ZX5T849Z

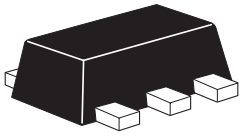
30V NPN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

BV_{CEO} = 30V : R_{SAT} = 23mΩ; I_C = 6.0A

DESCRIPTION

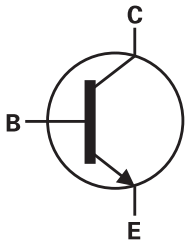
Packaged in the SOT89 outline this new 5th generation low saturation 30V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



SOT89

FEATURES

- Extemely low equivalent on-resistance; **R_{SAT} = 23mΩ at 6.5A**
- 6 amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Excellent h_{FE} characteristics up to 20 amps



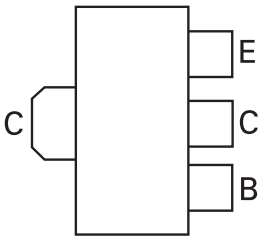
APPLICATIONS

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

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T849ZTA	7”	12mm embossed	1000 units

PINOUT



TOP VIEW

DEVICE MARKING

- 849

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	6	A
Peak pulse current	I_{CM}	20	A
Power dissipation at T_A =25°C [a]	P_D	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at T_A =25°C [b]	P_D	2.1	W
Linear derating factor		16.8	mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

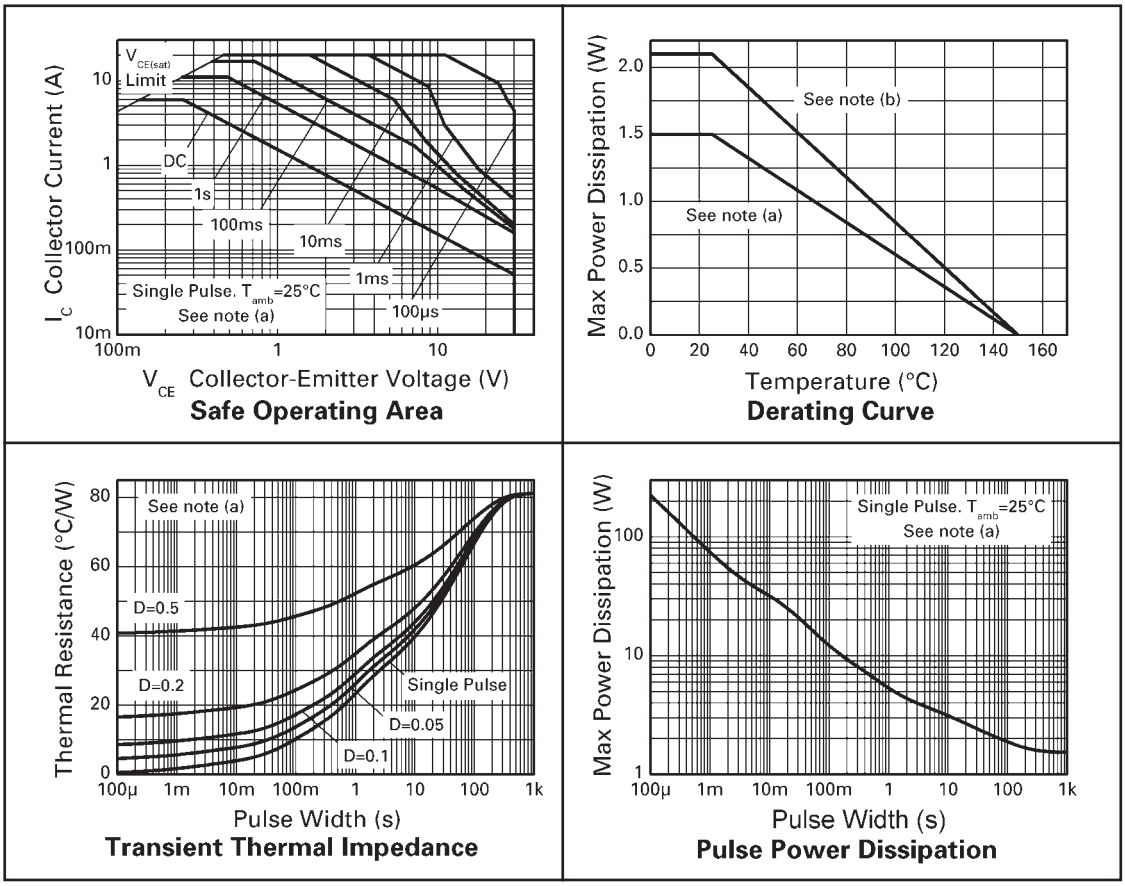
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient [a]	$R_{\Theta JA}$	83	°C/W
Junction to ambient [b]	$R_{\Theta JA}$	60	°C/W

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.

CHARACTERISTICS

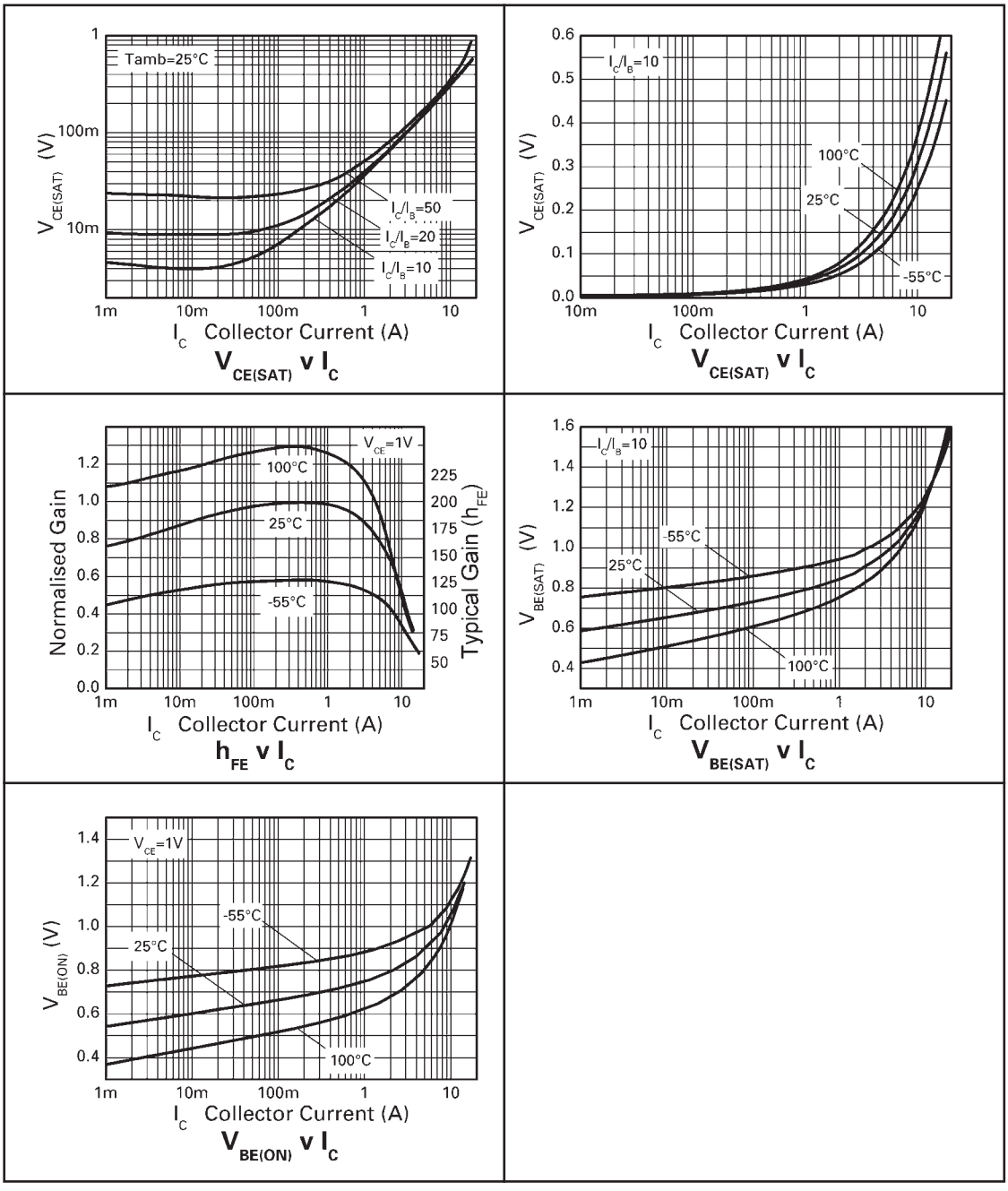


ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

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	$V_{CE(SAT)}$		22	35	mV	I_C=0.5A, I_B=20mA*
			25	45	mV	I_C=1A, I_B=100mA*
			40	60	mV	I_C=1A, I_B=20mA*
			90	115	mV	I_C=2A, I_B=20mA*
			150	190	mV	I_C=6.5A, I_B=300mA*
Base-emitter saturation voltage	$V_{BE(SAT)}$		1000	1100	mV	I_C=6.5A, I_B=300mA*
Base-emitter turn-on voltage	$V_{BE(ON)}$		890	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

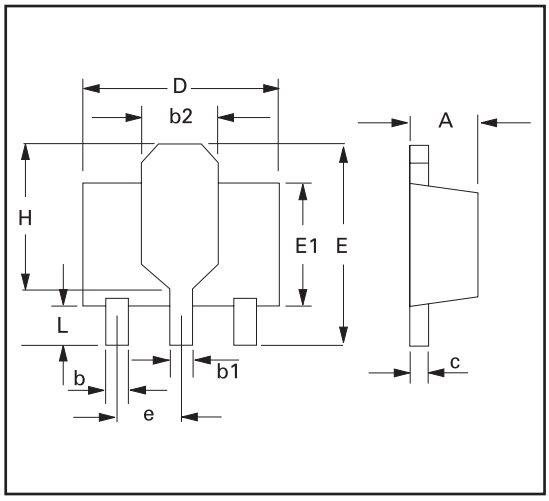
* Measured under pulsed conditions. Pulse width ≤ 300μs; duty cycle ≤ 2%.

TYPICAL CHARACTERISTICS

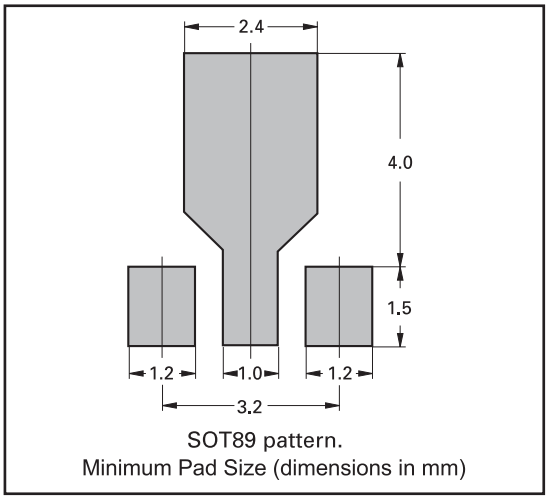


ZX5T849Z

PACKAGE OUTLINE



PAD LAYOUT DETAILS



SOT89 pattern.
Minimum Pad Size (dimensions in mm)

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	1.40	1.60	0.550	0.630	e	1.40	1.50	0.055	0.059
b	0.38	0.48	0.015	0.019	E	3.75	4.25	0.150	0.167
b1	-	0.53	-	0.021	E1	-	2.60	-	0.102
b2	1.50	1.80	0.060	0.071	G	2.90	3.00	0.114	0.118
c	0.28	0.44	0.011	0.017	H	2.60	2.85	0.102	0.112
D	4.40	4.60	0.173	0.181	-	-	-	-	-

© Zetex Semiconductors plc 2004

Europe

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

Corporate Headquarters

Zetex Semiconductors plc
Lansdowne Road, Chadderton
Oldham, OL9 9TY
United Kingdom

Telephone (44) 161 622 4444
Fax: (44) 161 622 4446
hq@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

ISSUE 3 - DECEMBER 2004