ZXMP2120E5

200V P-CHANNEL ENHANCEMENT MODE MOSFET

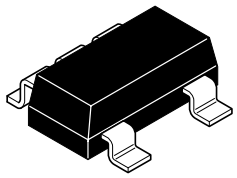
SUMMARY

$V_{(BR)DSS}$ =-200V; $R_{DS(ON)}$ = 28Ω; I_D = -122mA

DESCRIPTION

This 200V enhancement mode P-channel MOSFET provides users with a competitive specification offering efficient power handling capability, high impedance and is free from thermal runaway and thermally induced secondary breakdown. Applications benefiting from this device include a variety of Telecom and general high voltage circuits.

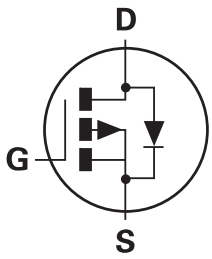
A 4 pin SOT223 version is also available (ZXMP2120G4).



SOT23-5

FEATURES

- High voltage
- Low on-resistance
- Fast switching speed
- Low gate drive
- Low threshold
- SOT23-5 package variant engineered to increase spacing between high voltage pins.



APPLICATIONS

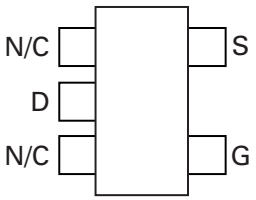
- Active clamping of primary side MOSFETs in 48 volt DC-DC converters

ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXMP2120E5TA	7	8mm embossed	3,000 units

DEVICE MARKING

- P120



PINOUT - TOP VIEW

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	-200	V
Gate Source Voltage	V_{GS}	±20	V
Continuous Drain Current (V_{GS}=10V; T_{amb}=25°C)[a]	I_D	-122	mA
Pulsed Drain Current (c)	I_{DM}	-0.7	A
Pulsed Source Current (Body Diode) [c]	I_{SM}	-0.7	A
Power Dissipation at T_{amb}=25°C [a] Linear Derating Factor	P_D	0.75 6	W mW/°C
Operating and Storage Temperature Range	T_j:T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient [a]	$R_{\theta JA}$	167	°C/W

NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at t≤5 secs.

(c) Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-200			V	I_D=-1mA, V_{GS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.5		-3.5	V	I_D=-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)	$R_{DS(on)}$			28	Ω	V_{GS}=-10V, I_D=-150mA
Forward Transconductance (1)(2)	g_{fs}	50			mS	V_{DS}=-25V,I_D=-150mA
DYNAMIC						
Input Capacitance (2)	C_{iss}			100	pF	V_{DS}=-25 V, V_{GS}=0V, f=1MHz
Output Capacitance (2)	C_{oss}			25	pF	
Reverse Transfer Capacitance (2)	C_{rss}			7	pF	
SWITCHING						
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	

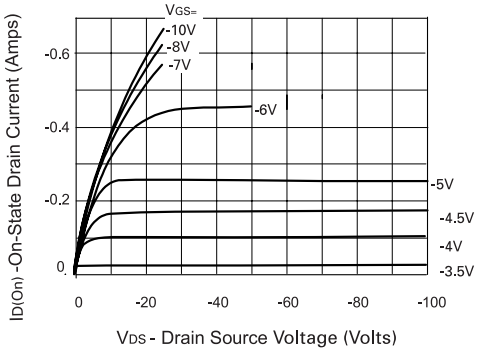
NOTES:

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

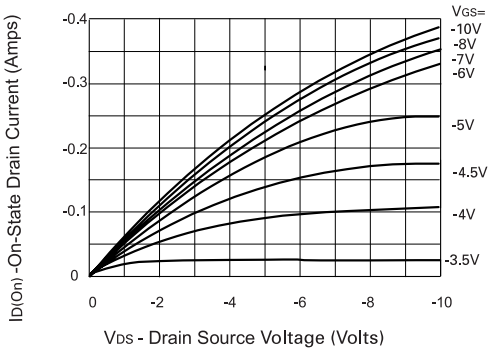
(2) Sample test.

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

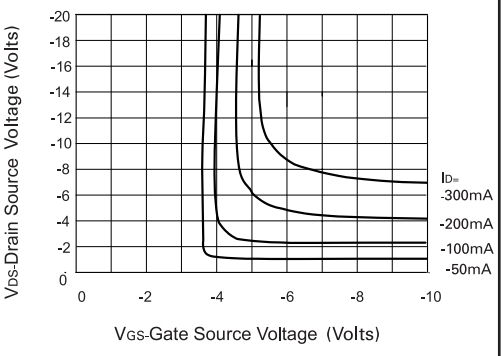
TYPICAL CHARACTERISTICS



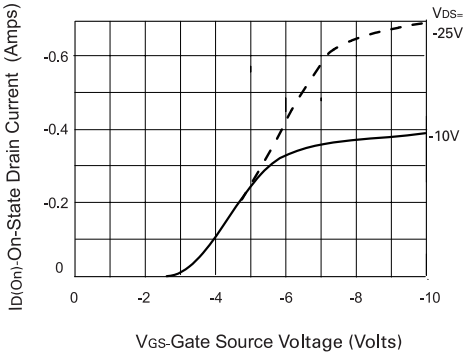
Output Characteristics



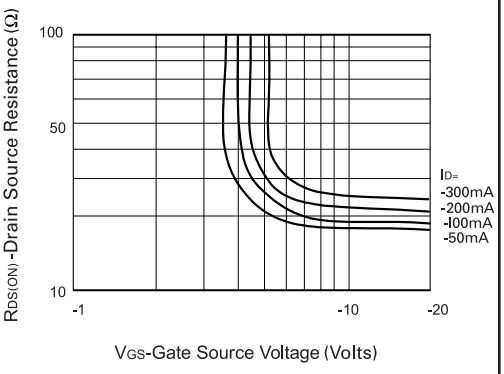
Saturation Characteristics



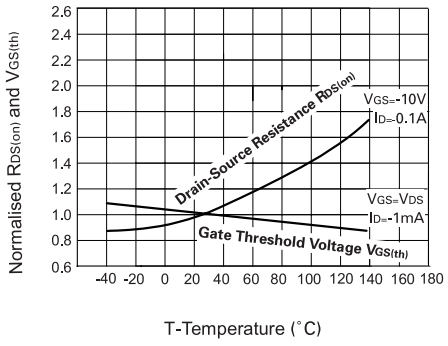
Voltage Saturation Characteristics



Transfer Characteristics

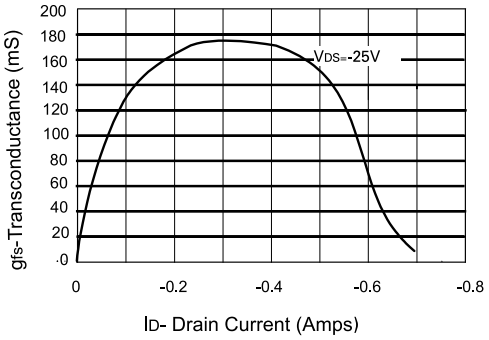


On-resistance vs gate-source voltage

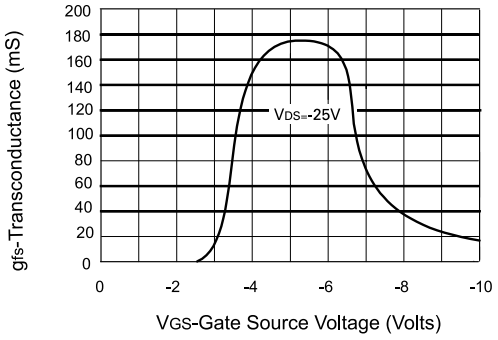


Normalised $R_{DS(on)}$ and $V_{GS(th)}$ vs Temperature

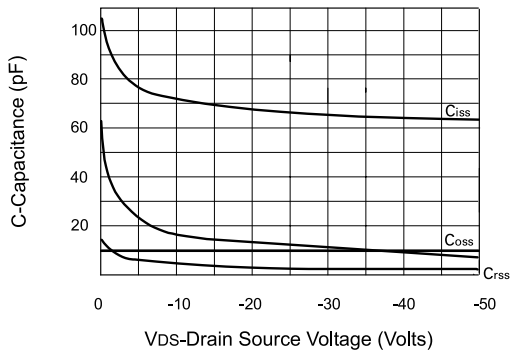
CHARACTERISTICS



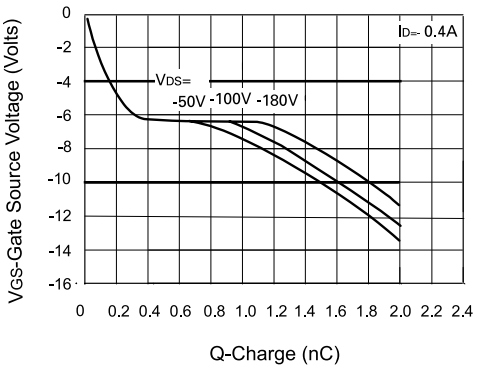
Transconductance v drain current



Transconductance v gate-source voltage



Capacitance v drain-source voltage



Gate charge v gate-source voltage

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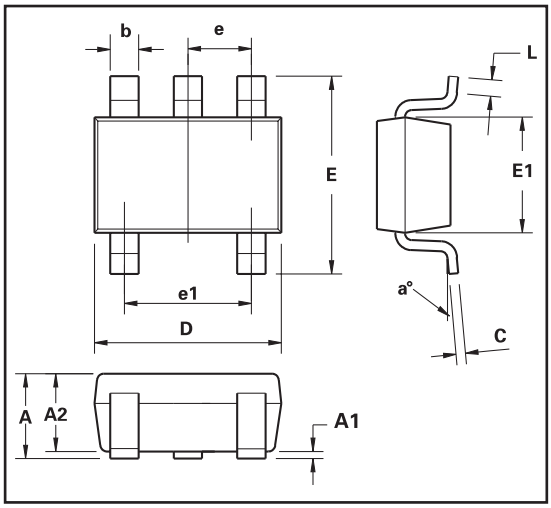
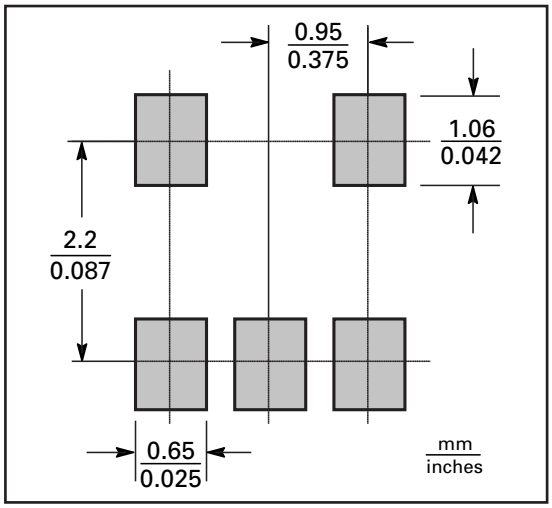
PACKAGE OUTLINE



PAD LAYOUT DETAILS



Controlling dimensions are in millimeters. Approximate conversions are given in inches

PACKAGE DIMENSIONS

DIM	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
A	0.90	1.45	0.0354	0.0570
A1	-	0.15	-	0.0059
A2	0.90	1.30	0.0354	0.0511
b	0.20	0.50	0.0078	0.0196
C	0.09	0.26	0.0035	0.0102
D	2.70	3.10	0.1062	0.1220

DIM	Millimeters		Inches	
	MIN.	MAX.	MIN.	MAX.
E	2.20	3.20	0.0866	0.1181
E1	1.30	1.80	0.0511	0.0708
e	0.95 REF		0.0374 REF	
e1	1.90 REF		0.0748 REF	
L	0.10	0.60	0.0039	0.0236
a	0°	30°	0°	30°

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