OBSOLETE
ALTERNATIVE IS ZXTN2005G

ZX5T869G

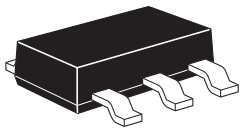
25V NPN LOW SATURATION TRANSISTOR IN SOT223

SUMMARY

BV_{CEO} = 25V : R_{SAT} = 30mΩ; I_C = 7A

DESCRIPTION

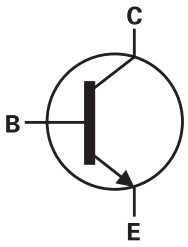
Packaged in the SOT223 outline this new 5th generation low saturation 25V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



SOT223

FEATURES

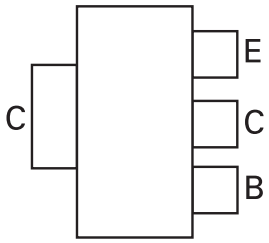
- Extemely low equivalent on-resistance; **R_{SAT} = 30mΩ at 6.5A**
- 7 amps continuous current
- Up to 20 amps peak current
- Very low saturation voltages
- Excellent h_{FE} characteristics up to 20 amps



APPLICATIONS

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

PINOUT



TOP VIEW

ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T869GTA	7”	12mm embossed	1000 units
ZX5T869GTC	13”		4000 units

DEVICE MARKING

- X5T869

ZX5T869G

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

THERMAL RESISTANCE

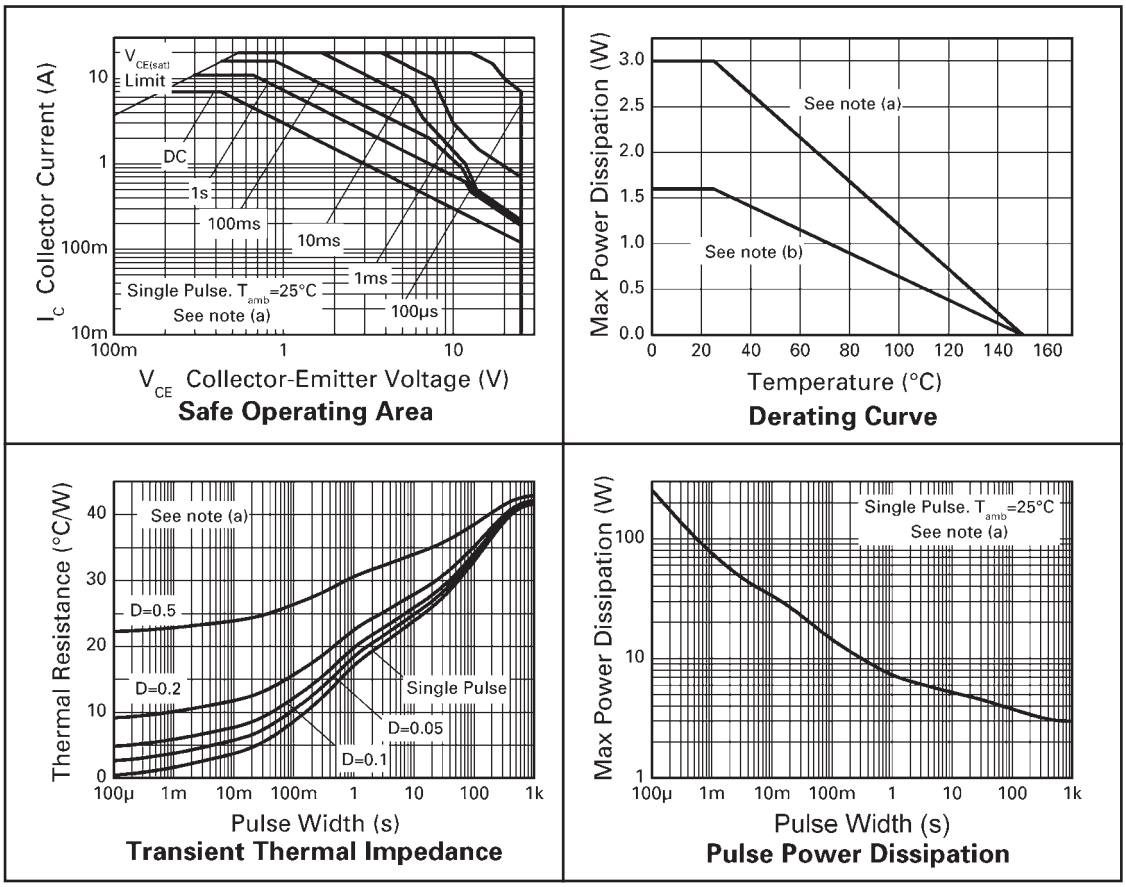
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient (a)	$R_{\Theta JA}$	42	°C/W
Junction to ambient (b)	$R_{\Theta JA}$	78	°C/W

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



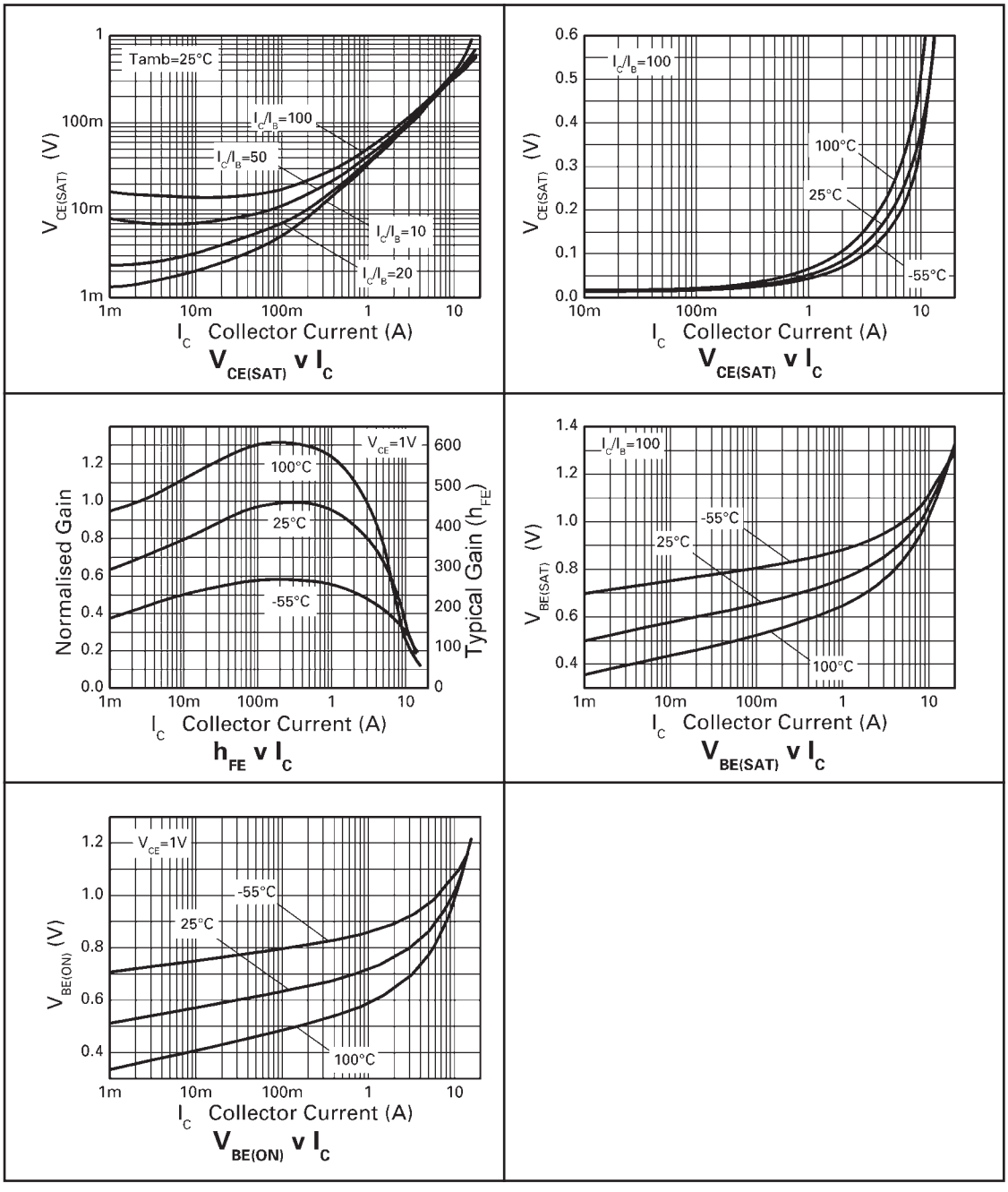
ZX5T869G

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	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	$V_{CE(SAT)}$		28	40	mV	I_C=500mA, I_B=10mA*
			35	50	mV	I_C=1A, I_B=100mA*
			55	75	mV	I_C=1A, I_B=10mA*
			115	140	mV	I_C=2A, I_B=10mA*
			195	230	mV	I_C=6.5A, I_B=150mA*
Base-emitter saturation voltage	$V_{BE(SAT)}$		980	1080	mV	I_C=6.5A, I_B=150mA*
Base-emitter turn-on voltage	$V_{BE(ON)}$		890	980	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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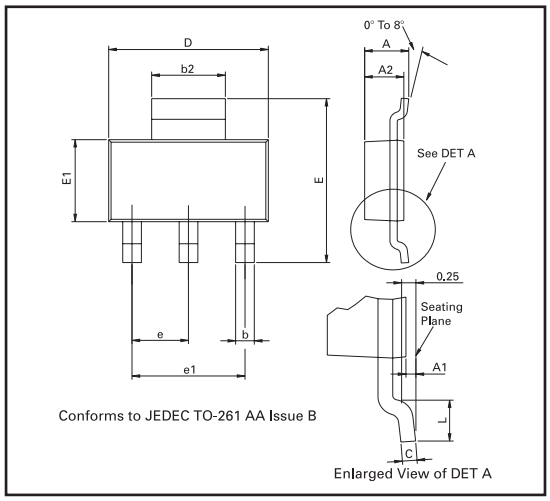
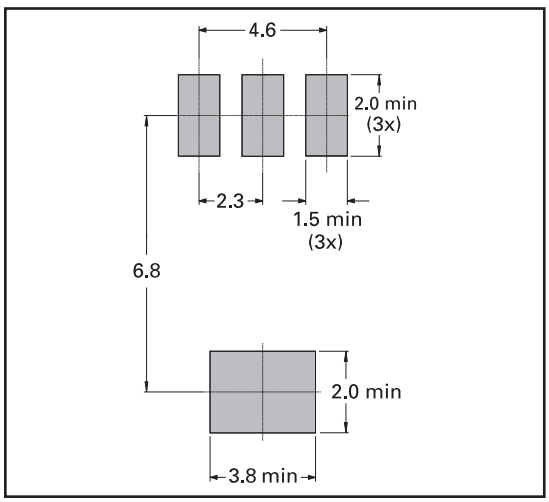
PACKAGE OUTLINE



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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