ZXMP2120G4

200V P-CHANNEL ENHANCEMENT MODE MOSFET

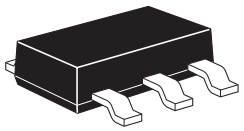
SUMMARY

$V_{(BR)DSS}$ =-200V; $R_{DS(ON)}$ = 25Ω; I_D = 200mA

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.

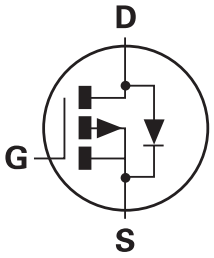
A SOT23-5 version is also available (ZXMP2120E5).



SOT223

FEATURES

- High voltage
- Low on-resistance
- Fast switching speed
- Low gate drive
- Low threshold
- SOT223 package variant engineered to increase spacing between high voltage pins.

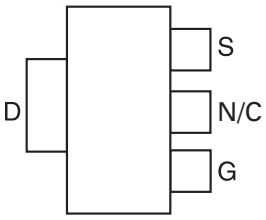


APPLICATIONS

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

ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXMP2120G4TA	7	12mm embossed	1,000 units
ZXMP2120G4TC	13	12mm embossed	4,000 units



PINOUT - TOP VIEW

DEVICE MARKING

ZXMP
2120

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	-200	V
Gate Source Voltage	V_{GS}	±20	V
Continuous Drain Current (V_{GS}=10V; T_{amb}=25°C)[a]	I_D	-200	mA
Pulsed Drain Current [c]	I_{DM}	-1.2	A
Pulsed Source Current (Body Diode) [c]	I_{SM}	-1.2	A
Power Dissipation at T_{amb}=25°C [a] Linear derating factor	P_{tot}	2.0 1.6	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]	$R_{\theta JA}$	62.5	°C/W
Junction to Ambient [b]	$R_{\theta JA}$	32	°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)

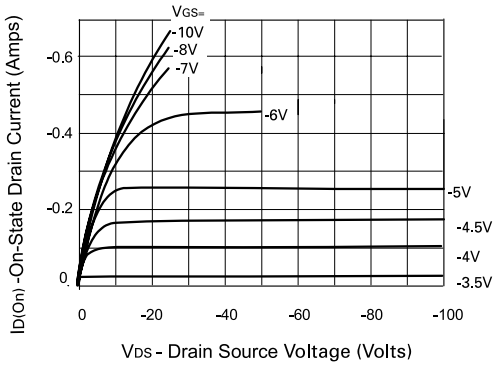
PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS
Drain-Source Breakdown Voltage	BV_{DSS}	-200		V	I_D=-1mA, V_{GS}=0V
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.5	-3.5	V	I_D=-1mA, V_{DS}= V_{GS}
Gate-Body Leakage	I_{GSS}		20	nA	V_{GS}= ±20V, V_{DS}=0V
Zero Gate Voltage Drain Current	I_{DSS}		-10 -100	µA µA	V_{DS}=-200 V, V_{GS}=0V 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%

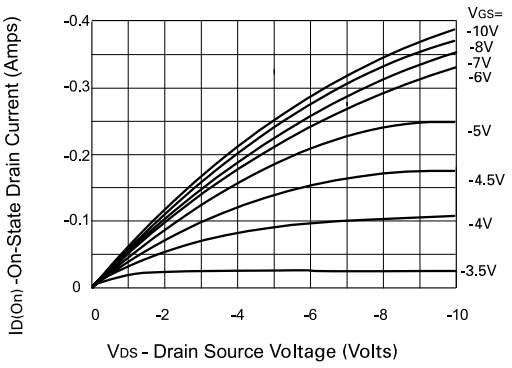
(2) Sample test.

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

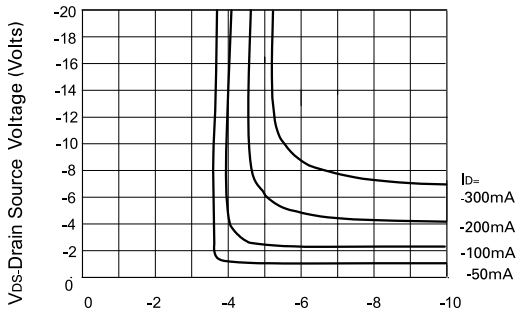
TYPICAL CHARACTERISTICS



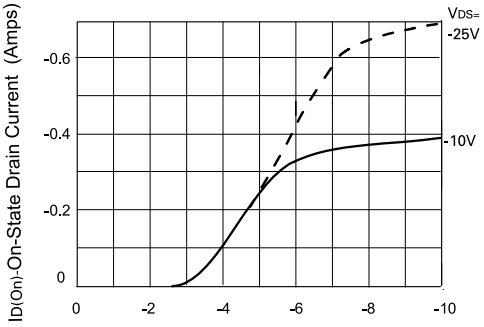
Output Characteristics



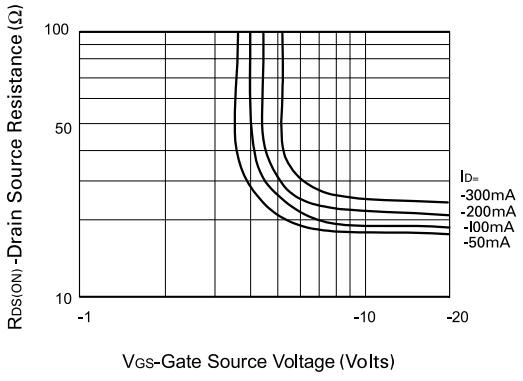
Saturation Characteristics



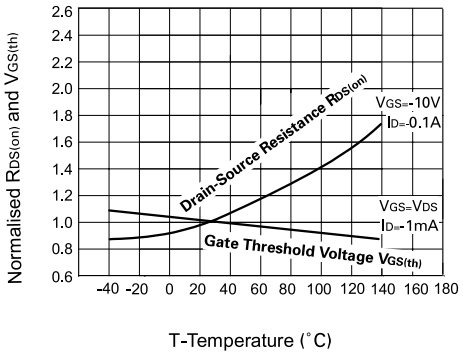
Voltage Saturation Characteristics



Transfer Characteristics

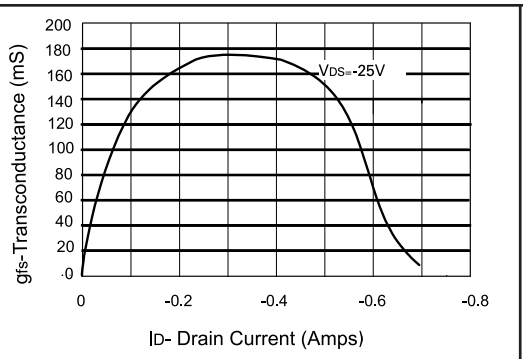


On-resistance vs gate-source voltage

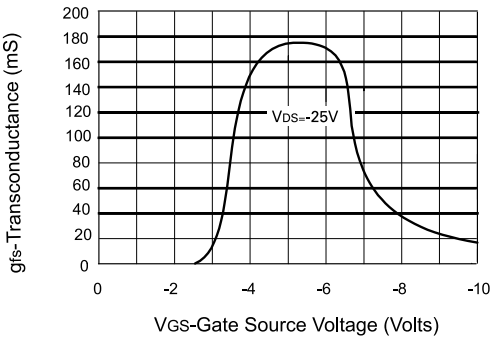


Normalised $R_{DS(on)}$ and $V_{GS(th)}$ vs Temperature

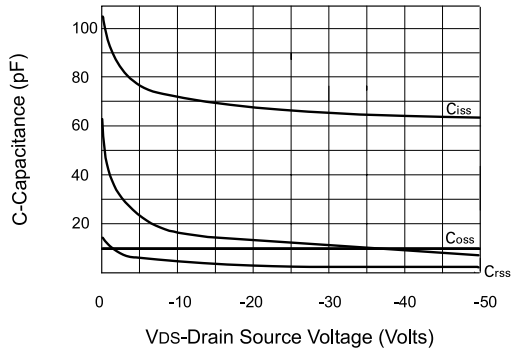
CHARACTERISTICS



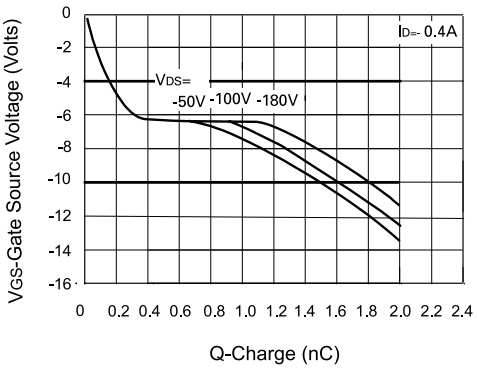
Transconductance v drain current



Transconductance v gate-source voltage



Capacitance v drain-source voltage



Gate charge v gate-source voltage

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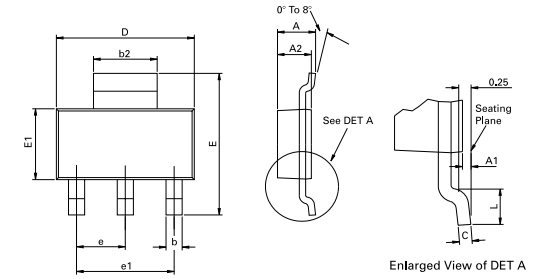
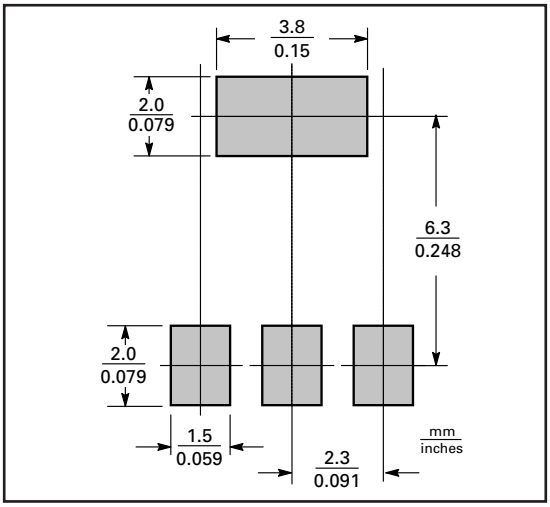
PACKAGE OUTLINE



Conforms to JEDEC TO-261 AA Issue B

PAD LAYOUT DETAILS



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

PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-
D	6.30	6.70	0.248	0.264	-	-	-	-	-

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