

SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ZVN4424G

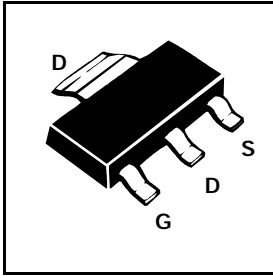
ISSUE 4 - OCTOBER 1995

FEATURES

- * 240 Volt V_{DS}
- * Extremely low $R_{DS(on)}=4.3\Omega$
- * Low threshold and Fast switching

APPLICATIONS

- * Earth recall and dialling switches
- * Electronic hook switches
- * Battery powered equipment
- * Telecoms and high voltage dc-dc convertors



PARTMARKING DETAILS - ZVN4424
 COMPLEMENTARY TYPE - ZVP4424G

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 | 500 | mA |
| Pulsed Drain Current | I_{DM} | 1.5 | A |
| Gate Source Voltage | V_{GS} | ± 40 | V |
| Power Dissipation at $T_{amb}=25^{\circ}C$ | P_{tot} | 2.5 | W |
| Operating and Storage Temperature Range | $T_j; T_{stg}$ | -55 to +150 | $^{\circ}C$ |

ZVN4424G

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

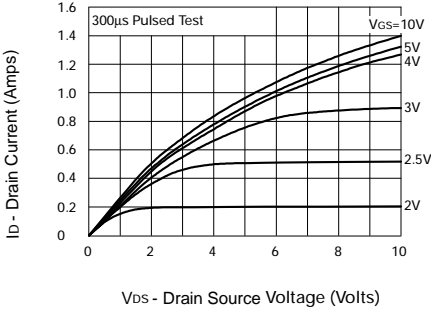
| PARAMETER | SYMBOL | MIN. | TYP | MAX. | UNIT | CONDITIONS. |
|---|--------------|------|----------|-----------|--------------------------------|---|
| Drain-Source Breakdown Voltage | BV_{DSS} | 240 | | | V | $I_D=1\text{mA}, V_{GS}=0\text{V}$ |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | 0.8 | 1.3 | 1.8 | V | $I_D=1\text{mA}, V_{DS}=V_{GS}$ |
| Gate-Body Leakage | I_{GSS} | | | 100 | nA | $V_{GS}=\pm 40\text{V}, V_{DS}=0\text{V}$ |
| On State Drain-Current | $I_{D(on)}$ | 0.8 | 1.4 | | A | $V_{DS}=10\text{V}, V_{GS}=10\text{V}$ |
| Zero Gate Voltage Drain Current | I_{DSS} | | | 10 100 | μA μA | $V_{DS}=240\text{V}, V_{GS}=0\text{V}$ $V_{DS}=190\text{V}, V_{GS}=0\text{V}, T=125^{\circ}\text{C}$ |
| Static Drain-Source On-State Resistance | $R_{DS(on)}$ | | 4 4.3 | 5.5 6 | Ω Ω | $V_{GS}=10\text{V}, I_D=500\text{mA}^*$ $V_{GS}=2.5\text{V}, I_D=100\text{mA}^*$ |
| Forward Transconductance (1) (2) | g_{fs} | 0.4 | 0.75 | | S | $V_{DS}=10\text{V}, I_D=0.5\text{A}$ |
| Input Capacitance (2) | C_{iss} | | 110 | 200 | pF | $V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$ |
| Common Source Output Capacitance (2) | C_{oss} | | 15 | 25 | pF | |
| Reverse Transfer Capacitance (2) | C_{rss} | | 3.5 | 15 | pF | |
| Turn-On Delay Time (2)(3) | $t_{d(on)}$ | | 2.5 | 5 | ns | $V_{DD}\approx 50\text{V}, I_D=0.25\text{A}, V_{GEN}=10\text{V}$ |
| Rise Time (2)(3) | t_r | | 5 | 8 | ns | |
| Turn-Off Delay Time (2)(3) | $t_{d(off)}$ | | 40 | 60 | ns | |
| Fall Time (2)(3) | t_f | | 16 | 25 | ns | |

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

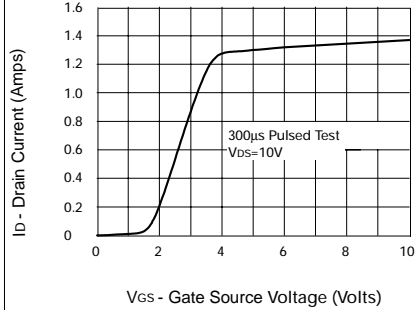
(2) Sample test.

(3) Switching times measured with 50 Ω source impedance and <5ns rise time on a pulse generator
Spice parameter data is available upon request for this device

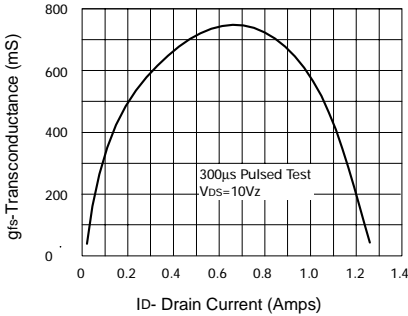
TYPICAL CHARACTERISTICS



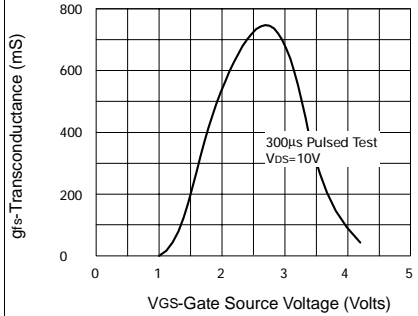
Saturation Characteristics



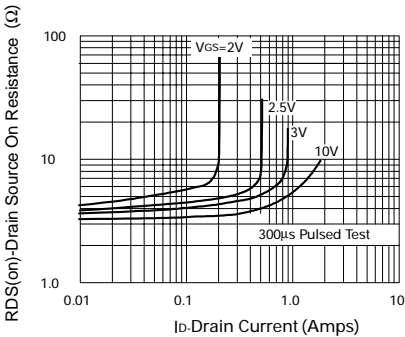
Transfer Characteristics



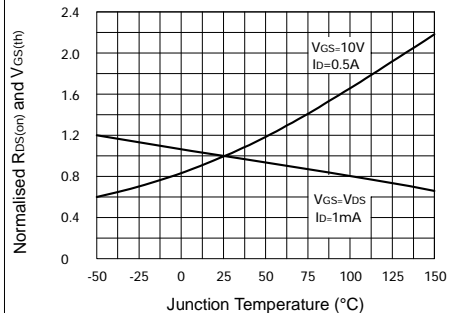
Transconductance v drain current



Transconductance v gate-source voltage



On-resistance vs Drain Current



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

ZVN4424G

TYPICAL CHARACTERISTICS

