

## ADVANCE INFORMATION

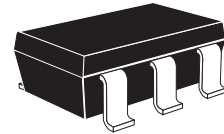
### 60V P-CHANNEL ENHANCEMENT MODE MOSFET

#### SUMMARY

$V_{(BR)DSS} = -60V$ ;  $R_{DS(ON)} = 0.125\Omega$   $I_D = -3.0A$

#### 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.



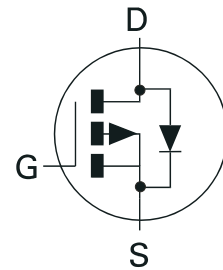
SOT23-6

#### FEATURES

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

#### APPLICATIONS

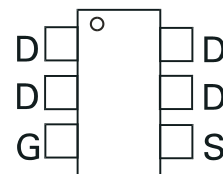
- DC - DC Converters
- Power management functions
- Disconnect switches
- Motor control



#### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXMP6A17E6TA	7"	8mm	3000 units
ZXMP6A17E6TC	13"	8mm	10000 units

#### PINOUT



Top View

#### DEVICE MARKING

- 617

# ZXMP6A17E6

## ADVANCE INFORMATION

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	$V_{DSS}$	-60	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>	$I_D$	-3.0 -2.4 -2.3	A
Pulsed Drain Current <sup>(c)</sup>	$I_{DM}$	-13.6	A
Continuous Source Current (Body Diode) <sup>(b)</sup>	$I_S$	-2.5	A
Pulsed Source Current (Body Diode) <sup>(c)</sup>	$I_{SM}$	-13.6	A
Power Dissipation at $T_A=25^\circ C$ <sup>(a)</sup> Linear Derating Factor	$P_D$	1.1 8.8	W mW/ $^\circ C$
Power Dissipation at $T_A=25^\circ C$ <sup>(b)</sup> 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 <sup>(a)</sup>	$R_{\theta JA}$	113	$^\circ C/W$
Junction to Ambient <sup>(b)</sup>	$R_{\theta JA}$	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

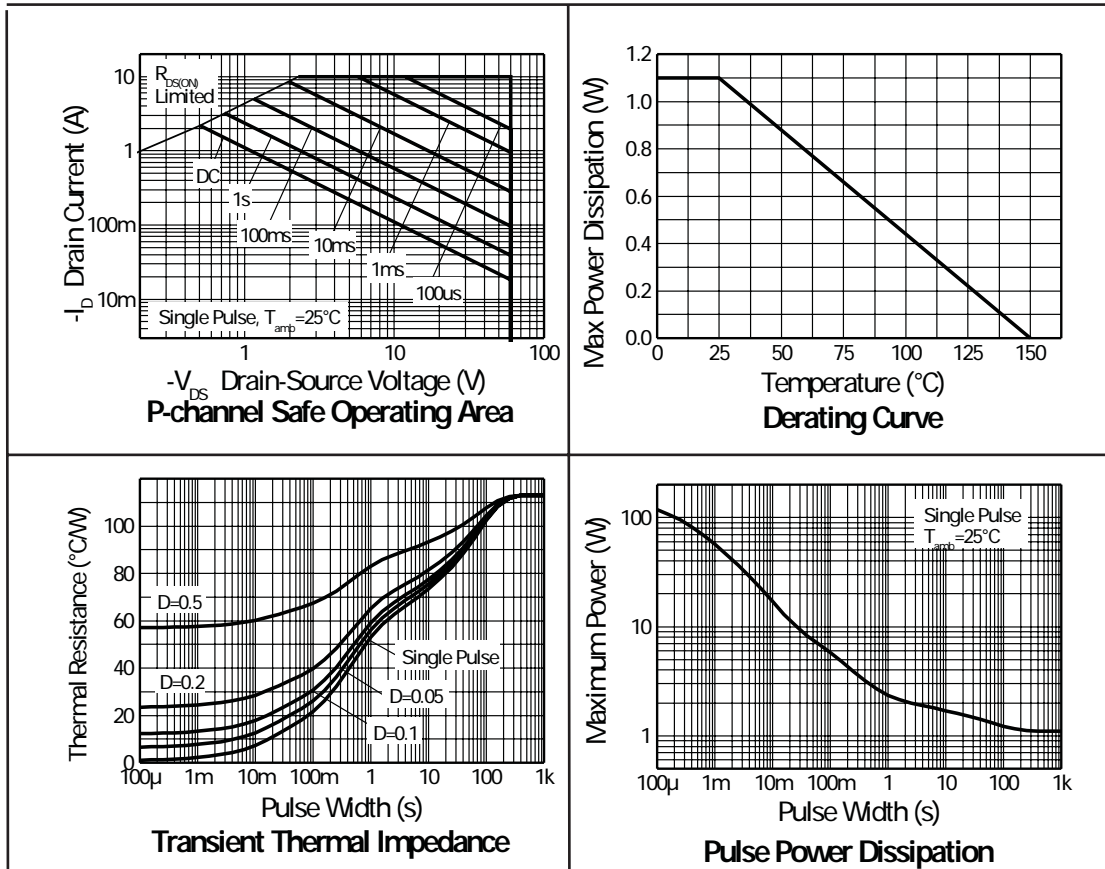
(b) For a device surface mounted on FR4 PCB measured at  $t \leq 5$  secs.

(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.

# ADVANCE INFORMATION

# ZXMP6A17E6

## CHARACTERISTICS



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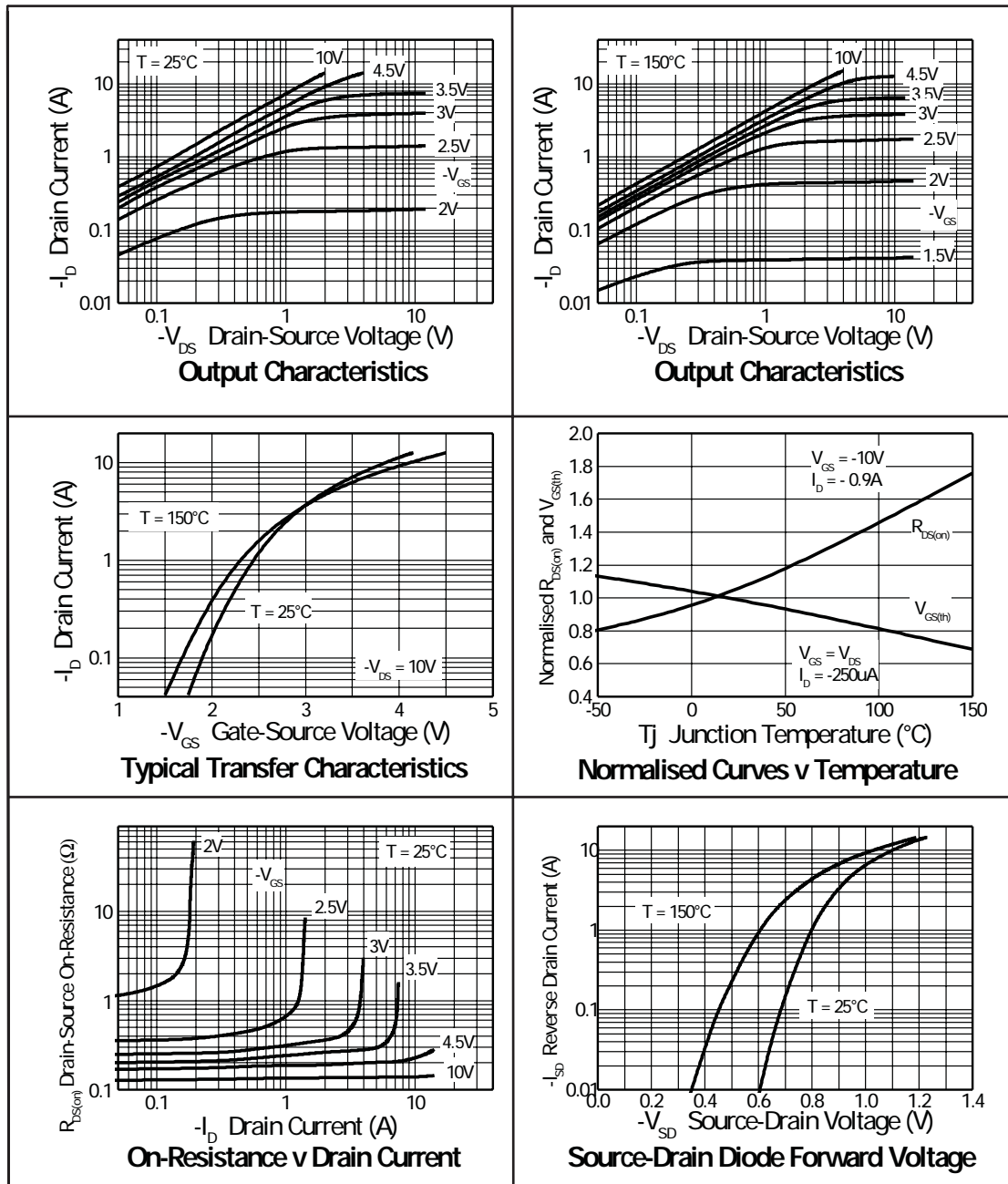
ELECTRICAL CHARACTERISTICS (at  $T_A = 25^\circ\text{C}$  unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	-60			V	$I_D = -250\mu\text{A}$ , $V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	$I_{DSS}$			-1.0	$\mu\text{A}$	$V_{DS} = -60\text{V}$ , $V_{GS} = 0\text{V}$
Gate-Body Leakage	$I_{GSS}$			100	nA	$V_{GS} = \pm 20\text{V}$ , $V_{DS} = 0\text{V}$
Gate-Source Threshold Voltage	$V_{GS(th)}$	-1.0			V	$I_D = -250\mu\text{A}$ , $V_{DS} = V_{GS}$
Static Drain-Source On-State Resistance <sup>(1)</sup>	$R_{DS(on)}$			0.125 0.190	$\Omega$ $\Omega$	$V_{GS} = -10\text{V}$ , $I_D = -2.3\text{A}$ $V_{GS} = -4.5\text{V}$ , $I_D = -1.9\text{A}$
Forward Transconductance <sup>(1)(3)</sup>	$g_{fs}$		4.9		S	$V_{DS} = -15\text{V}$ , $I_D = -2.3\text{A}$
<b>DYNAMIC <sup>(3)</sup></b>						
Input Capacitance	$C_{iss}$		670		pF	$V_{DS} = -30\text{V}$ , $V_{GS} = 0\text{V}$ , $f = 1\text{MHz}$
Output Capacitance	$C_{oss}$		46.7		pF	
Reverse Transfer Capacitance	$C_{rss}$		28		pF	
<b>SWITCHING <sup>(2) (3)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$		2.4		ns	$V_{DD} = -30\text{V}$ , $I_D = -1\text{A}$ $R_G = 6.0\Omega$ , $V_{GS} = -10\text{V}$
Rise Time	$t_r$		3.5		ns	
Turn-Off Delay Time	$t_{d(off)}$		30.0		ns	
Fall Time	$t_f$		7.4		ns	
Gate Charge	$Q_g$		7.3		nC	$V_{DS} = -30\text{V}$ , $V_{GS} = -5\text{V}$ , $I_D = -2.3\text{A}$
Total Gate Charge	$Q_g$		15.1		nC	$V_{DS} = -30\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -2.3\text{A}$
Gate-Source Charge	$Q_{gs}$		1.8		nC	
Gate-Drain Charge	$Q_{gd}$		1.9		nC	
<b>SOURCE-DRAIN DIODE</b>						
Diode Forward Voltage <sup>(1)</sup>	$V_{SD}$		-0.85	-0.95	V	$T_J = 25^\circ\text{C}$ , $I_S = -2\text{A}$ , $V_{GS} = 0\text{V}$
Reverse Recovery Time <sup>(3)</sup>	$t_{rr}$		26.4		ns	$T_J = 25^\circ\text{C}$ , $I_F = -1.7\text{A}$ , $di/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge <sup>(3)</sup>	$Q_{rr}$		32.7		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.

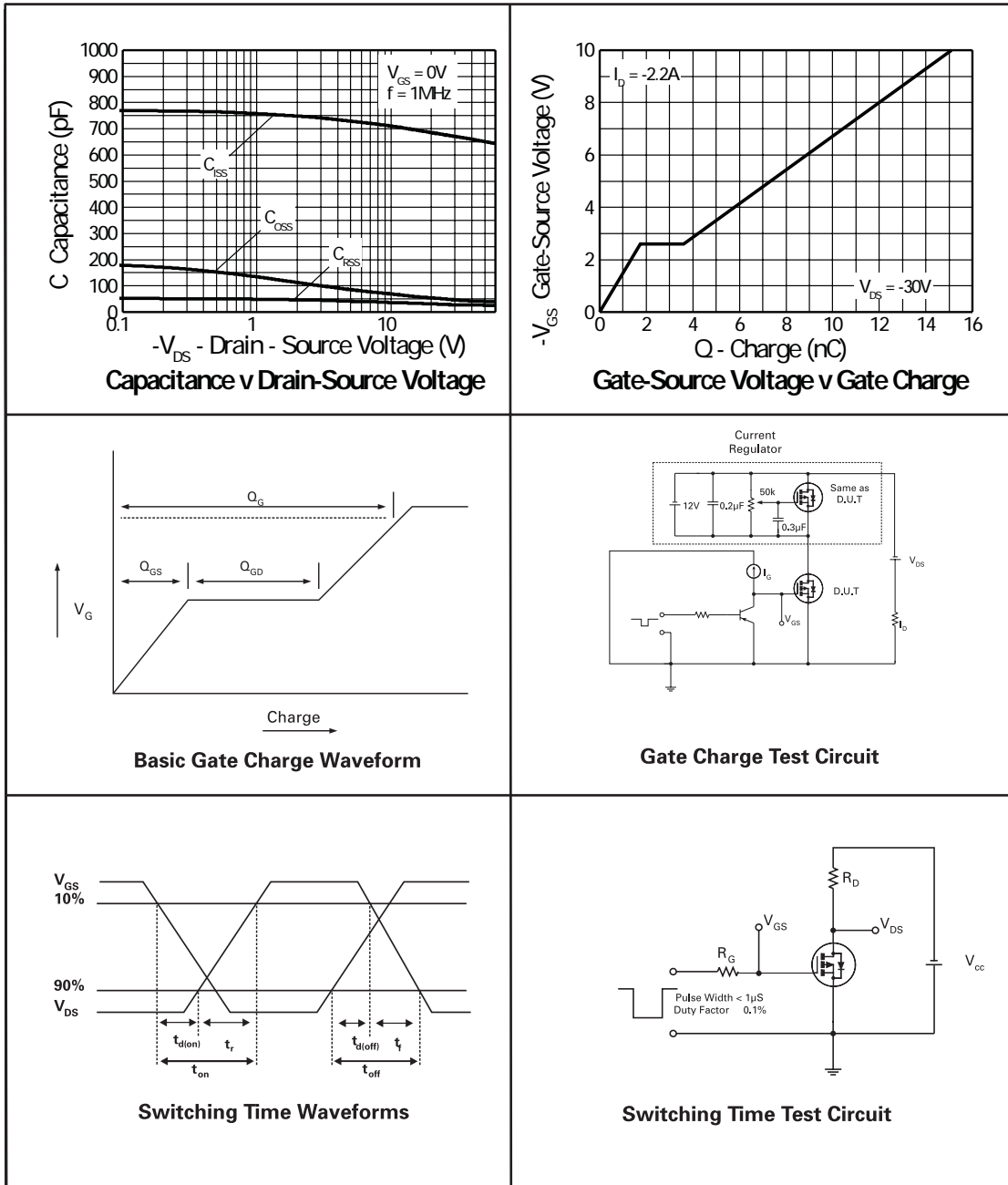
TYPICAL CHARACTERISTICS



# ZXMP6A17E6

## ADVANCE INFORMATION

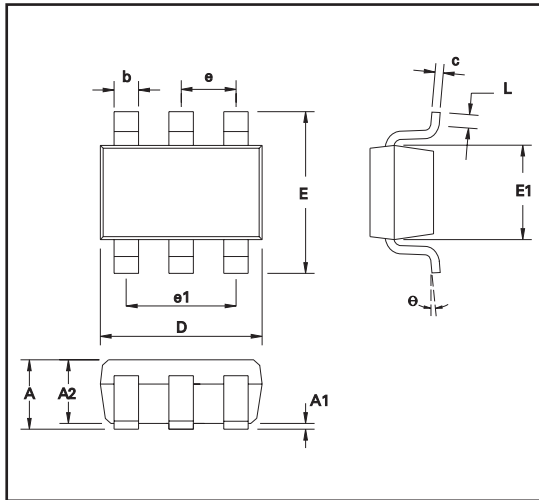
### TYPICAL CHARACTERISTICS



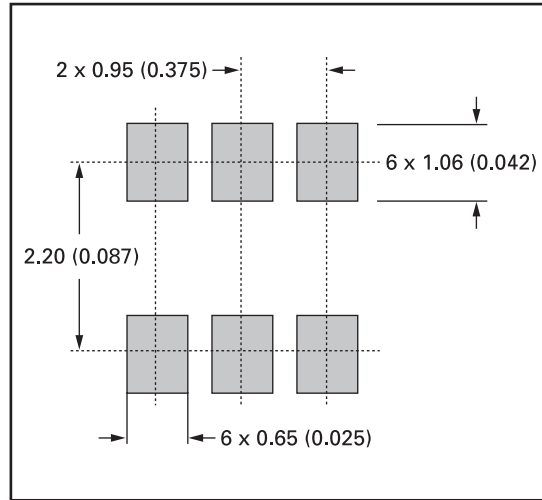
# ZXMP6A17E6

## ADVANCE INFORMATION

### PACKAGE OUTLINE



### PAD LAYOUT DETAILS



CONTROLLING DIMENSIONS IN MILLIMETERS APPROX CONVERSIONS INCHES.

### PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		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	0.00	0.15	0	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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