

ADVANCE INFORMATION

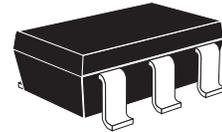
60V P-CHANNEL ENHANCEMENT MODE MOSFET

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.



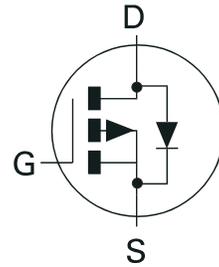
SOT23-6

FEATURES

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

APPLICATIONS

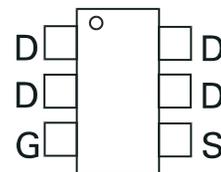
- DC - DC Converters
- Power management functions
- Disconnect switches
- Motor control



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

ADVANCE INFORMATION

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

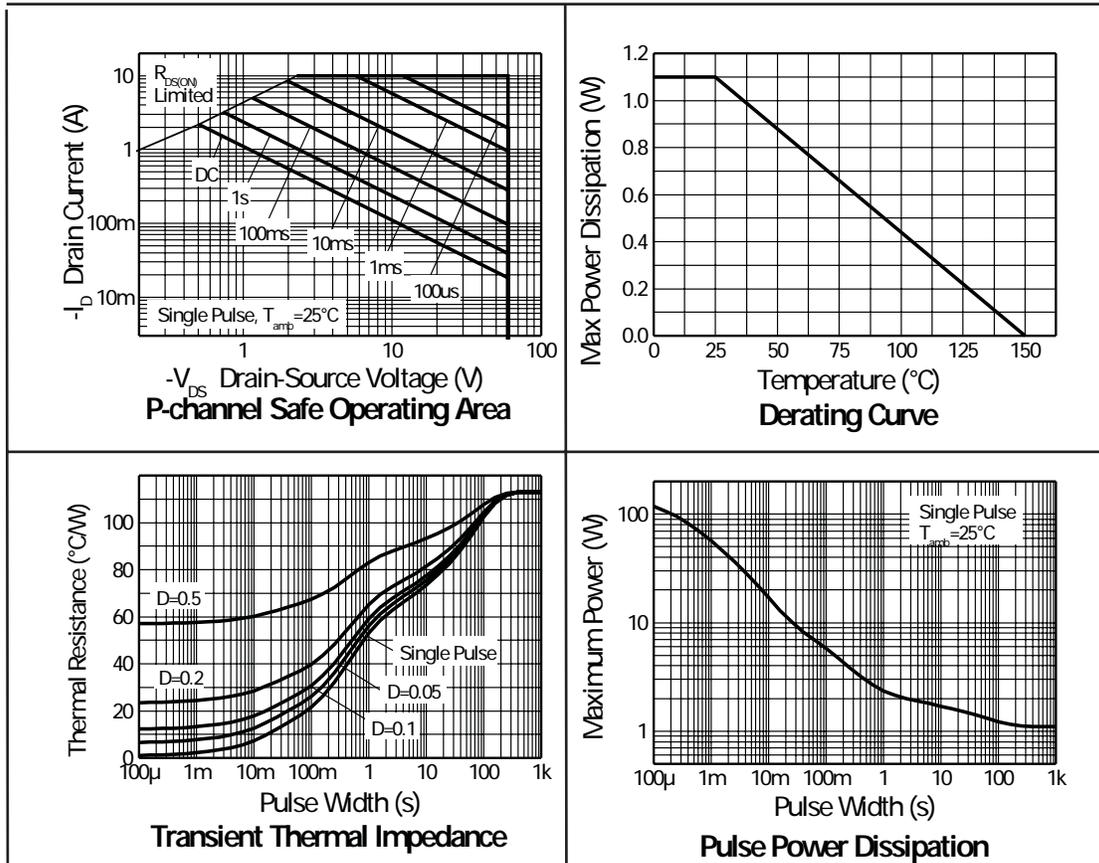
(b) For a device surface mounted on FR4 PCB measured at $t \leq 5$ secs.

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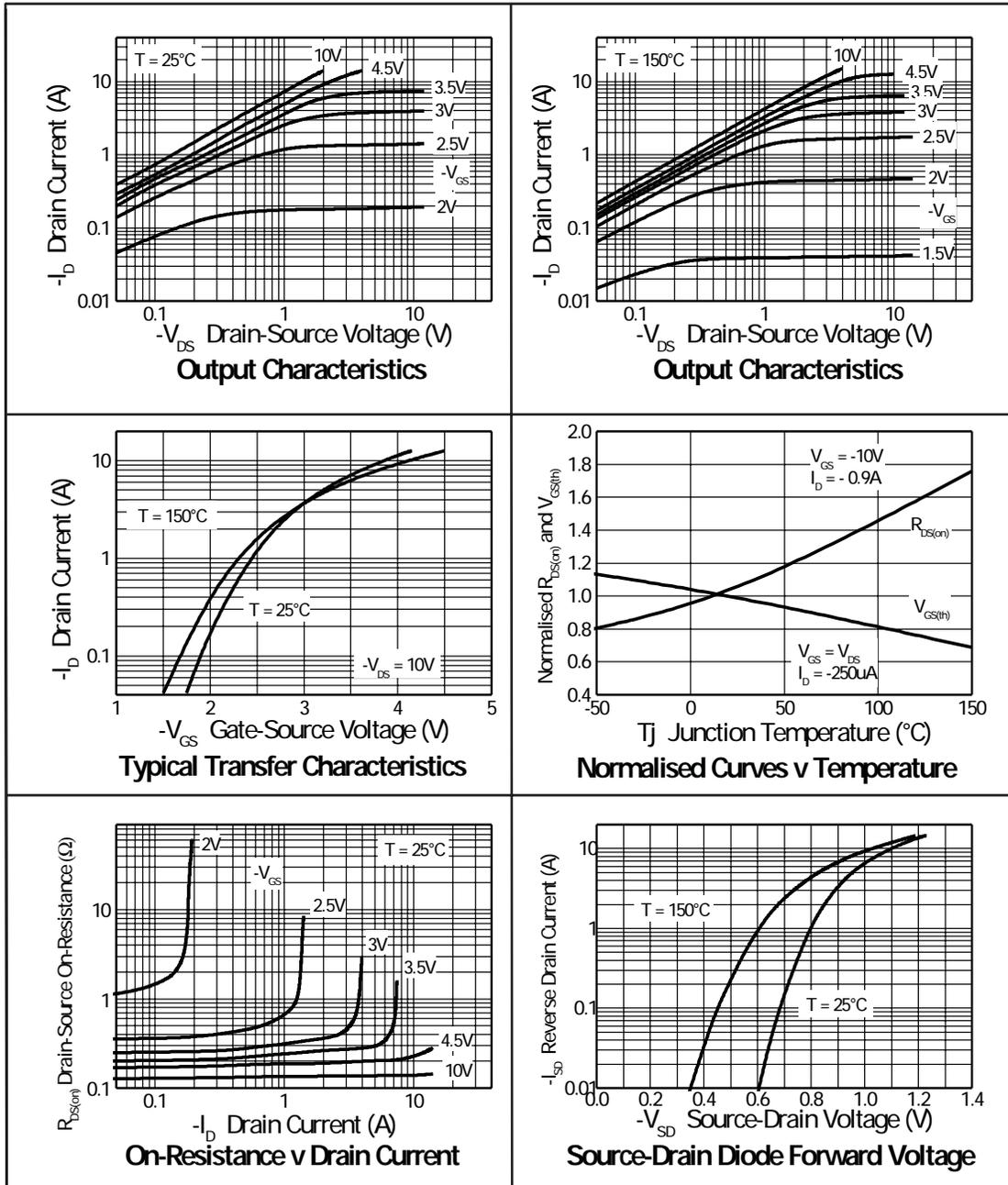
ELECTRICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$ unless otherwise stated)

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.

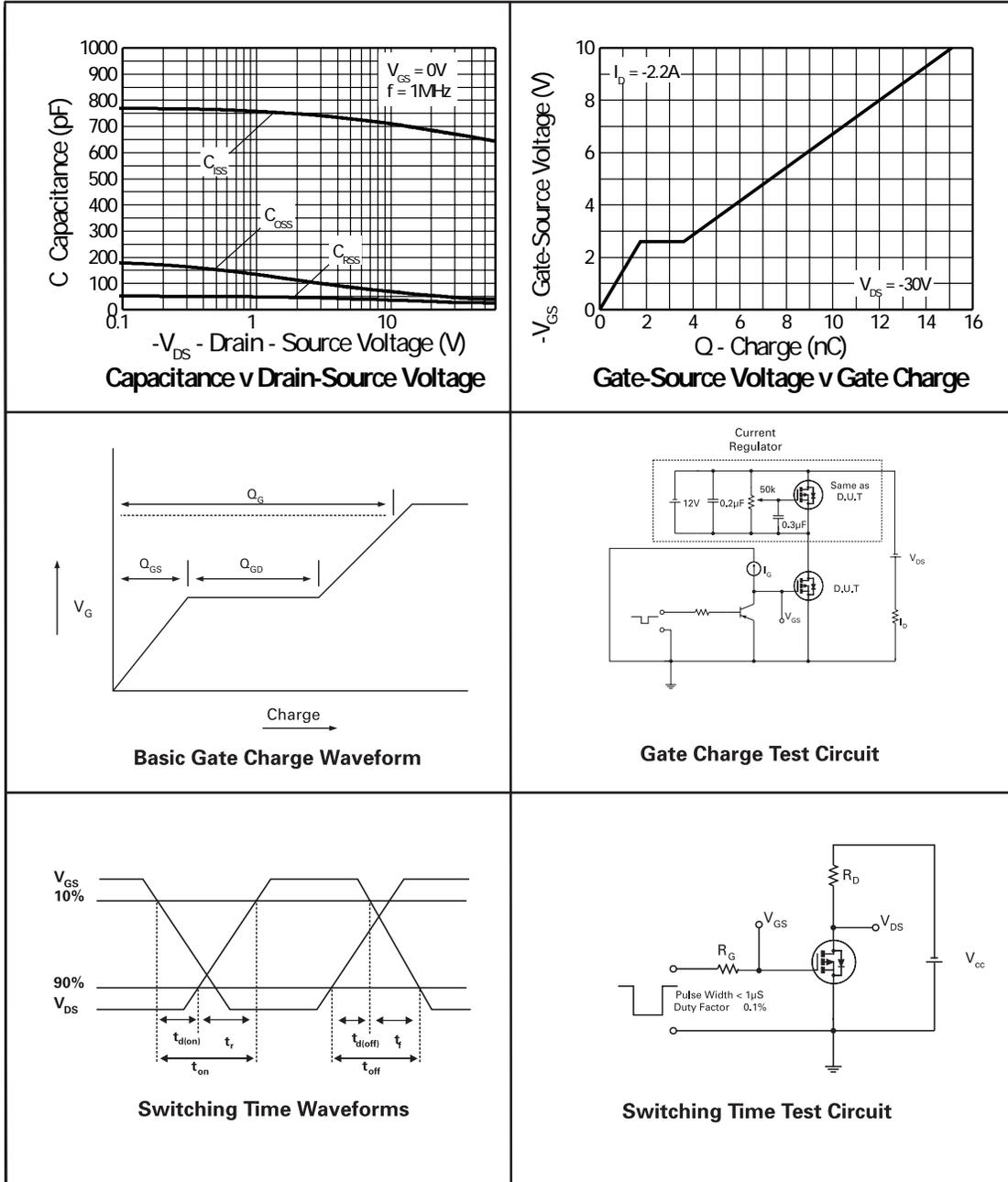
TYPICAL CHARACTERISTICS



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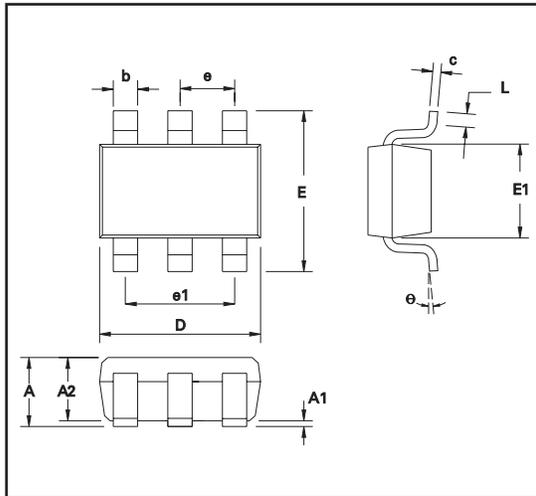
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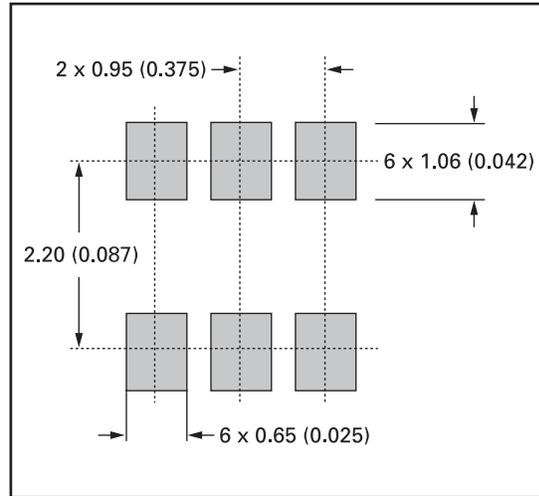
ZXMP6A17E6

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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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