

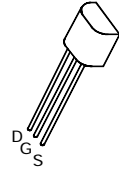
# N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVN2535A

ISSUE 2 – MARCH 94

### FEATURES

- \* 350 Volt  $V_{DS}$
- $R_{DS(on)}=35\Omega$



E-Line  
TO92 Compatible

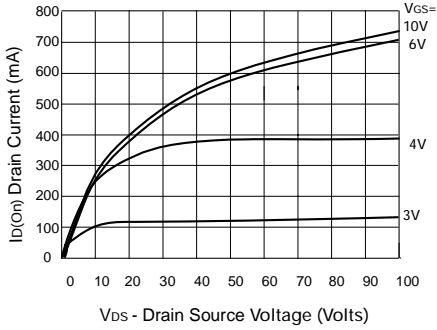
### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER   | SYMBOL        | VALUE       | UNIT        |
|---|---------------|-------------|-------------|
| Drain-Source Voltage                              | $V_{DS}$      | 350         | V           |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | $I_D$         | 90          | mA          |
| Pulsed Drain Current                              | $I_{DM}$      | 1           | 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 | $^{\circ}C$ |

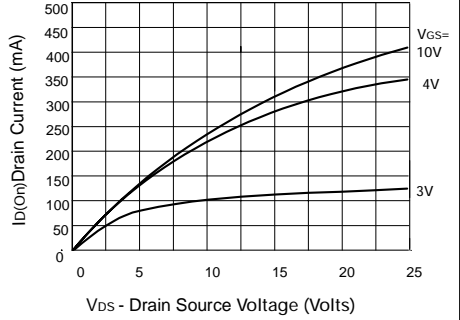
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

| PARAMETER                                   | SYMBOL       | MIN. | MAX.      | UNIT               | CONDITIONS.   |
|---|--------------|------|-----------|--------------------|---|
| Drain-Source Breakdown Voltage              | $BV_{DSS}$   | 350  |           | V                  | $I_D=1mA, V_{GS}=0V$  |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | 1    | 3         | 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             | $I_{DSS}$    |      | 10<br>400 | $\mu A$<br>$\mu A$ | $V_{DS}=350V, V_{GS}=0$<br>$V_{DS}=280V, V_{GS}=0V,$<br>$T=125^{\circ}C(2)$ |
| On-State Drain Current(1)                   | $I_{D(on)}$  | 250  |           | mA                 | $V_{DS}=25V, V_{GS}=10V$  |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ |      | 35        | $\Omega$           | $V_{GS}=10V, I_D=100mA$   |
| Forward Transconductance (1)(2)             | $g_{fs}$     | 100  |           | mS                 | $V_{DS}=25V, I_D=100mA$   |
| Input Capacitance (2)                       | $C_{iss}$    |      | 70        | pF                 | $V_{DS}=25V, V_{GS}=0V, f=1MHz$   |
| Common Source Output Capacitance (2)        | $C_{oss}$    |      | 10        | pF                 |   |
| Reverse Transfer Capacitance (2)            | $C_{rss}$    |      | 4         | pF                 |   |
| Turn-On Delay Time (2)(3)                   | $t_{d(on)}$  |      | 7         | ns                 | $V_{DD}\approx 25V, I_D=100mA$  |
| Rise Time (2)(3)                            | $t_r$        |      | 7         | ns                 |   |
| Turn-Off Delay Time (2)(3)                  | $t_{d(off)}$ |      | 16        | ns                 |   |
| Fall Time (2)(3)                            | $t_f$        |      | 10        | ns                 |   |

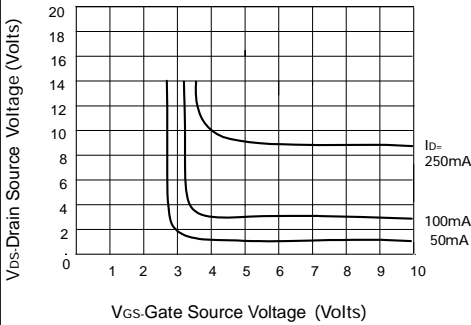
## TYPICAL CHARACTERISTICS



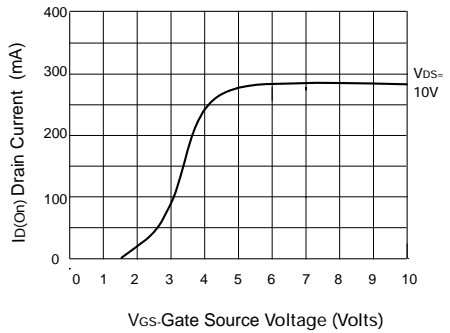
**Output Characteristics**



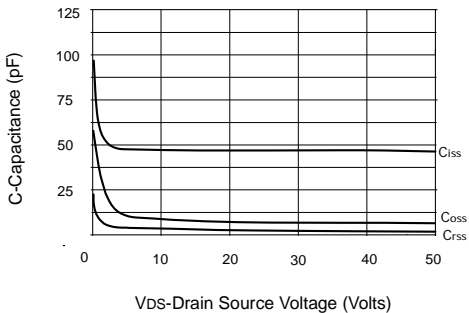
**Saturation Characteristics**



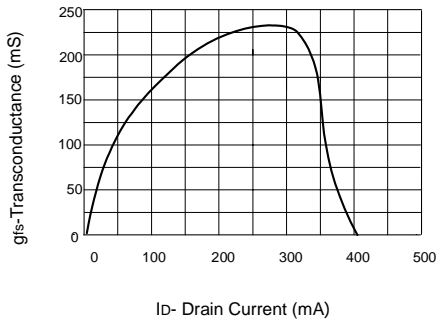
**Voltage Saturation Characteristics**



**Transfer Characteristics**



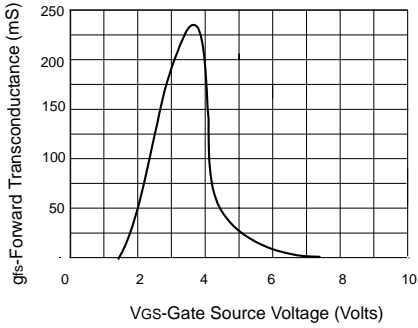
**Capacitance v drain-source voltage**



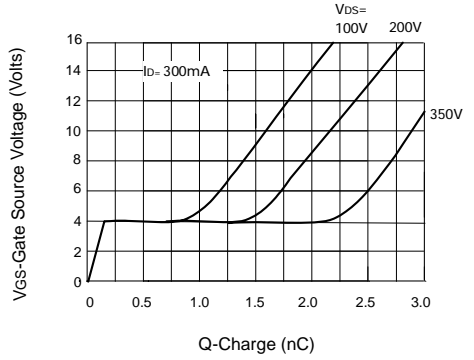
**Transconductance v drain current**

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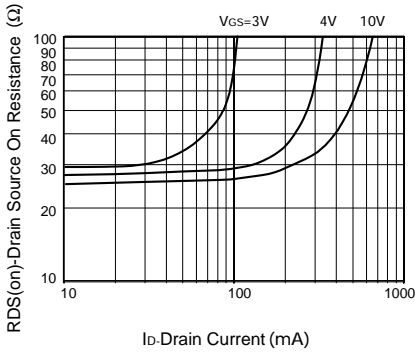
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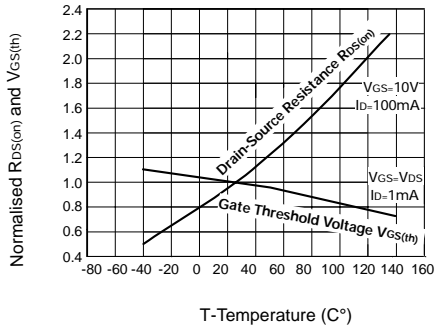
**Transconductance v gate-source voltage**



**Gate charge v gate-source voltage**



**On-resistance v drain current**



**Normalised RDS(on) and VGS(th) vs Temperature**