

ZXMP10A18G

100V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

$$V_{(BR)DSS} = -100V ; R_{DS(on)} = 0.150\Omega ; I_D = -3.7A$$

DESCRIPTION

This new generation of Trench MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.



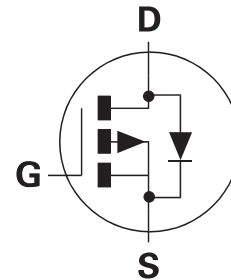
SOT223

FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT223 package

APPLICATIONS

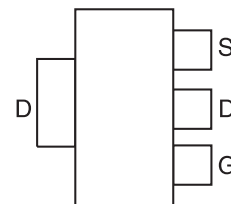
- DC-DC Converters
- Power Management functions
- Relay and Solenoid driving
- Motor control



ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMP10A18GTA	7"	12mm	1,000 units
ZXMP10A18GTC	13"	12mm	4,000 units

PINOUT



DEVICE MARKING

- ZXMP
10A18

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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	-100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current @ $V_{GS}=10V$; $T_A=25^\circ C$ ^(b) @ $V_{GS}=10V$; $T_A=70^\circ C$ ^(b) @ $V_{GS}=10V$; $T_A=25^\circ C$ ^(a)	I_D	-3.7	A
		-3.0	A
		-2.6	A
Pulsed Drain Current ^(c)	I_{DM}	-16.5	A
Continuous Source Current (Body Diode) ^(b)	I_S	-5.3	A
Pulsed Source Current (Body Diode) ^(c)	I_{SM}	-16.5	A
Power Dissipation at $T_A=25^\circ C$ ^(a)	P_D	2	W
Linear Derating Factor		16	mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ ^(b)	P_D	3.9	W
Linear Derating Factor		31	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)	$R_{\theta JA}$	62.5	$^\circ C/W$
Junction to Ambient ^(b)	$R_{\theta JA}$	32.2	$^\circ C/W$

NOTES

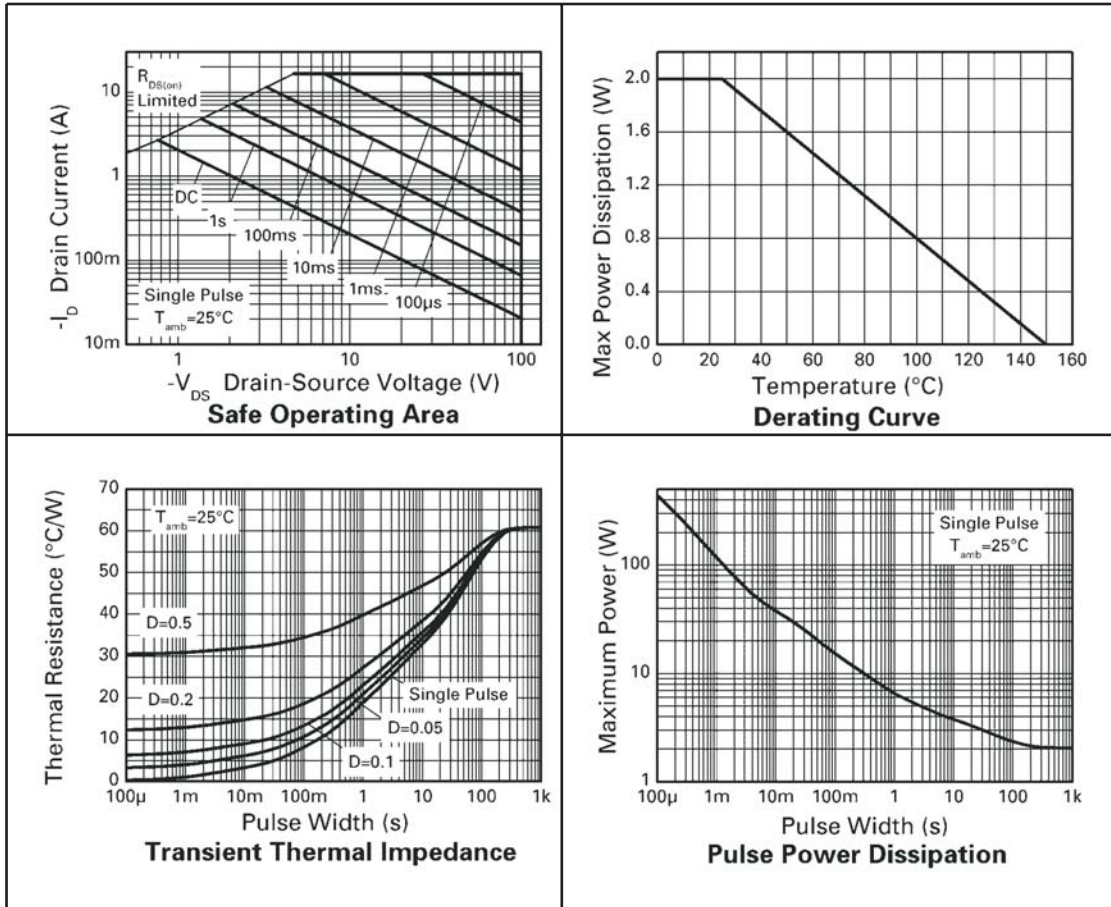
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ sec.

(c) Repetitive rating 25mm x 25mm FR4 PCB, $D = 0.02$ pulse width = 300 μs - pulse width limited by maximum junction temperature.

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CHARACTERISTICS



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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-100			V	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}			-1	μA	$V_{DS} = -100\text{V}$, $V_{GS} = 0\text{V}$
Gate-Body Leakage	I_{GSS}			100	nA	$V_{GS} = \pm 20\text{V}$, $V_{DS} = 0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-2.0		-4.0	V	$I_D = -250\mu\text{A}$, $V_{DS} = V_{GS}$
Static Drain-Source On-State Resistance ⁽¹⁾	$R_{DS(on)}$			0.150 0.190	Ω	$V_{GS} = -10\text{V}$, $I_D = -2.8\text{A}$ $V_{GS} = -6\text{V}$, $I_D = -2.4\text{A}$
Forward Transconductance ⁽¹⁾⁽³⁾	g_{fs}		6.0		S	$V_{DS} = -15\text{V}$, $I_D = -2.8\text{A}$
DYNAMIC ⁽³⁾						
Input Capacitance	C_{iss}		1055		pF	$V_{DS} = -50\text{V}$, $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$
Output Capacitance	C_{oss}		90		pF	
Reverse Transfer Capacitance	C_{rss}		76		pF	
SWITCHING ^{(2) (3)}						
Turn-On Delay Time	$t_{d(on)}$		4.6		ns	$V_{DD} = -50\text{V}$, $I_D = -1\text{A}$ $R_G = 6.0\Omega$, $V_{GS} = -10\text{V}$
Rise Time	t_r		6.8		ns	
Turn-Off Delay Time	$t_{d(off)}$		33.9		ns	
Fall Time	t_f		17.9		ns	
Total Gate Charge	Q_g		26.9		nC	$V_{DS} = -50\text{V}$, $V_{GS} = -10\text{V}$ $I_D = -2.8\text{A}$
Gate-Source Charge	Q_{gs}		3.9		nC	
Gate-Drain Charge	Q_{gd}		10.2		nC	
SOURCE-DRAIN DIODE						
Diode Forward Voltage ⁽¹⁾	V_{SD}		-0.85	-0.95	V	$T_j = 25^{\circ}\text{C}$, $I_S = -3.5\text{A}$, $V_{GS} = 0\text{V}$
Reverse Recovery Time ⁽³⁾	t_{rr}		49		ns	$T_j = 25^{\circ}\text{C}$, $I_S = -2.8\text{A}$,
Reverse Recovery Charge ⁽³⁾	Q_{rr}		107		nC	$di/dt = 100\text{A}/\mu\text{s}$

NOTES

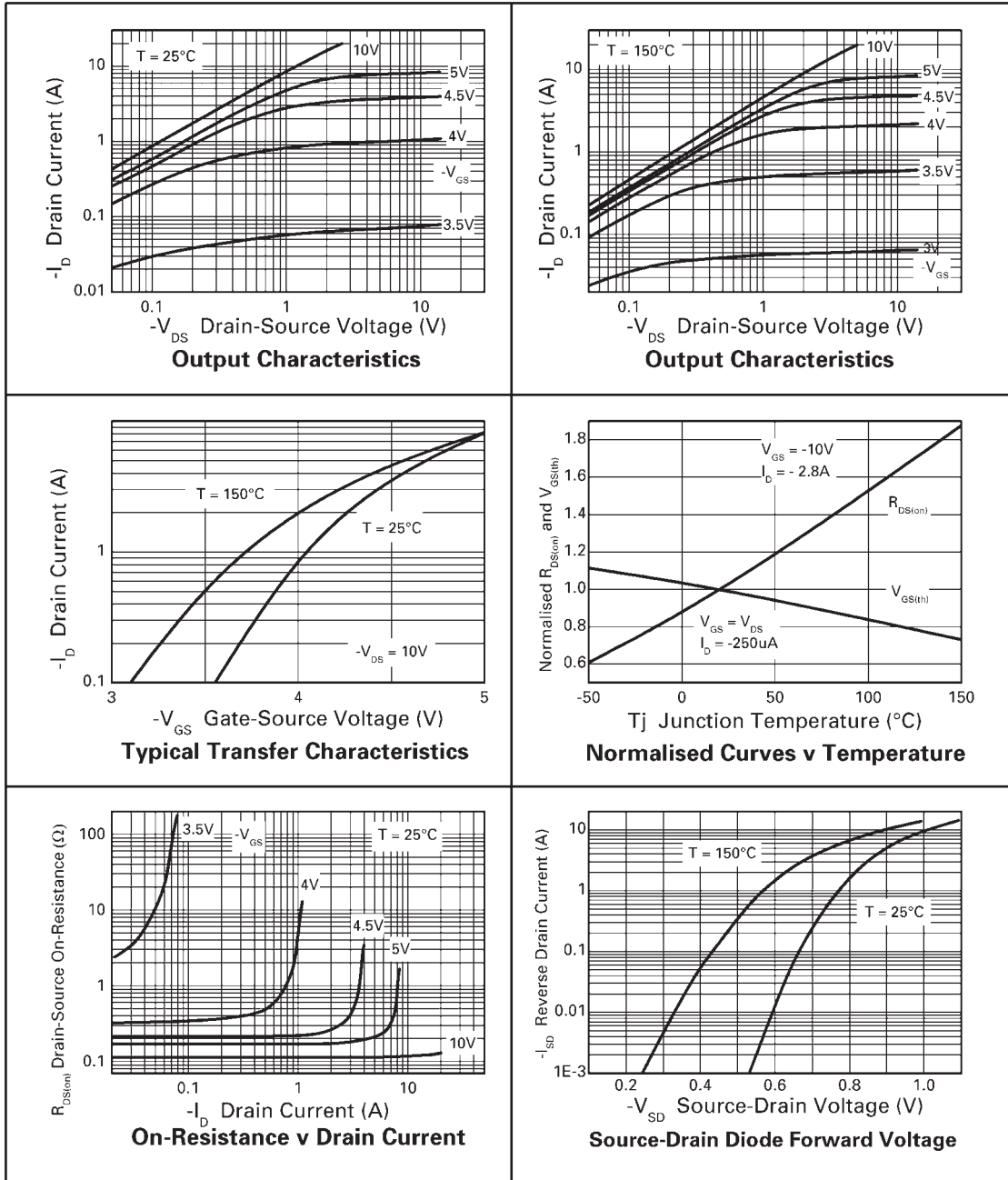
- (1) Measured under pulsed conditions. Pulse width $\leq 300\text{ms}$; duty cycle $\leq 2\%$.
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.



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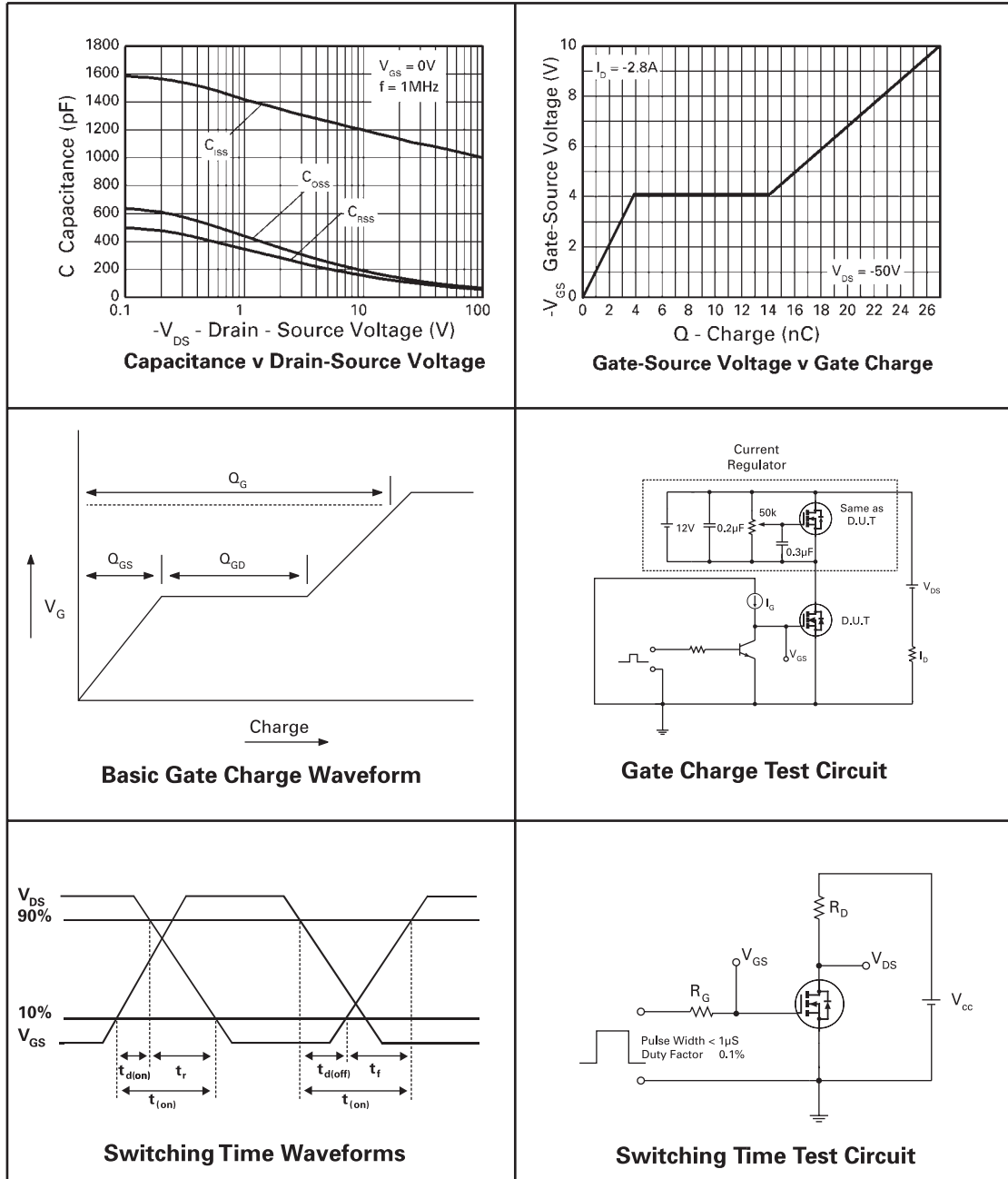
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TYPICAL CHARACTERISTICS



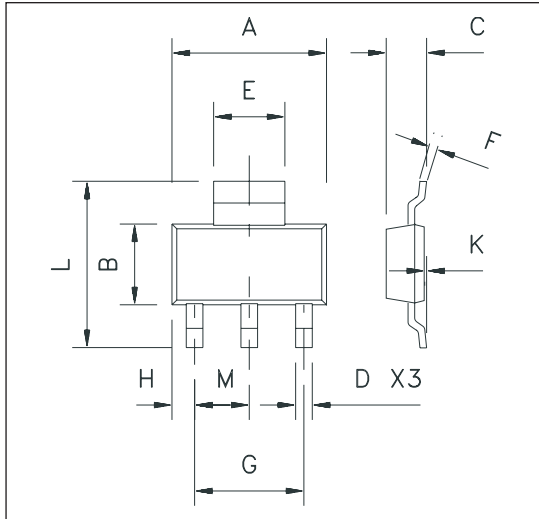
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TYPICAL CHARACTERISTICS

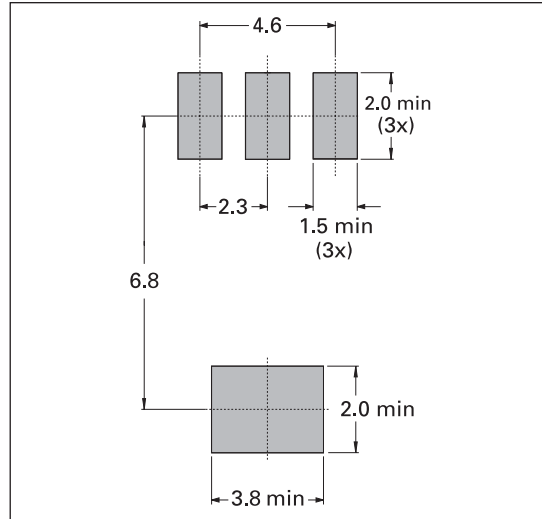


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PACKAGE OUTLINE



PAD LAYOUT DETAILS



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

PACKAGE DIMENSIONS

DIM	Millimetres		Inches		DIM	Millimetres		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	6.3	6.7	0.248	0.264	G	NOM 4.6		NOM 0.181	
B	3.3	3.7	0.130	0.146	H	0.85	1.05	0.033	0.041
C	-	1.7	-	0.067	K	0.02	0.10	0.0008	0.004
D	0.6	0.8	0.024	0.031	L	6.7	7.3	0.264	0.287
E	2.9	3.1	0.114	0.122	M	NOM 2.3		NOM 0.0905	
F	0.24	0.32	0.009	0.13					

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