

P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ZVP4424A

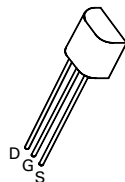
ISSUE 2 – SEPTEMBER 94

FEATURES

- * 240 Volt V_{DS}
- * $R_{DS(on)}=9\Omega$
- * Low threshold

APPLICATIONS

- * Electronic Hook Switch



**E-Line
TO92 Compatible**

ABSOLUTE MAXIMUM RATINGS.

| PARAMETER | SYMBOL | VALUE | UNIT |
|---|----------------|-------------|-------------|
| Drain-Source Voltage | V_{DS} | -240 | V |
| Continuous Drain Current at $T_{amb}=25^{\circ}C$ | I_D | -200 | mA |
| Pulsed Drain Current | I_{DM} | -1 | A |
| Gate Source Voltage | V_{GS} | ± 40 | V |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | P_{tot} | 750 | mW |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}C$ |

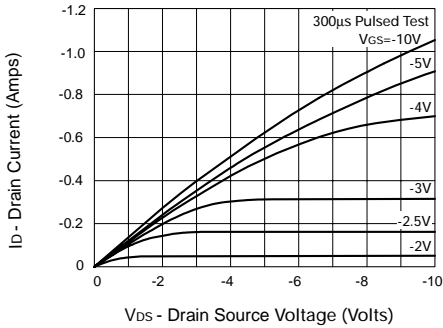
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

| PARAMETER | SYMBOL | MIN. | TYP | MAX. | UNIT | CONDITIONS. |
|---|--------------|-------|------------|-------------|----------------------|--|
| Drain-Source Breakdown Voltage | BV_{DSS} | -240 | | | V | $I_D=-1mA, V_{GS}=0V$ |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | -0.7 | -1.4 | -2.0 | V | $I_D=-1mA, V_{DS}=V_{GS}$ |
| Gate-Body Leakage | I_{GSS} | | | 100 | nA | $V_{GS}=\pm 40V, V_{DS}=0V$ |
| Zero Gate Voltage Drain Current | I_{DSS} | | | -10 -100 | μA μA | $V_{DS}=-240V, V_{GS}=0V$ $V_{DS}=-190V, V_{GS}=0V, T=125^{\circ}C$ |
| On-State Drain Current | $I_{D(on)}$ | -0.75 | -1.0 | | A | $V_{DS}=-10V, V_{GS}=-10V$ |
| Static Drain-Source On-State Resistance | $R_{DS(on)}$ | | 7.1 8.8 | 9 11 | Ω Ω | $V_{GS}=-10V, I_D=-200mA$ $V_{GS}=-3.5V, I_D=-100mA$ |
| Forward Transconductance (1) (2) | g_{fs} | 125 | | | mS | $V_{DS}=-10V, I_D=-0.2A$ |
| Input Capacitance (2) | C_{iss} | | 100 | 200 | pF | $V_{DS}=-25V, V_{GS}=0V, f=1MHz$ |
| Common Source Output Capacitance (2) | C_{oss} | | 18 | 25 | pF | |
| Reverse Transfer Capacitance (2) | C_{rss} | | 5 | 15 | pF | |
| Turn-On Delay Time (2)(3) | $t_{d(on)}$ | | 8 | 15 | ns | $V_{DD} \approx -50V, I_D = -0.25A,$ $V_{GEN} = -10V$ |
| Rise Time (2)(3) | t_r | | 8 | 15 | ns | |
| Turn-Off Delay Time (2)(3) | $t_{d(off)}$ | | 26 | 40 | ns | |
| Fall Time (2)(3) | t_f | | 20 | 30 | ns | |

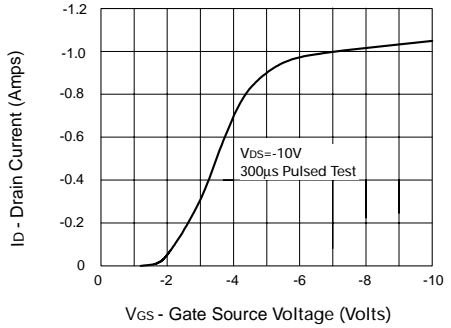
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$ (2) Sample test.

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

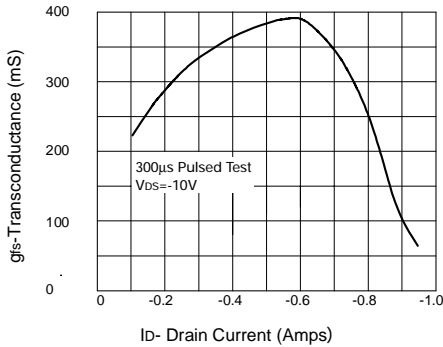
TYPICAL CHARACTERISTICS



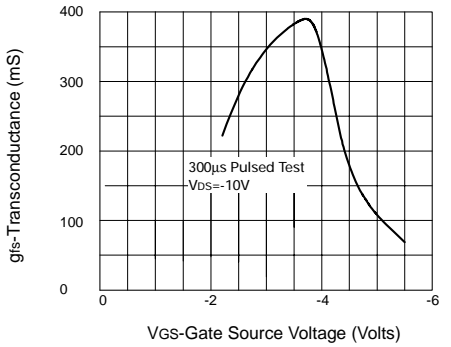
Saturation Characteristics



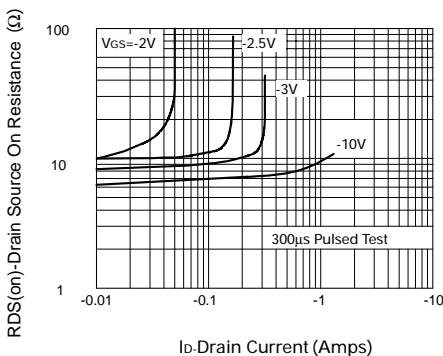
Transfer Characteristics



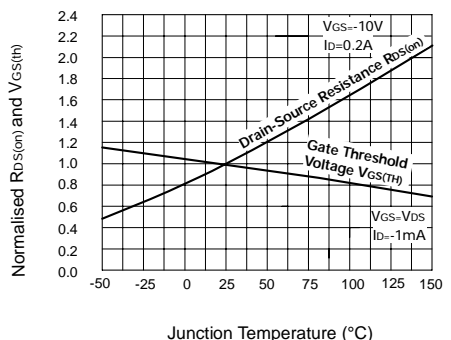
Transconductance v drain current



Transconductance v gate-source voltage



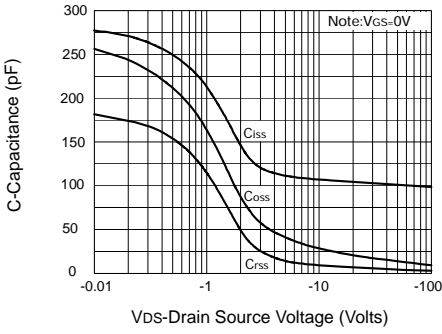
On-resistance vs Drain Current



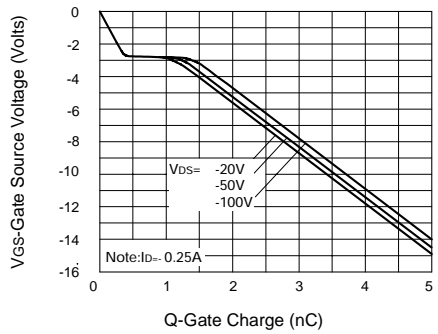
Normalised R_{DS(on)} and V_{GS(th)} vs Temperature

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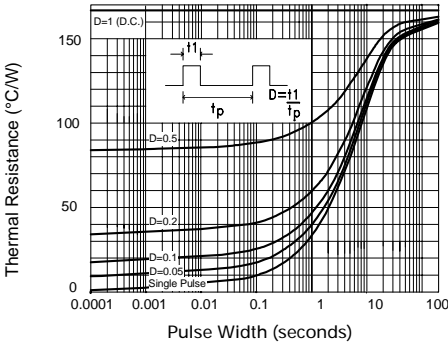
TYPICAL CHARACTERISTICS



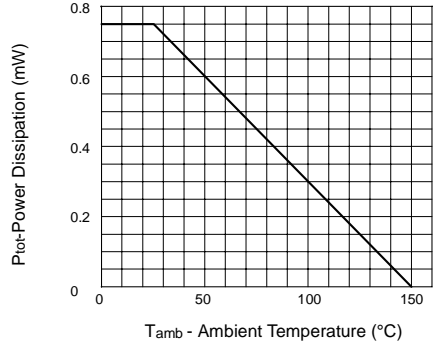
Capacitance v drain-source voltage



Gate charge v gate-source voltage



Maximum transient thermal impedance



Derating Curve