

ADVANCE INFORMATION

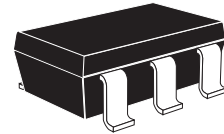
60V P-CHANNEL ENHANCEMENT MODE MOSFET

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.



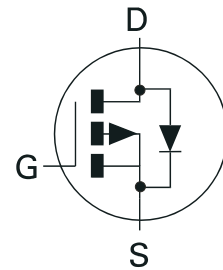
SOT23-6

FEATURES

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

APPLICATIONS

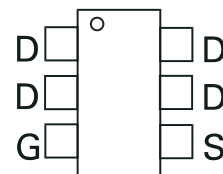
- DC - DC Converters
- Power management functions
- Disconnect switches
- Motor control



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

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ZXMP6A17E6

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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DSS}	-60	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	-3.0 -2.4 -2.3	A
Pulsed Drain Current ^(c)	I_{DM}	-13.6	A
Continuous Source Current (Body Diode) ^(b)	I_S	-2.5	A
Pulsed Source Current (Body Diode) ^(c)	I_{SM}	-13.6	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

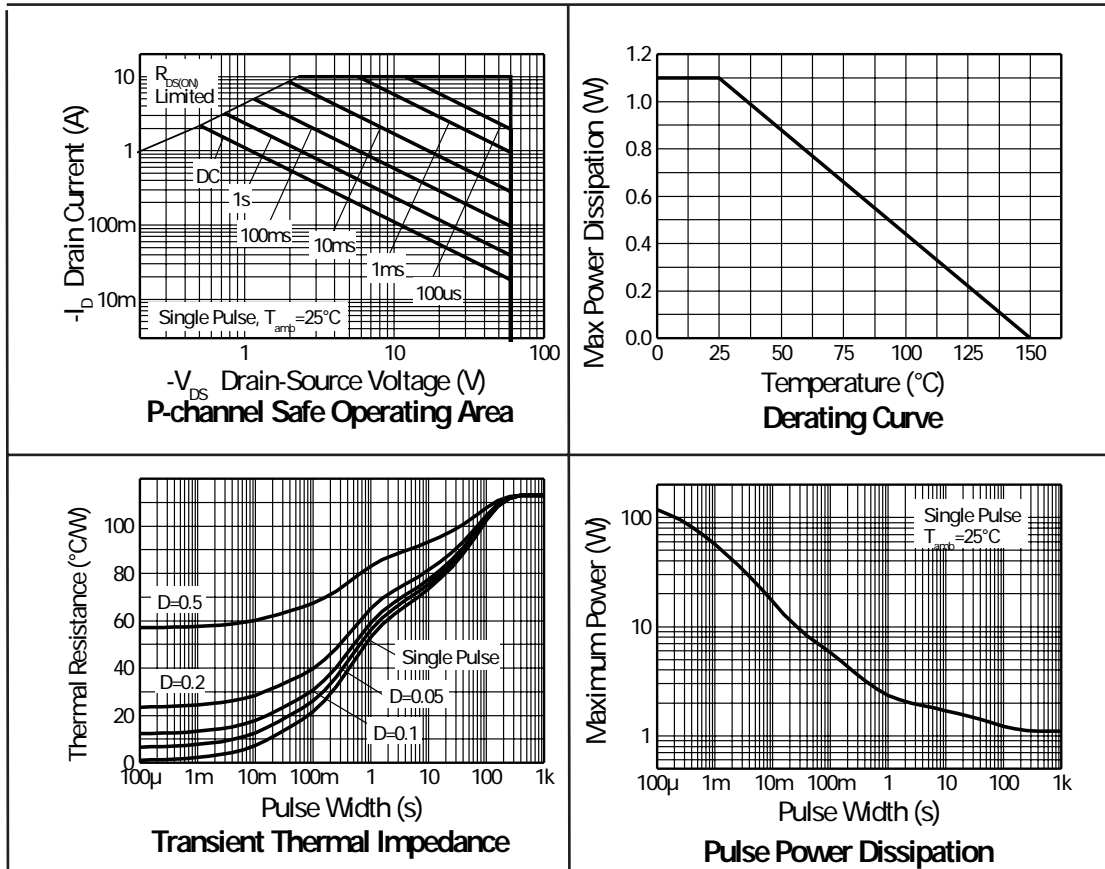
(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ secs.

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

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ZXMP6A17E6

CHARACTERISTICS



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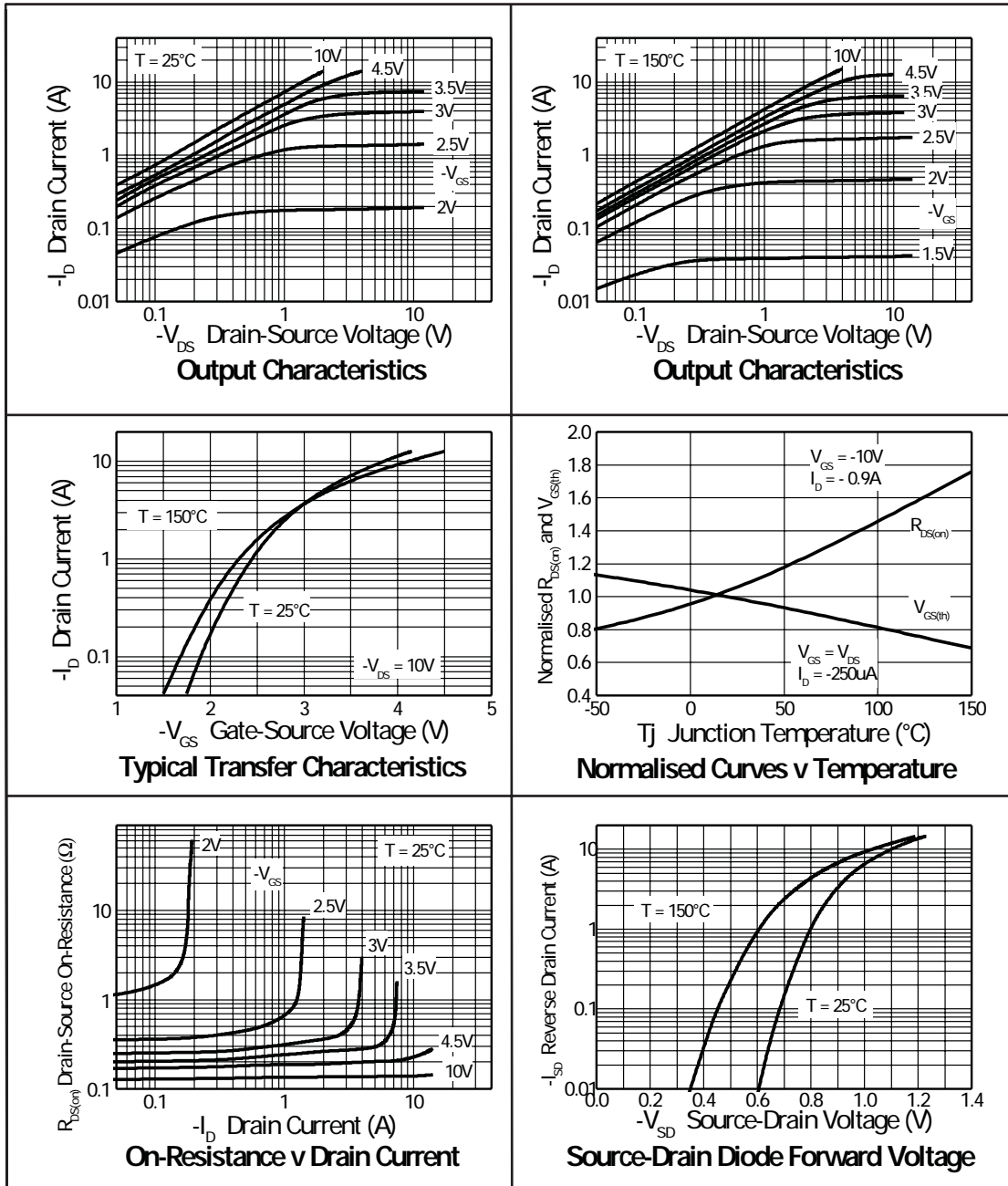
ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
STATIC						
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	μA	$V_{DS} = -60\text{V}$, $V_{GS} = 0\text{V}$
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 ⁽¹⁾	$R_{DS(on)}$			0.125 0.190	Ω Ω	$V_{GS} = -10\text{V}$, $I_D = -2.3\text{A}$ $V_{GS} = -4.5\text{V}$, $I_D = -1.9\text{A}$
Forward Transconductance ⁽¹⁾⁽³⁾	g_{fs}		4.9		S	$V_{DS} = -15\text{V}$, $I_D = -2.3\text{A}$
DYNAMIC ⁽³⁾						
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	
SWITCHING ^{(2) (3)}						
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	
SOURCE-DRAIN DIODE						
Diode Forward Voltage ⁽¹⁾	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 ⁽³⁾	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 ⁽³⁾	Q_{rr}		32.7		nC	

NOTES:

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

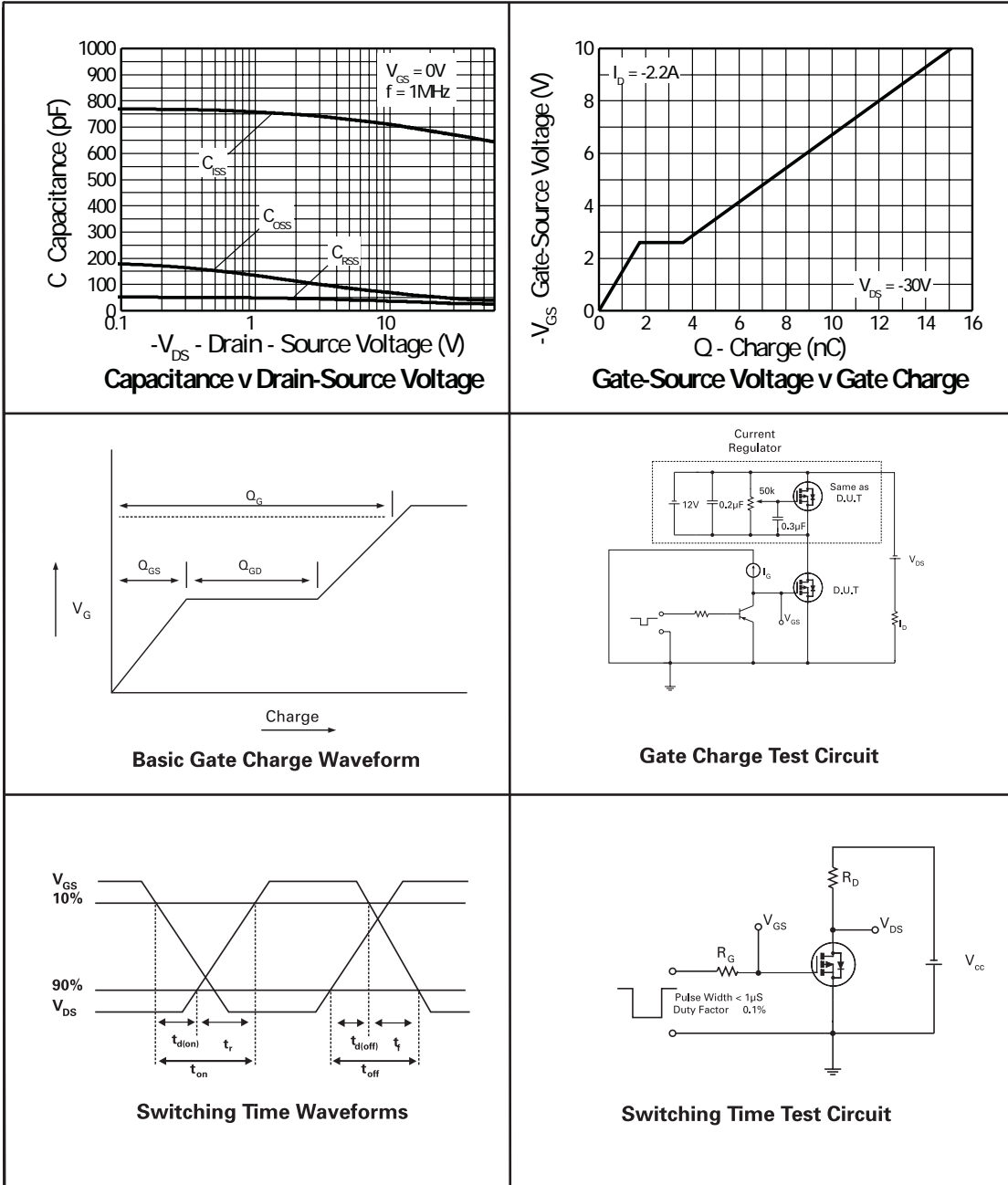
TYPICAL CHARACTERISTICS



ZXMP6A17E6

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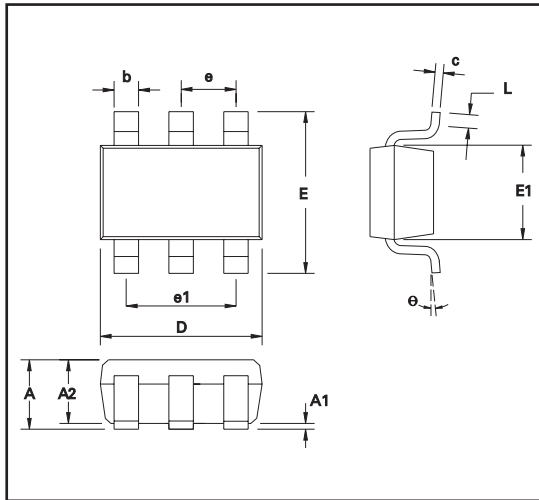
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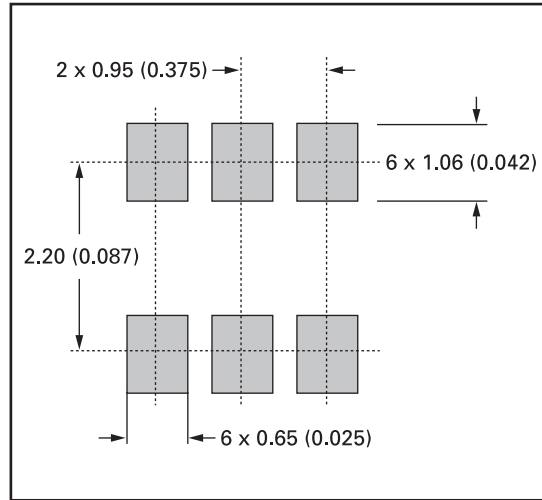
ZXMP6A17E6

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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