

# SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

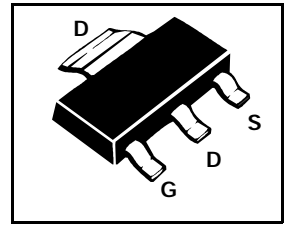
## ZVN4210G

ISSUE 2 - NOVEMBER 1995

### FEATURES

\* Low  $R_{DS(on)} = 1.5\Omega$

PARTMARKING DETAIL - ZVN4210



### ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	$V_{DS}$	100	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	$I_D$	0.8	A
Pulsed Drain Current	$I_{DM}$	6	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{tot}$	2	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.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	$BV_{DSS}$	100		V	$I_D=1mA, V_{GS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.8	2.4	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	$\mu A$ $\mu A$	$V_{DS}=100V, V_{GS}=0$ $V_{DS}=80V, V_{GS}=0V, T=125^{\circ}C(2)$
On-State Drain Current(1)	$I_{D(on)}$	2.5		A	$V_{DS}=25V, V_{GS}=10V$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		1.5 1.8	$\Omega$ $\Omega$	$V_{GS}=10V, I_D=1.5A$ $V_{GS}=5V, I_D=500mA$
Forward Transconductance(1)(2)	$g_{fs}$	250		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)	$C_{oss}$		40	pF	
Reverse Transfer Capacitance (2)	$C_{rss}$		12	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		4	ns	$V_{DD}=25V, I_D=1.5A$
Rise Time (2)(3)	$t_r$		8	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		20	ns	
Fall Time (2)(3)	$t_f$		30	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

# ZVN4210G

## DRAIN-SOURCE DIODE CHARACTERISTICS

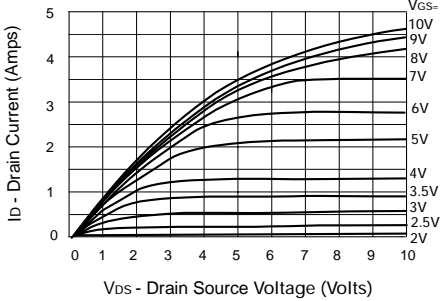
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Diode Forward Voltage (1)	$V_{SD}$	-	0.79	-	V	$I_S=0.32A, V_{GS}=0V$
		-	0.89	-	V	$I_S=1.0A, V_{GS}=0V$
Reverse Recovery Time (to $I_R=10\%$ )	$T_{RR}$	-	135		ns	$I_F=0.45A, V_{GS}=0V,$ $I_R=100mA, V_R=10V$

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

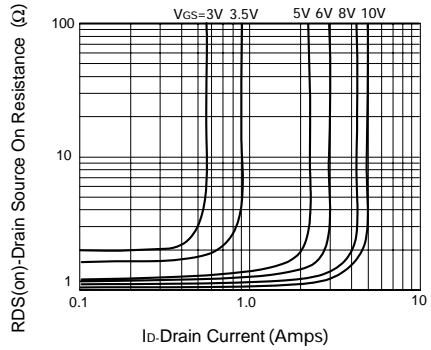
(3) Switching times measured with 50 $\Omega$  source impedance and <5ns rise time on a pulse generator  
Spice parameter data is available upon request for this device

# ZVN4210G

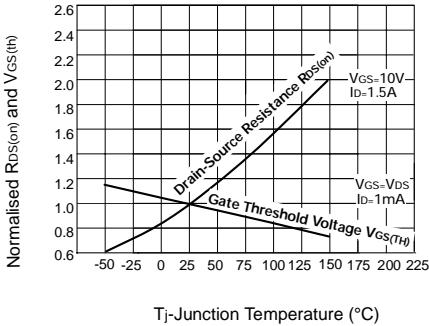
## TYPICAL CHARACTERISTICS



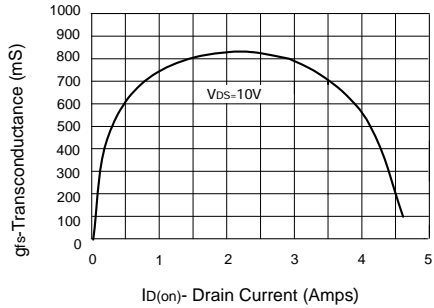
**Saturation Characteristics**



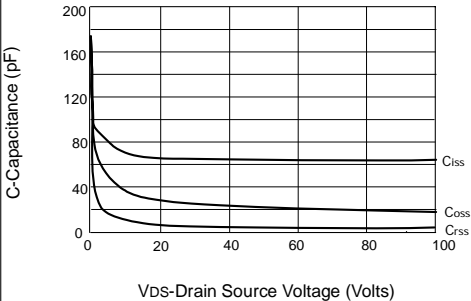
**On-resistance v drain current**



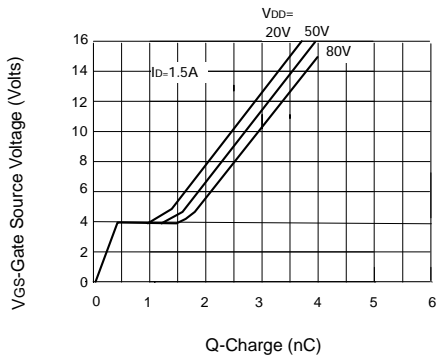
**Normalised  $R_{DS(on)}$  and  $V_{GS(th)}$  v Temperature**



**Transconductance v drain current**



**Capacitance v drain-source voltage**



**Gate charge v gate-source voltage**