ZXTN2005Z

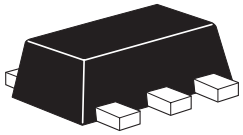
25V NPN LOW SATURATION MEDIUM POWER TRANSISTOR IN SOT89

SUMMARY

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

DESCRIPTION

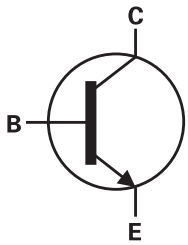
Packaged in the SOT89 outline this new low saturation 25V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



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

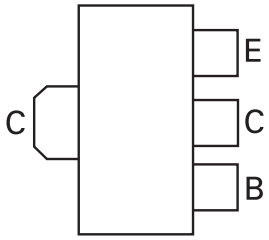
ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZXTN2005ZTA	7"	12mm embossed	1,000 units

DEVICE MARKING

869

PINOUT



TOP VIEW

ABSOLUTE MAXIMUM RATINGS

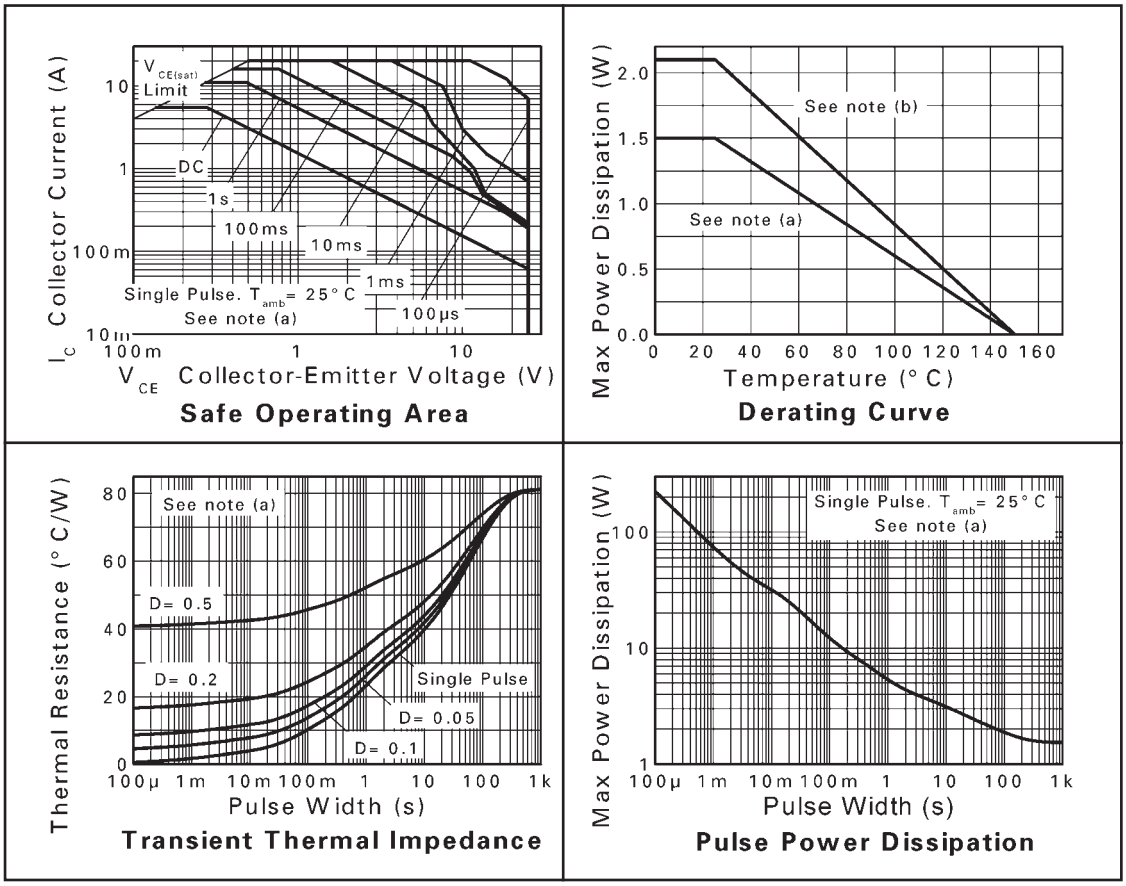
PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CBO}	60	V
Collector-emitter voltage	BV_{CEO}	25	V
Emitter-base voltage	BV_{EBO}	7	V
Continuous collector current[a]	I_C	5.5	A
Peak pulse current	I_{CM}	20	A
Power dissipation at T_A=25°C [a] Linear derating factor	P_D	1.5 12	W mW/°C
Power dissipation 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



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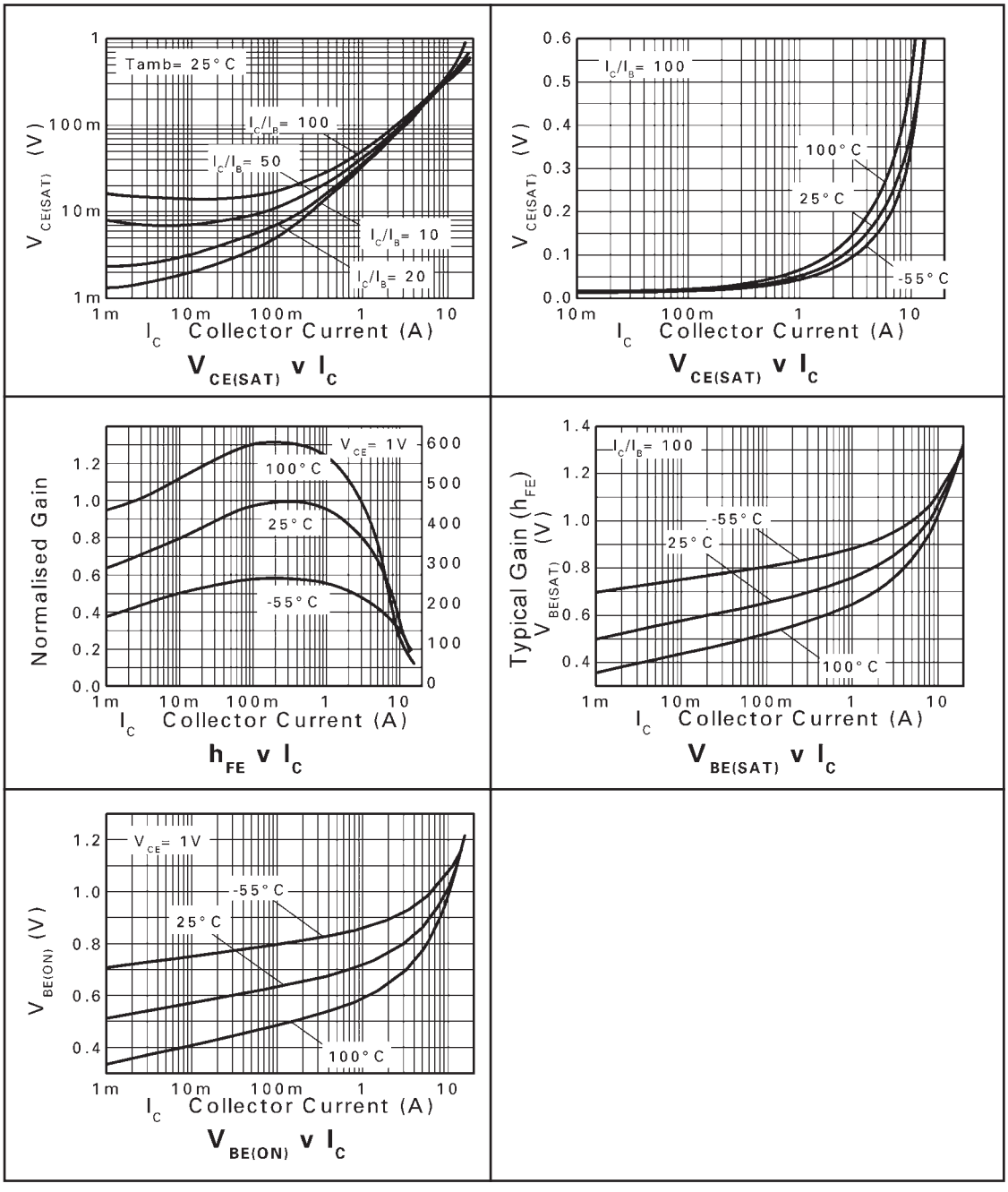
ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated)

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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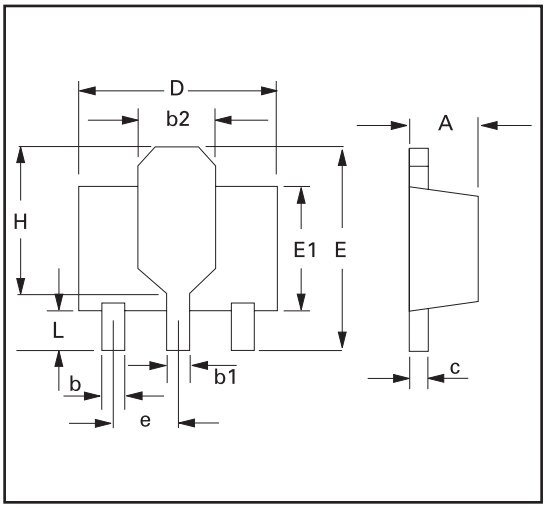
PACKAGE OUTLINE



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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