ZX5T849G

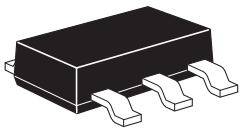
30V NPN MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

SUMMARY

BV_{CEO} = 30V : R_{SAT} = 28mΩ; I_C = 7A

DESCRIPTION

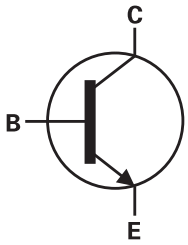
Packaged in the SOT223 outline this new 5th generation low saturation 30V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



SOT223

FEATURES

- Extemely low equivalent on-resistance; **R_{SAT} = 28mΩ 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



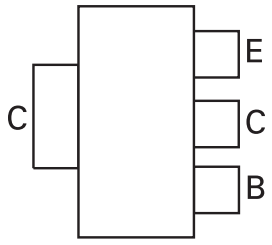
APPLICATIONS

- 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"		4000 units

PINOUT



TOP VIEW

DEVICE MARKING

- X5T849

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 [a]	I_C	7	A
Peak pulse current	I_{CM}	20	A
Power dissipation at T_A =25°C [a]	P_D	3.0	W
Linear derating factor		24	mW/°C
Power dissipation at T_A =25°C [b]	P_D	1.6	W
Linear derating factor		12.8	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

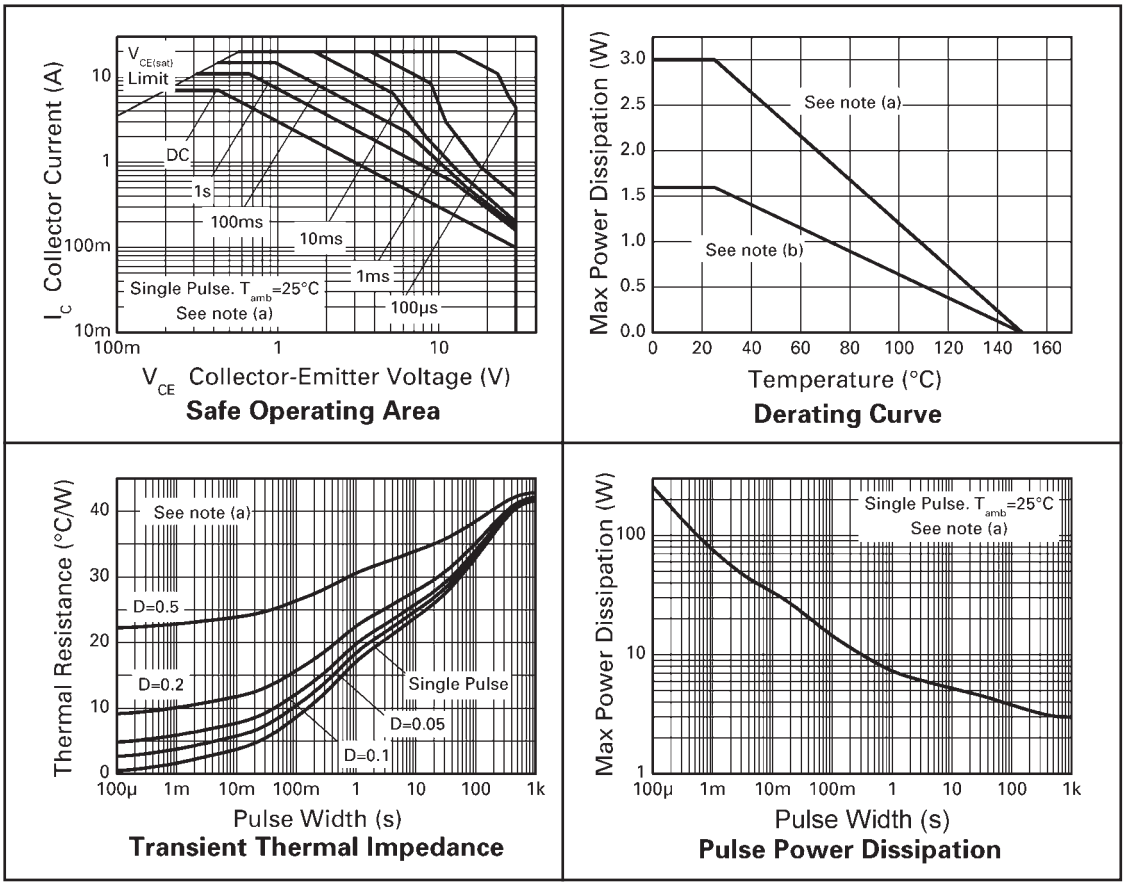
THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient [a]	$R_{\Theta JA}$	42	°C/W
Junction to ambient [b]	$R_{\Theta JA}$	78	°C/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

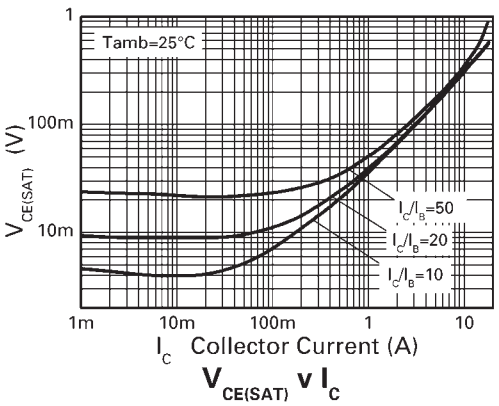


ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

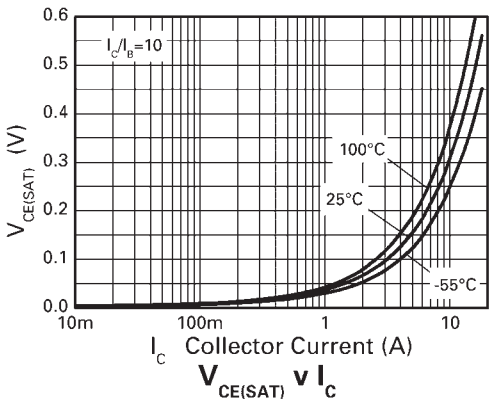
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	80	125		V	I_C=100μA
Collector-emitter breakdown voltage	BV_{CER}	80	125		V	I_C=1μA, RB≤1kΩ
Collector-emitter breakdown voltage	BV_{CEO}	30	40		V	I_C=10mA*
Emitter-base breakdown voltage	BV_{EBO}	7	8.1		V	I_E=100μA
Collector cut-off current	I_{CBO}			20	nA	V_{CB}=70V
				0.5	μA	V_{CB}=70V, T_{amb}=100°C
Collector cut-off current	I_{CER}			20	nA	V_{CB}=70V
	R≤1kΩ			0.5	μA	V_{CB}=70V, T_{amb}=100°C
Emitter cut-off current	I_{EBO}			10	nA	V_{EB}=6V
Collector-emitter saturation voltage	$V_{CE(SAT)}$		25	35	mV	I_C=0.5A, I_B=20mA*
			35	50	mV	I_C=1A, I_B=100mA*
			50	65	mV	I_C=1A, I_B=20mA*
			100	125	mV	I_C=2A, I_B=20mA*
			185	220	mV	I_C=6.5A, I_B=300mA*
Base-emitter saturation voltage	$V_{BE(SAT)}$		1025	1130	mV	I_C=6.5A, I_B=300mA*
Base-emitter turn-on voltage	$V_{BE(ON)}$		920	1000	mV	I_C=6.5A, V_{CE}=1V*
Static forward current transfer ratio	h_{FE}	100	175			I_C=10mA, V_{CE}=1V*
		100	200	300		I_C=1A, V_{CE}=1V*
		100	150			I_C=7A, V_{CE}=1V*
		20	30			I_C=20A, V_{CE}=1V*
Transition frequency	f_T		140		MHz	I_C=100mA, V_{CE}=10V
						f=50MHz
Output capacitance	C_{OBO}		48		pF	V_{CB}=10V, f=1MHz*
Switching times	t_{ON}		37		ns	I_C=1A, V_{CC}=10V,
	t_{OFF}		425			I_{B1}=-I_{B2}=100mA

* Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.

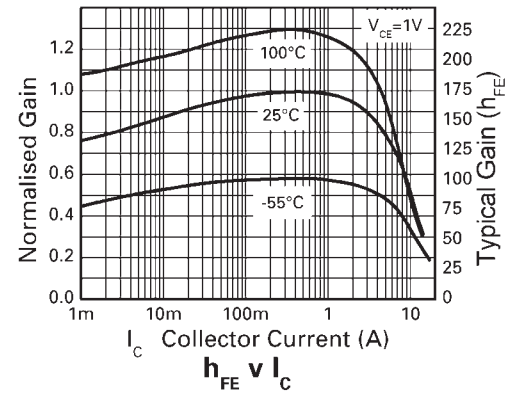
TYPICAL CHARACTERISTICS



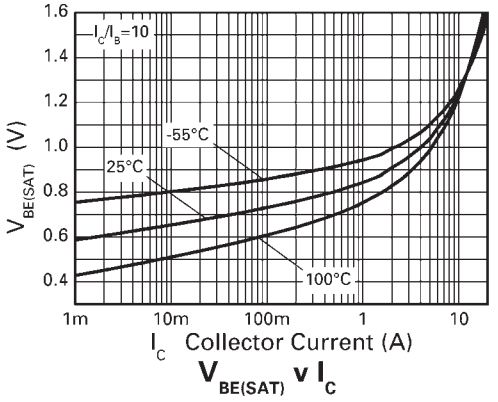
$V_{CE(SAT)}$ v I_C



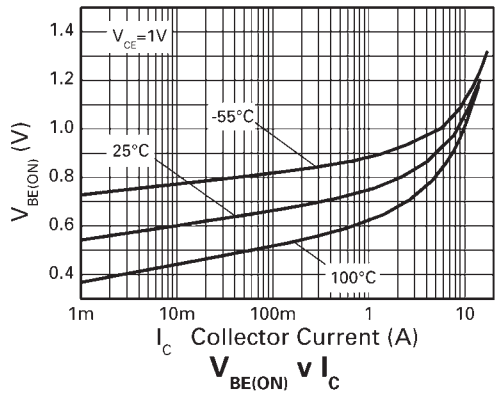
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



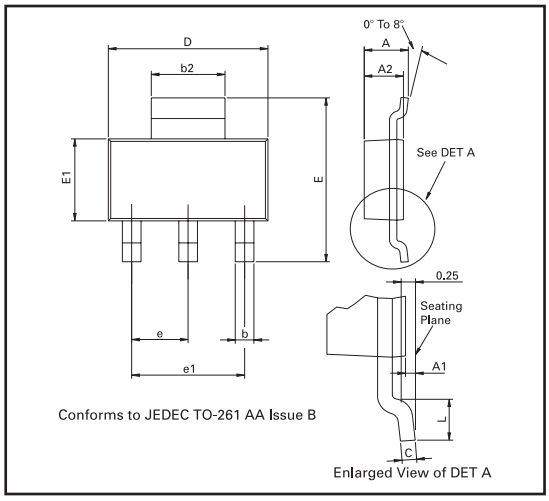
$V_{BE(SAT)}$ v I_C



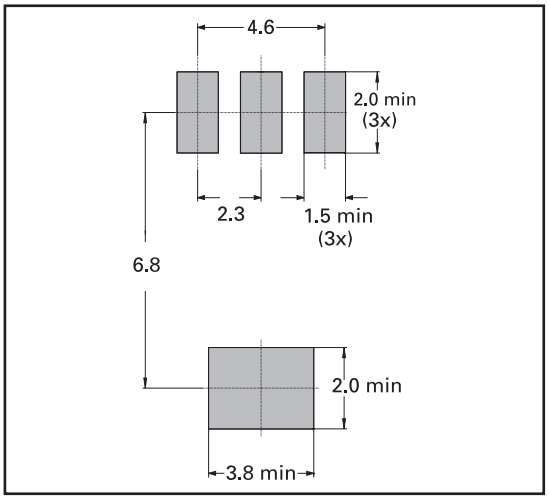
$V_{BE(ON)}$ v I_C

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	-	-	-	-	-

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Europe

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

Americas

Zetex Inc
700 Veterans Memorial Hwy
Hauppauge, NY 11788
USA
Telephone: (1) 631 360 2222
Fax: (1) 631 360 8222
usa.sales@zetex.com

Asia Pacific

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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