

SOT89 N-CHANNEL ENHANCEMENT
MODE VERTICAL DMOS FET

ZVN4424Z

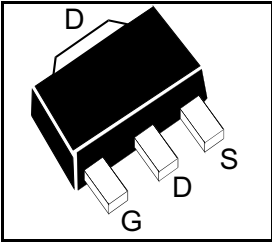
ISSUE 1 - NOVEMBER 1998

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 - N24
COMPLEMENTARY TYPE - ZVP4424Z

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	300	mA
Pulsed Drain Current	I_{DM}	1.0	A
Gate Source Voltage	V_{GS}	± 40	V
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	1 †	W
Operating and Storage Temperature Range	$T_j:T_{stg}$	-55 to +150	$^{\circ}C$

† recommended P_{tot} calculated using FR4 measuring 15x15x0.6mm
Refer to the handling instructions for soldering surface mount components.

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

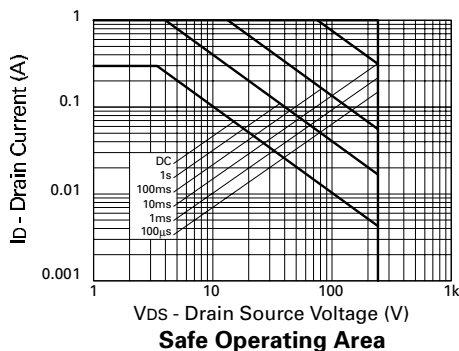
PARAMETER	SYMBOL	MIN.	TYP	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	240			V	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.8	1.3	1.8	V	$I_D=1\text{mA}$, $V_{DS}=V_{GS}$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 40\text{V}$, $V_{DS}=0\text{V}$
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 $\leq 2\%$

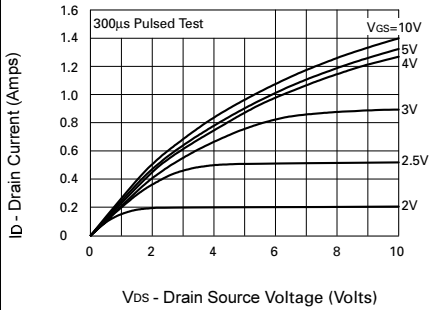
(2) Sample test.

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

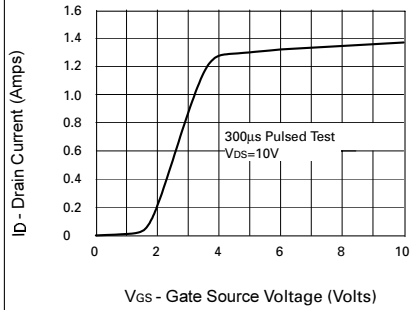
TYPICAL CHARACTERISTICS



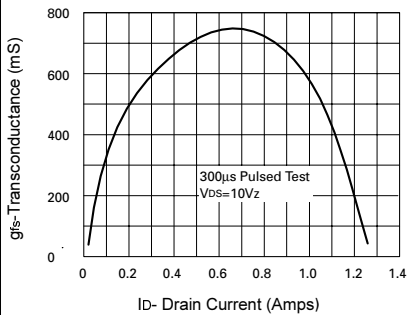
TYPICAL CHARACTERISTICS



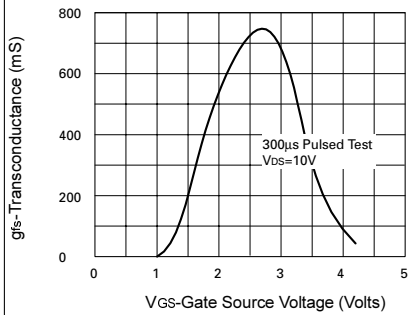
Saturation Characteristics



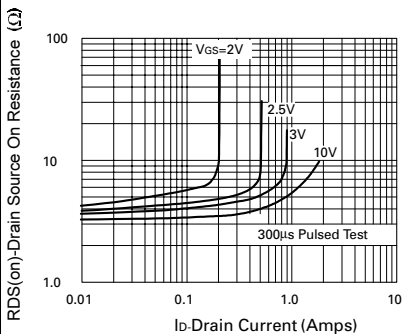
Transfer Characteristics



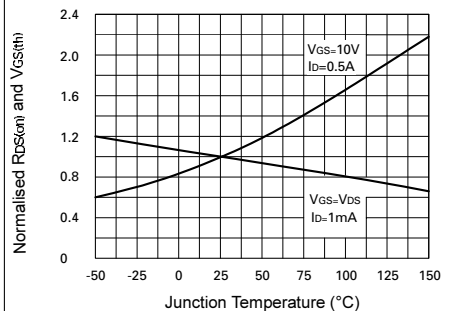
Transconductance v drain current



Transconductance v gate-source voltage



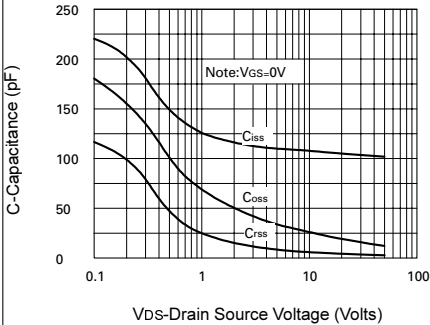
On-resistance vs Drain Current



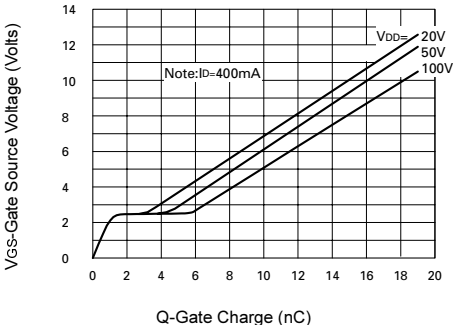
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ vs Temperature

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TYPICAL CHARACTERISTICS



Capacitance v drain-source voltage



Gate charge v gate-source voltage