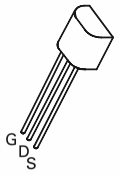
P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

ISSUE 2 – MARCH 94

FEATURES

- 200 Volt V_{DS}
- $R_{DS(on)}$=25Ω

ZVP2120C



E-Line
TO92 Compatible

REFER TO ZVP2120A FOR GRAPHS

ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	-200	V
Continuous Drain Current at T_{amb}=25°C	I_D	-120	mA
Pulsed Drain Current	I_{DM}	-1.2	A
Gate Source Voltage	V_{GS}	± 20	V
Power Dissipation at T_{amb}=25°C	P_{tot}	700	mW
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Drain-Source Breakdown Voltage	BV_{DSS}	-200		V	I_D=-1mA, V_{GS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.5	-3.5	V	ID=-1mA, V_{DS}= V_{GS}
Gate-Body Leakage	I_{GSS}		20	nA	V_{GS}=± 20V, V_{DS}=0V
Zero Gate Voltage Drain Current	I_{DSS}		-10 -100	µA µA	V_{DS}=-200 V, V_{GS}=0 V_{DS}=-160 V, V_{GS}=0V, T=125°C(2)
On-State Drain Current(1)	$I_{D(on)}$	-300		mA	V_{DS}=-25 V, V_{GS}=-10V
Static Drain-Source On-State Resistance (1)	$R_{DS(on)}$		25	Ω	V_{GS}=-10V,I_D=-150mA
Forward Transconductance (1)(2)	g_{fs}	50		mS	V_{DS}=-25V,I_D=-150mA
Input Capacitance (2)	C_{iss}		100	pF	V_{DS}=-25V, V_{GS}=0V, f=1MHz
Common Source Output Capacitance (2)	C_{oss}		25	pF	
Reverse Transfer Capacitance (2)	C_{rss}		7	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		7	ns	V_{DD}≈-25V, I_D=-150mA
Rise Time (2)(3)	t_r		15	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		12	ns	
Fall Time (2)(3)	t_f		15	ns	

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

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

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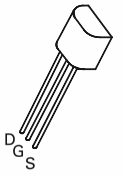

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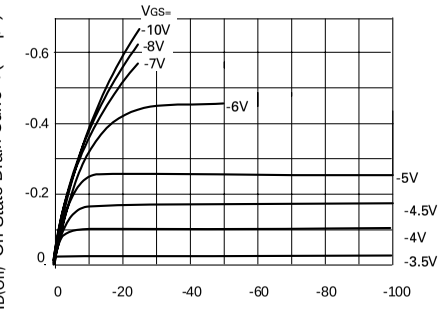
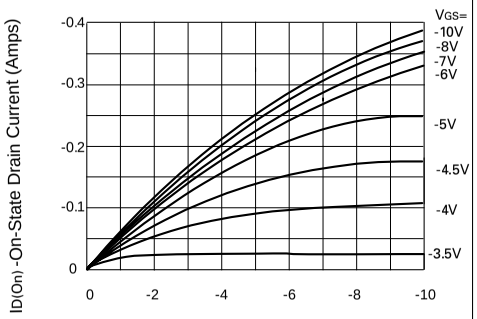
Input Capacitance (2)	C_{iss}		100	pF	V_{DS}=-25V, V_{GS}=0V, f=1MHz
Common Source Output Capacitance (2)	C_{oss}		25	pF	
Reverse Transfer Capacitance (2)	C_{rss}		7	pF	
Turn-On Delay Time (2)(3)	$t_{d(on)}$		7	ns	V_{DD}≈-25V, I_D=-150mA
Rise Time (2)(3)	t_r		15	ns	
Turn-Off Delay Time (2)(3)	$t_{d(off)}$		12	ns	
Fall Time (2)(3)	t_f		15	ns	

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

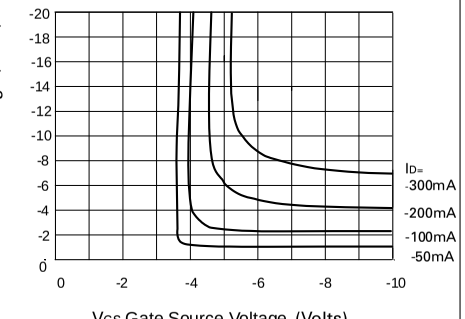
TYPICAL CHARACTERISTICS



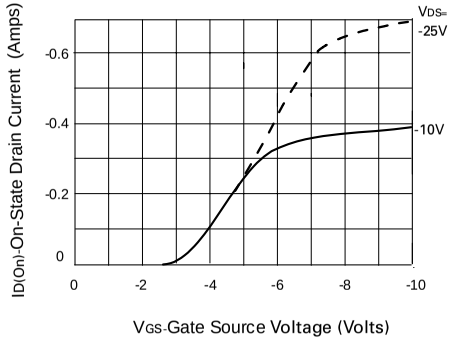
Output Characteristics



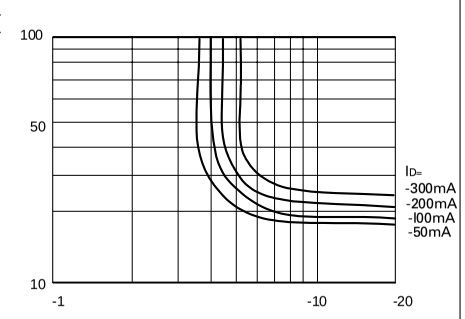
Saturation Characteristics



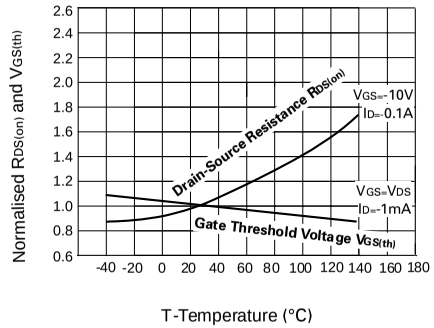
Voltage Saturation Characteristics



Transfer Characteristics



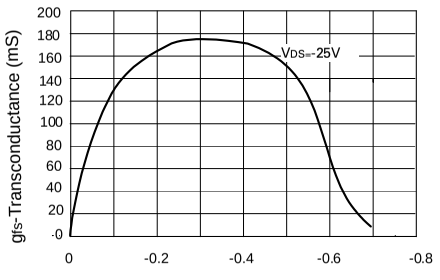
On-resistance vs gate-source voltage



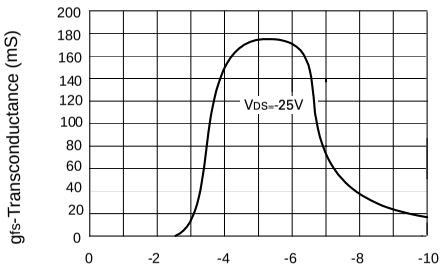
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ vs Temperature

ZVP2120A

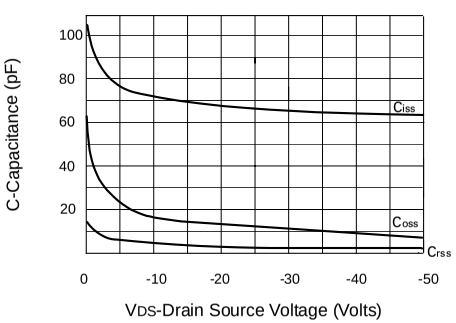
TYPICAL CHARACTERISTICS



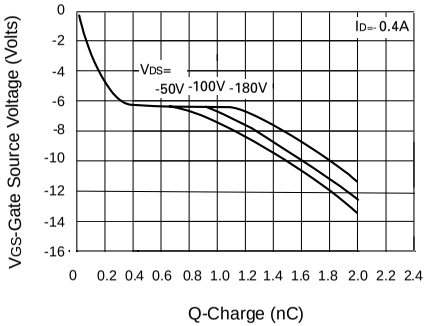
Transconductance v drain current



Transconductance v gate-source voltage

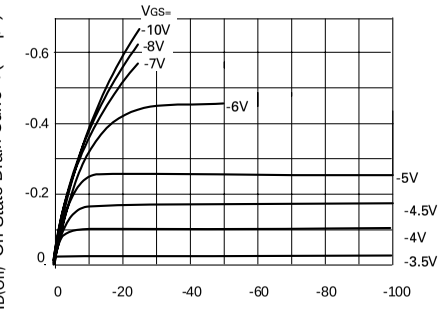


Capacitance v drain-source voltage

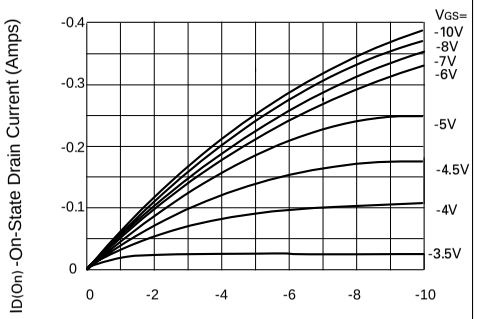


Gate charge v gate-source voltage

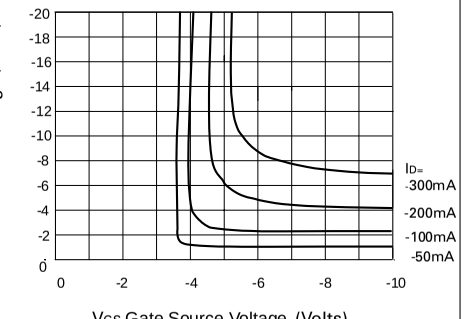
TYPICAL CHARACTERISTICS



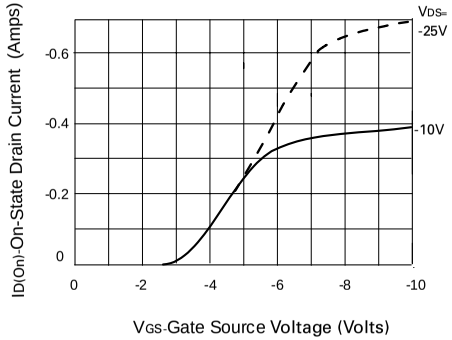
Output Characteristics



Saturation Characteristics



Voltage Saturation Characteristics



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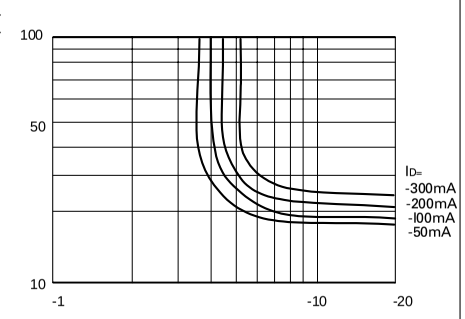

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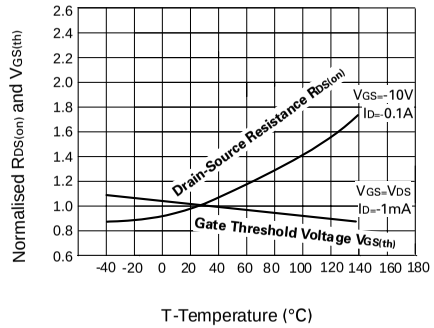

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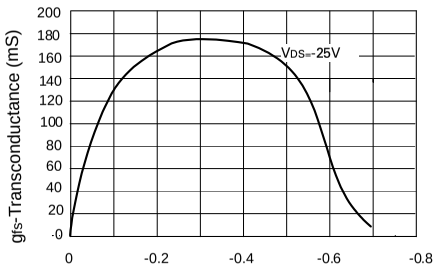
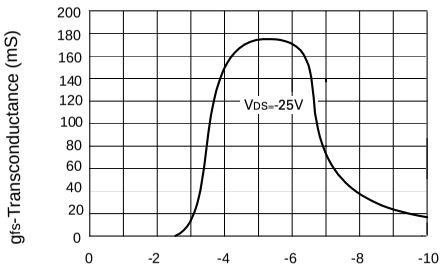


Transconductance v drain current



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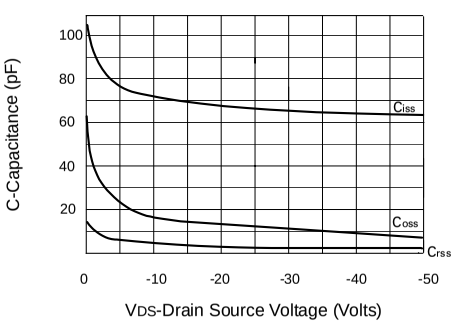
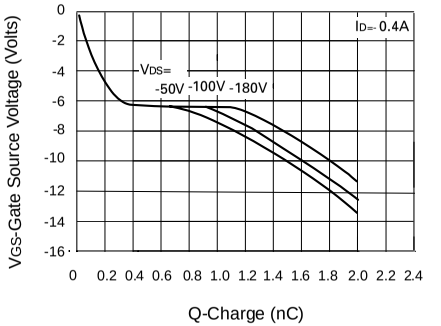


Capacitance v drain-source voltage



Gate charge v gate-source voltage