

# ZXMP10A17E6

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## 100V P-CHANNEL ENHANCEMENT MODE MOSFET

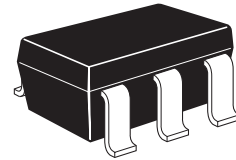
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### SUMMARY

$V_{(BR)DSS} = -100V$ ;  $R_{DS(ON)} = 0.350\Omega$ ;  $I_D = -1.4A$

### 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.



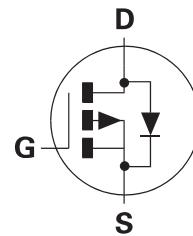
SOT23-6

### FEATURES

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- SOT23-6 package

### APPLICATIONS

- DC-DC Converters
- Power Management functions
- Disconnect switches
- Motor control



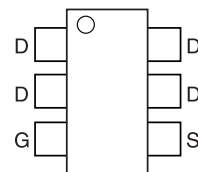
### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMP10A17E6TA	7"	8mm	3000 units
ZXMP10A17E6TC	13"	8mm	10000 units

### DEVICE MARKING

- 1A17

### PINOUT



Top View

# ZXMP10A17E6

## 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 @ $V_{GS}=10V$ ; $T_A=25^\circ C$ (b) @ $V_{GS}=10V$ ; $T_A=70^\circ C$ (b) @ $V_{GS}=10V$ ; $T_A=25^\circ C$ (a)	$I_D$	-1.6 -1.3 -1.3	A
Pulsed Drain Current (c)	$I_{DM}$	-7.7	A
Continuous Source Current (Body Diode) (b)	$I_S$	-2.1	A
Pulsed Source Current (Body Diode) (c)	$I_{SM}$	-7.7	A
Power Dissipation at $T_A=25^\circ C$ (a) Linear Derating Factor	$P_D$	1.1 8.8	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ (b) Linear Derating Factor	$P_D$	1.7 13.6	W mW/ $^\circ C$
Operating and Storage Temperature Range	$T_j, T_{stg}$	-55 to +150	$^\circ C$

## THERMAL RESISTANCE

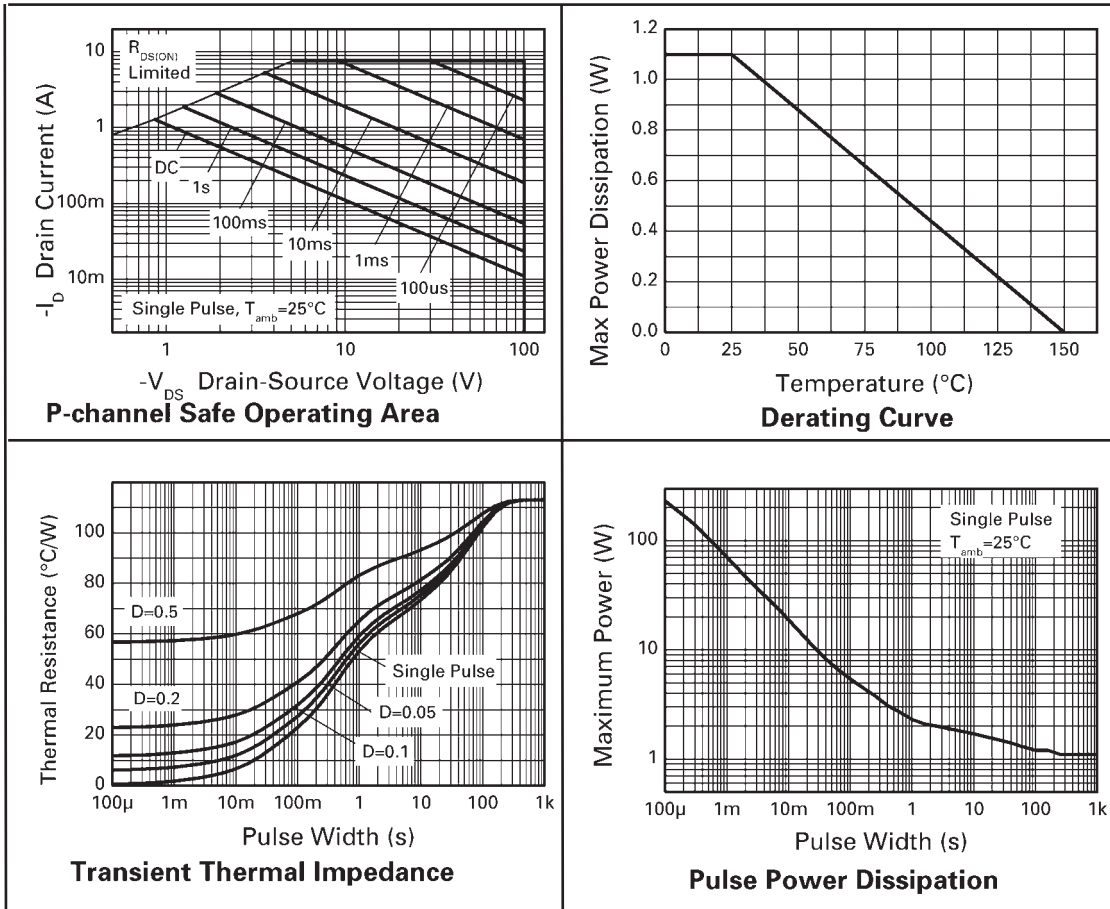
PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	113	$^\circ C/W$
Junction to Ambient (b)	$R_{\theta JA}$	73	$^\circ C/W$

### 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 25mm x 25mm FR4 PCB,  $D = 0.02$ , pulse width 300 $\mu s$  - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

# ZXMP10A17E6

## CHARACTERISTICS



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

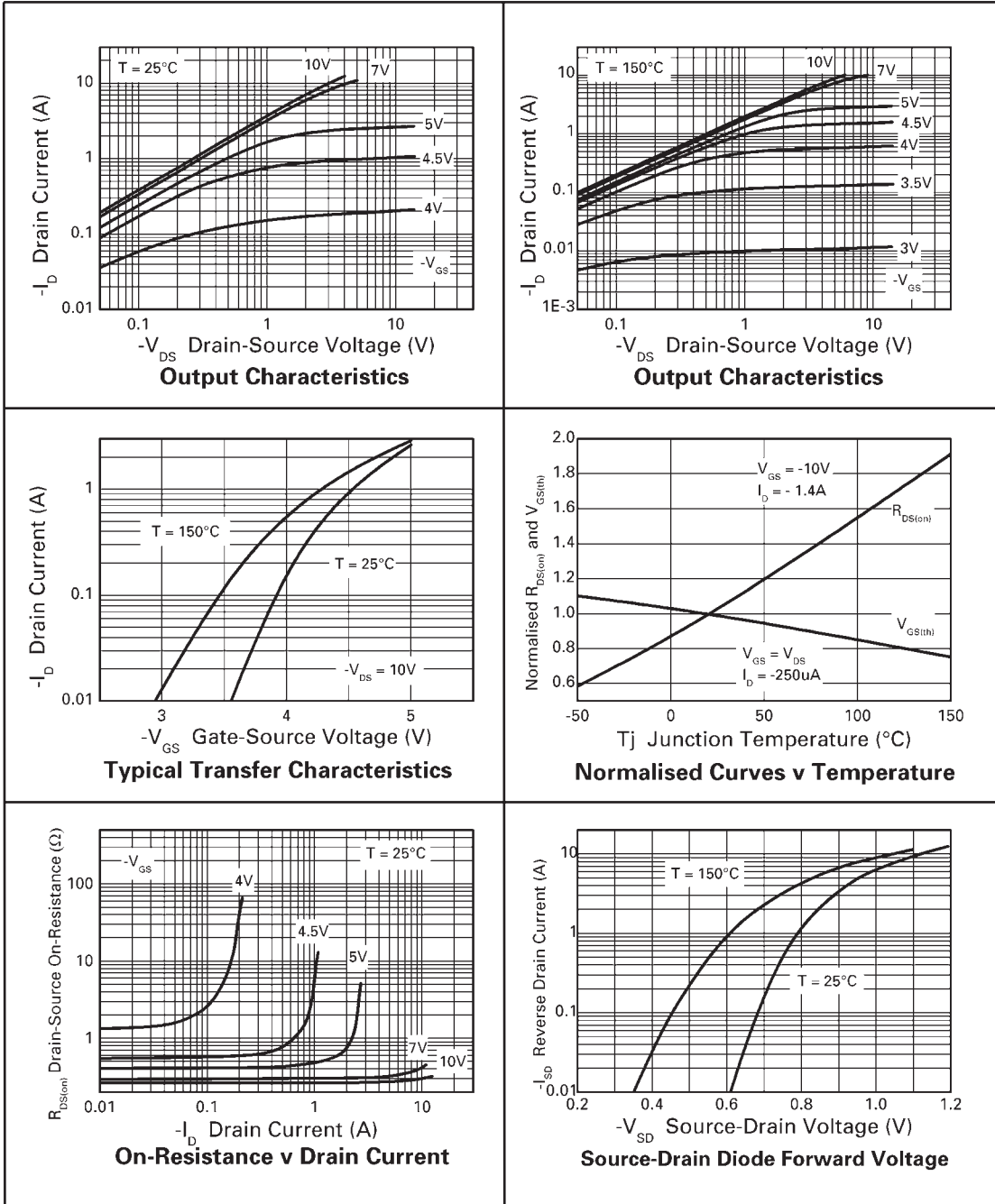
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-100			V	$I_D = -250\mu\text{A}$ , $V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$			-1.0	$\mu\text{A}$	$V_{DS} = -100\text{V}$ , $V_{GS} = 0\text{V}$
Gate-Body Leakage	$I_{GSS}$			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 (1)	$R_{DS(on)}$			0.350 0.450	$\Omega$	$V_{GS} = -10\text{V}$ , $I_D = -1.4\text{A}$ $V_{GS} = -6\text{V}$ , $I_D = -1.2\text{A}$
Forward Transconductance (1)(3)	$g_{fs}$		2.8		S	$V_{DS} = -15\text{V}$ , $I_D = -1.4\text{A}$
<b>DYNAMIC (3)</b>						
Input Capacitance	$C_{iss}$		424		pF	$V_{DS} = -50\text{V}$ , $V_{GS} = 0\text{V}$ $f = 1\text{MHz}$
Output Capacitance	$C_{oss}$		36.6		pF	
Reverse Transfer Capacitance	$C_{rss}$		29.8		pF	
<b>SWITCHING(2) (3)</b>						
Turn-On Delay Time	$t_{d(on)}$		3.0		ns	$V_{DD} = -50\text{V}$ , $I_D = -1\text{A}$ $R_G \cong 6.0\Omega$ , $V_{GS} = -10\text{V}$
Rise Time	$t_r$		3.5		ns	
Turn-Off Delay Time	$t_{d(off)}$		13.4		ns	
Fall Time	$t_f$		7.2		ns	
Gate Charge	$Q_g$		6.1		nC	$V_{DS} = -50\text{V}$ , $V_{GS} = -5\text{V}$ $I_D = -1.4\text{A}$
Total Gate Charge	$Q_g$		10.7		nC	$V_{DS} = -50\text{V}$ , $V_{GS} = -10\text{V}$ $I_D = -1.4\text{A}$
Gate-Source Charge	$Q_{gs}$		1.7		nC	
Gate-Drain Charge	$Q_{gd}$		3.8		nC	
<b>SOURCE-DRAIN DIODE</b>						
Diode Forward Voltage (1)	$V_{SD}$		-0.85	-0.95	V	$T_J = 25^{\circ}\text{C}$ , $I_S = -1.7\text{A}$ , $V_{GS} = 0\text{V}$
Reverse Recovery Time (3)	$t_{rr}$		33		ns	$T_J = 25^{\circ}\text{C}$ , $I_S = -1.5\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge (3)	$Q_{rr}$		48		nC	

### NOTES

- (1) Measured under pulsed conditions. Width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$ .
- (2) Switching characteristics are independent of operating junction temperature.
- (3) For design aid only, not subject to production testing.

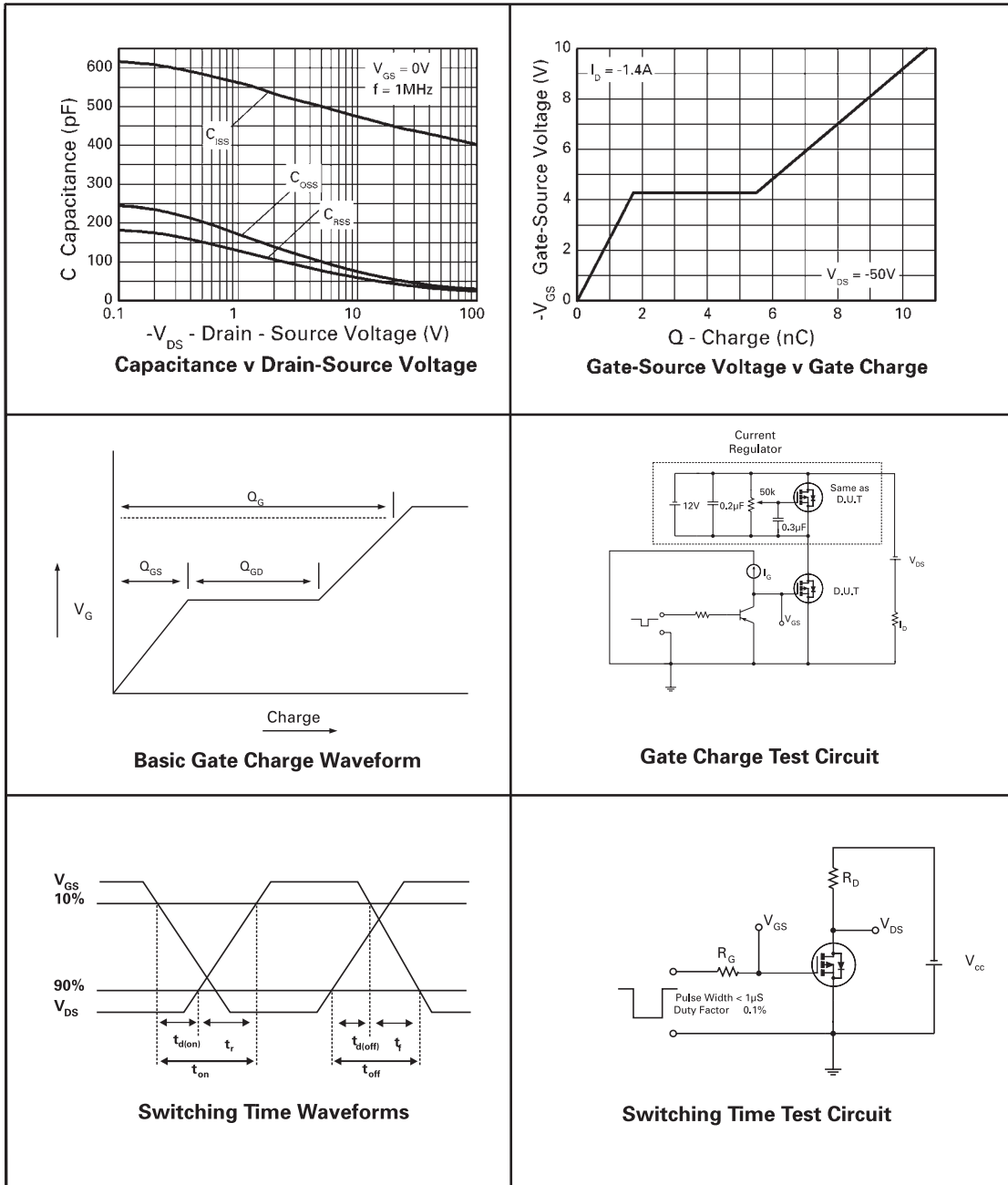
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## TYPICAL CHARACTERISTICS



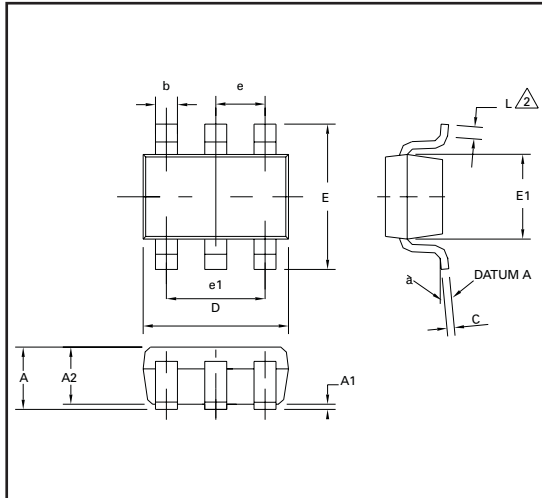
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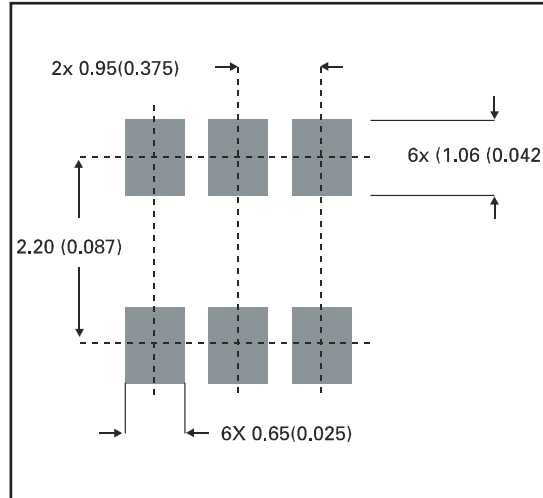


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## PACKAGE OUTLINE



## 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	0.90	1.45	0.35	0.057	E	2.60	3.00	0.102	0.118
A1	-	0.15	-	0.006	E1	1.50	1.75	0.059	0.069
A2	0.90	1.30	0.035	0.051	L	0.10	0.60	0.004	0.002
b	0.35	0.50	0.014	0.019	e	0.95 REF		0.037 REF	
C	0.09	0.20	0.0035	0.008	e1	1.90 REF		0.074 REF	
D	2.80	3.00	0.110	0.118	L	0°	10°	0°	10°

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