

SOT223 N-CHANNEL ENHANCEMENT
MODE VERTICAL DMOS FET

ISSUE 1 - APRIL 1998

ZVN4306GV

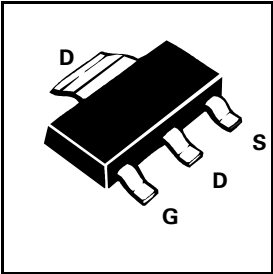
FEATURES

- * $BV_{DSS}=60V$
- * $R_{DS(ON)} = 0.33\Omega$
- * Repetitive Avalanche Rating

APPLICATIONS

- * DC - DC Converters
- * Solenoids/Relay Drivers for Automotive
- * Stepper Motor Drivers

PARTMARKING DETAIL - ZVN4306V



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	60	V
Continuous Drain Current at $T_{amb}=25^{\circ}C$	I_D	2.1	A
Pulsed Drain Current	I_{DM}	15	A
Gate Source Voltage	V_{GS}	± 20	V
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	3	W
Avalanche Current-Repetitive	I_{AR}	1	A
Avalanche Energy-Repetitive	E_{AR}	25	mJ
Operating and Storage Temperature Range	$T_j:T_{stg}$	-55 to +150	$^{\circ}C$

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ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	60			V	$I_D=1\text{mA}$, $V_{GS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	1.3		3	V	$I_D=1\text{mA}$, $V_{DS}=V_{GS}$
Gate-Body Leakage	I_{GSS}			20	nA	$V_{GS}=\pm 20\text{V}$, $V_{DS}=0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			10 100	μA μA	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$ $V_{DS}=48\text{V}$, $V_{GS}=0\text{V}$, $T=125^{\circ}\text{C}$ (2)
On-State Drain Current(1)	$I_{D(on)}$	12			A	$V_{DS}=10\text{V}$, $V_{GS}=10\text{V}$
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		0.22 0.32	0.33 0.45	Ω Ω	$V_{GS}=10\text{V}$, $I_D=3\text{A}$ $V_{GS}=5\text{V}$, $I_D=1.5\text{A}$
Forward Transconductance (1)	g_{fs}	0.7			S	$V_{DS}=25\text{V}$, $I_D=3\text{A}$
Input Capacitance (2)	C_{iss}			350	pF	$V_{DS}=25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$
Common Source Output Capacitance (2)	C_{oss}			140	pF	
Reverse Transfer Capacitance (2)	C_{rss}			30	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$			8	ns	$V_{DD}\approx 25\text{V}$, $V_{GEN}=10\text{V}$, $I_D=3\text{A}$
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	

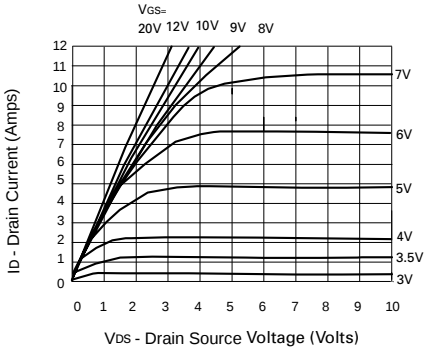
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$ (2) Sample test.

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

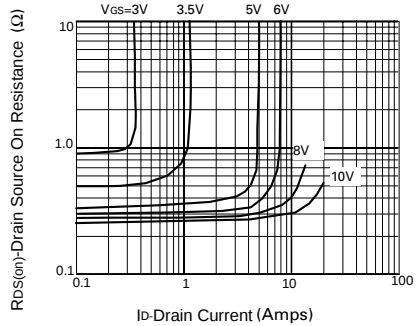
Spice parameter data is available upon request for this device

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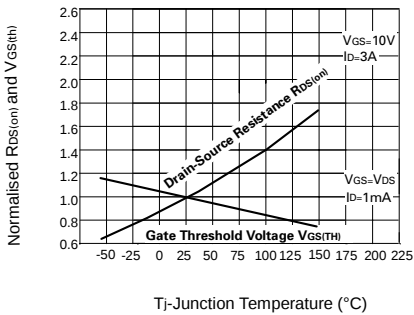
TYPICAL CHARACTERISTICS



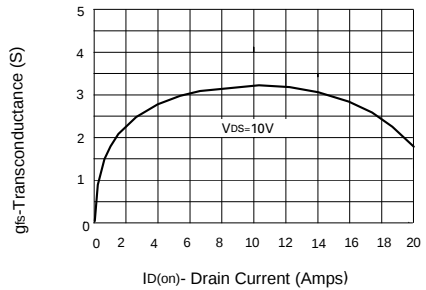
Saturation Characteristics



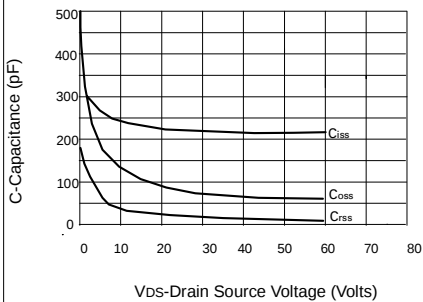
On-resistance v drain current



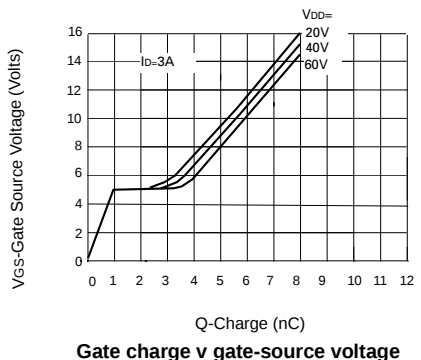
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ v Temperature



Transconductance v drain current



Capacitance v drain-source voltage



Gate charge v gate-source voltage

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TYPICAL CHARACTERISTICS

