

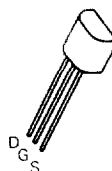
# N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## 2N7000P

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### FEATURES

- \* 60 Volt  $V_{CEO}$
- \*  $R_{DS(on)} = 5 \Omega$



E-Line  
TO92 Compatible

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                                | SYMBOL         | VALUE       | UNIT               |
|----------------------------------------------------------|----------------|-------------|--------------------|
| Drain-Source Voltage                                     | $V_{DS}$       | 60          | V                  |
| Continuous Drain Current at $T_{amb}=25^{\circ}\text{C}$ | $I_D$          | 200         | mA                 |
| Pulsed Drain Current                                     | $I_{DM}$       | 500         | mA                 |
| Gate-Source Voltage                                      | $V_{GS}$       | $\pm 40$    | V                  |
| Power Dissipation at $T_{amb}=25^{\circ}\text{C}$        | $P_{tot}$      | 400         | mW                 |
| Operating and Storage Temperature Range                  | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}\text{C}$ |

### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

| PARAMETER                                   | SYMBOL       | MIN. | MAX.       | UNIT                | CONDITIONS.                                                                                               |
|---------------------------------------------|--------------|------|------------|---------------------|-----------------------------------------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage              | $BV_{DSS}$   | 60   |            | V                   | $I_D=10\mu\text{A}$ , $V_{GS}=0\text{V}$                                                                  |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | 0.8  | 3          | V                   | $I_D=1\text{mA}$ , $V_{DS}=V_{GS}$                                                                        |
| Gate-Body Leakage                           | $I_{GSS}$    |      | 10         | nA                  | $V_{GS}=\pm 15\text{V}$ , $V_{DS}=0\text{V}$                                                              |
| Zero Gate Voltage Drain Current             | $I_{DSS}$    |      | 1<br>1     | $\mu\text{A}$<br>mA | $V_{DS}=48\text{V}$ , $V_{GS}=0$<br>$V_{DS}=48\text{V}$ , $V_{GS}=0\text{V}$ , $T=125^{\circ}\text{C}(2)$ |
| On-State Drain Current(1)                   | $I_{D(on)}$  | 75   |            | mA                  | $V_{DS}=10\text{V}$ , $V_{GS}=4.5\text{V}$                                                                |
| Static Drain-Source On-State Voltage (1)    | $V_{DS(on)}$ |      | 2.5<br>0.4 | V<br>V              | $V_{GS}=10\text{V}$ , $I_D=500\text{mA}$<br>$V_{GS}=4.5\text{V}$ , $I_D=75\text{mA}$                      |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ |      | 5          | $\Omega$            | $V_{GS}=10\text{V}$ , $I_D=500\text{mA}$                                                                  |
| Forward Transconductance(1)(2)              | $g_{fs}$     | 100  |            | mS                  | $V_{DS}=10\text{V}$ , $I_D=200\text{mA}$                                                                  |
| Input Capacitance (2)                       | $C_{iss}$    |      | 60         | pF                  | $V_{DS}=25\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$                                                |
| Common Source Output Capacitance (2)        | $C_{oss}$    |      | 25         | pF                  |                                                                                                           |
| Reverse Transfer Capacitance (2)            | $C_{rss}$    |      | 5          | pF                  |                                                                                                           |
| Turn-On Time (2)(3)                         | $t_{(on)}$   |      | 10         | ns                  | $V_{DD}=15\text{V}$ , $I_D=500\text{mA}$<br>$R_g=25\Omega$ , $R_L=25\Omega$                               |
| Turn-Off Time (2)(3)                        | $t_{(off)}$  |      | 10         | ns                  |                                                                                                           |

(1) Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$  (2) Sample test.

(3) Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator