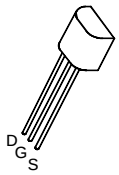
N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ZVN1409A

ISSUE 2 – MARCH 94

FEATURES

* 90 Volt V_{DS}
* Low input capacitance
* Fast switching



E-Line
TO92 Compatible

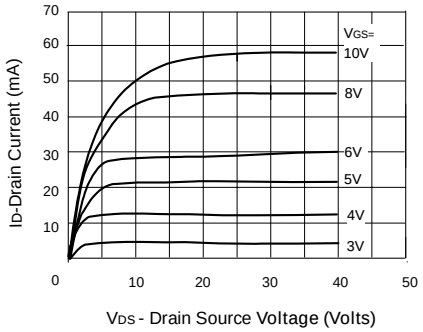
ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	90	V
Continuous Drain Current	I_D	10	mA
Pulsed Drain Current	I_{DM}	40	mA
Gate Source Voltage	V_{GS}	± 20	V
Power Dissipation at T_{amb}=25°C	P_{tot}	625	mW
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°C

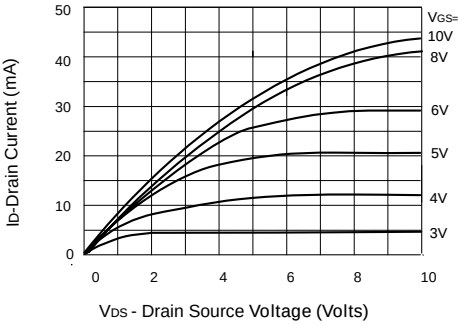
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	90		V	I_D=0.1mA, V_{GS}=0V
Gate-Source Breakdown Voltage	$V_{GS(th)}$	0.8	2.4	V	ID=0.1mA, V_{DS}= V_{GS}
Gate Body Leakage	I_{GSS}		100	nA	V_{GS}=± 20V, V_{DS}=0V
Zero Gate Voltage Drain Current	I_{DSS}		1 100 (2)	µA µA	V_{DS}=90V, V_{GS}=0V V_{DS}=72V, V_{GS}=0V, T=125°C
On State Drain Current (1)	$I_{D(on)}$	10		mA	V_{DS}=25 V, V_{GS}=10V
Static Drain Source On State Resistance (1)	$R_{DS(on)}$		250	Ω	V_{GS}=10V,I_D=5mA
Forward Transconductance (1)(2)	g_{fs}	2		mS	V_{DS}=25V,I_D=10mA
Input Capacitance (2)	C_{iss}		6.5	pF	V_{DS}=25 V, V_{GS}=0V f=1MHz
Common Source Output Capacitance (2)	C_{oss}		3	pF	
Reverse Transfer Capacitance (2)	C_{rss}		0.65	pF	
Turn-On Delay Time (2)(3)(4)	$t_{d(on)}$		0.3	ns	V_{DD}≈25V, I_D=5mA
Rise Time (2)(3)(4)	t_r		0.5	ns	
Turn-Off Delay Time (2)(3)(4)	$t_{d(off)}$		0.35	ns	
Fall Time (2)(3)(4)	t_f		0.5	ns	

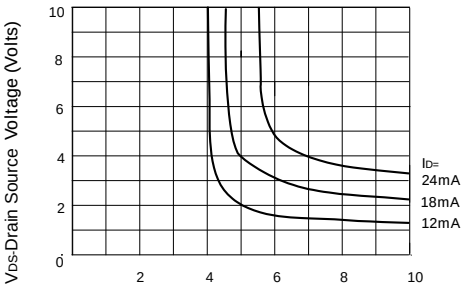
TYPICAL CHARACTERISTICS



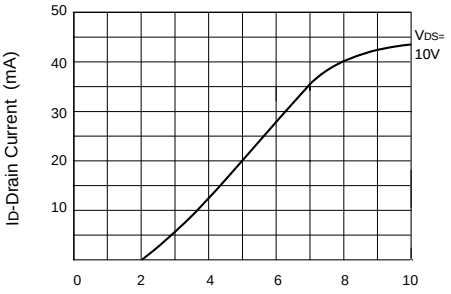
Output Characteristics



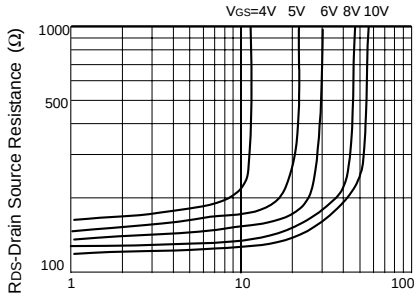
Saturation Characteristics



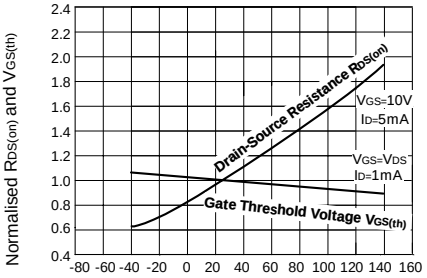
Voltage Saturation Characteristics



Transfer Characteristics



On-resistance v drain current



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

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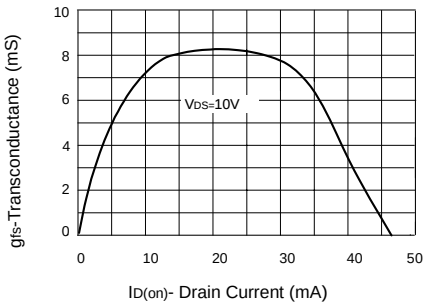
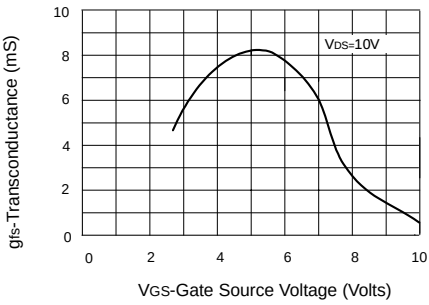
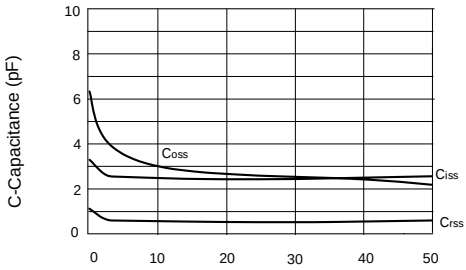
TYPICAL CHARACTERISTICS



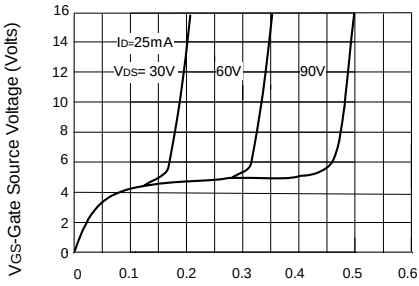
Transconductance v drain current



Transconductance v gate-source voltage



Capacitance v drain-source voltage



Gate charge v gate-source voltage