

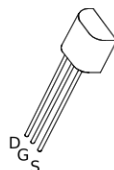
# P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVP2106A

ISSUE 2 - MARCH 94

### FEATURES

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



**E-Line  
TO92 Compatible**

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER   | SYMBOL         | VALUE       | UNIT        |
|---|----------------|-------------|-------------|
| Drain-Source Voltage                              | $V_{DS}$       | -60         | V           |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | $I_D$          | -280        | mA          |
| Pulsed Drain Current                              | $I_{DM}$       | -4          | A           |
| Gate Source Voltage                               | $V_{GS}$       | $\pm 20$    | V           |
| Power Dissipation at $T_{amb}=25^{\circ}C$        | $P_{tot}$      | 700         | mW          |
| Operating and Storage Temperature Range           | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}C$ |

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

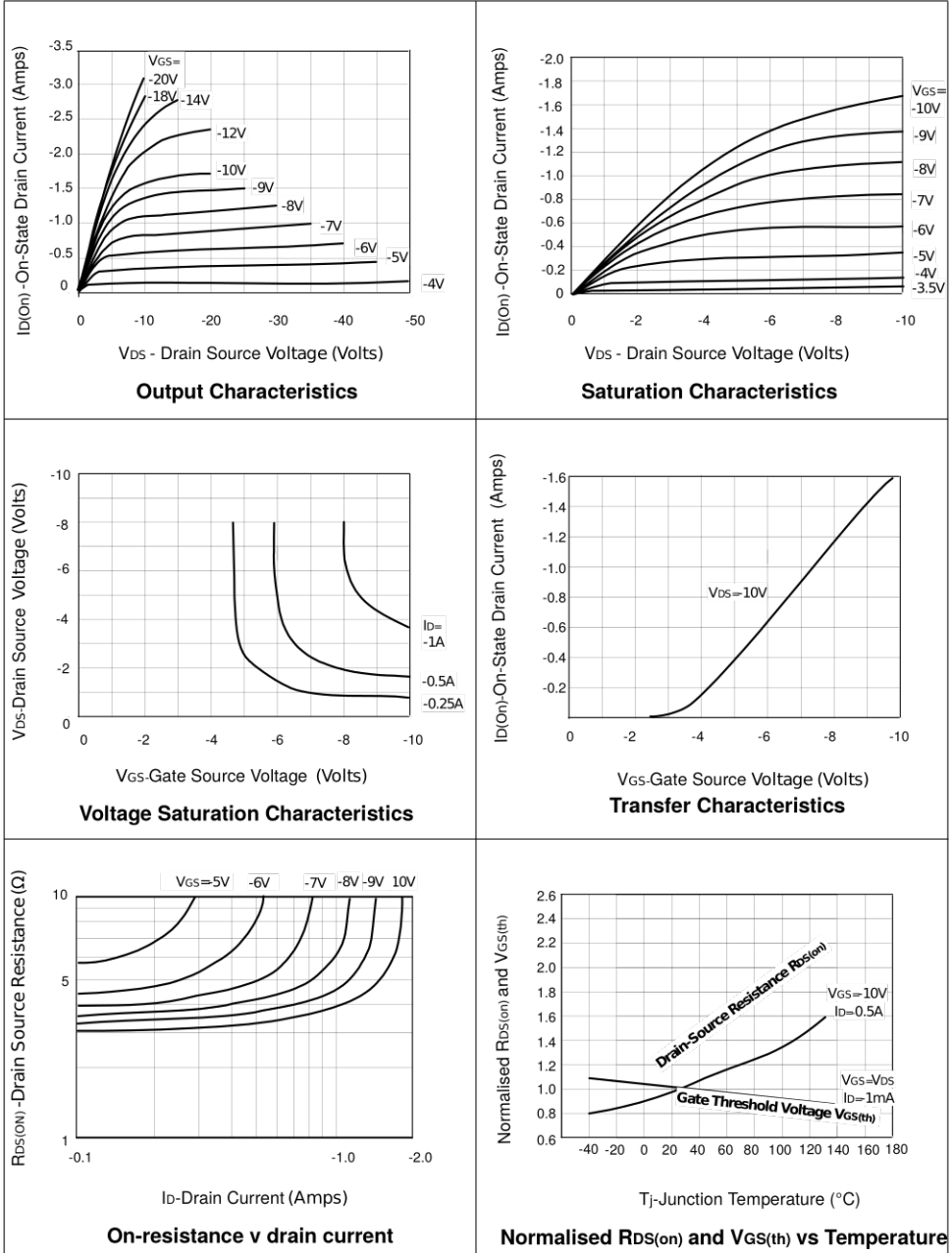
| PARAMETER                                   | SYMBOL       | MIN. | MAX.         | UNIT               | CONDITIONS.  |
|---|--------------|------|--------------|--------------------|--|
| Drain-Source Breakdown Voltage              | $BV_{DSS}$   | -60  |              | V                  | $I_D = 1mA, V_{GS} = 0V$   |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | -1.5 | -3.5         | V                  | $I_D = 1mA, V_{DS} = V_{GS}$   |
| Gate-Body Leakage                           | $I_{GSS}$    |      | 20           | nA                 | $V_{GS} = \pm 20V, V_{DS} = 0V$  |
| Zero Gate Voltage Drain Current             | $I_{DSS}$    |      | -0.5<br>-100 | $\mu A$<br>$\mu A$ | $V_{DS} = 60V, V_{GS} = 0$<br>$V_{DS} = 48V, V_{GS} = 0V, T = 125^{\circ}C(2)$ |
| On-State Drain Current(1)                   | $I_{D(on)}$  | -1   |              | A                  | $V_{DS} = 18V, V_{GS} = 10V$   |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ |      | 5            | $\Omega$           | $V_{GS} = 10V, I_D = 500mA$  |
| Forward Transconductance (1)(2)             | $g_{fs}$     | 150  |              | mS                 | $V_{DS} = 18V, I_D = 500mA$  |
| Input Capacitance (2)                       | $C_{iss}$    |      | 100          | pF                 | $V_{DS} = 18V, V_{GS} = 0V, f = 1MHz$  |
| Common Source Output Capacitance (2)        | $C_{oss}$    |      | 60           | pF                 |  |
| Reverse Transfer Capacitance (2)            | $C_{rss}$    |      | 20           | pF                 |  |
| Turn-On Delay Time (2)(3)                   | $t_{d(on)}$  |      | 7            | ns                 | $V_{DD} \approx 18V, I_D = 500mA$  |
| Rise Time (2)(3)                            | $t_r$        |      | 15           | ns                 |  |
| Turn-Off Delay Time (2)(3)                  | $t_{d(off)}$ |      | 12           | ns                 |  |
| Fall Time (2)(3)                            | $t_f$        |      | 15           | ns                 |  |

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

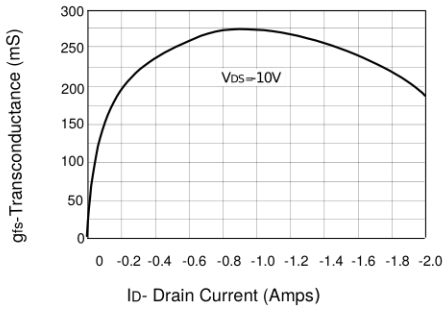
(2) Sample test.

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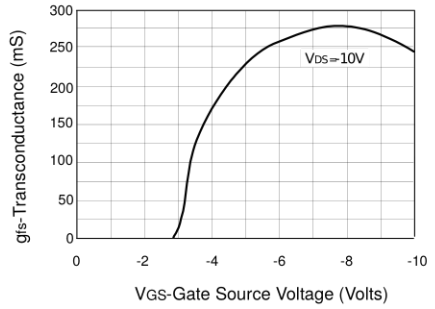
## TYPICAL CHARACTERISTICS



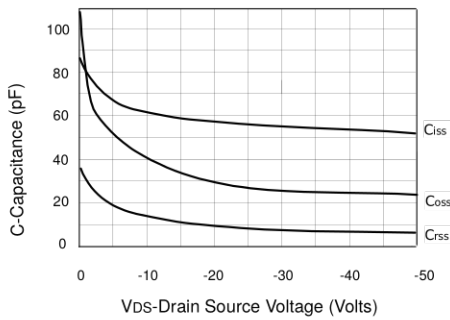
## TYPICAL CHARACTERISTICS



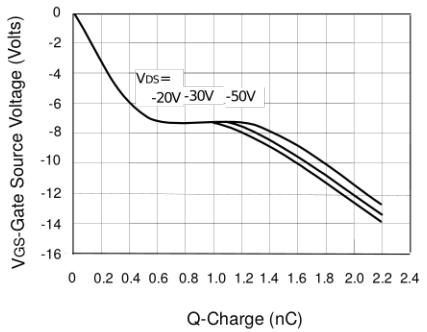
**Transconductance v drain current**



**Transconductance v gate-source voltage**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**