 110 | |

Notes
a. Surface Mounted on 1” x 1” FR4 Board.
b. Pulse width limited by maximum junction temperature

## Electrical Characteristics

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250 uA **(Nch)** | 1 | | | V |
| | | $V_{DS}$ = $V_{GS}$, $I_D$ = -250 uA **(Pch)** | -1 | | | V |
| Gate-Body Leakage | $I_{GSS}$ | $V_{DS}$ = 0 V, $V_{GS}$ = ±20 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 120 V, $V_{GS}$ = 0 V **(Nch)** | | | 1 | uA |
| | | $V_{DS}$ = -120 V, $V_{GS}$ = 0 V **(Pch)** | | | -1 | |
| On-State Drain Current [a] | $I_{D(on)}$ | $V_{DS}$ = 5 V, $V_{GS}$ = 10 V **(Nch)** | 3.5 | | | A |
| | | $V_{DS}$ = -5 V, $V_{GS}$ = -10 V **(Pch)** | -2.5 | | | A |
| Drain-Source On-Resistance [a] | $r_{DS(on)}$ | $V_{GS}$ = 10 V, $I_D$ = 2.1 A **(Nch)** | | | 255 | mΩ |
| | | $V_{GS}$ = 4.5 V, $I_D$ = 1.7 A **(Nch)** | | | 290 | |
| | | $V_{GS}$ = -10 V, $I_D$ = -1.4 A **(Pch)** | | | 500 | mΩ |
| | | $V_{GS}$ = -4.5 V, $I_D$ = -1 A **(Pch)** | | | 530 | |
| Forward Transconductance [a] | $g_{fs}$ | $V_{DS}$ = 15 V, $I_D$ = 2.1 A **(Nch)** | | 11 | | S |
| | | $V_{DS}$ = -15 V, $I_D$ = -1.4 A **(Pch)** | | 11 | | S |
| Diode Forward Voltage [a] | $V_{SD}$ | $I_S$ = 1.3 A, $V_{GS}$ = 0 V **(Nch)** | | 0.76 | | V |
| | | $I_S$ = 1.2 A, $V_{GS}$ = 0 V **(Pch)** | | 0.75 | | V |
| **Dynamic** [b] | | | | | | |
| Total Gate Charge | $Q_g$ | N - Channel $V_{DS}$ = 75 V, $V_{GS}$ = 4.5 V, $I_D$ = 2.1 A | | 10 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 4.0 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 4.7 | | |
| Total Gate Charge | $Q_g$ | P - Channel $V_{DS}$ = -75 V, $V_{GS}$ = -4.5 V, $I_D$ = -1.4 A | | 6 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 2.0 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 2.9 | | |
| Turn-On Delay Time | $t_{d(on)}$ | N - Channel $V_{DD}$ = 75 V, $R_L$ = 35.7 Ω, $I_D$ = 2.1 A, $V_{GEN}$ = 10 V, $R_{GEN}$ = 6 Ω | | 7 | | ns |
| Rise Time | $t_r$ | | | 7 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 47 | | |
| Fall Time | $t_f$ | | | 20 | | |
| Turn-On Delay Time | $t_{d(on)}$ | P - Channel $V_{DD}$ = -75 V, $R_L$ = 53.6 Ω, $I_D$ = -1.4 A, $V_{GEN}$ = -10 V, $R_{GEN}$ = 6 Ω | | 8 | | ns |
| Rise Time | $t_r$ | | | 7 | | |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 96 | | |
| Fall Time | $t_f$ | | | 79 | | |
| Input Capacitance | $C_{iss}$ | N - Channel $V_{DS}$ = 15 V, $V_{GS}$ = 0 V, f = 1 MHz | | 1016 | | pF |
| Output Capacitance | $C_{oss}$ | | | 83 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 40 | | |
| Input Capacitance | $C_{iss}$ | P - Channel $V_{DS}$ = -15 V, $V_{GS}$ = 0 V, f = 1 MHz | | 1008 | | pF |
| Output Capacitance | $C_{oss}$ | | | 100 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 61 | | |