

SOT223 N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 3 - FEBRUARY 1996

ZVN4310G

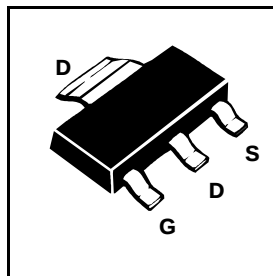
FEATURES

- * 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}	± 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).

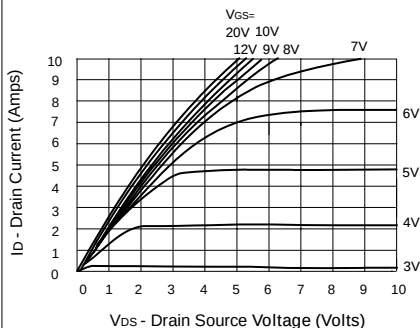
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	100			V	$I_D=1mA, V_{GS}=0V$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1		3	V	$I_D=1mA, V_{DS}=V_{GS}$
Gate-Body Leakage	I_{GSS}			20	nA	$V_{GS}=\pm 20V, V_{DS}=0V$
Zero Gate Voltage Drain Current	I_{DSS}			10 100	μA μA	$V_{DS}=100V, V_{GS}=0V$ $V_{DS}=80V, V_{GS}=0V, T=125^{\circ}C(2)$
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	Ω Ω	$V_{GS}=10V, I_D=3.3A$ $V_{GS}=5V, I_D=1.5A$
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	$V_{DD}=25V, V_{GEN}=10V, I_D=3A$ $R_{GS}=50\Omega$
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 μs . Duty cycle $\leq 2\%$ (2) Sample test.

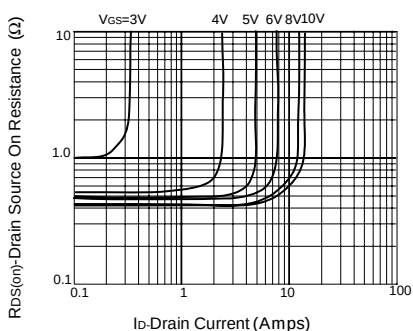
(3) Switching times measured with 50 Ω source impedance and $< 5ns$ rise time on a pulse generator
Spice parameter data is available upon request for this device

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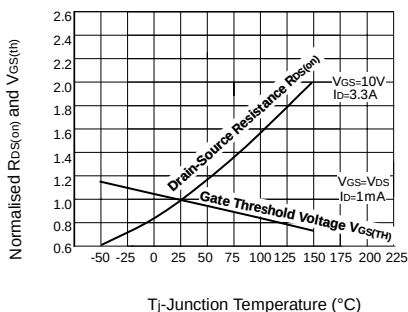
TYPICAL CHARACTERISTICS



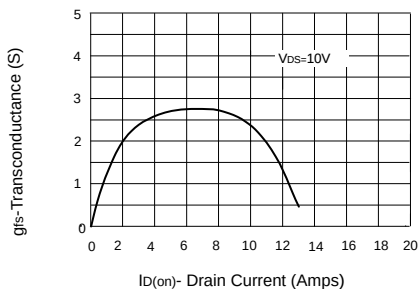
Saturation Characteristics



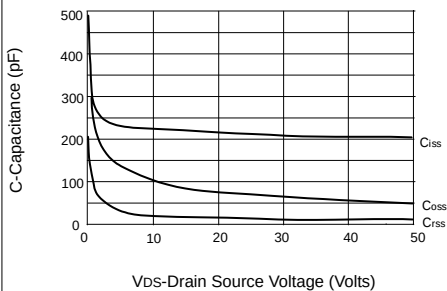
On-resistance v drain current



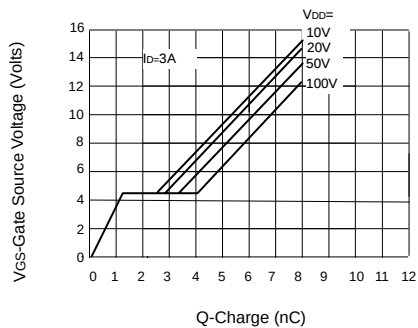
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ v Temperature



Transconductance v drain current



Capacitance v drain-source voltage



Gate charge v gate-source voltage