

P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 2 – SEPTEMBER 94

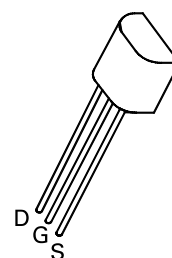
ZVP4424A

FEATURES

- * 240 Volt V_{DS}
- * $R_{DS(on)}=9\Omega$
- * Low threshold

APPLICATIONS

- * Electronic Hook Switch



E-Line
TO92 Compatible

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	-240	V
Continuous Drain Current at $T_{amb}=25^{\circ}\text{C}$	I_D	-200	mA
Pulsed Drain Current	I_{DM}	-1	A
Gate Source Voltage	V_{GS}	± 40	V
Power Dissipation at $T_{amb}=25^{\circ}\text{C}$	P_{tot}	750	mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}\text{C}$

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

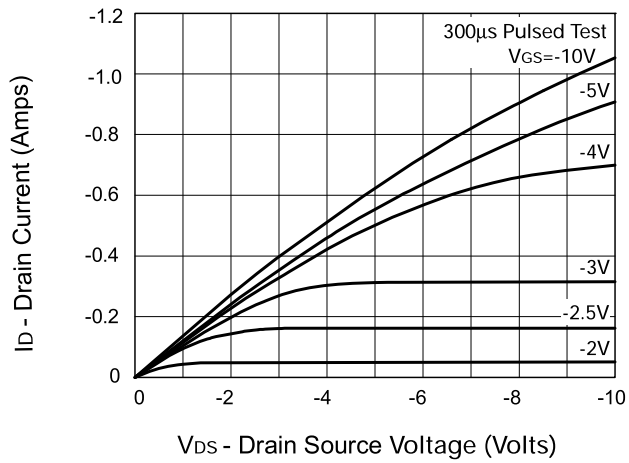
PARAMETER	SYMBOL	MIN.	TYP	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	-240			V	$I_D=-1\text{mA}$, $V_{GS}=0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-0.7	-1.4	-2.0	V	$I_D=-1\text{mA}$, $V_{DS}=V_{GS}$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS}=\pm 40\text{V}$, $V_{DS}=0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			-10 -100	μA μA	$V_{DS}=-240\text{V}$, $V_{GS}=0$ $V_{DS}=-190\text{V}$, $V_{GS}=0\text{V}$, $T=125^{\circ}\text{C}$
On-State Drain Current	$I_{D(on)}$	-0.75	-1.0		A	$V_{DS}=-10\text{V}$, $V_{GS}=-10\text{V}$
Static Drain-Source On-State Resistance	$R_{DS(on)}$		7.1 8.8	9 11	Ω Ω	$V_{GS}=-10\text{V}$, $I_D=-200\text{mA}$ $V_{GS}=-3.5\text{V}$, $I_D=-100\text{mA}$
Forward Transconductance (1) (2)	g_{fs}	125			mS	$V_{DS}=-10\text{V}$, $I_D=-0.2\text{A}$
Input Capacitance (2)	C_{iss}		100	200	pF	$V_{DS}=-25\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$
Common Source Output Capacitance (2)	C_{oss}		18	25	pF	
Reverse Transfer Capacitance (2)	C_{rss}		5	15	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		8	15	ns	$V_{DD}\approx -50\text{V}$, $I_D=-0.25\text{A}$, $V_{GEN}=-10\text{V}$
Rise Time (2)(3)	t_r		8	15	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		26	40	ns	
Fall Time (2)(3)	t_f		20	30	ns	

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

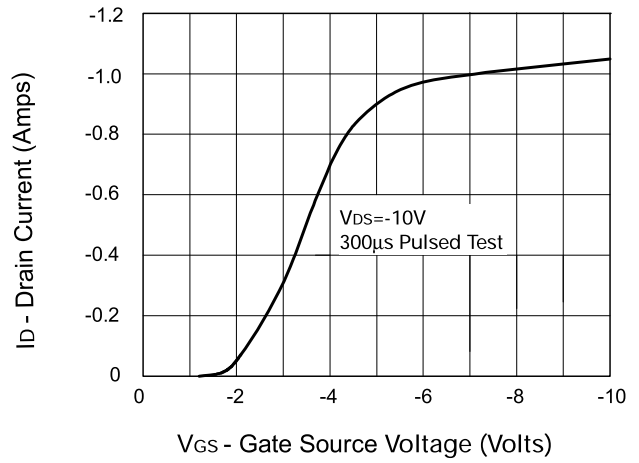
(3) Switching times measured with 50 Ω source impedance and <5ns rise time on a pulse generator

ZVP4424A

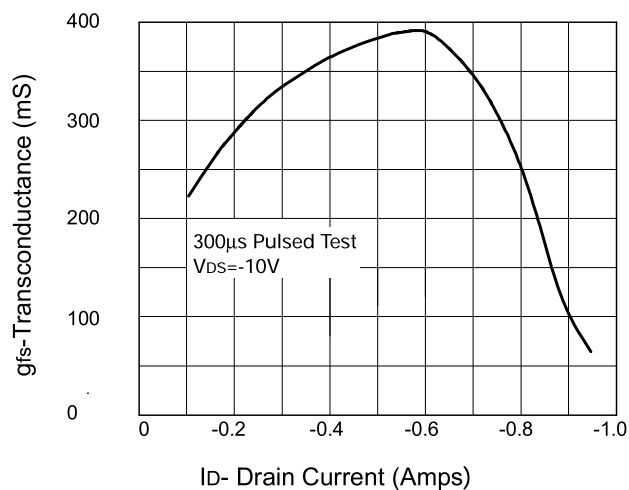
TYPICAL CHARACTERISTICS



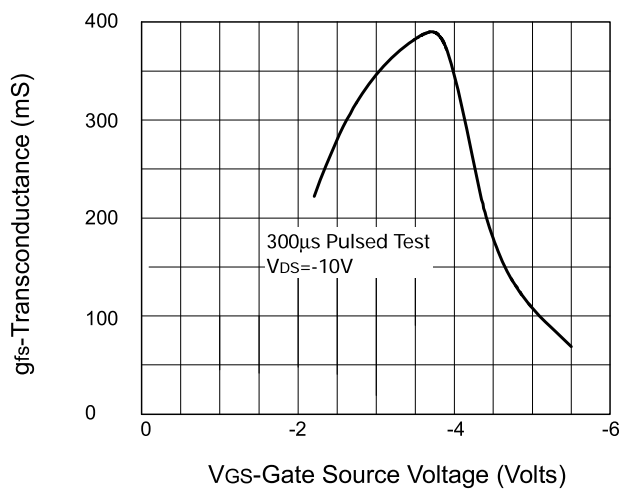
Saturation Characteristics



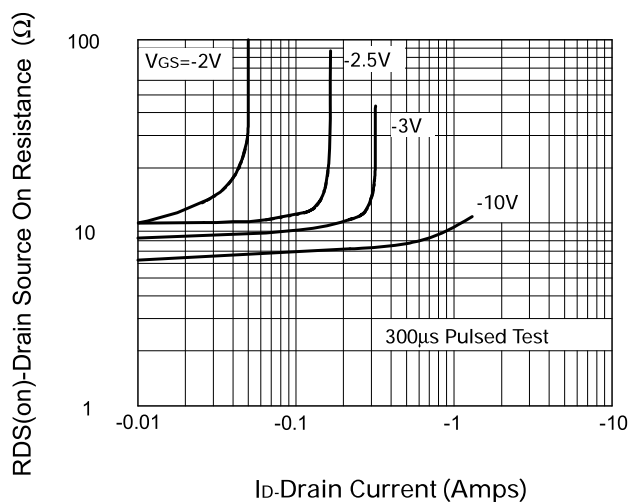
Transfer Characteristics



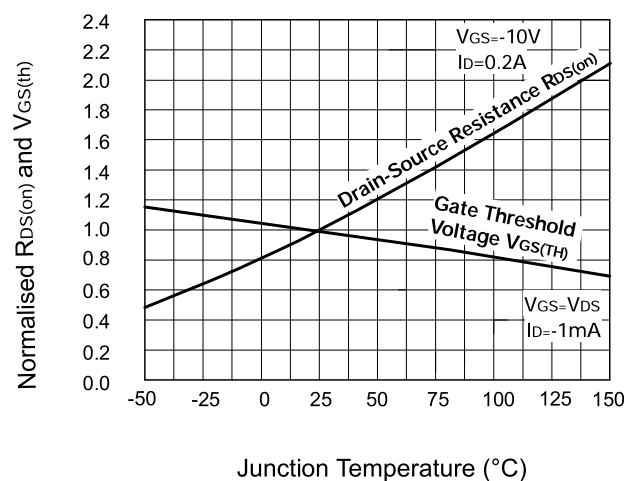
Transconductance v drain current



Transconductance v gate-source voltage



On-resistance vs Drain Current



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

ZVP4424A

TYPICAL CHARACTERISTICS

