



**THE DATASHEET OF
ZVP4424ASTZ**



P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 2 – SEPTEMBER 94

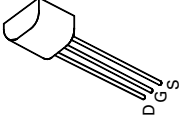
FEATURES

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

APPLICATIONS

- * Electronic Hook Switch

ZVP4424A



E-Line
TO92 Compatible

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FEATURES

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APPLICATIONS

- * Electronic Hook Switch

REFER TO ZVP4424A FOR GRAPHS

ABSOLUTE MAXIMUM RATINGS

PARAMETER	VALUE
Drain-Source Voltage	-240
Continuous Drain Current at $T_{amb}=25^{\circ}\text{C}$	-200
Pulsed Drain Current	-1
Gate Source Voltage	± 40
Power Dissipation at $T_{amb}=25^{\circ}\text{C}$	750
Operating and Storage Temperature Range	-55 to +150

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	
Common Source Output Capacitance (2)	C_{oss}		18	25	pF	$V_{DS}=-25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$
Reverse Transfer Capacitance (2)	C_{rss}		5	15	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		8	15	ns	
Rise Time (2)(3)	t_r		8	15	ns	$V_{DD}=-50\text{V}, I_D=-0.25\text{A}, V_{GEN}=-10\text{V}$
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

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

PARAMETER	SYMBOL	VALUE
Drain-Source Breakdown Voltage	BV_{DSS}	-
Gate-Source Threshold Voltage	$V_{GS(th)}$	-
Gate-Body Leakage	I_{GSS}	
Zero Gate Voltage Drain Current	I_{DSS}	
On-State Drain Current	$I_{D(on)}$	-
Static Drain-Source On-State Resistance	$R_{DS(on)}$	
Forward Transconductance (1) (2)	g_{fs}	1
Input Capacitance (2)	C_{iss}	
Common Source Output Capacitance (2)	C_{oss}	
Reverse Transfer Capacitance (2)	C_{rss}	
Turn-On Delay Time (2)(3)	$t_{d(on)}$	
Rise Time (2)(3)	t_r	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$	
Fall Time (2)(3)	t_f	

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

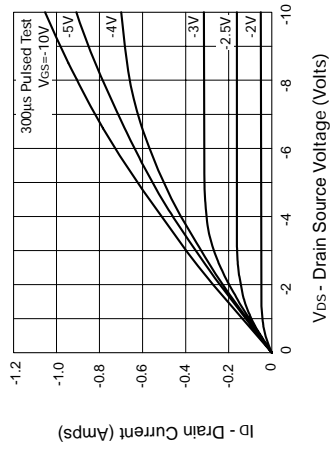
(3) Switching times measured with 50 Ω so

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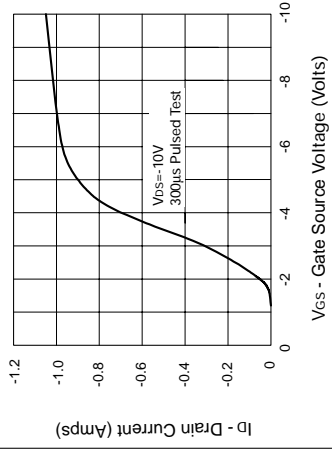
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TYPICAL CHARACTERISTICS

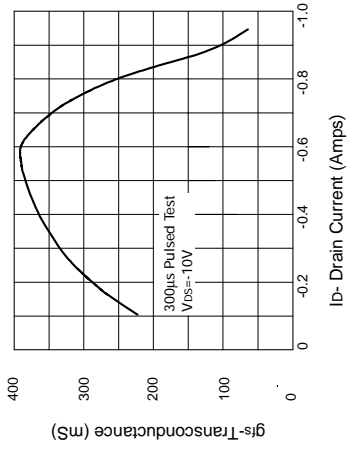
TYPICAL



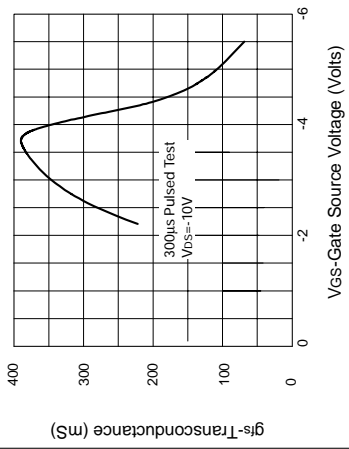
Saturation Characteristics



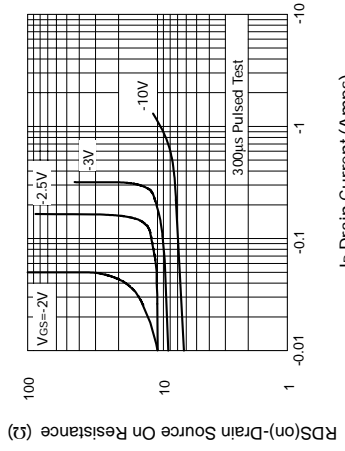
Transfer Characteristics



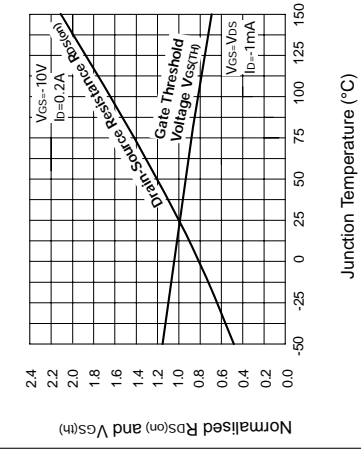
Transconductance v drain current



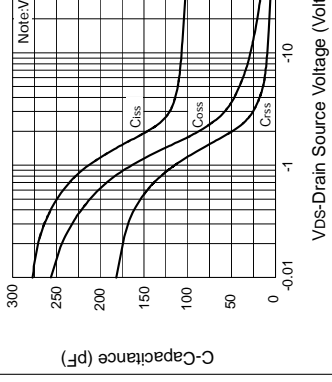
Transconductance v gate-source voltage



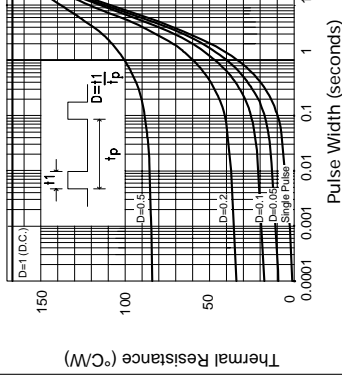
On-resistance v Drain Current



Normalised RDS(on) and VGS(th) vs Temperature



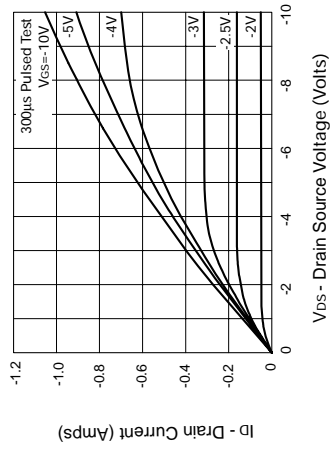
Capacitance v drain-source voltage



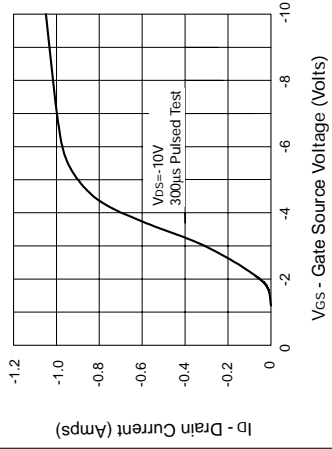
Maximum transient thermal impedance

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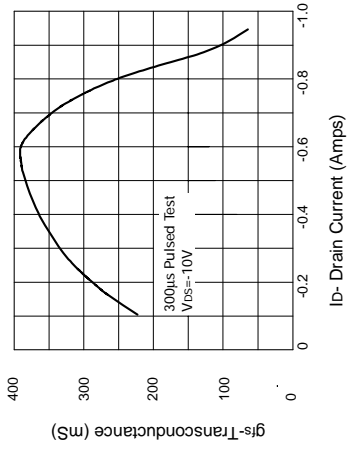
TYPICAL CHARACTERISTICS



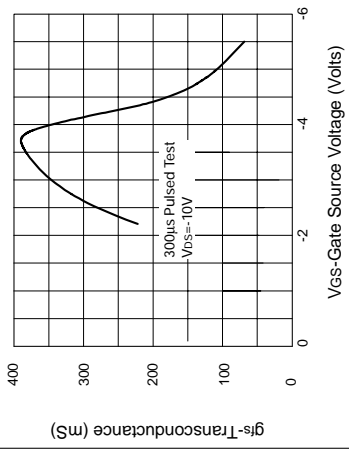
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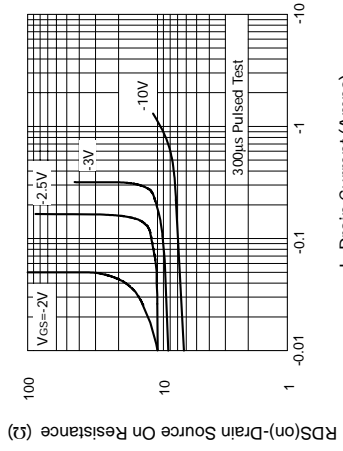
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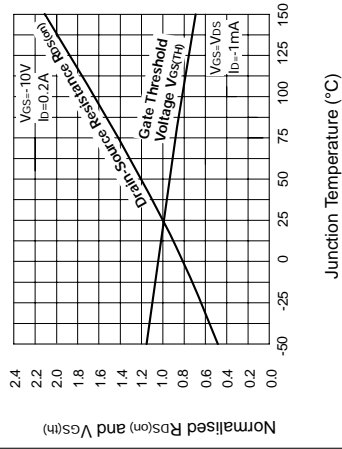
Transconductance v drain current



Transconductance v gate-source voltage



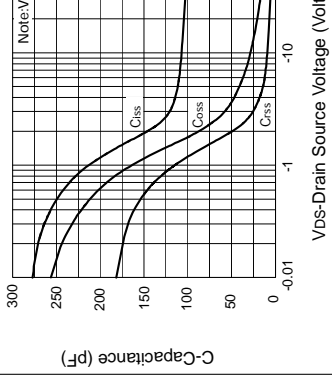
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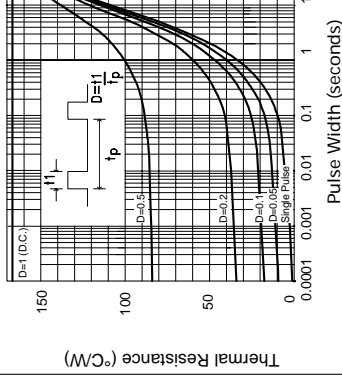
Normalised RDS(on) and Vgs(th) vs Temperature

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TYPICAL



Capacitance v drain-source voltage



Maximum transient thermal impedance

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