

# ZX5T3Z

---

## 40V PNP HIGH GAIN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

---

### SUMMARY

$BV_{CEO} = -40V$  ;  $R_{SAT} = 29m\Omega$ ;  $I_C = -5.5A$

### DESCRIPTION

Packaged in the SOT89 outline this new 5<sup>th</sup> generation low saturation 40V PNP transistor offers low on state losses making it ideal for use in DC-DC circuits, line switching and particularly charging circuits.



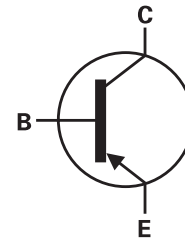
SOT89

### FEATURES

- Extremely low equivalent on-resistance
- 5.5 amps continuous current
- Up to 15 amps peak current
- Very low saturation voltages < -60mV @ -1A

### APPLICATIONS

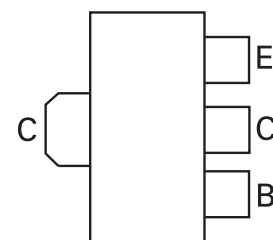
- Charging circuits
- DC - DC converters
- MOSFET gate drivers
- Power switches
- Motor control



### ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T3ZTA	7"	12mm	1000 units

### PINOUT



TOP VIEW

### DEVICE MARKING

- 53Z

# ZX5T3Z

## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	$BV_{CBO}$	-50	V
Collector-base voltage	$BV_{CBS}$	-50	V
Collector-emitter voltage	$BV_{CEO}$	-40	V
Emitter-base voltage	$BV_{EBO}$	-7.5	V
Continuous collector current <sup>(b)</sup>	$I_C$	-5.5	A
Peak pulse current	$I_{CM}$	-15	A
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(a)</sup>	$P_D$	0.9	W
Linear derating factor		7.2	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(b)</sup>	$P_D$	1.5	W
Linear derating factor		12	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(c)</sup>	$P_D$	2.1	W
Linear derating factor		16.8	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ <sup>(d)</sup>	$P_D$	3	W
Linear derating factor		24	mW/°C
Operating and storage temperature range	$T_j, T_{stg}$	-55 to 150	°C

## THERMAL RESISTANCE

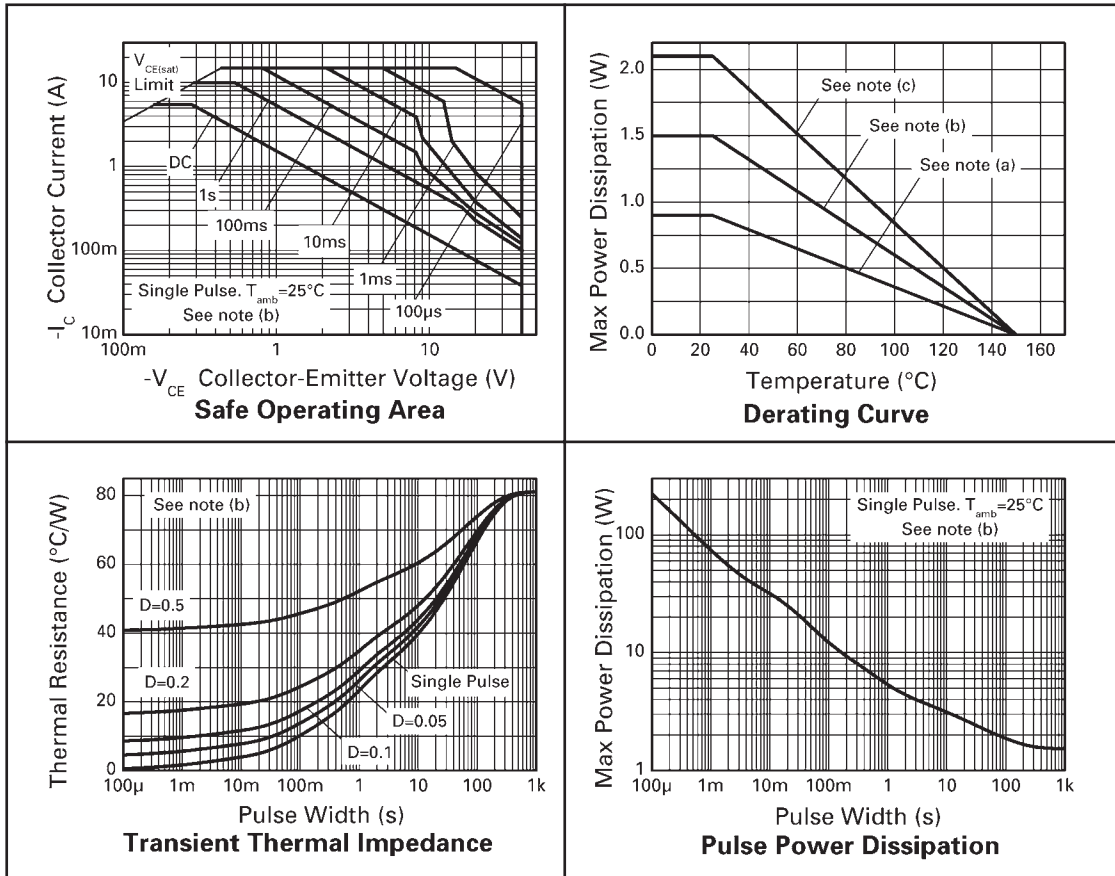
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient <sup>(a)</sup>	$R_{\theta JA}$	139	°C/W
Junction to ambient <sup>(b)</sup>	$R_{\theta JA}$	83	°C/W
Junction to ambient <sup>(c)</sup>	$R_{\theta JA}$	60	°C/W
Junction to ambient <sup>(d)</sup>	$R_{\theta JA}$	42	°C/W

### NOTES

- (a) For a device surface mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz 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.  
(c) 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.  
(d) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB measured at  $t < 5$  secs.

# ZX5T3Z

## CHARACTERISTICS



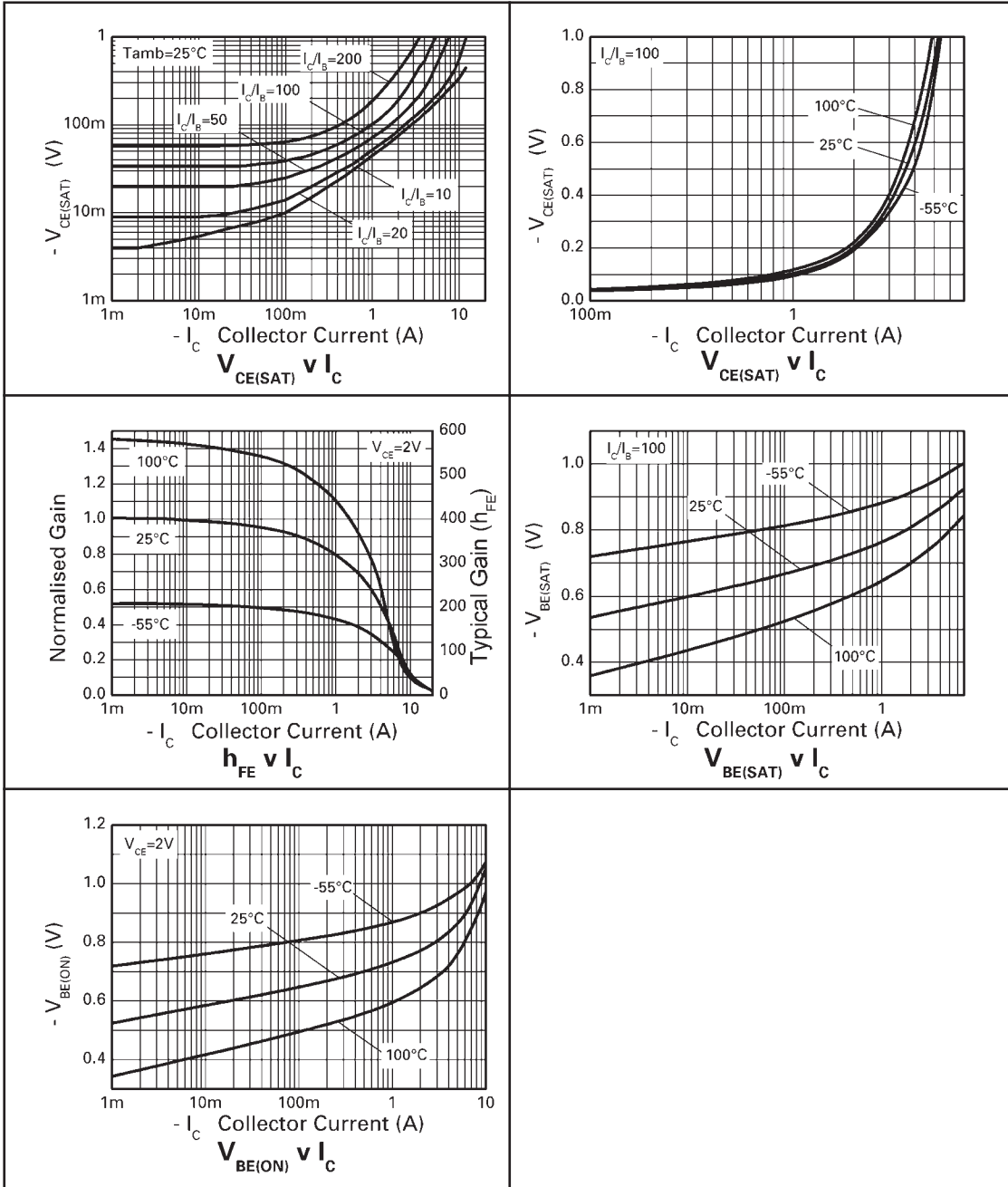
# ZX5T3Z

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	$BV_{CBO}$	-50	-90		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CES}$	-50	-90		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	$BV_{CEO}$	-40	-58		V	$I_C = -10\text{mA}^*$
Emitter-base breakdown voltage	$BV_{EBO}$	-7.5	-8.3		V	$I_E = -100\mu\text{A}$
Collector cut-off current	$I_{CBO}$		<1	-20	nA	$V_{CB} = -40\text{V}$
Collector cut-off current	$I_{CES}$		<1	-20	nA	$V_{CB} = -32\text{V}$
Emitter cut-off current	$I_{EBO}$		<1	-20	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-15	-30	mV	$I_C = -0.1\text{A}, I_B = -10\text{mA}^*$
			-44	-60	mV	$I_C = -1\text{A}, I_B = -100\text{mA}^*$
			-50	-70	mV	$I_C = -1\text{A}, I_B = -50\text{mA}^*$
			-120	-165	mV	$I_C = -1\text{A}, I_B = -10\text{mA}^*$
			-70	-80	mV	$I_C = -2\text{A}, I_B = -200\text{mA}^*$
			-125	-175	mV	$I_C = -2\text{A}, I_B = -40\text{mA}^*$
			-130	-175	mV	$I_C = -3.5\text{A}, I_B = -175\text{mA}^*$
	-162	-185	mV	$I_C = -5.5\text{A}, I_B = -550\text{mA}^*$		
Base-emitter saturation voltage	$V_{BE(SAT)}$		-820	-900	mV	$I_C = -2\text{A}, I_B = -40\text{mA}^*$
			-1000	-1075	mV	$I_C = -5.5\text{A}, I_B = -550\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		-778	-850	mV	$I_C = -2\text{A}, V_{CE} = -2\text{V}^*$
			-869	-950	mV	$I_C = -5.5\text{A}, V_{CE} = -2\text{V}^*$
Static forward current transfer ratio	$H_{FE}$	200	390			$I_C = -10\text{mA}, V_{CE} = -2\text{V}^*$
		200	350	550		$I_C = -0.5\text{A}, V_{CE} = -2\text{V}^*$
		170	290			$I_C = -2\text{A}, V_{CE} = -2\text{V}^*$
		110	175			$I_C = -5.5\text{A}, V_{CE} = -2\text{V}^*$
Transition frequency	$f_T$		152		MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 100\text{MHz}$
Output capacitance	$C_{OBO}$		53		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}^*$
Switching times	$t_d$ $t_r$ $t_s$ $t_r$		18		ns	$I_C = -1\text{A}, V_{CC} = -10\text{V},$ $I_{B1} = I_{B2} = -100\text{mA}$
			17			
			325			
			60			
Switching times	$t_d$ $t_r$ $t_s$ $t_r$		55		ns	$I_C = -2\text{A}, V_{CC} = -30\text{V},$ $I_{B1} = I_{B2} = -20\text{mA}$
			107			
			264			
			103			

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

TYPICAL CHARACTERISTICS

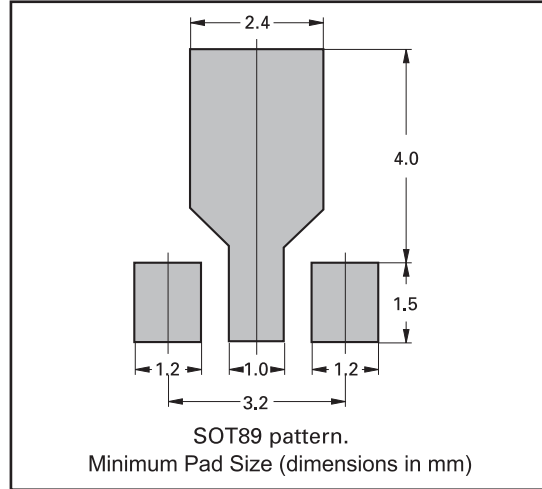


# ZX5T3Z

## 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	1.40	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 plc 2003

### 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

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 - OCTOBER 2003

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- Конкурентоспособные цены и скидки постоянным клиентам.
- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- Регистрацию проекта у производителя компонентов.
- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)

Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)