

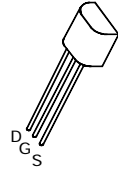
N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ZVN2120A

ISSUE 2 – MARCH 94

FEATURES

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



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|---------------|-------------|-------------|
| Drain-Source Voltage | V_{DS} | 200 | V |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | I_D | 180 | mA |
| Pulsed Drain Current | I_{DM} | 2 | A |
| Gate Source Voltage | V_{GS} | ± 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).

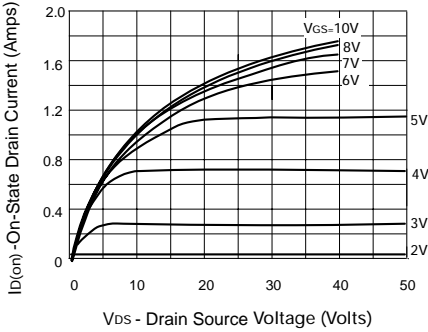
| PARAMETER | SYMBOL | MIN. | MAX. | UNIT | CONDITIONS. |
|---|--------------|------|-----------|--------------------|---|
| Drain-Source Breakdown Voltage | BV_{DSS} | 200 | | V | $I_D=1mA, V_{GS}=0V$ |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | 1 | 3 | V | $I_D=1mA, V_{DS}=V_{GS}$ |
| Gate-Body Leakage | I_{GSS} | | 20 | nA | $V_{GS}=\pm 20V, V_{DS}=0V$ |
| Zero Gate Voltage Drain Current | I_{DSS} | | 10 100 | μA μA | $V_{DS}=200V, V_{GS}=0$ $V_{DS}=160V, V_{GS}=0V,$ $T=125^{\circ}C(2)$ |
| On-State Drain Current(1) | $I_{D(on)}$ | 500 | | mA | $V_{DS}=25V, V_{GS}=10V$ |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ | | 10 | Ω | $V_{GS}=10V, I_D=250mA$ |
| Forward Transconductance (1)(2) | g_{fs} | 100 | | mS | $V_{DS}=25V, I_D=250mA$ |
| Input Capacitance (2) | C_{iss} | | 85 | pF | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ |
| Common Source Output Capacitance (2) | C_{oss} | | 20 | pF | |
| Reverse Transfer Capacitance (2) | C_{rss} | | 7 | pF | |
| Turn-On Delay Time (2)(3) | $t_{d(on)}$ | | 8 | ns | $V_{DD}\approx 25V, I_D=250mA$ |
| Rise Time (2)(3) | t_r | | 8 | ns | |
| Turn-Off Delay Time (2)(3) | $t_{d(off)}$ | | 20 | ns | |
| Fall Time (2)(3) | t_f | | 12 | ns | |

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

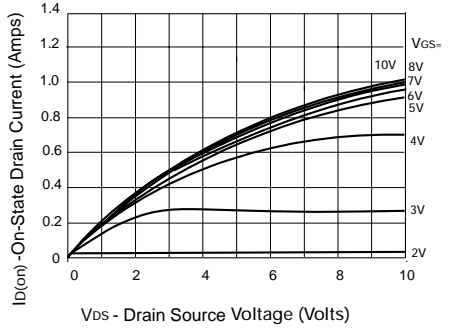
(2) Sample test.

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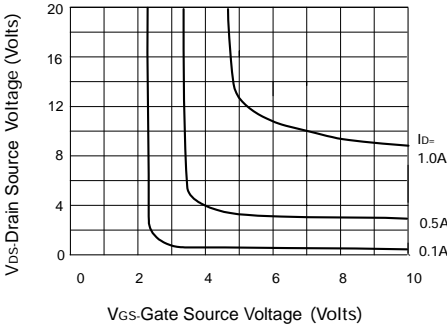
TYPICAL CHARACTERISTICS



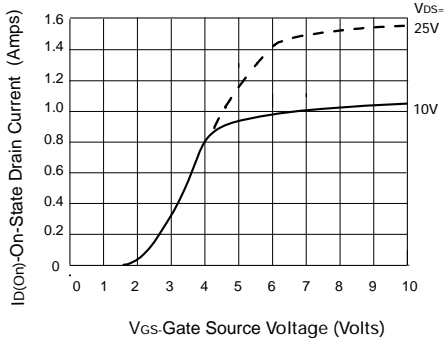
Output Characteristics



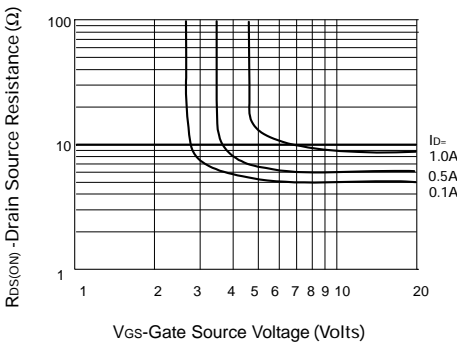
Saturation Characteristics



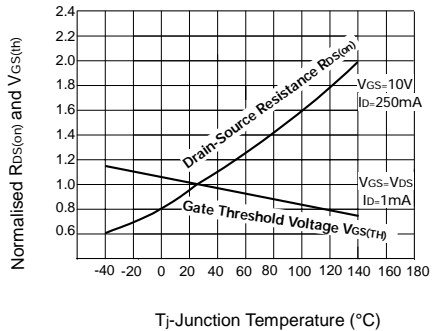
Voltage Saturation Characteristics



Transfer Characteristics



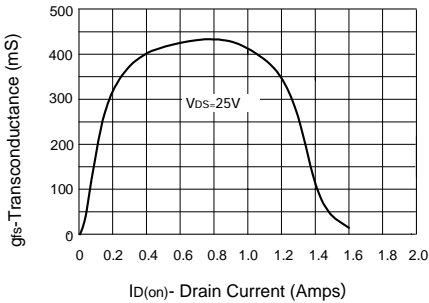
On-resistance vs gate-source voltage



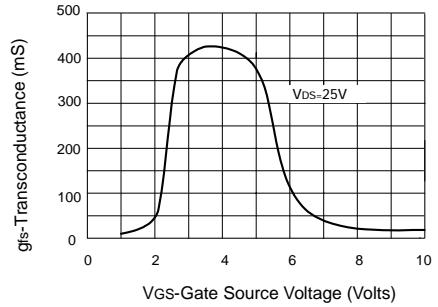
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ v Temperature

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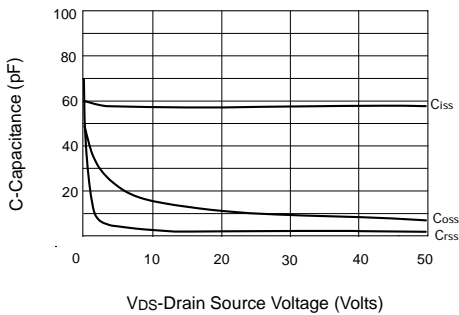
TYPICAL CHARACTERISTICS



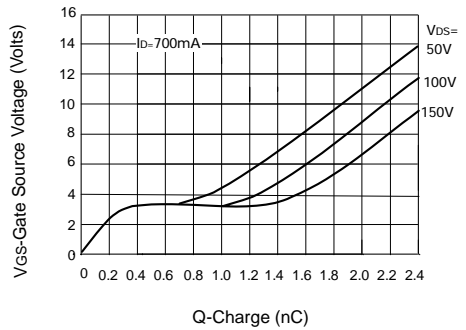
Transconductance v drain current



Transconductance v gate-source voltage



Capacitance v drain-source voltage



Gate charge v gate-source voltage