

# ZXT953K

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## 100V PNP LOW SATURATION MEDIUM POWER TRANSISTOR IN D-PAK

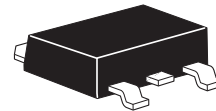
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### SUMMARY

$BV_{CEO} = -100V$  ;  $R_{SAT} = 67m\Omega$ ;  $I_C = -5A$

### DESCRIPTION

Packaged in the D-Pak outline this high current high performance 100V PNP transistor offers low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



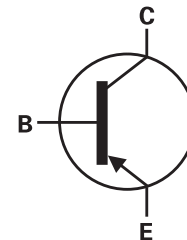
DPAK

### FEATURES

- 5 amps continuous current
- Up to 10 amps peak current
- Low equivalent on resistance
- Low saturation voltages

### APPLICATIONS

- DC - DC converters
- DC - DC modules
- Power switches
- Motor control
- Automotive circuits
- Inverter circuits



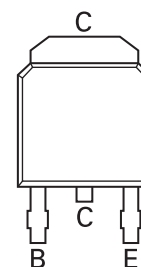
### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXT953KTC	13"	16mm	2500 units

### DEVICE MARKING

- ZXT953

### PINOUT



TOP VIEW

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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	$BV_{CBO}$	-140	V
Collector-base voltage	$BV_{CER}$	-140	V
Collector-emitter voltage	$BV_{CEO}$	-100	V
Emitter-base voltage	$BV_{EBO}$	-7	V
Peak pulse current	$I_{CM}$	-10	A
Continuous collector current <sup>(b)</sup>	$I_C$	-5	A
Base current	$I_B$	-0.5	A
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup>	$P_D$	2.1	W
Linear derating factor		16.8	mW/ $^\circ\text{C}$
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	3.2	W
Linear derating factor		25.6	mW/ $^\circ\text{C}$
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(c)</sup>	$P_D$	4.2	W
Linear derating factor		33.6	mW/ $^\circ\text{C}$
Operating and storage temperature range	$T_j, T_{stg}$	-55 to +150	$^\circ\text{C}$

## THERMAL RESISTANCE

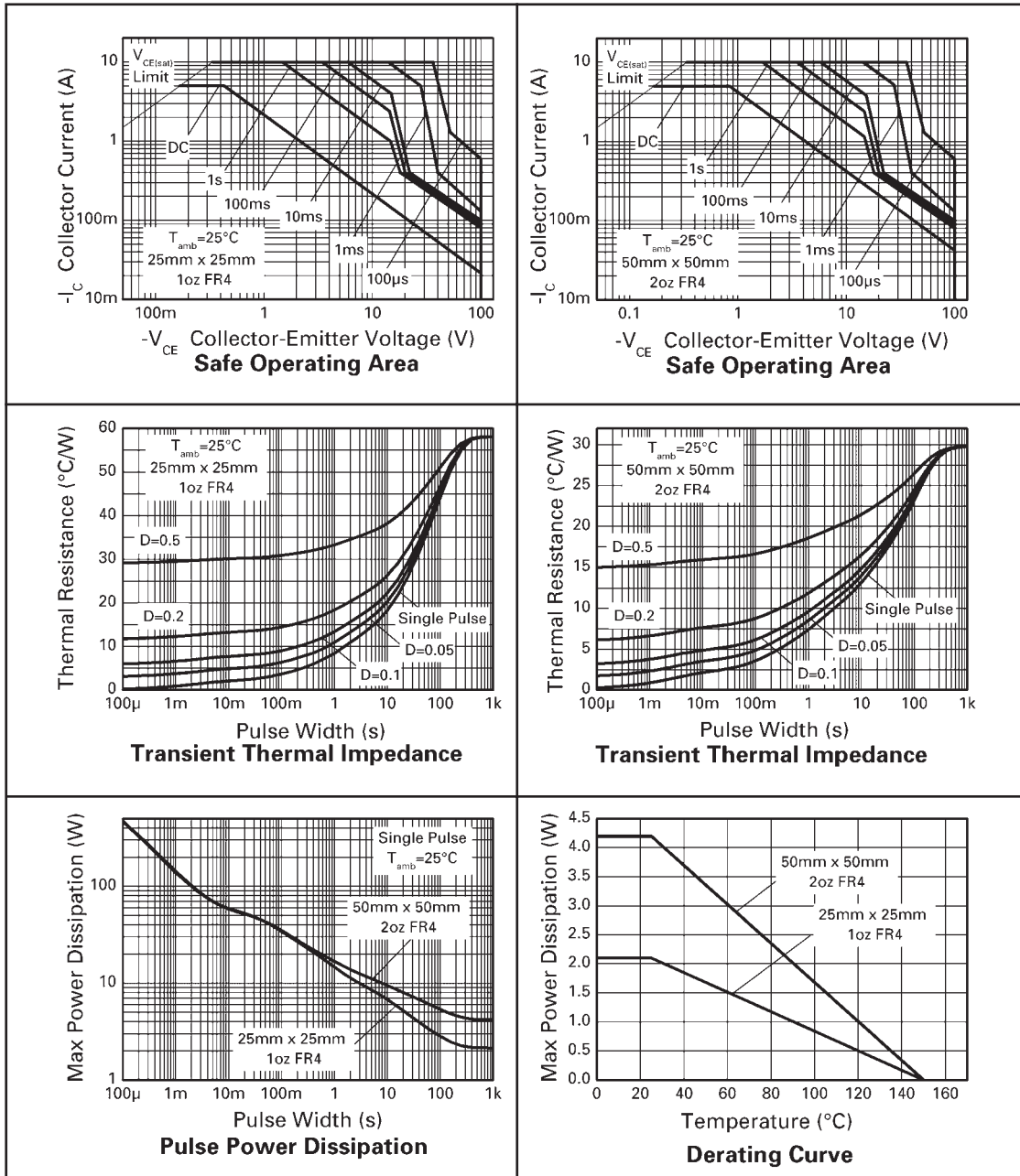
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	59	$^\circ\text{C}/\text{W}$
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	39	$^\circ\text{C}/\text{W}$
Junction to ambient <sup>(c)</sup>	$R_{\theta JA}$	30	$^\circ\text{C}/\text{W}$

### NOTES

- (a) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.  
(b) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.  
(c) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.

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## CHARACTERISTICS



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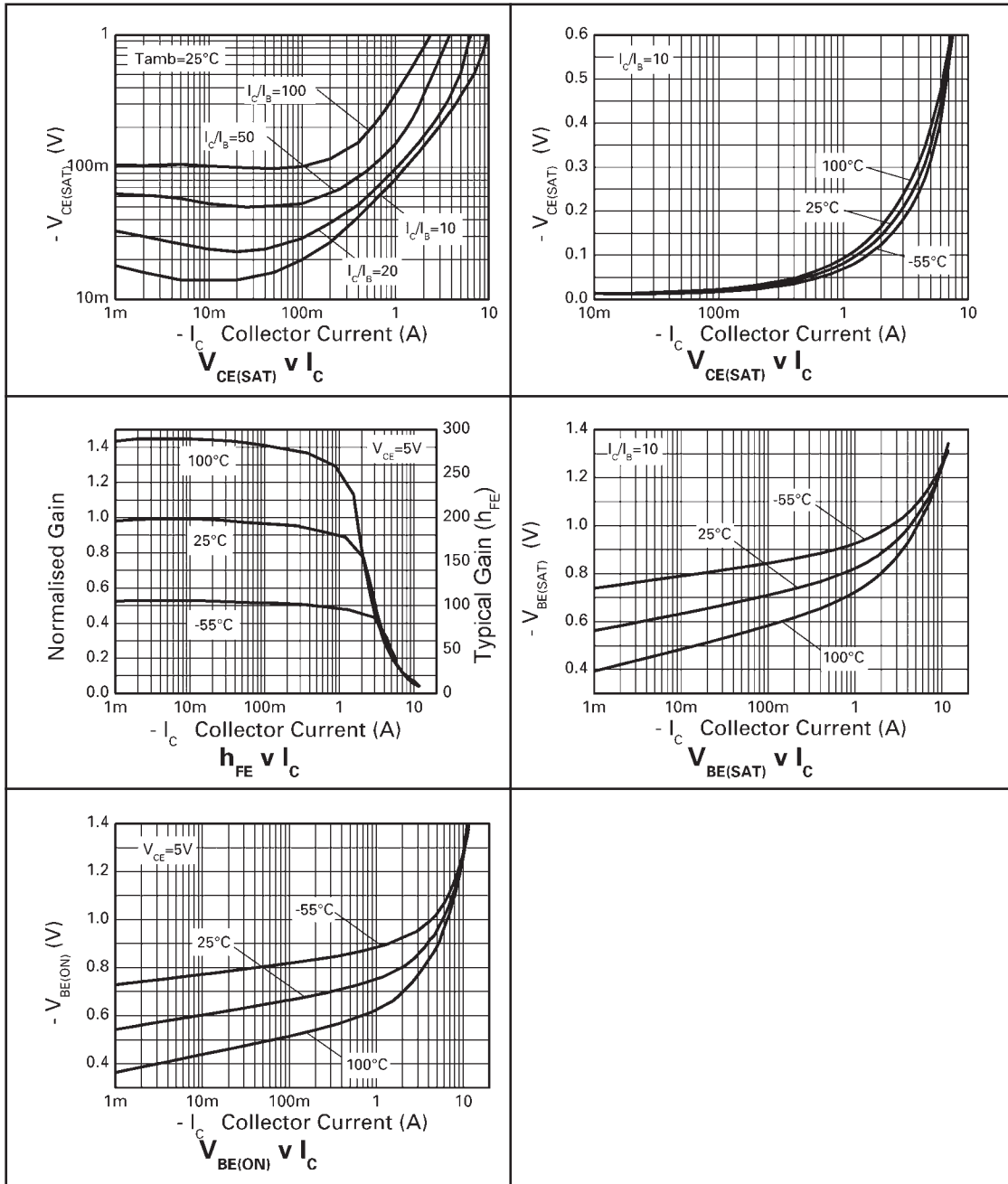
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	$BV_{CBO}$	-140	-170		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CER}$	-140	-170		V	$I_C = -1\mu\text{A}$ , $R_{BE} = \leq 1\text{k}\Omega$
Collector-emitter breakdown voltage	$BV_{CEO}$	-100	-125		V	$I_C = -10\text{mA}^*$
Emitter-base breakdown voltage	$BV_{EBO}$	-7	-8.1		V	$I_E = -100\mu\text{A}$
Collector cut-off current	$I_{CBO}$		<1	-20	nA	$V_{CB} = -100\text{V}$
Collector cut-off current	$I_{CER}$		<1	-20	nA	$V_{CB} = -100\text{V}$ , $R_{BE} = \leq 1\text{k}\Omega$
Emitter cut-off current	$I_{EBO}$		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-20 -80 -140 -335	-30 -100 -175 -390	mV	$I_C = -0.1\text{A}$ , $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$ , $I_B = -200\text{mA}^*$ $I_C = -5\text{A}$ , $I_B = -500\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		-1.01	-1.1	mV	$I_C = -5\text{A}$ , $I_B = -500\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		-0.94	-1.05	mV	$I_C = -5\text{A}$ , $V_{CE} = -1\text{V}^*$
Static forward current transfer ratio	$h_{FE}$	100 100 50 15	225 200 85 30 15	300		$I_C = -10\text{mA}$ , $V_{CE} = -1\text{V}^*$ $I_C = -1\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -3\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -5\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$ , $V_{CE} = -1\text{V}^*$
Transition frequency	$f_T$		125		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output capacitance	$C_{OBO}$		65		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}^*$
Switching times	$t_{ON}$ $t_{OFF}$		110 460		nS nS	$I_C = -2\text{A}$ , $V_{CC} = -10\text{V}$ , $I_{B1} = I_{B2} = -200\text{mA}$

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

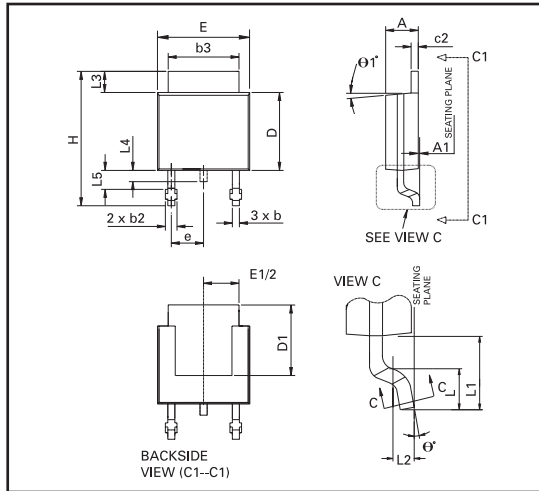
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## TYPICAL CHARACTERISTICS



# ZXT953K

## PACKAGE OUTLINE



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	2.18	2.38	0.086	0.094	e	2.30 BSC		0.090 BSC	
A1	—	0.127	—	0.005	H	9.40	10.41	0.370	0.410
b	0.635	0.89	0.025	0.035	L	1.40	1.78	0.055	0.070
b2	0.762	1.114	0.030	0.045	L1	2.74 REF		0.108 REF	
b3	5.20	5.46	0.205	0.215	L2	0.051 BSC		0.020 BSC	
c	0.457	0.609	0.018	0.024	L3	0.89	1.27	0.035	0.050
c2	0.457	0.584	0.018	0.023	L4	0.635	1.01	0.025	0.040
D	5.97	6.22	0.235	0.245	L5	1.14	1.52	0.045	0.060
D1	5.20	—	0.205	—	$\Theta 1^\circ$	0°	10°	0°	10°
E	6.35	6.73	0.250	0.265	$\Theta^\circ$	0°	15°	0°	15°
E1	4.32	—	0.170	—	—	—	—	—	—

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