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ZX5T869Z

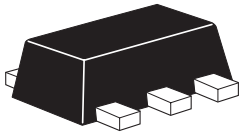
25V NPN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

BV_{CEO} = 25V : R_{SAT} = 25mΩ; I_C = 5.5A

DESCRIPTION

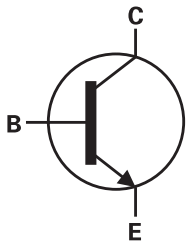
Packaged in the SOT89 outline this new 5th generation low saturation 25V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



SOT89

FEATURES

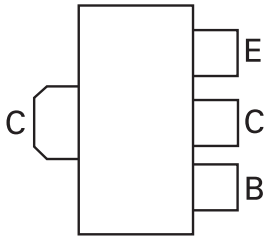
- Extremely low equivalent on-resistance; **R_{SAT} = 25mΩ at 6.5A**
- 5.5 amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Excellent h_{FE} characteristics up to 20 amps



APPLICATIONS

- Emergency lighting circuits
- Motor driving (including DC fans)
- Solenoid, relay and actuator drivers
- DC modules
- Backlight Inverters

PINOUT



TOP VIEW

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T869ZTA	7"	12mm embossed	1000 units

DEVICE MARKING

- 869

ABSOLUTE MAXIMUM RATINGS

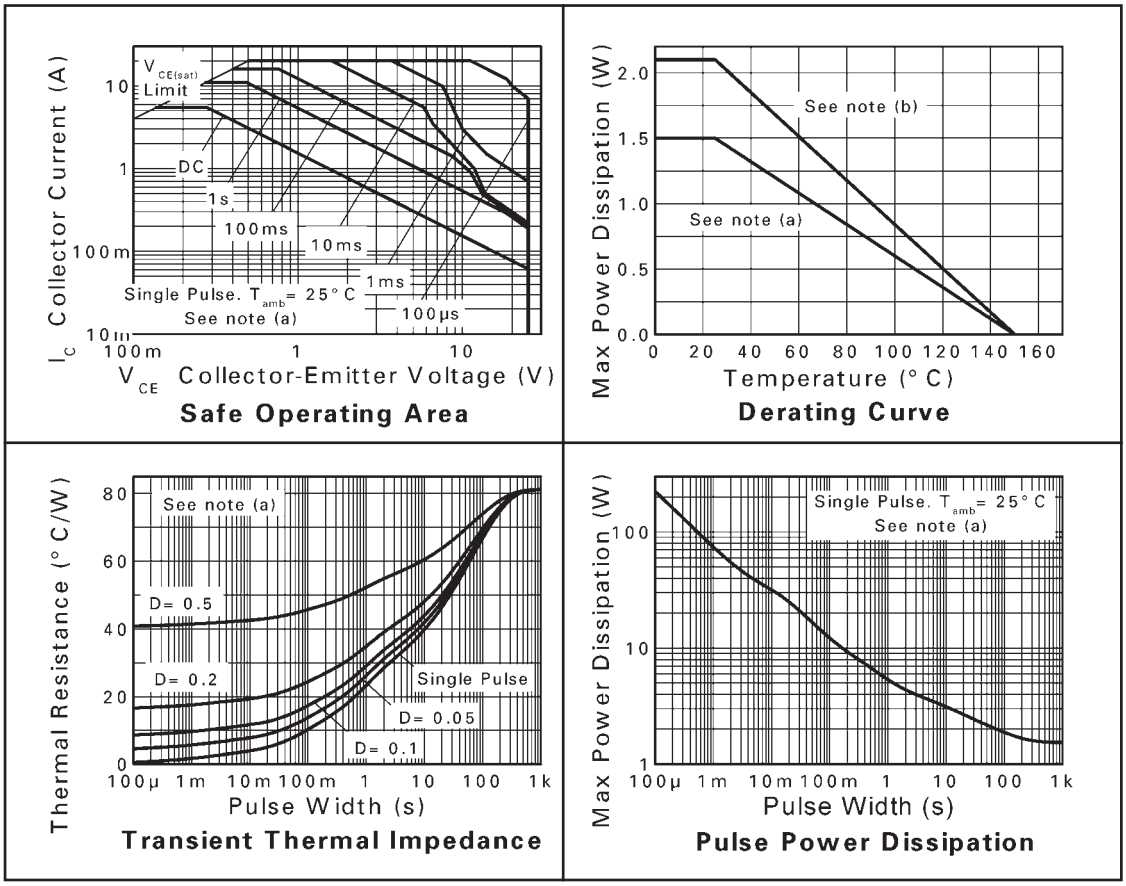
PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CBO}	60	V
Collector-emitter voltage	BV_{CEO}	25	V
Emitter-base voltage	BV_{EBO}	7	V
Continuous collector current[a]	I_C	5.5	A
Peak pulse current	I_{CM}	20	A
Power dissipation at T_A=25°C [a] Linear derating factor	P_D	1.5 12	W mW/°C
Power dissipation at T_A=25°C [b] Linear derating factor	P_D	2.1 16.8	W mW/°C
Operating and storage temperature range	T_j, T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	LIMIT	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

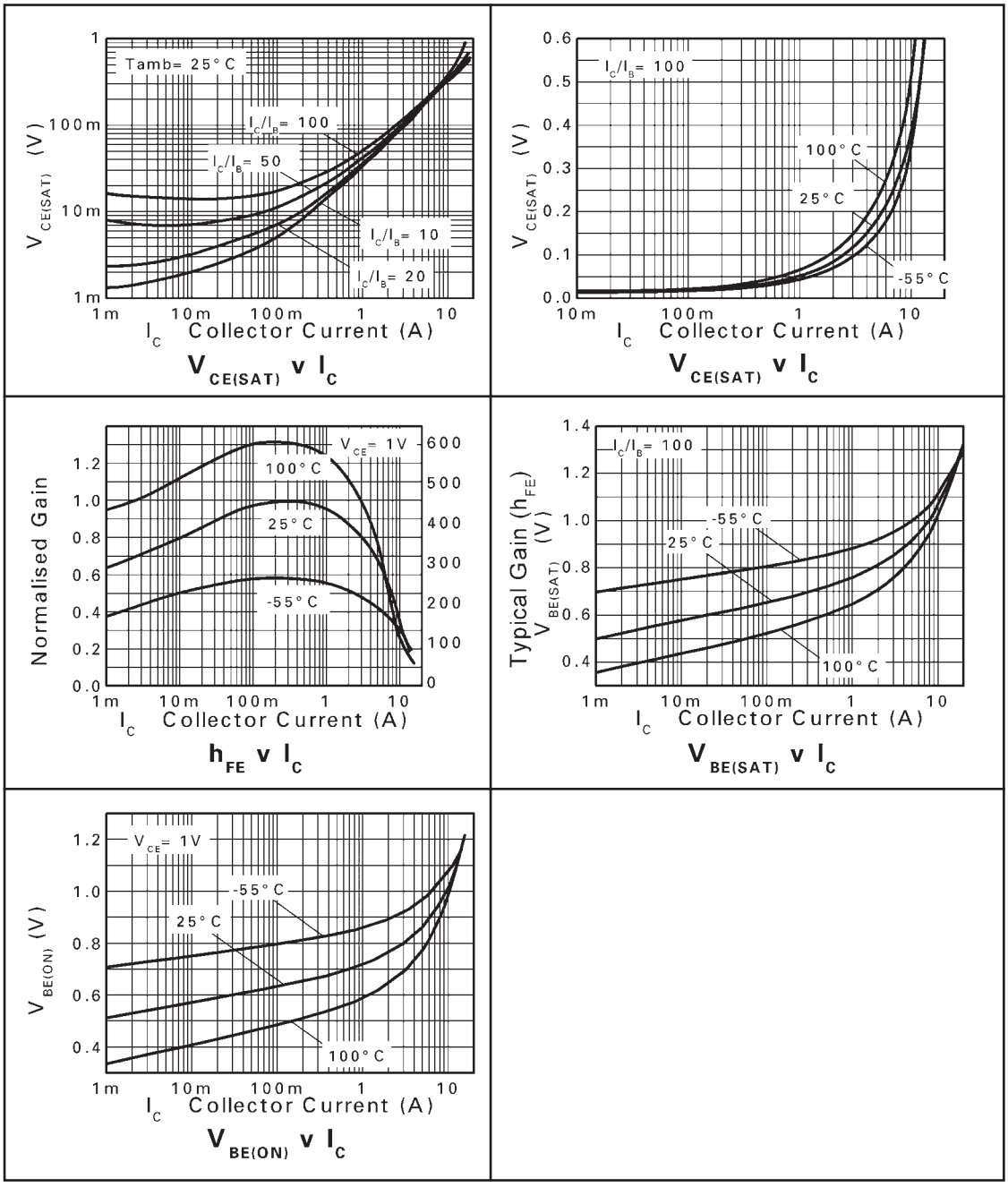


ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	60	120		V	I_C = 100μA
Collector-emitter breakdown voltage	BV_{CER}	60	120		V	I_C = 1μA, RB ≤ 1kΩ
Collector-emitter breakdown voltage	BV_{CEO}	25	35		V	I_C = 10mA*
Emitter base breakdown voltage	BV_{EBO}	7.0	8.1		V	I_E = 100μA
Collector cut-off current	I_{CBO}			20	nA	V_{CB} = 50V
				0.5	μA	V_{CB} = 50V, T_{amb}=100°C
Collector cut-off current	I_{CER}			20	nA	V_{CB} = 50V
	R≤1kΩ			0.5	μA	V_{CB} = 50V, 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 = 500mA, I_B = 10mA*
			30	45	mV	I_C = 1A, I_B = 100mA*
			45	70	mV	I_C = 1A, I_B = 10mA*
			105	130	mV	I_C = 2A, I_B = 10mA*
			160	200	mV	I_C = 6.5A, I_B = 150mA*
Base-emitter saturation voltage	$V_{BE(SAT)}$		950	1050	mV	I_C = 6.5A, I_B = 150mA*
Base-emitter turn on voltage	$V_{BE(ON)}$		860	960	mV	I_C = 6.5A, V_{CE} = 1V*
Static forward current transfer ratio	h_{FE}	300	400			I_C = 10mA, V_{CE} = 1V*
		300	450			I_C = 1A, V_{CE} = 1V*
		200	275			I_C = 7A, V_{CE} = 1V*
		40	55			I_C = 20A, V_{CE} = 1V*
Transition frequency	f_T		150			I_C = 100mA, V_{CE} = 10V
						f=50MHz
Output capacitance	C_{OBO}		48		pF	V_{CB} = 10V, f= 1MHz*
Switching times	t_{ON}		33		ns	I_C = 1A, V_{CC} = 10V,
	t_{OFF}		464			I_{B1} = -I_{B2} = 100mA

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

TYPICAL CHARACTERISTICS



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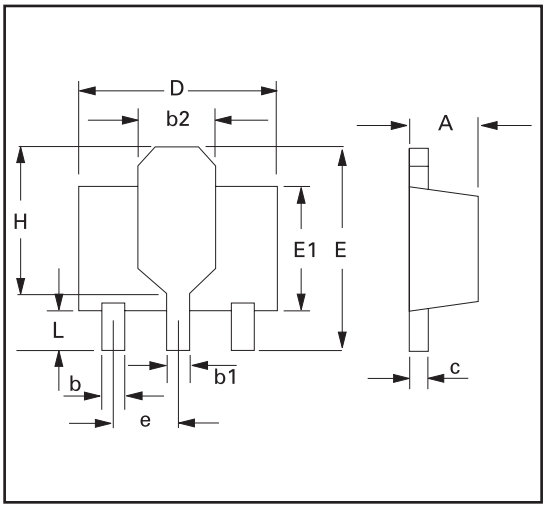
PACKAGE OUTLINE



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	-	-	-	-	-

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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
Zetex Technology Park
Chadderton, Oldham, OL9 9LL
United Kingdom

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

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