

# ZXMP10A18G

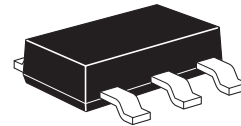
## 100V P-CHANNEL ENHANCEMENT MODE MOSFET

### 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.



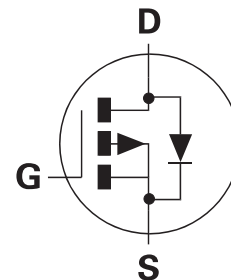
SOT223

### FEATURES

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

### APPLICATIONS

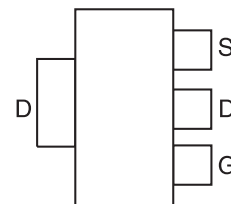
- DC-DC Converters
- Power Management functions
- Relay and Solenoid driving
- Motor control



### 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

# ZXMP10A18G

## ABSOLUTE MAXIMUM RATINGS

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

### NOTES

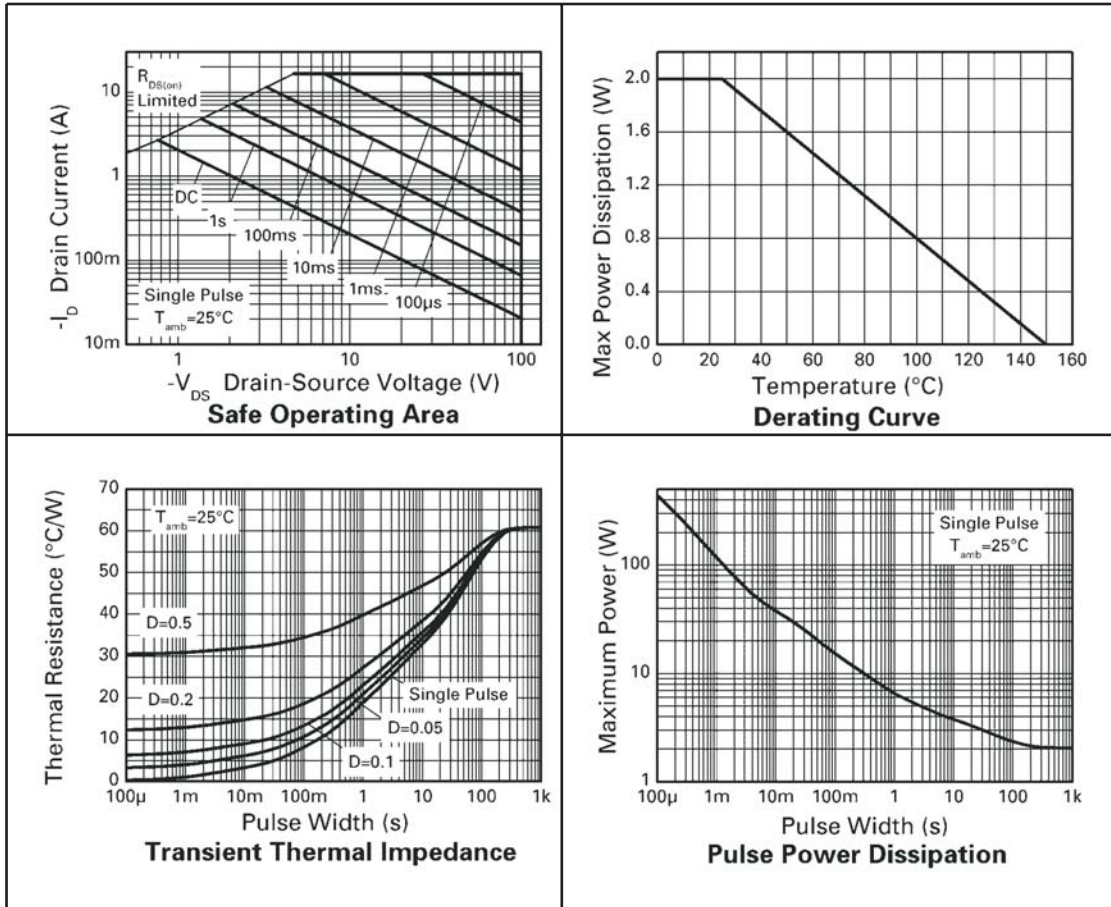
(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(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 $\mu s$  - 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
<b>STATIC</b>						
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	$\mu\text{A}$	$V_{DS} = -100\text{V}$ , $V_{GS} = 0\text{V}$
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 <sup>(1)</sup>	$R_{DS(on)}$			0.150	$\Omega$	$V_{GS} = -10\text{V}$ , $I_D = -2.8\text{A}$
				0.190	$\Omega$	$V_{GS} = -6\text{V}$ , $I_D = -2.4\text{A}$
Forward Transconductance <sup>(1)(3)</sup>	$g_{fs}$		6.0		S	$V_{DS} = -15\text{V}$ , $I_D = -2.8\text{A}$
<b>DYNAMIC <sup>(3)</sup></b>						
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	
<b>SWITCHING <sup>(2) (3)</sup></b>						
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	
<b>SOURCE-DRAIN DIODE</b>						
Diode Forward Voltage <sup>(1)</sup>	$V_{SD}$		-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 <sup>(3)</sup>	$t_{rr}$		49		ns	$T_j = 25^{\circ}\text{C}$ , $I_S = -2.8\text{A}$ ,
Reverse Recovery Charge <sup>(3)</sup>	$Q_{rr}$		107		nC	$di/dt = 100\text{A}/\mu\text{s}$

### NOTES

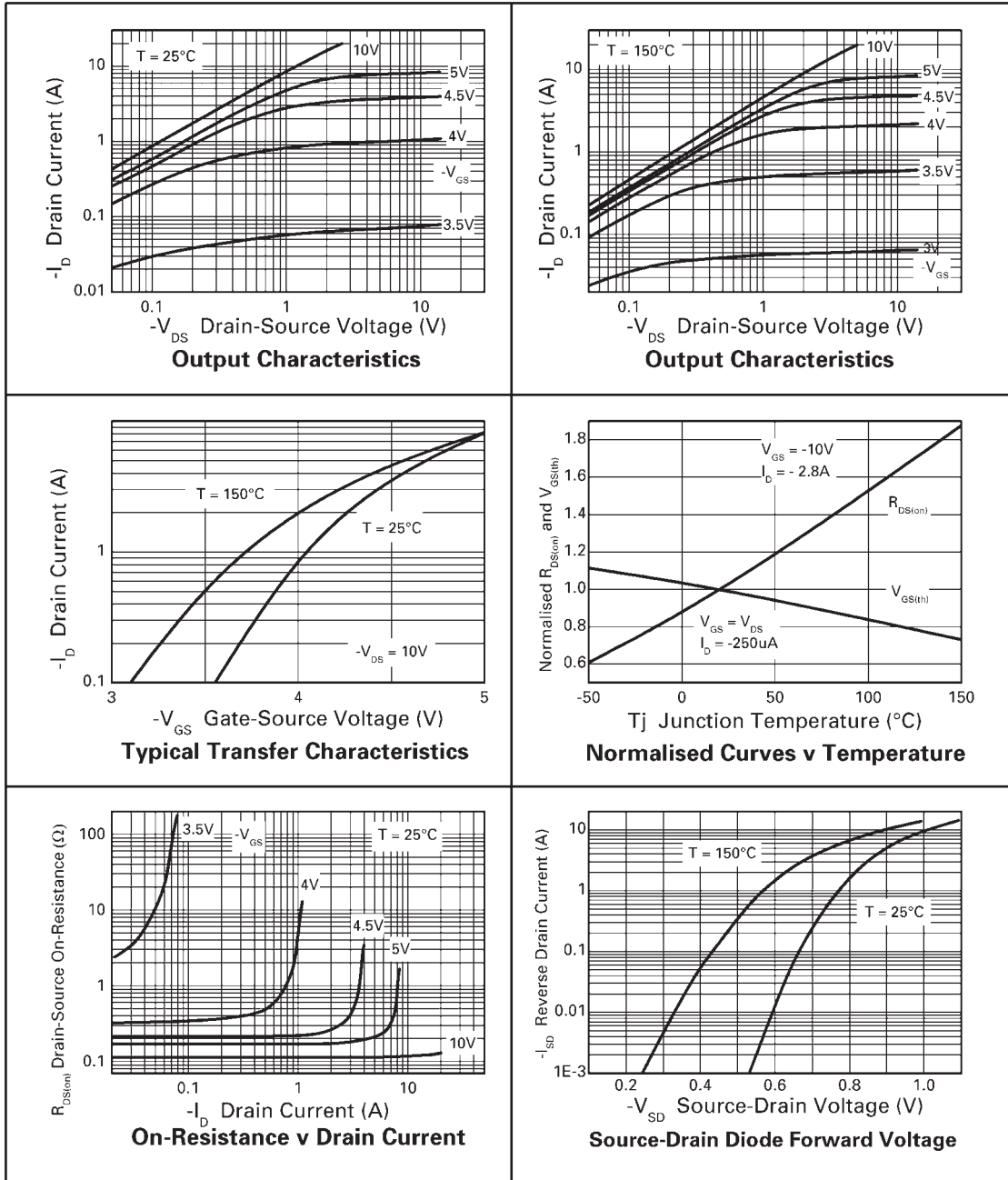
- (1) Measured under pulsed conditions. Pulse width  $\leq 300\text{ms}$ ; duty cycle  $\leq 2\%$ .
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.



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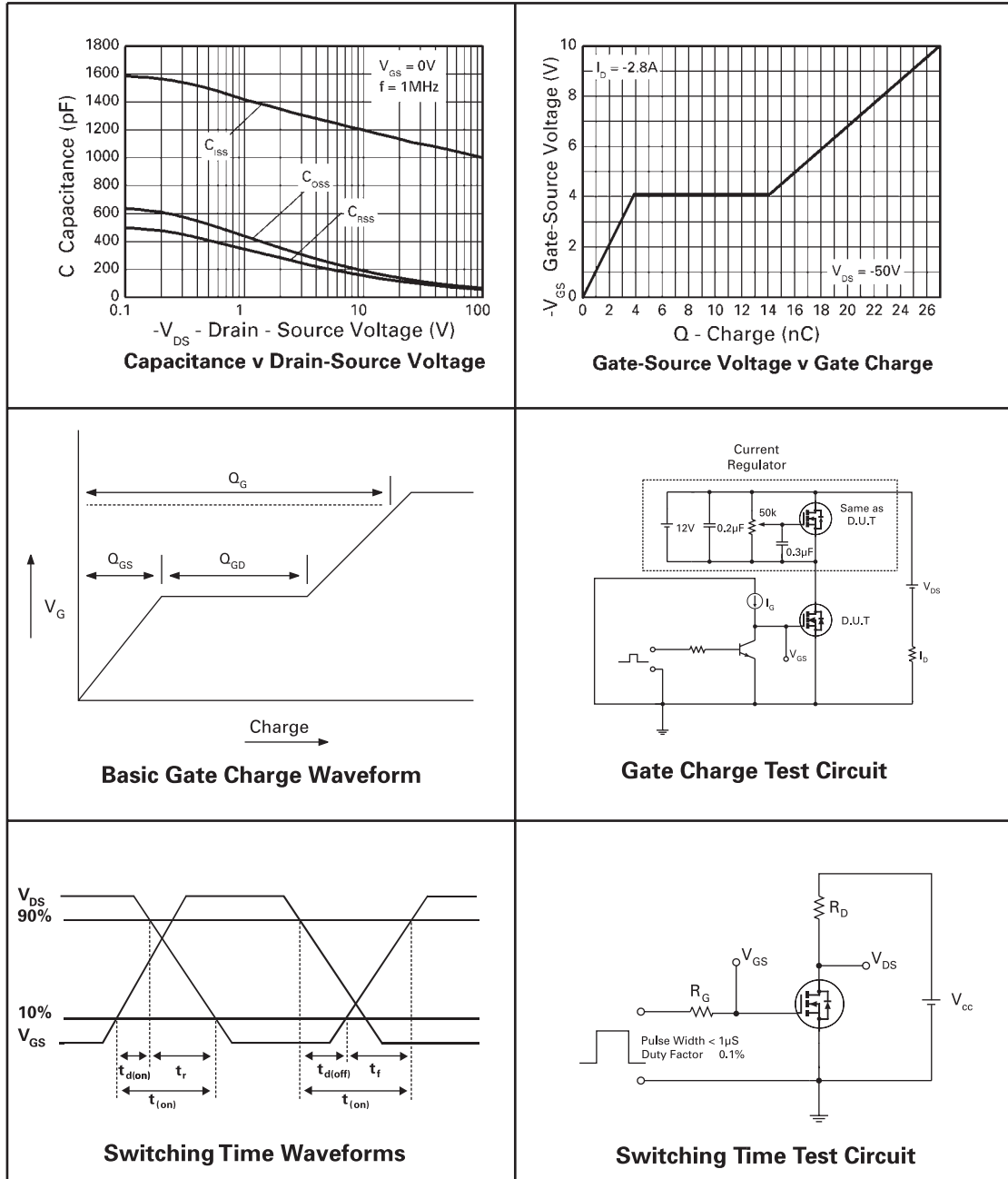
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## TYPICAL CHARACTERISTICS



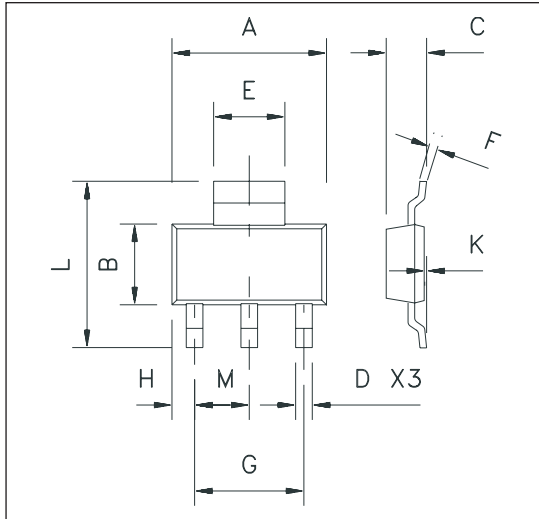
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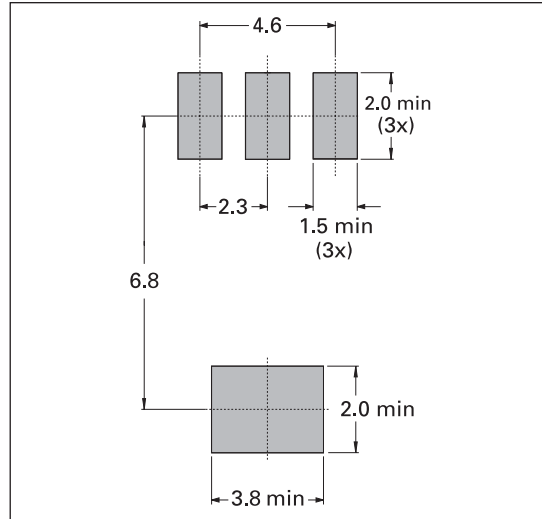


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## PACKAGE OUTLINE



## 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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