

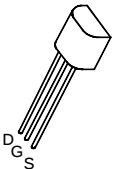
# N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVN2106A

ISSUE 2 – MARCH 94

### FEATURES

- \* 60 Volt  $V_{DS}$
- \*  $R_{DS(on)}=2\Omega$



E-Line  
TO92 Compatible

### ABSOLUTE MAXIMUM RATINGS.

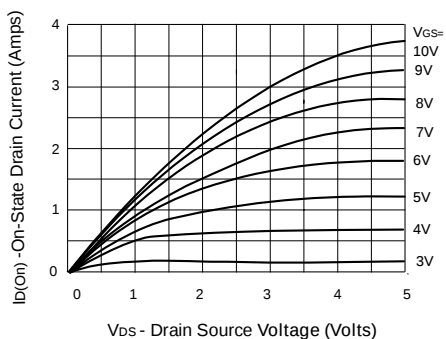
| PARAMETER                                         | SYMBOL        | VALUE       | UNIT        |
|---------------------------------------------------|---------------|-------------|-------------|
| Drain-Source Voltage                              | $V_{DS}$      | 60          | V           |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | $I_D$         | 450         | mA          |
| Pulsed Drain Current                              | $I_{DM}$      | 8           | 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).

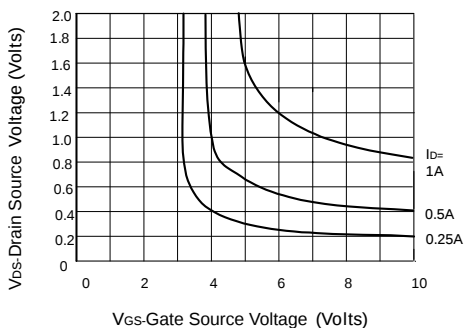
| PARAMETER                                   | SYMBOL       | MIN. | MAX.       | UNIT          | CONDITIONS.                                                               |
|---------------------------------------------|--------------|------|------------|---------------|---------------------------------------------------------------------------|
| Drain-Source Breakdown Voltage              | $BV_{DSS}$   | 60   |            | V             | $I_D=1mA, V_{GS}=0V$                                                      |
| Gate-Source Threshold Voltage               | $V_{GS(th)}$ | 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             | $I_{DSS}$    |      | 500<br>100 | nA<br>$\mu A$ | $V_{DS}=60V, V_{GS}=0$<br>$V_{DS}=48V, V_{GS}=0V,$<br>$T=125^{\circ}C(2)$ |
| On-State Drain Current(1)                   | $I_{D(on)}$  | 2    |            | A             | $V_{DS}=18V, V_{GS}=10V$                                                  |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ |      | 2          | $\Omega$      | $V_{GS}=10V, I_D=1A$                                                      |
| Forward Transconductance (1)(2)             | $g_{fs}$     | 300  |            | mS            | $V_{DS}=18V, I_D=1A$                                                      |
| Input Capacitance (2)                       | $C_{iss}$    |      | 75         | pF            | $V_{DS}=18V, V_{GS}=0V, f=1MHz$                                           |
| Common Source Output Capacitance (2)        | $C_{oss}$    |      | 45         | pF            |                                                                           |
| Reverse Transfer Capacitance (2)            | $C_{rss}$    |      | 20         | pF            |                                                                           |

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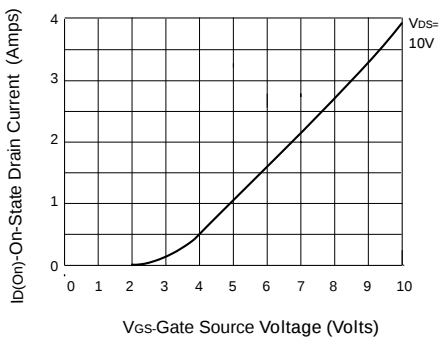
## TYPICAL CHARACTERISTICS



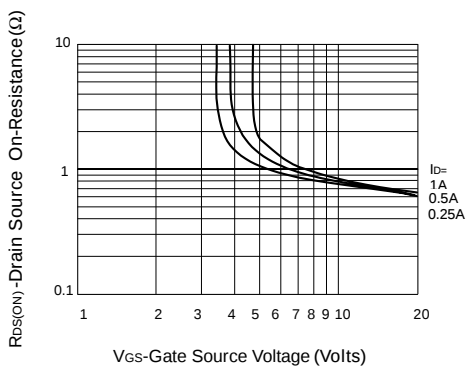
**Saturation Characteristics**



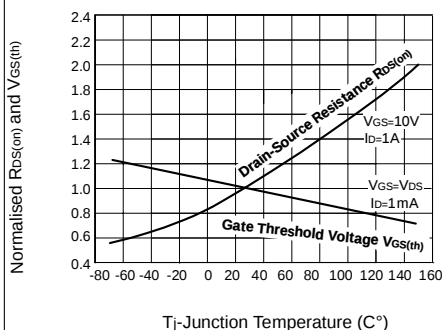
**Voltage Saturation Characteristics**



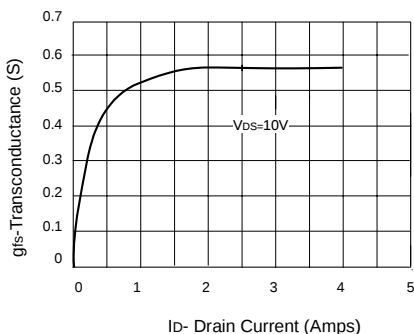
**Transfer Characteristics**



**On-resistance v gate-source voltage**

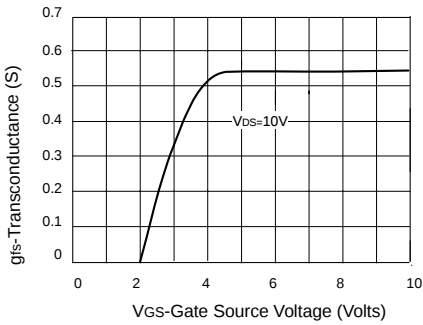


**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  vs Temperature**

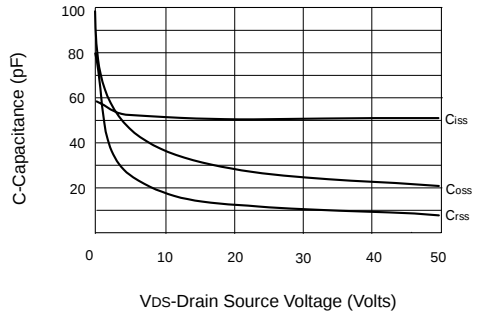


**Transconductance v drain current**

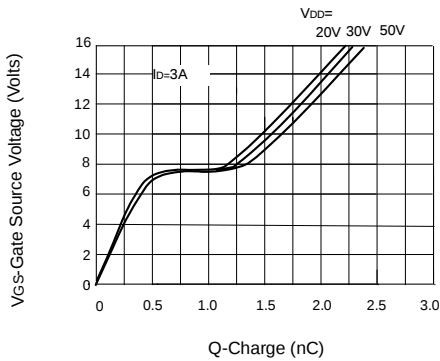
## TYPICAL CHARACTERISTICS



**Transconductance v gate-source voltage**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**