

# SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

## ZVN4310G

ISSUE 3 - FEBRUARY 1996

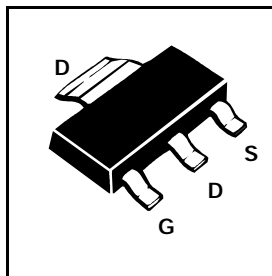
### FEATURES

- \* Very low  $R_{DS(ON)} = .54\Omega$

### APPLICATIONS

- \* DC - DC Converters
- \* Solenoids/Relay Drivers for Automotive

PARTMARKING DETAIL - ZVN4310



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	$V_{DS}$	100	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	$I_D$	1.67	A
Pulsed Drain Current	$I_{DM}$	12	A
Gate Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	3	W
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).

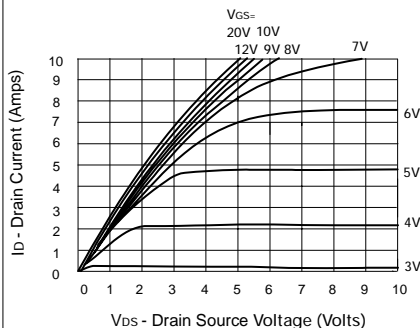
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	$BV_{DSS}$	100			V	$I_D=1mA, V_{GS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1		3	V	$I_D=1mA, V_{DS}=V_{GS}$
Gate-Body Leakage	$I_{GSS}$			20	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Zero Gate Voltage Drain Current	$I_{DSS}$			10 100	$\mu A$ $\mu A$	$V_{DS}=100V, V_{GS}=0V$ $V_{DS}=80V, V_{GS}=0V, T=125^{\circ}C(2)$
On-State Drain Current(1)	$I_{D(on)}$	9			A	$V_{DS}=25V, V_{GS}=10V$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		0.4 0.5	0.54 0.75	$\Omega$ $\Omega$	$V_{GS}=10V, I_D=3.3A$ $V_{GS}=5V, I_D=1.5A$
Forward Transconductance (1)	$g_{fs}$	0.6			S	$V_{DS}=25V, I_D=3.3A$
Input Capacitance (2)	$C_{iss}$			350	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
Common Source Output Capacitance (2)	$C_{oss}$			140	pF	
Reverse Transfer Capacitance (2)	$C_{rss}$			20	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$			8	ns	$V_{DD}\approx 25V, V_{GEN}=10V, I_D=3A$ $R_{GS}=50\Omega$
Rise Time (2)(3)	$t_r$			25	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$			30	ns	
Fall Time (2)(3)	$t_f$			16	ns	

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

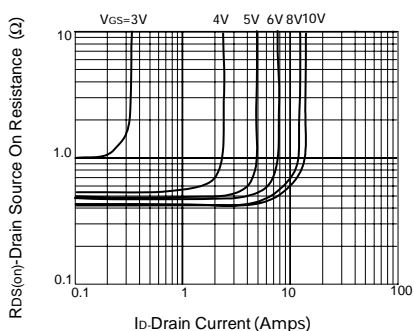
(3) Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator  
Spice parameter data is available upon request for this device

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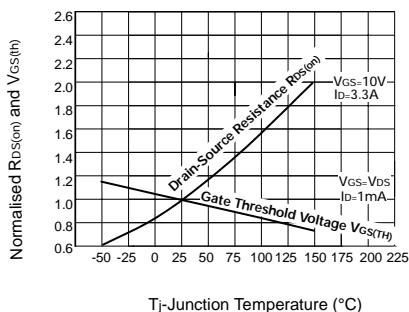
## TYPICAL CHARACTERISTICS



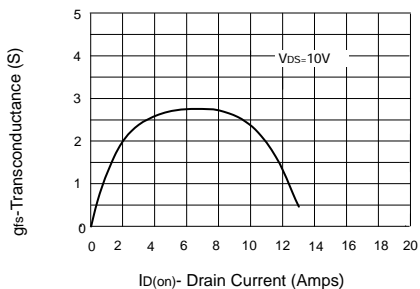
**Saturation Characteristics**



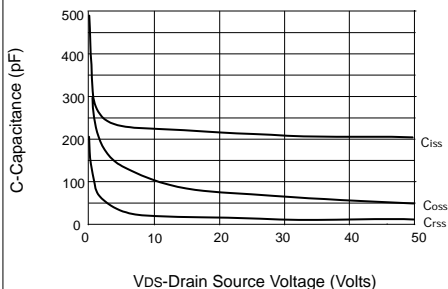
**On-resistance v drain current**



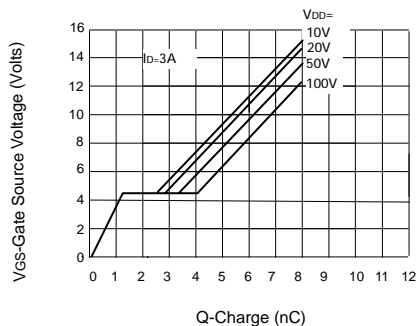
**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  v Temperature**



**Transconductance v drain current**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**