

# ZX5T849G

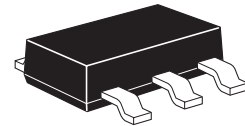
## 30V NPN MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

### SUMMARY

$BV_{CEO} = 30V$  ;  $R_{SAT} = 28m\Omega$  ;  $I_C = 7A$

### DESCRIPTION

Packaged in the SOT223 outline this new 5th generation low saturation 30V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



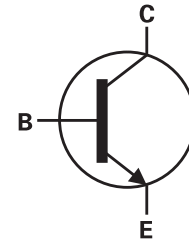
SOT223

### FEATURES

- Extremely low equivalent on-resistance;  $R_{SAT} = 28m\Omega$  at 6.5A
- 7 amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Excellent  $h_{FE}$  characteristics up to 20 amps

### APPLICATIONS

- DC - DC converters
- MOSFET gate drivers
- Charging circuits
- Power switches
- Motor control

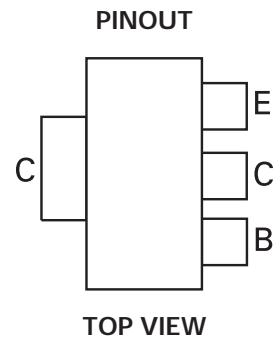


### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T849GTA	7"	12mm embossed	1000 units
ZX5T849GTC	13"	12mm embossed	4000 units

### DEVICE MARKING

- X5T849



# ZX5T849G

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	$BV_{CBO}$	80	V
Collector-emitter voltage	$BV_{CEO}$	30	V
Emitter-base voltage	$BV_{EBO}$	7	V
Continuous collector current <sup>(a)</sup>	$I_C$	7	A
Peak pulse current	$I_{CM}$	20	A
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup>	$P_D$	3.0	W
Linear derating factor		24	mW/ $^\circ\text{C}$
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	1.6	W
Linear derating factor		12.8	mW/ $^\circ\text{C}$
Operating and storage temperature range	$T_j, T_{stg}$	-55 to +150	$^\circ\text{C}$

## THERMAL RESISTANCE

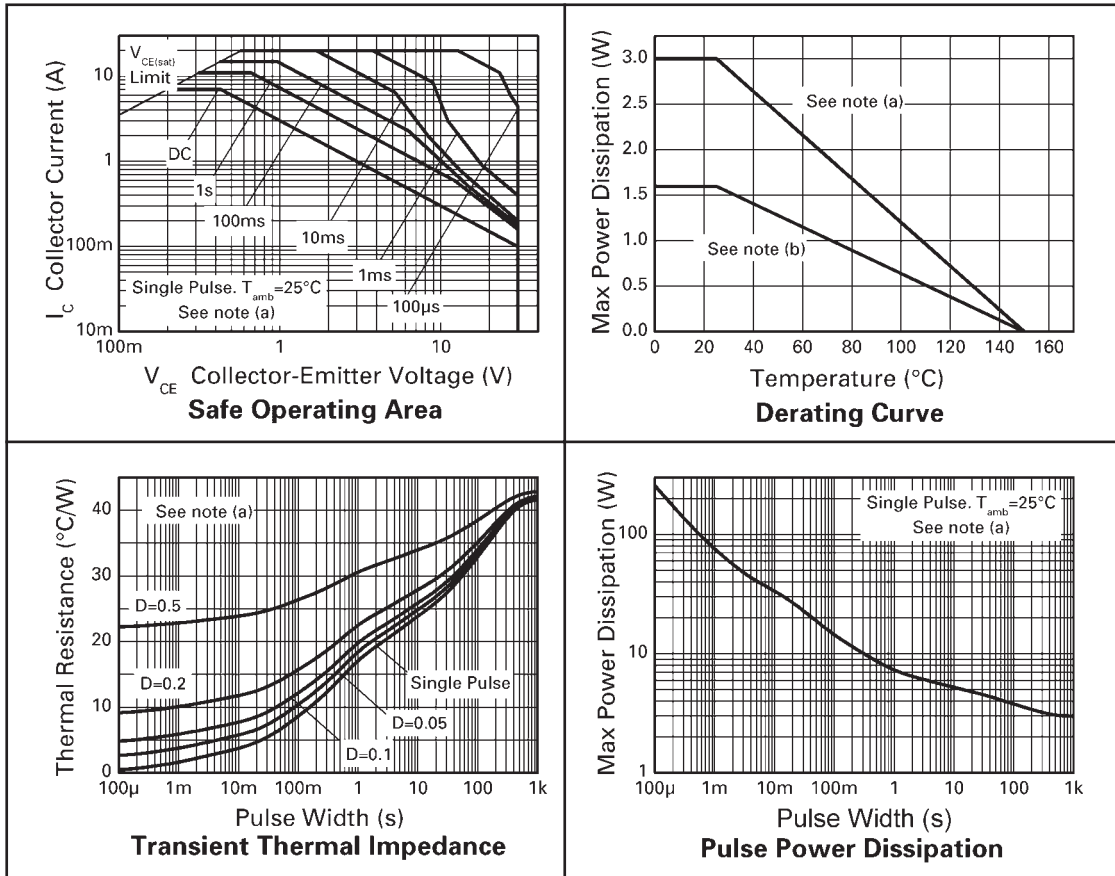
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	42	$^\circ\text{C}/\text{W}$
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	78	$^\circ\text{C}/\text{W}$

### NOTES

(a) For a device surface mounted on 52mm x 52mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.

(b) 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.

## CHARACTERISTICS



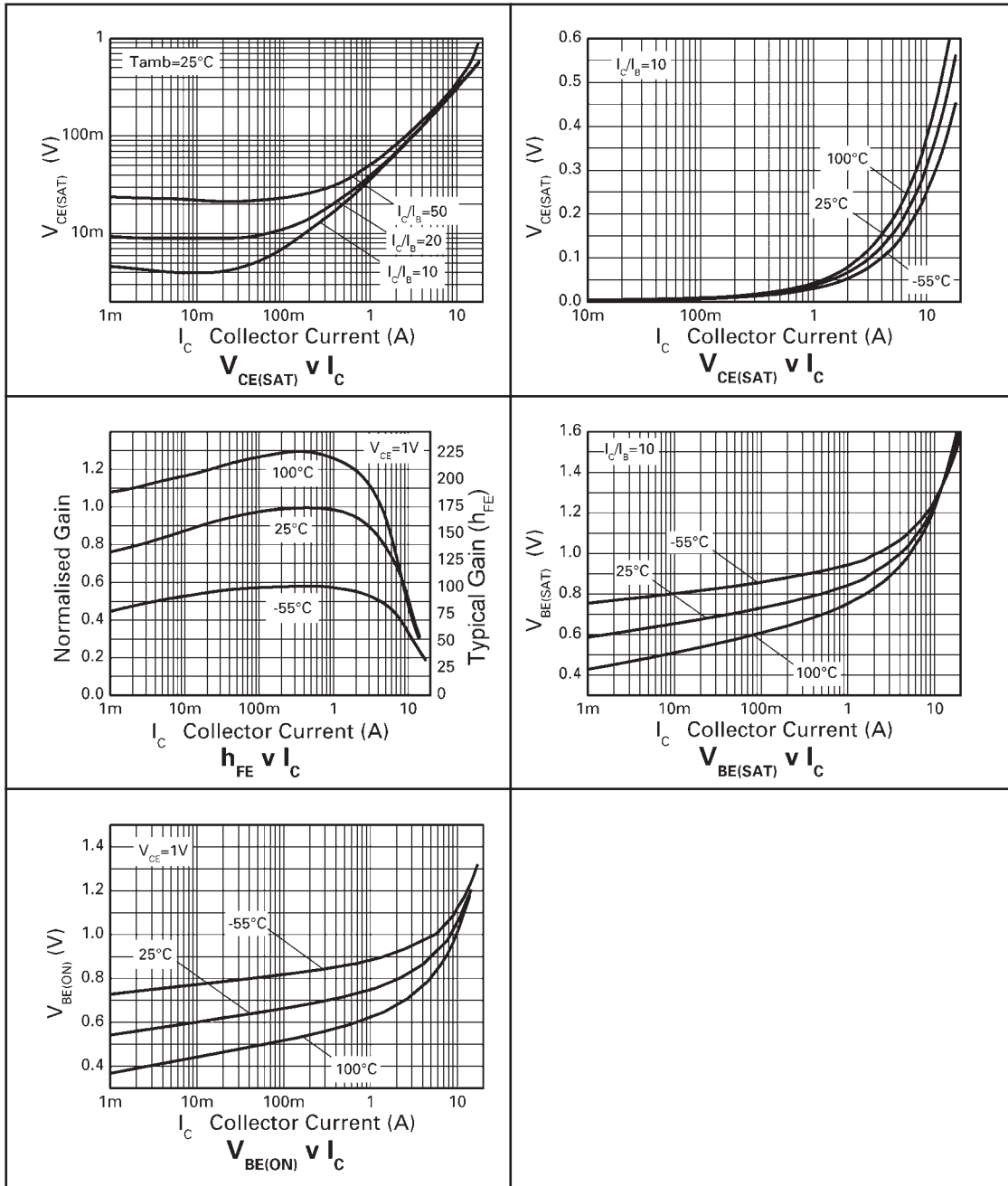
# ZX5T849G

## 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	$I_C = 1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-emitter breakdown voltage	$BV_{CEO}$	30	40		V	$I_C = 10\text{mA}^*$
Emitter-base breakdown voltage	$BV_{EBO}$	7	8.1		V	$I_E = 100\mu\text{A}$
Collector cut-off current	$I_{CBO}$			20 0.5	nA $\mu\text{A}$	$V_{CB} = 70\text{V}$ $V_{CB} = 70\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector cut-off current	$I_{CER}$ $R \leq 1\text{k}\Omega$			20 0.5	nA $\mu\text{A}$	$V_{CB} = 70\text{V}$ $V_{CB} = 70\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter cut-off current	$I_{EBO}$			10	nA	$V_{EB} = 6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		25 35 50 100 185	35 50 65 125 220	mV	$I_C = 0.5\text{A}$ , $I_B = 20\text{mA}^*$ $I_C = 1\text{A}$ , $I_B = 100\text{mA}^*$ $I_C = 1\text{A}$ , $I_B = 20\text{mA}^*$ $I_C = 2\text{A}$ , $I_B = 20\text{mA}^*$ $I_C = 6.5\text{A}$ , $I_B = 300\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		1025	1130	mV	$I_C = 6.5\text{A}$ , $I_B = 300\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		920	1000	mV	$I_C = 6.5\text{A}$ , $V_{CE} = 1\text{V}^*$
Static forward current transfer ratio	$h_{FE}$	100 100 100 20	175 200 150 30	300		$I_C = 10\text{mA}$ , $V_{CE} = 1\text{V}^*$ $I_C = 1\text{A}$ , $V_{CE} = 1\text{V}^*$ $I_C = 7\text{A}$ , $V_{CE} = 1\text{V}^*$ $I_C = 20\text{A}$ , $V_{CE} = 1\text{V}^*$
Transition frequency	$f_T$		140		MHz	$I_C = 100\text{mA}$ , $V_{CE} = 10\text{V}$ $f = 50\text{MHz}$
Output capacitance	$C_{OBO}$		48		pF	$V_{CB} = 10\text{V}$ , $f = 1\text{MHz}^*$
Switching times	$t_{ON}$ $t_{OFF}$		37 425		ns	$I_C = 1\text{A}$ , $V_{CC} = 10\text{V}$ , $I_{B1} = -I_{B2} = 100\text{mA}$

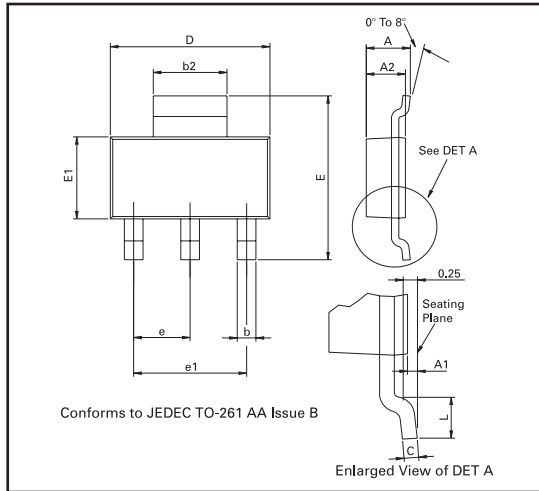
\* Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$ .

TYPICAL CHARACTERISTICS

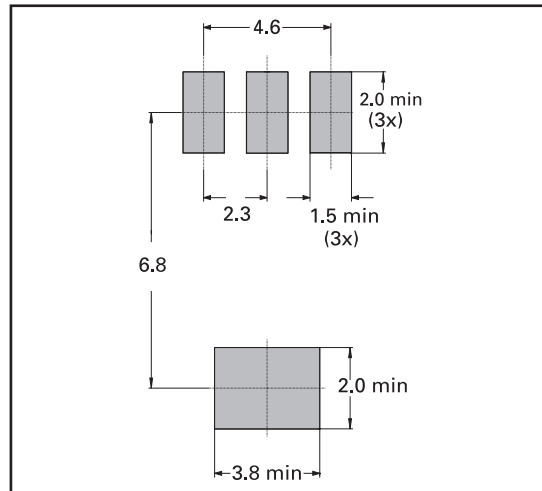


# ZX5T849G

## 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	-	1.80	-	0.071	e	2.30 BSC		0.0905 BSC	
A1	0.02	0.10	0.0008	0.004	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.355	-
D	6.30	6.70	0.248	0.264	-	-	-	-	-

© Zetex plc 2003

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 Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.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

These offices are supported by agents and distributors in major countries world-wide.

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

For the latest product information, log on to [www.zetex.com](http://www.zetex.com)



ISSUE 1 - NOVEMBER 2003