

# ZXT849K

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## 30V NPN LOW SATURATION TRANSISTOR IN D-PAK

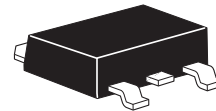
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### SUMMARY

$BV_{CEO} = 30V$  :  $R_{SAT} = 33m\Omega$  typical;  $I_C = 7A$

### DESCRIPTION

Packaged in the D-Pak outline this high current high performance 30V NPN transistor offers low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



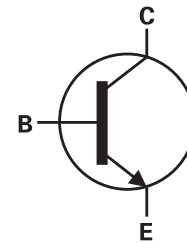
DPAK

### FEATURES

- 7 amps continuous current
- Up to 20 amps peak current
- Low equivalent on resistance
- Low saturation voltages
- Excellent  $h_{FE}$  performance up to 20 amps

### APPLICATIONS

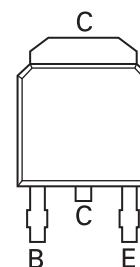
- DC - DC converters
- DC - DC modules
- Power switches
- Motor control
- Automotive circuits



### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXT849KTC	13"	16mm	2500 units/reel

### PINOUT



TOP VIEW

### DEVICE MARKING

- ZXT849

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## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	$BV_{CBO}$	80	V
Collector-emitter voltage	$BV_{CER}$	80	V
Collector-emitter voltage	$BV_{CEO}$	30	V
Emitter-base voltage	$BV_{EBO}$	7	V
Peak pulse current	$I_{CM}$	20	A
Continuous collector current <sup>(b)</sup>	$I_C$	7	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/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	3.2	W
Linear derating factor		25.6	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(c)</sup>	$P_D$	4.2	W
Linear derating factor		33.6	mW/°C
Operating and storage temperature range	$T_j, T_{stg}$	-55 to +150	°C

## THERMAL RESISTANCE

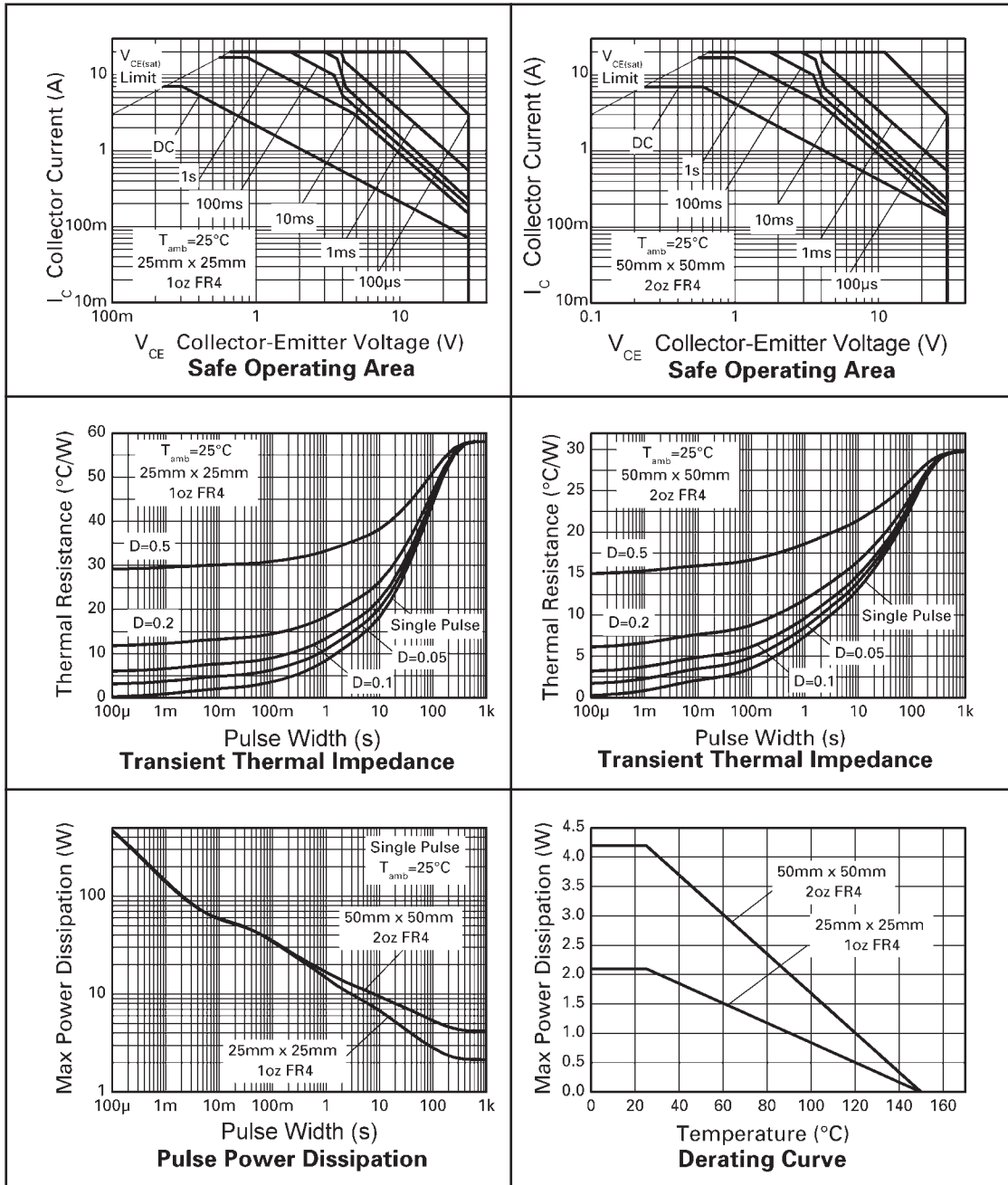
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	59	°C/W
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	39	°C/W
Junction to ambient <sup>(c)</sup>	$R_{\theta JA}$	30	°C/W

### 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 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper in still air conditions.

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## TYPICAL CHARACTERISTICS



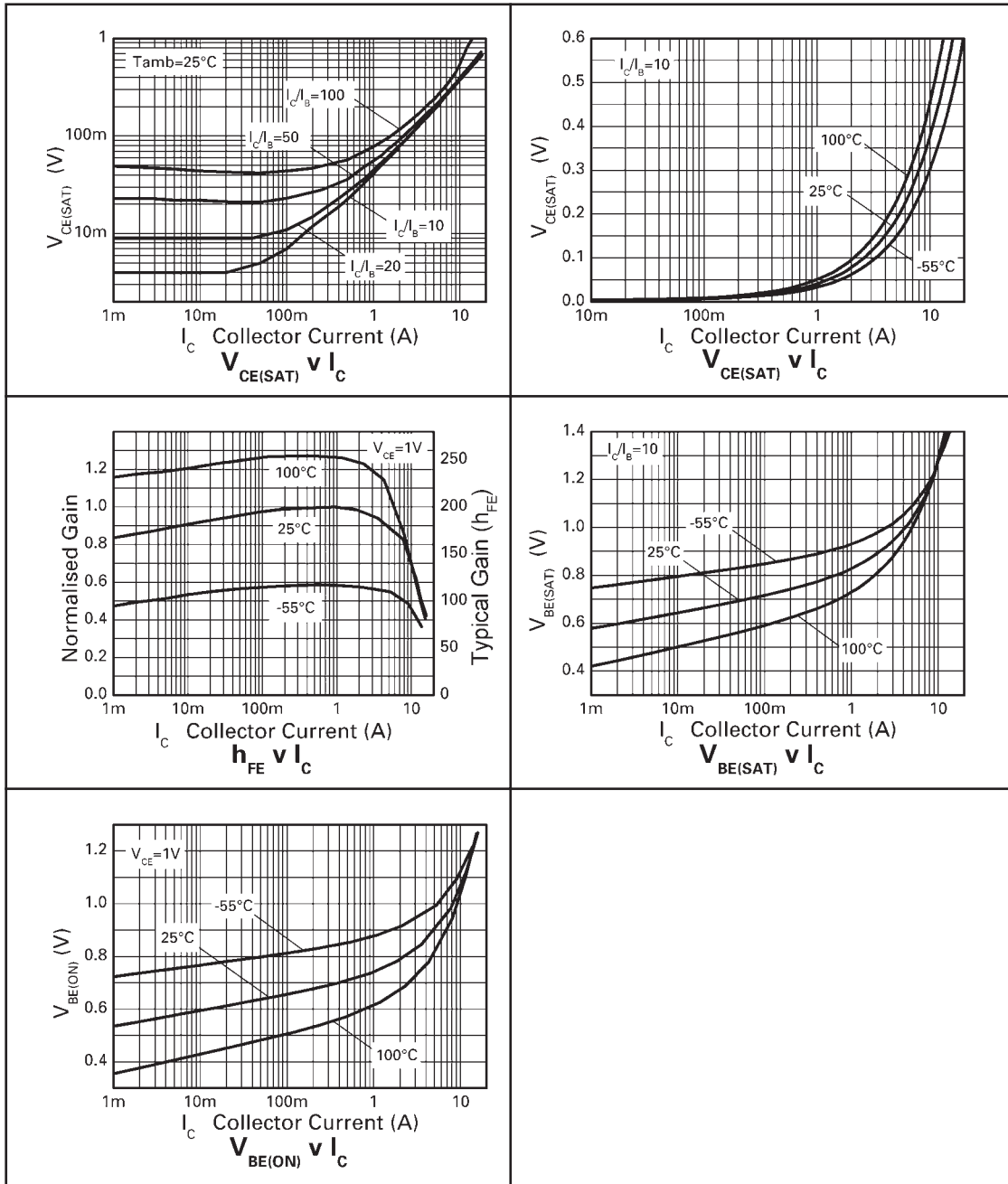
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## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	$BV_{CBO}$	80	125		V	$I_C = 100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CER}$	80	125		V	$I_C = 1\mu\text{A}$ , $R_{BE} \leq 1\text{k}\Omega$
Collector-emitter breakdown voltage	$BV_{CEO}$	30	40		V	$I_C = 10\text{mA}^*$
Emitter-base breakdown voltage	$BV_{EBO}$	7	8		V	$I_E = 100\mu\text{A}$
Collector cut-off current	$I_{CBO}$			20	nA	$V_{CB} = 70\text{V}$
Collector cut-off current	$I_{CER}$			20	nA	$V_{CB} = 70\text{V}$ , $R_{BE} \leq 1\text{k}\Omega$
Emitter cut-off current	$I_{EBO}$			10	nA	$V_{EB} = 6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		27	40	mV	$I_C = 0.5\text{A}$ , $I_B = 20\text{mA}^*$
			55	80	mV	$I_C = 1\text{A}$ , $I_B = 20\text{mA}^*$
			115	180	mV	$I_C = 2\text{A}$ , $I_B = 20\text{mA}^*$
			230	280	mV	$I_C = 7\text{A}$ , $I_B = 350\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		1.04	1.15	mV	$I_C = 7\text{A}$ , $I_B = 350\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		0.93	1.1	mV	$I_C = 7\text{A}$ , $V_{CE} = 1\text{V}^*$
Static forward current transfer ratio	$H_{FE}$	100	190			$I_C = 10\text{mA}$ , $V_{CE} = 1\text{V}^*$
		100	200	300		$I_C = 1\text{A}$ , $V_{CE} = 1\text{V}^*$
		100	165			$I_C = 7\text{A}$ , $V_{CE} = 1\text{V}^*$
		40	90			$I_C = 20\text{A}$ , $V_{CE} = 2\text{V}^*$
Transition frequency	$f_T$		100		MHz	$I_C = 100\text{mA}$ , $V_{CE} = 10\text{V}$ $f = 50\text{MHz}$
Output capacitance	$C_{OBO}$		75		pF	$V_{CB} = 10\text{V}$ , $f = 1\text{MHz}^*$
Switching times	$t_{ON}$		45		nS	$I_C = 1\text{A}$ , $V_{CC} = 10\text{V}$ ,
	$t_{OFF}$		630		nS	$I_{B1} = I_{B2} = 100\text{mA}$

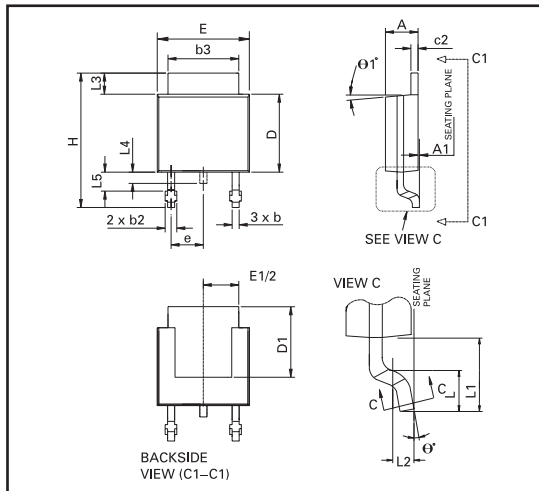
\* Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

## TYPICAL CHARACTERISTICS



# ZXT849K

## 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	—	$\Theta 1^\circ$	$0^\circ$	$10^\circ$	$0^\circ$	$10^\circ$
E	6.35	6.73	0.250	0.265	$\Theta^\circ$	$0^\circ$	$15^\circ$	$0^\circ$	$15^\circ$
E1	4.32	—	0.170	—	—	—	—	—	—

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Europe		Americas	Asia Pacific
Zetex plc Fields New Road Chadderton Oldham, OL9 8NP United Kingdom Telephone (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com	Zetex GmbH Streitfeldstraße 19 D-81673 München  Germany Telephone: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Zetex Inc 700 Veterans Memorial Hwy Hauppauge, NY 11788  USA Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Zetex (Asia) Ltd 3701-04 Metroplaza Tower 1 Hing Fong Road Kwai Fong Hong Kong Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com

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