

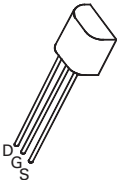
N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 2 – JUNE 94

FEATURES

- * 60 Volt V_{DS}
- * $R_{DS(on)} = 1 \Omega$

ZVN4206A



**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 | 600 | mA |
| Pulsed Drain Current | I_{DM} | 8 | A |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | P_{tot} | 0.7 | W |
| 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).

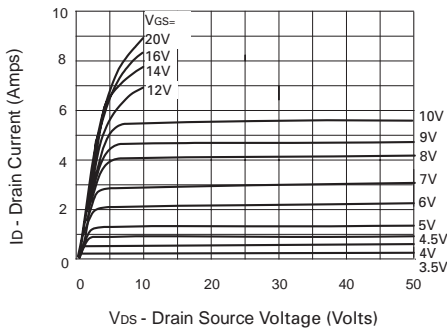
| PARAMETER | SYMBOL | MIN. | MAX. | UNIT | CONDITIONS. |
|---|--------------|------|-----------|----------------------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | 60 | | V | $I_D=1mA, V_{GS}=0V$ |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | 1.3 | 3 | V | $ID=1mA, V_{DS}= V_{GS}$ |
| Gate-Body Leakage | I_{GSS} | | 100 | nA | $V_{GS}=\pm 20V, V_{DS}=0V$ |
| Zero Gate Voltage Drain Current | I_{DSS} | | 10 100 | μA μA | $V_{DS}=60V, V_{GS}=0$ $V_{DS}=48V, V_{GS}=0V, T=125^{\circ}C(2)$ |
| On-State Drain Current(1) | $I_{D(on)}$ | 3 | | A | $V_{DS}=25V, V_{GS}=10V$ |
| Static Drain-Source On-State Resistance (1) | $R_{DS(on)}$ | | 1 1.5 | Ω Ω | $V_{GS}=10V, I_D=1.5A$ $V_{GS}=5V, I_D=500mA$ |
| Forward Transconductance(1)(2) | g_{fs} | 300 | | mS | $V_{DS}=25V, I_D=1.5A$ |
| Input Capacitance (2) | C_{iss} | | 100 | pF | $V_{DS}=25V, V_{GS}=0V, f=1MHz$ |
| Common Source Output Capacitance (2) | C_{oss} | | 60 | pF | |
| Reverse Transfer Capacitance (2) | C_{rss} | | 20 | pF | |
| Turn-On Delay Time (2)(3) | $t_{d(on)}$ | | 8 | ns | $V_{DD} \approx 25V, I_D=1.5A$ |
| Rise Time (2)(3) | t_r | | 12 | 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 μs . Duty cycle $\leq 2\%$ (2) Sample test.

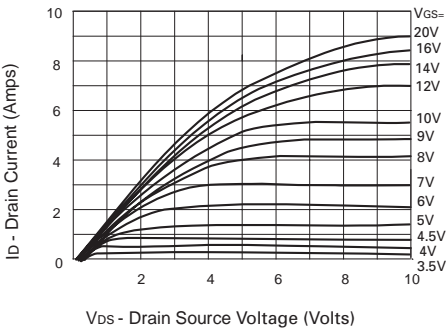
(3) Switching times measured with 50 Ω source impedance and <5ns rise time on a pulse generator

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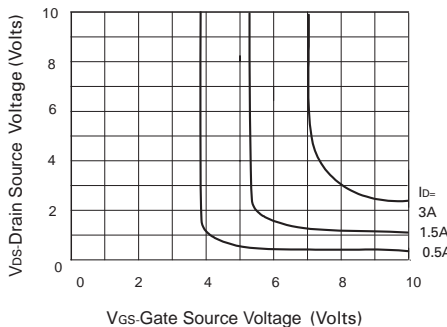
TYPICAL CHARACTERISTICS



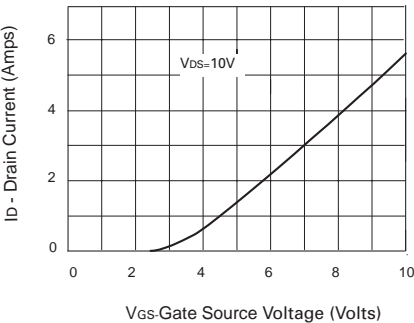
Output Characteristics



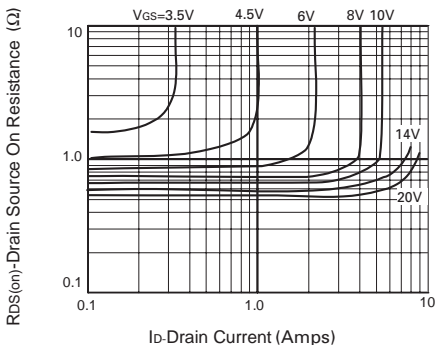
Saturation Characteristics



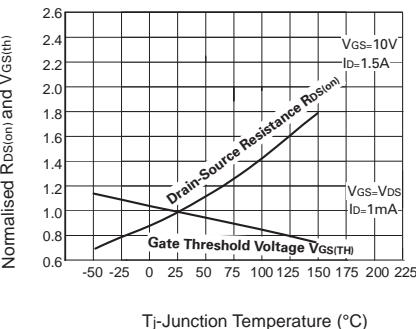
Voltage Saturation Characteristics



Transfer Characteristics

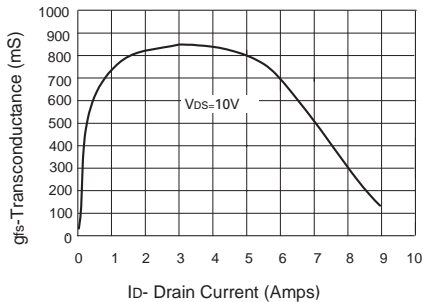


On-resistance v drain current

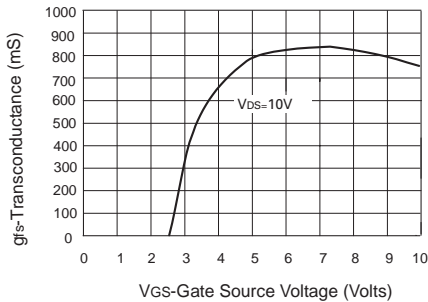


Normalised $R_{DS(on)}$ and $V_{GS(th)}$ v Temperature

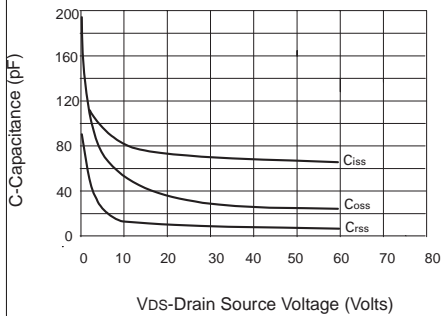
TYPICAL CHARACTERISTICS



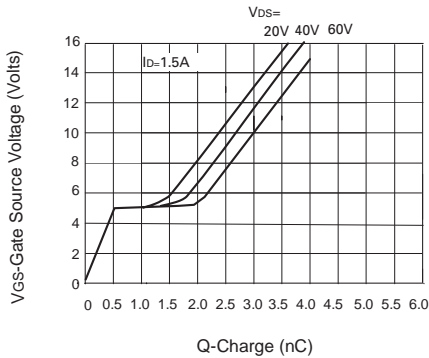
Transconductance v drain current



Transconductance v gate-source voltage



Capacitance v drain-source voltage



Gate charge v gate-source voltage