

# ZXTP2006E6

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## 20V PNP LOW SAT MEDIUM POWER TRANSISTOR IN SOT23-6

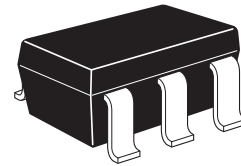
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### SUMMARY

$BV_{CEO} = -20V$  ;  $R_{SAT} = 31m\Omega$ ;  $I_C = -3.5A$

### DESCRIPTION

Packaged in the SOT23-6 outline this new low saturation 20V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



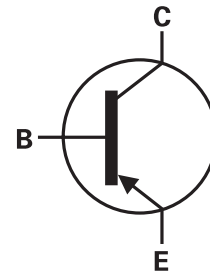
SOT23-6

### FEATURES

- 3.5 Amps continuous current
- Extremely low saturation voltage (-70mV max @ 1A/100mA )
- Up to 10 Amps peak current
- Very low saturation voltages

### APPLICATIONS

- DC - DC converters
- Battery charging
- Power switches
- Motor control
- Power management functions



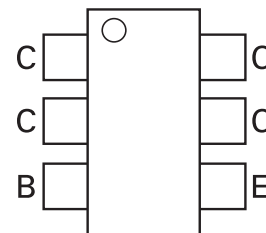
### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXTP2006E6TA	7"	8mm embossed	3,000
ZXTP2006E6TC	13"	8mm embossed	10,000

### DEVICE MARKING

52

### PINOUT



TOP VIEW

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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	$BV_{CBO}$	-25	V
Collector-emitter voltage	$BV_{CEO}$	-20	V
Emitter-base voltage	$BV_{EBO}$	-7.5	V
Continuous collector current	$I_C$	-3.5	A
Peak pulse current	$I_{CM}$	-10	A
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup>	$P_D$	1.1	W
Linear derating factor		8.8	mW/ $^\circ\text{C}$
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	1.7	W
Linear derating factor		13.6	mW/ $^\circ\text{C}$

## THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	113	$^\circ\text{C}/\text{W}$
Junction to ambient <sup>(b)</sup>	$R_{\theta JC}$	73	$^\circ\text{C}/\text{W}$

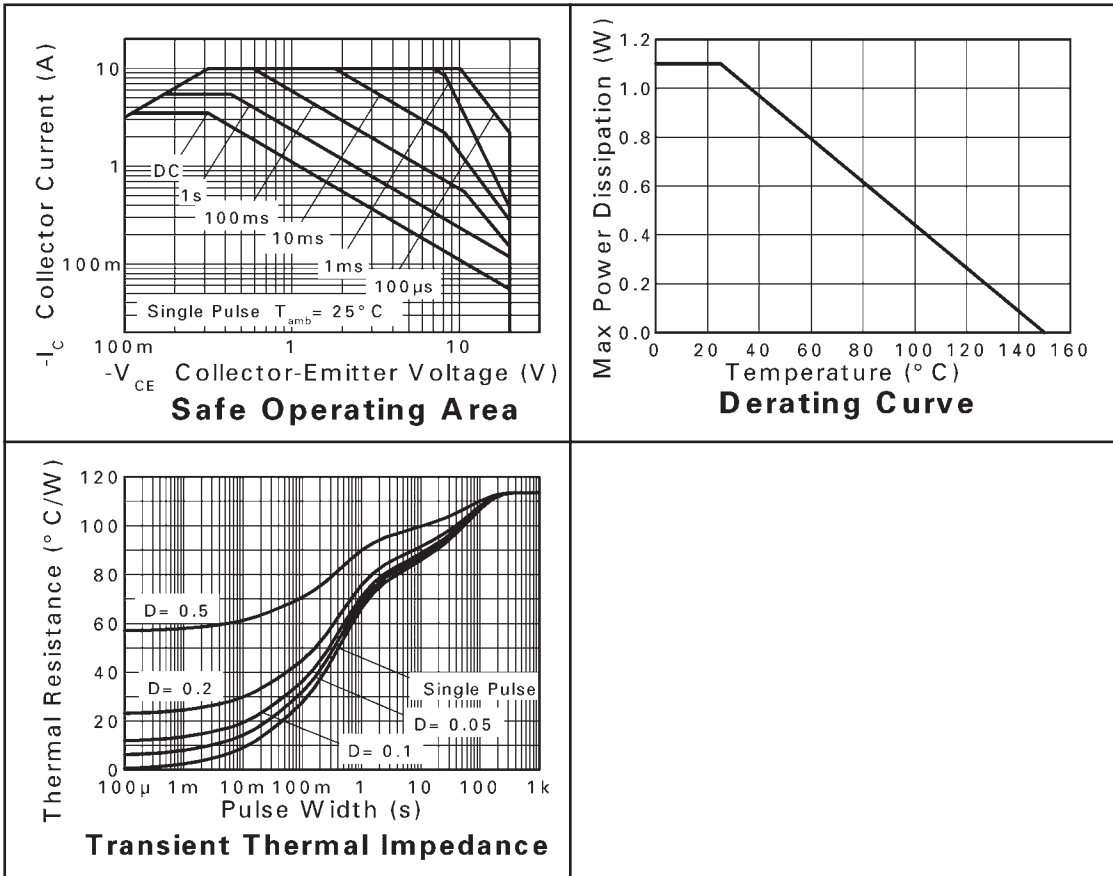
### NOTES

(a) For a device surface mounted on 25mm x 25mm x 0.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

(b) As above measured at  $t < 5$  seconds.

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## CHARACTERISTICS



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

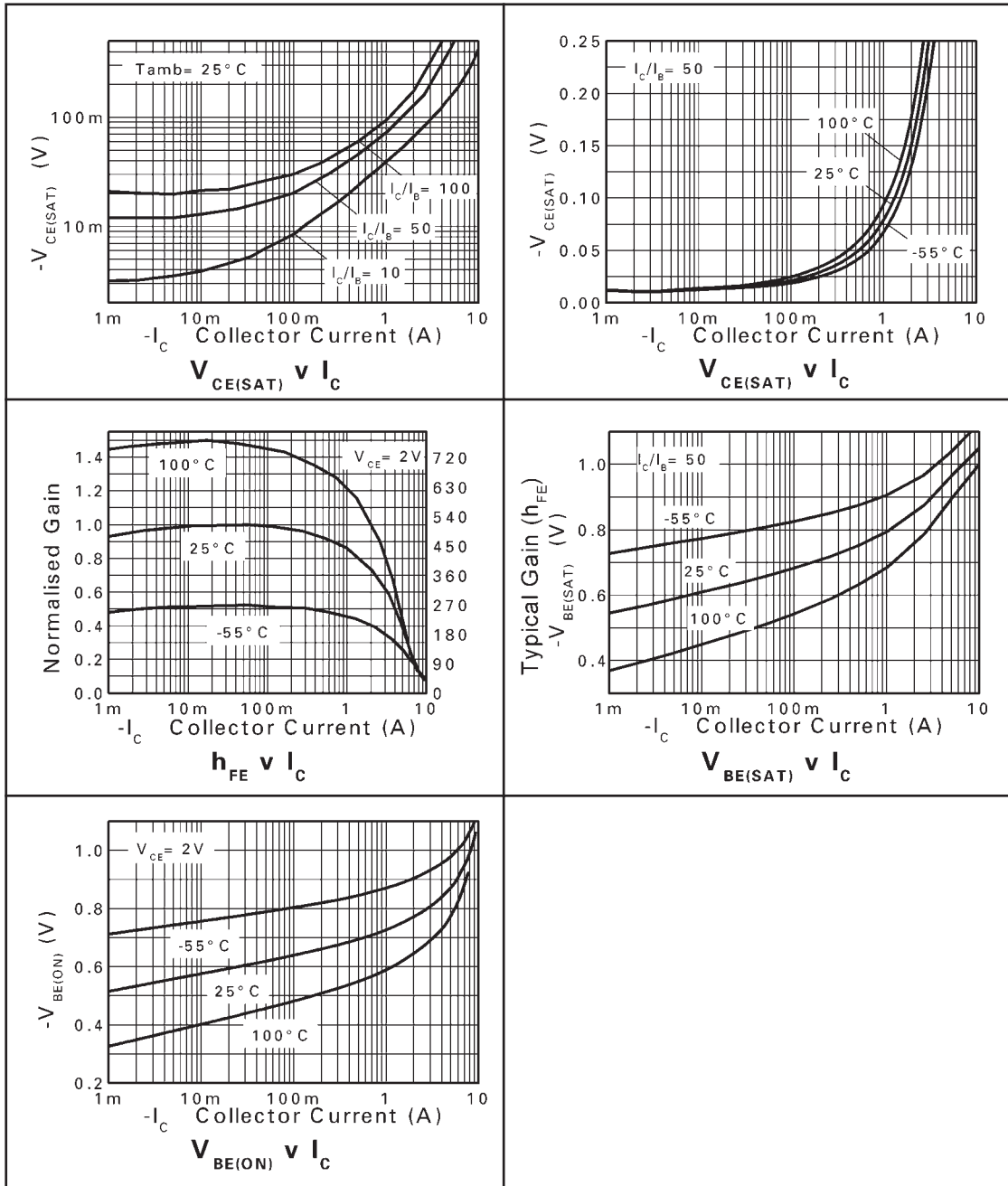
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	$BV_{CBO}$	-25	-49		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CEO}$	-20	-43		V	$I_C = -10\text{mA}^*$
Emitter-base breakdown voltage	$BV_{EBO}$	-7.5	-8.4		V	$I_E = -100\mu\text{A}$
Collector cut-off current	$I_{CBO}$			-100	nA	$V_{CB} = -20\text{V}$
Collector cut-off current	$I_{CES}$			-100	nA	$V_{CB} = -20\text{V}$
Emitter cut-off current	$I_{EBO}$			-100	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-10	-15	mV	$I_C = -0.1\text{A}, I_B = -10\text{mA}^*$
			-100	-140	mV	$I_C = -1\text{A}, I_B = -10\text{mA}^*$
			-110	-130	mV	$I_C = -3.5\text{A}, I_B = -350\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		-0.96	-1.1	V	$I_C = -3.5\text{A}, I_B = -350\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		-0.8	-0.9	V	$I_C = -3.5\text{A}, V_{CE} = -2\text{V}^*$
Static forward current transfer ratio	$h_{FE}$	300	575			$I_C = -10\text{mA}, V_{CE} = -2\text{V}^*$
		300	450	900		$I_C = -1\text{A}, V_{CE} = -2\text{V}^*$
		150	285			$I_C = -3.5\text{A}, V_{CE} = -2\text{V}^*$
		10	40			$I_C = -10\text{A}, V_{CE} = -2\text{V}^*$
Transition frequency	$f_T$		110			$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output capacitance	$C_{OBO}$		45		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}^*$

### NOTES

\* Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

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## TYPICAL CHARACTERISTICS



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NOTES:

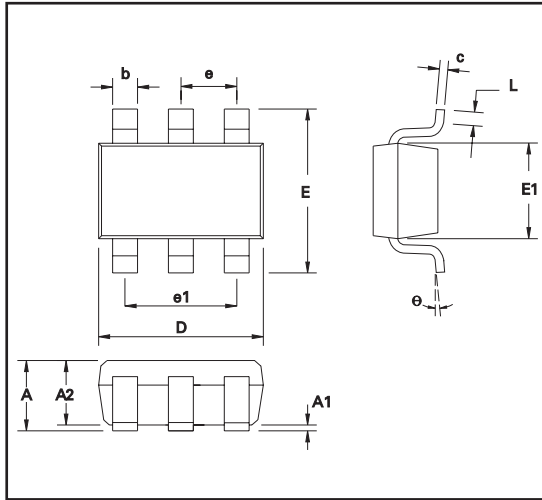
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NOTES:

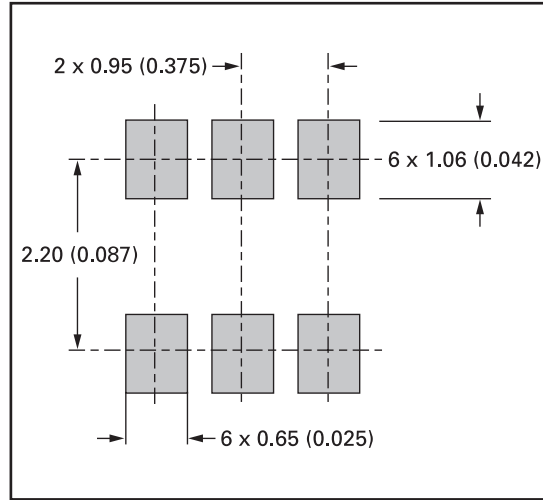
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# ZXTP2006E6

## PACKAGE OUTLINE



## PAD LAYOUT DETAILS



Controlling dimensions are in millimeters. Approximate conversions are given in inches

## PACKAGE DIMENSIONS

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min	Max	Min	Max		Min	Max	Min	Max
A	0.90	1.45	0.035	0.057	E	2.20	3.20	0.0866	0.118
A1	0.00	0.15	0.00	0.006	E1	1.30	1.80	0.0511	0.071
A2	0.90	1.30	0.035	0.051	L	0.10	0.60	0.004	0.024
b	0.20	0.50	0.008	0.020	e	0.95 REF		0.037 REF	
C	0.09	0.26	0.003	0.010	e1	1.90 REF		0.075 REF	
D	2.70	3.10	0.106	0.122	θ	0°	30°	0°	30°

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