

# SOT23 N-CANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVN3306F

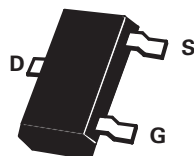
ISSUE 3 – JANUARY 1996

### FEATURES

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

COMPLEMENTARY TYPE - ZVP3306F

PARTMARKING DETAIL - MC



SOT23

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER   | SYMBOL        | VALUE       | UNIT        |
|---|---------------|-------------|-------------|
| Drain-Source Voltage                              | $V_{DS}$      | 60          | V           |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | $I_D$         | 150         | mA          |
| Pulsed Drain Current                              | $I_{DM}$      | 3           | A           |
| Gate-Source Voltage                               | $V_{GS}$      | $\pm 20$    | V           |
| Power Dissipation at $T_{amb}=25^{\circ}C$        | $P_{tot}$     | 330         | 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).

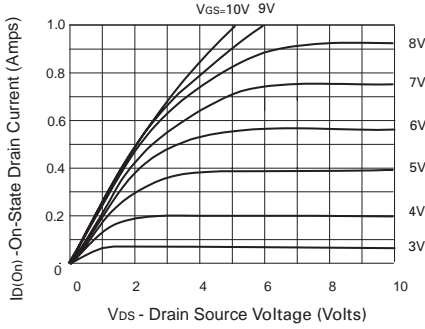
| PARAMETER                                   | SYMBOL       | MIN.  | MAX.      | UNIT               | CONDITIONS.   |
|---|--------------|-------|-----------|--------------------|---|
| Drain-Source Breakdown Voltage              | $BV_{DSS}$   | 60    |           | V                  | $I_D=1mA, V_{GS}=0V$  |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | 0.8   | 2.4       | 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>50 | $\mu A$<br>$\mu A$ | $V_{DS}=60V, V_{GS}=0V$<br>$V_{DS}=48V, V_{GS}=0V, T=125^{\circ}C(2)$ |
| On-State Drain Current(1)                   | $I_{D(on)}$  | 750   |           | mA                 | $V_{DS}=18V, V_{GS}=10V$  |
| 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)                       | $C_{iss}$    |       | 35        | pF                 | $V_{DS}=18V, V_{GS}=0V, f=1MHz$                                       |
| Common Source Output Capacitance (2)        | $C_{oss}$    |       | 25        | pF                 |   |
| Reverse Transfer Capacitance (2)            | $C_{rss}$    |       | 8         | pF                 |   |
| Turn-On Delay Time (2)(3)                   | $t_{d(on)}$  | 3 typ | 5         | ns                 | $V_{DD} \approx 18V, I_D=500mA$                                       |
| Rise Time (2)(3)                            | $t_r$        | 4 typ | 7         | ns                 |   |
| Turn-Off Delay Time (2)(3)                  | $t_{d(off)}$ | 4 typ | 6         | ns                 |   |
| Fall Time (2)(3)                            | $t_f$        | 5 typ | 8         | ns                 |   |

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

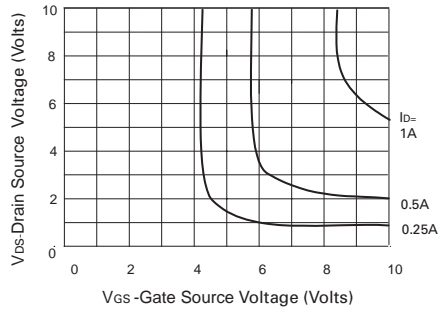
(3) Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator  
Spice parameter data is available upon request for this device

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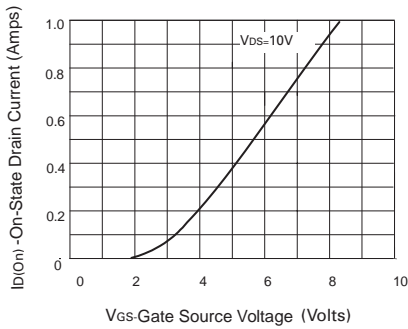
## TYPICAL CHARACTERISTICS



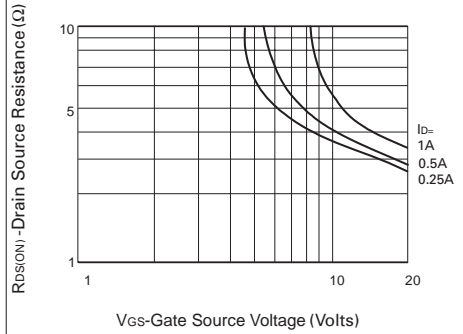
**Saturation Characteristics**



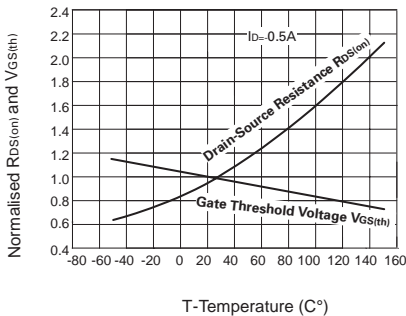
**Voltage Saturation Characteristics**



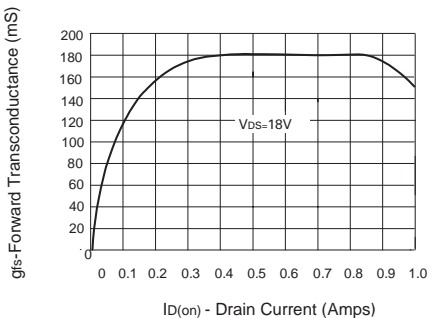
**Transfer Characteristics**



**On-resistance vs gate-source voltage**



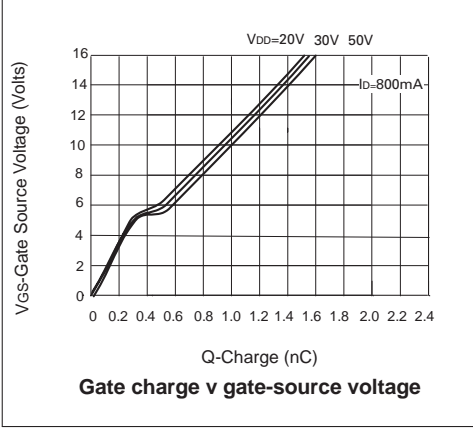
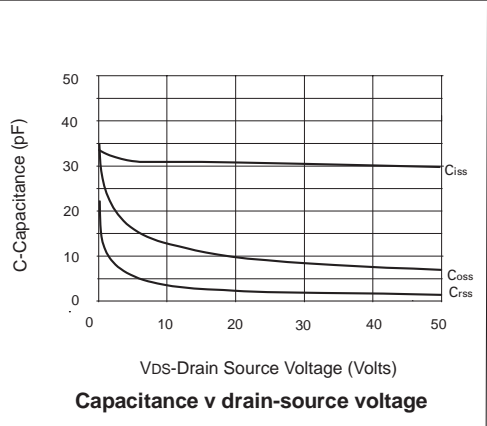
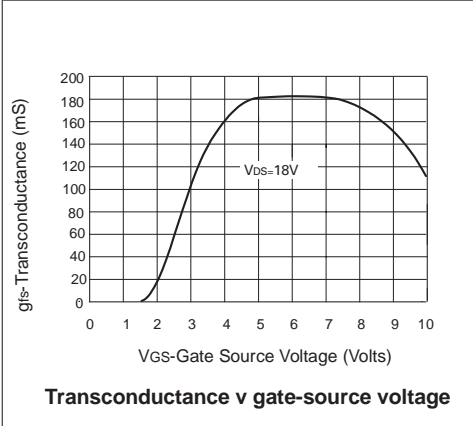
**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  vs Temperature**



**Transconductance v drain current**

# ZVN3306F

## TYPICAL CHARACTERISTICS



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