

ZXMP2120E5

200V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

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

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).

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

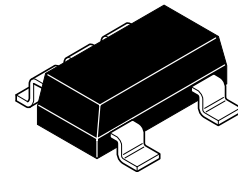
- Active clamping of primary side MOSFETs in 48 volt DC-DC converters

ORDERING INFORMATION

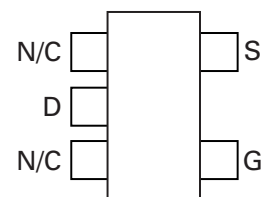
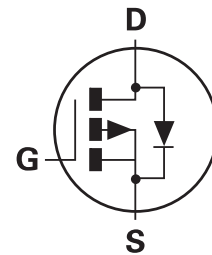
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXMP2120E5TA	7	8mm embossed	3,000 units

DEVICE MARKING

- P120



SOT23-5



PINOUT - TOP VIEW

ZXMP2120E5

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	-200	V
Gate Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS}=10V$; $T_{amb}=25^{\circ}C$) ^(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 $T_{amb}=25^{\circ}C$ ^(a)	P_D	0.75	W
Linear Derating Factor		6	mW/ $^{\circ}C$
Operating and Storage Temperature Range	T_j ; T_{stg}	-55 to +150	$^{\circ}C$

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient ^(a)	$R_{\theta JA}$	167	$^{\circ}C/W$

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 $t \leq 5$ secs.

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

ZXMP2120E5

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-200			V	$I_D = -1\text{mA}$, $V_{GS} = 0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.5		-3.5	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	$V_{DS} = -200\text{V}$, $V_{GS} = 0$ $V_{DS} = -160\text{V}$, $V_{GS} = 0\text{V}$, $T = 125^{\circ}\text{C}$ (2)
On-State Drain Current ⁽¹⁾	$I_{D(on)}$	-300			mA	$V_{DS} = -25\text{V}$, $V_{GS} = -10\text{V}$
Static Drain-Source On-State Resistance ⁽¹⁾	$R_{DS(on)}$			28	Ω	$V_{GS} = -10\text{V}$, $I_D = -150\text{mA}$
Forward Transconductance ⁽¹⁾⁽²⁾	g_{fs}	50			mS	$V_{DS} = -25\text{V}$, $I_D = -150\text{mA}$
DYNAMIC						
Input Capacitance ⁽²⁾	C_{iss}			100	pF	$V_{DS} = -25\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$
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	$V_{DD} = -25\text{V}$, $I_D = -150\text{mA}$
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:

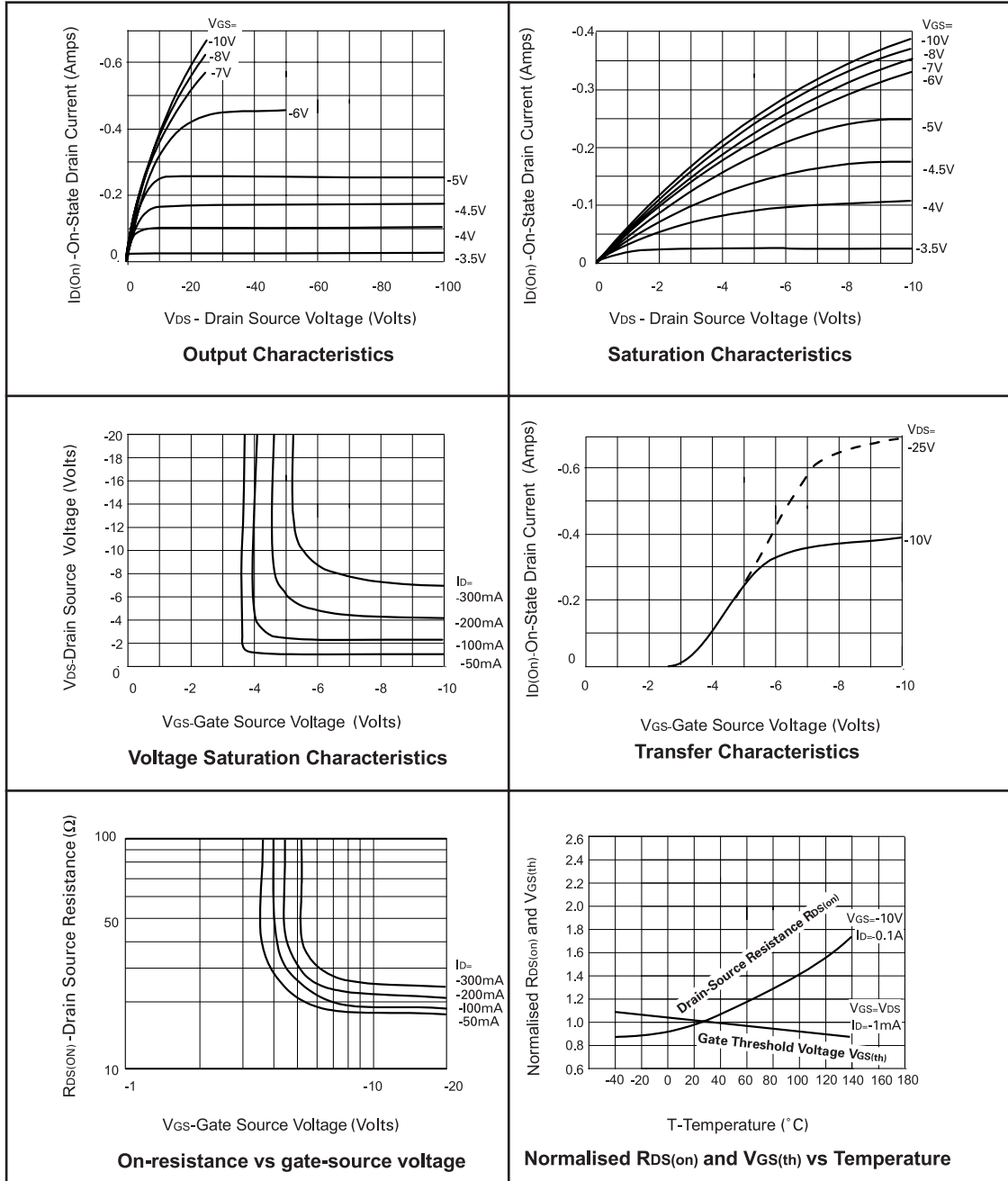
(1) Measured under pulsed conditions. Width=300 μs . Duty cycle $\leq 2\%$.

(2) Sample test.

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

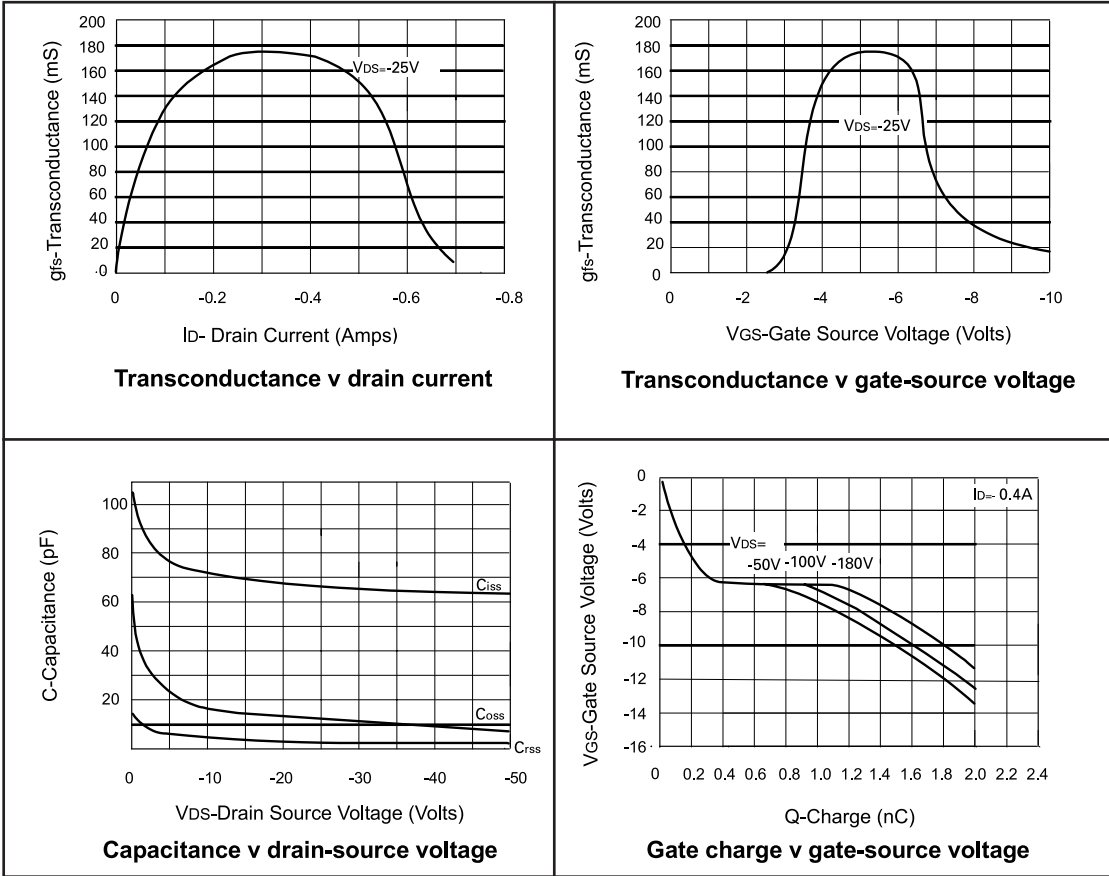
ZXMP2120E5

TYPICAL CHARACTERISTICS



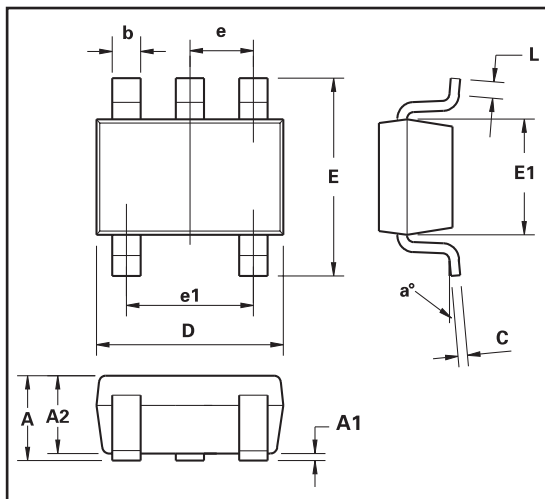
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CHARACTERISTICS

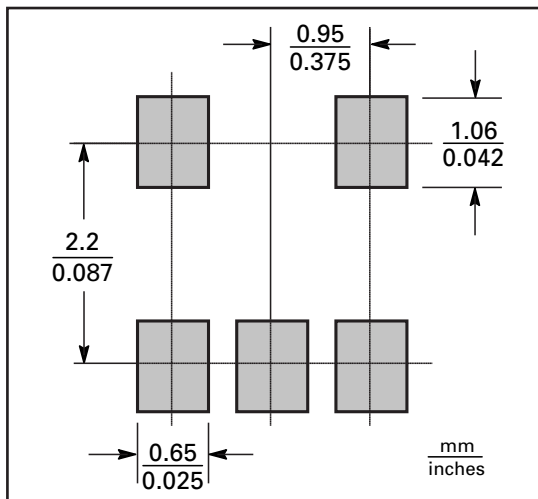


ZXMP2120E5

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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