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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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# N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVNL120A

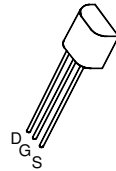
ISSUE 2 – MARCH 94

### FEATURES

- \* 200 Volt  $V_{DS}$
- \*  $R_{DS(on)}=10\Omega$
- \* Low threshold

### APPLICATIONS

- \* Telephone handsets



E-Line  
TO92 Compatible

### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	$V_{DS}$	200	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	$I_D$	180	mA
Pulsed Drain Current	$I_{DM}$	2	A
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	700	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).

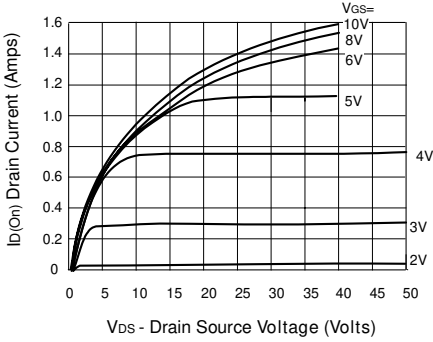
PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	$BV_{DSS}$	200		V	$I_D=1mA, V_{GS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.5	1.5	V	$I_D=1mA, V_{DS}=V_{GS}$
Gate-Body Leakage	$I_{GSS}$		100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Zero Gate Voltage Drain Current	$I_{DSS}$		10 100	$\mu A$ $\mu A$	$V_{DS}=200V, V_{GS}=0$ $V_{DS}=160V, V_{GS}=0V, T=125^{\circ}C(2)$
On-State Drain Current(1)	$I_{D(on)}$	500		mA	$V_{DS}=25V, V_{GS}=5V$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		10 10	$\Omega$ $\Omega$	$V_{GS}=5V, I_D=250mA$ $V_{GS}=3V, I_D=125mA$
Forward Transconductance (1)(2)	$g_{fs}$	200		mS	$V_{DS}=25V, I_D=250mA$
Input Capacitance (2)	$C_{iss}$		85	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Common Source Output Capacitance (2)	$C_{oss}$		20	pF	
Reverse Transfer Capacitance (2)	$C_{rss}$		7	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		8	ns	$V_{DD}=25V, I_D=250mA$
Rise Time (2)(3)	$t_r$		8	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		20	ns	
Fall Time (2)(3)	$t_f$		12	ns	

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

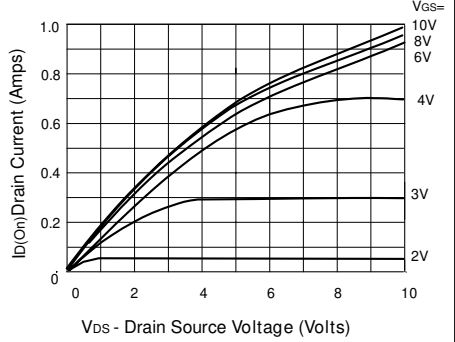
(3) Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator

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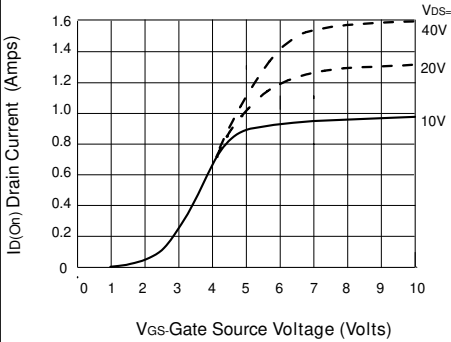
## TYPICAL CHARACTERISTICS



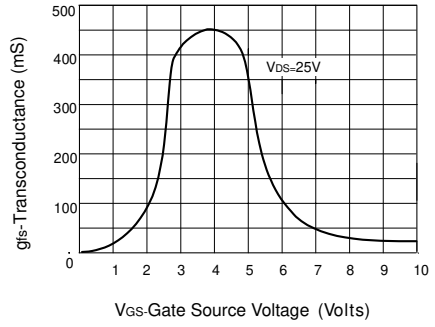
**Output Characteristics**



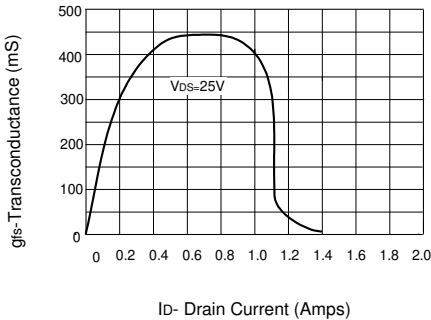
**Saturation Characteristics**



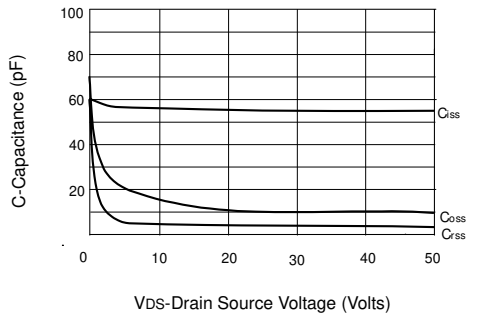
**Transfer Characteristics**



**Transconductance v gate-source voltage**

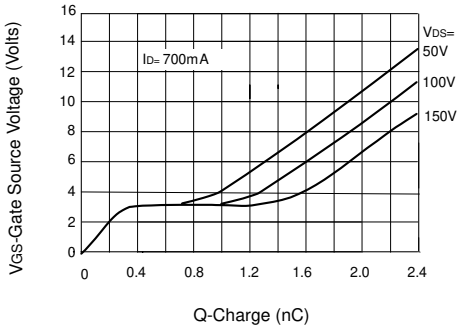


**Transconductance v drain current**

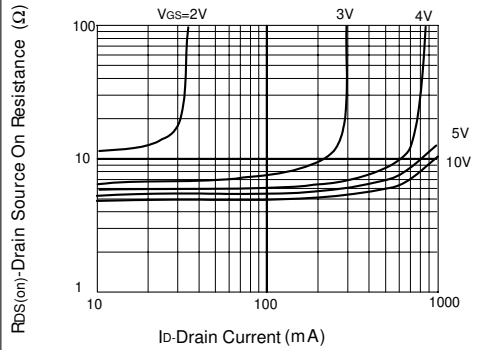


**Capacitance v drain-source voltage**

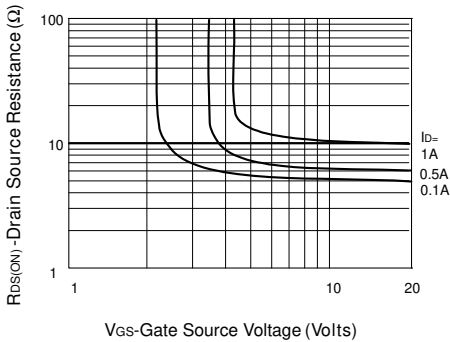
## TYPICAL CHARACTERISTICS



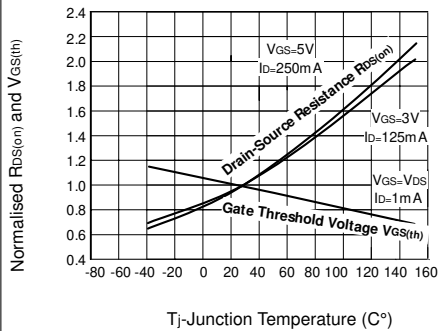
Gate charge v gate-source voltage



On-resistance v drain current



On-resistance vs gate-source voltage



Normalised Rds(on) and Vgs(th) vs Temperature