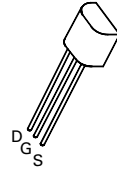


# P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVP4105A

**ISSUE 2 – MARCH 94**
**FEATURES**

- \* 50 Volt  $V_{DS}$
- \*  $R_{DS(on)}=10\Omega$
- \* Low threshold



**E-Line**  
**TO92 Compatible**

**ABSOLUTE MAXIMUM RATINGS.**

| PARAMETER                                                | SYMBOL         | VALUE       | UNIT               |
|----------------------------------------------------------|----------------|-------------|--------------------|
| Drain-Source Voltage                                     | $V_{DS}$       | -50         | V                  |
| Continuous Drain Current at $T_{amb}=25^{\circ}\text{C}$ | $I_D$          | -175        | mA                 |
| Pulsed Drain Current                                     | $I_{DM}$       | -520        | mA                 |
| Gate Source Voltage                                      | $V_{GS}$       | $\pm 20$    | V                  |
| Power Dissipation at $T_{amb}=25^{\circ}\text{C}$        | $P_{tot}$      | 625         | 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              | $BV_{DSS}$   | -50  |                    | V                                    | $I_D=-0.25\text{mA}$ , $V_{GS}=0\text{V}$                                                                                                                        |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | -0.8 | -2.0               | V                                    | $I_D=-1\text{mA}$ , $V_{DS}=V_{GS}$                                                                                                                              |
| Gate-Body Leakage                           | $I_{GSS}$    |      | 10                 | nA                                   | $V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$                                                                                                                     |
| Zero Gate Voltage Drain Current             | $I_{DSS}$    |      | -15<br>-60<br>-100 | $\mu\text{A}$<br>$\mu\text{A}$<br>nA | $V_{DS}=-50\text{V}$ , $V_{GS}=0\text{V}$<br>$V_{DS}=-50\text{V}$ , $V_{GS}=0\text{V}$ , $T=125^{\circ}\text{C}(2)$<br>$V_{DS}=-25\text{V}$ , $V_{GS}=0\text{V}$ |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ |      | 10                 | $\Omega$                             | $V_{GS}=-5\text{V}$ , $I_D=-100\text{mA}$                                                                                                                        |
| Forward Transconductance (1)(2)             | $g_{fs}$     | 50   |                    | mS                                   | $V_{DS}=-25\text{V}$ , $I_D=-100\text{mA}$                                                                                                                       |
| Input Capacitance (2)(4)                    | $C_{iss}$    |      | 40                 | pF                                   | $V_{DS}=-25\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$                                                                                                      |
| Common Source Output Capacitance (2)(4)     | $C_{oss}$    |      | 15                 | pF                                   |                                                                                                                                                                  |
| Reverse Transfer Capacitance (2)(4)         | $C_{rss}$    |      | 6                  | pF                                   |                                                                                                                                                                  |
| Turn-On Delay Time (2)(3)(4)                | $t_{d(on)}$  |      | 10                 | ns                                   | $V_{DD}\approx -30\text{V}$ , $I_D=-270\text{mA}$                                                                                                                |
| Rise Time (2)(3)(4)                         | $t_r$        |      | 10                 | ns                                   |                                                                                                                                                                  |
| Turn-Off Delay Time (2)(3)(4)               | $t_{d(off)}$ |      | 18                 | ns                                   |                                                                                                                                                                  |
| Fall Time (2)(3)(4)                         | $t_f$        |      | 25                 | 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