

N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 3 - APRIL 1998

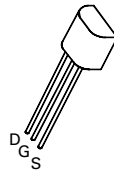
ZVN4206AV

FEATURES

- * 60 Volt V_{DS}
- * $R_{DS(on)} = 1\Omega$
- * Repetitive avalanche rating
- * No transient protection required
- * Characterised for 5V logic drive

APPLICATIONS

- * Automotive relay drivers
- * Stepper motor driver



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}	700	mW
Continuous Body Diode Current at $T_{amb}=25^{\circ}C$	I_{SD}	600	mA
Avalanche Current – Repetitive	I_{AR}	600	mA
Avalanche Energy – Repetitive	E_{AR}	15	mJ
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

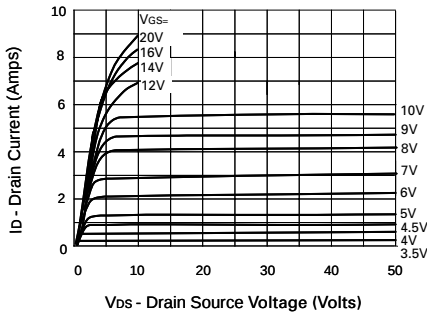
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

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	$I_D=1mA, V_{DS}=V_{GS}$
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	$V_{GS}=10V, I_D=1.5A$ $V_{GS}=5V, I_D=.0.5A$
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	$V_{DD}\approx 25V, I_D=1.5A, V_{GEN}=10V$
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	

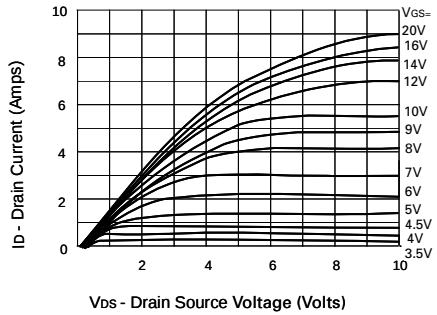
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$ (2) Sample test.

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

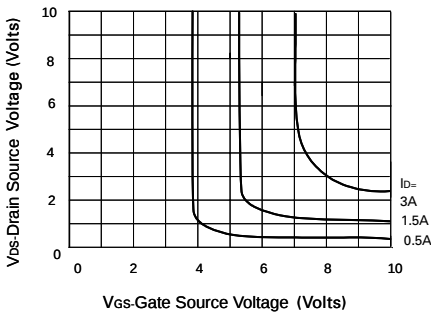
TYPICAL CHARACTERISTICS



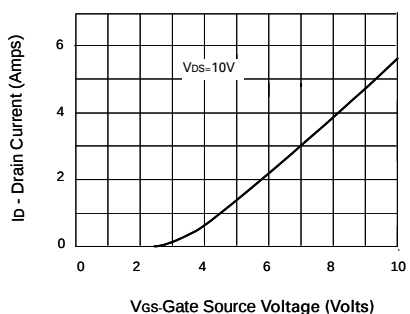
Output Characteristics



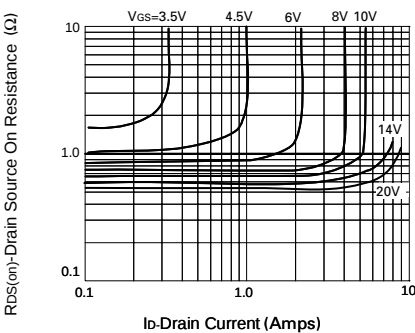
Saturation Characteristics



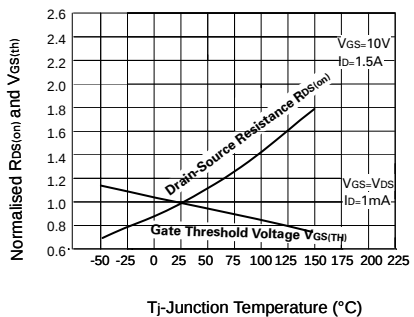
Voltage Saturation Characteristics



Transfer Characteristics



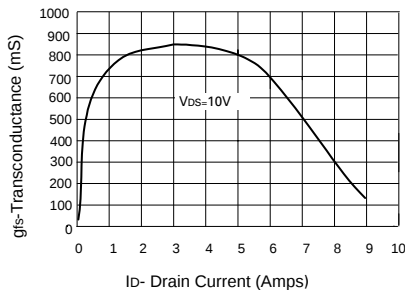
On-resistance v drain current



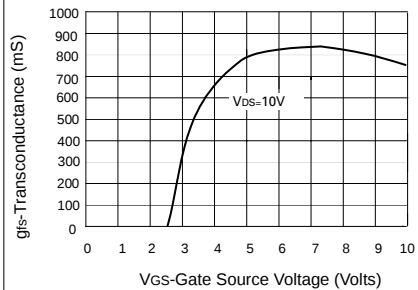
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ v Temperature

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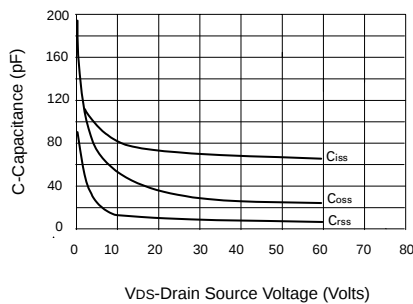
TYPICAL CHARACTERISTICS



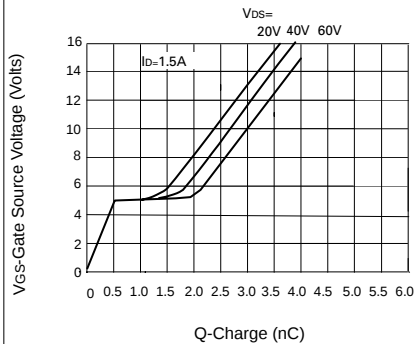
Transconductance v drain current



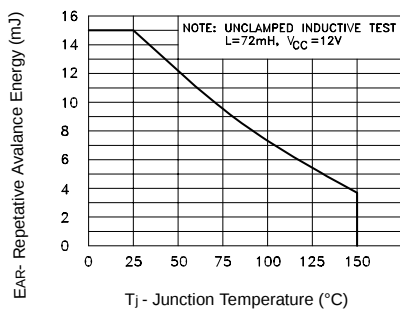
Transconductance v gate-source voltage



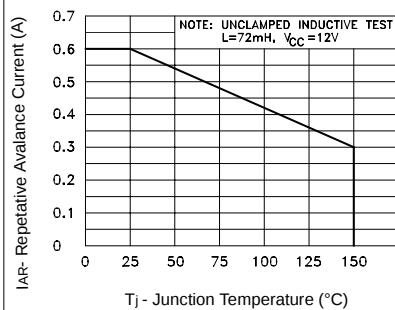
Capacitance v drain-source voltage



Gate charge v gate-source voltage



Maximum repetitive avalanche energy v Junction Temperature



Maximum repetitive avalanche current v Junction Temperature

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