

ZX5T949G

30V PNP LOW SATURATION TRANSISTOR IN SOT223

SUMMARY

$BV_{CEO} = -30V$; $R_{SAT} = 31m\Omega$; $I_C = -5.5A$

DESCRIPTION

Packaged in the SOT223 outline this new 5th generation low saturation 30V PNP transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



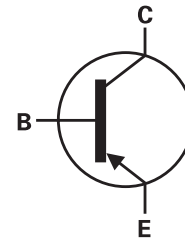
SOT223

FEATURES

- 5.5 Amps continuous current
- Up to 20 Amps peak current
- Very low saturation voltages
- Exceptional gain linearity down to 10mA

APPLICATIONS

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



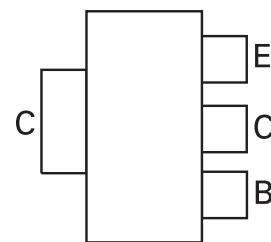
ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T949GTA	7"	12mm embossed	1,000 units
ZX5T949GTC	13"	12mm embossed	4,000 units

DEVICE MARKING

- X5T949

PINOUT



TOP VIEW

ZX5T949G

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CBO}	-50	V
Collector-emitter voltage	BV_{CEO}	-30	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 $T_A = 25^\circ\text{C}$ ^(a)	P_D	3.0	W
Linear derating factor		24	mW/°C
Power dissipation at $T_A = 25^\circ\text{C}$ ^(b)	P_D	1.6	W
Linear derating factor		12.8	mW/°C
Operating and storage temperature range	T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE

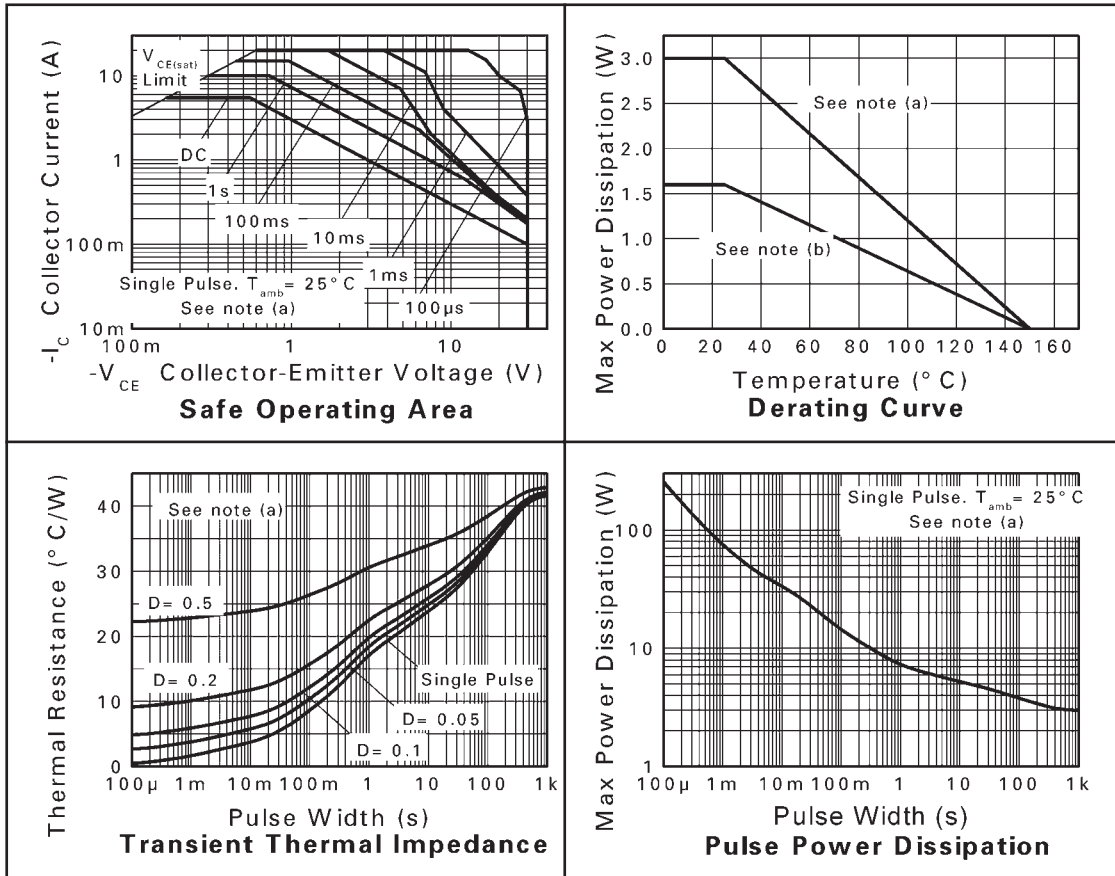
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient ^(a)	$R_{\theta JA}$	42	°C/W
Junction to ambient ^(b)	$R_{\theta JA}$	78	°C/W

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



ZX5T949G

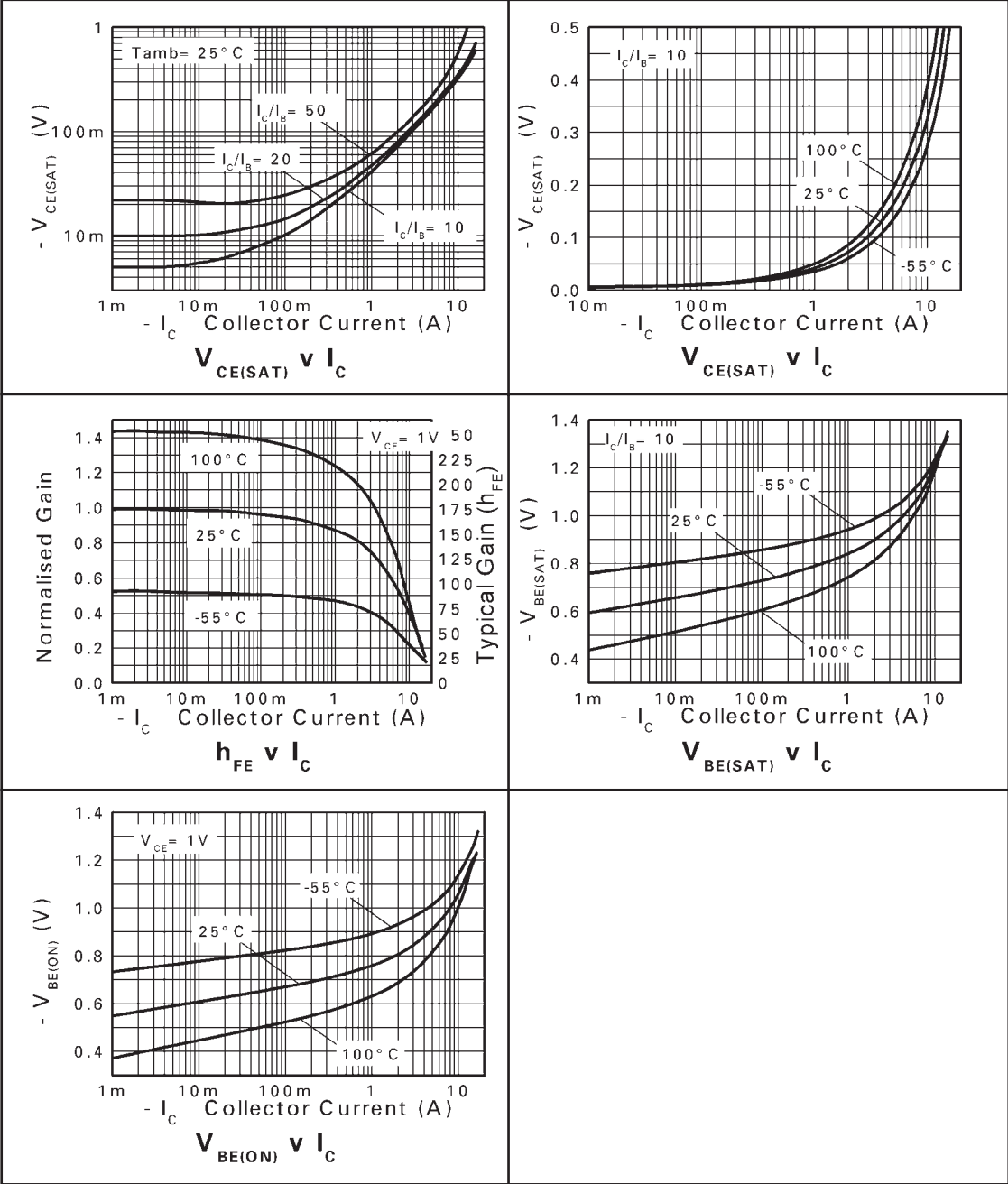
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	-50	-70		V	$I_C = -100\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CER}	-50	-70		V	$I_C = -1\mu\text{A}$, $R_B < 1\text{k}\Omega$
Collector-emitter breakdown voltage	BV_{CEO}	-30	-40		V	$I_C = -10\text{mA}$ *
Emitter-base breakdown voltage	BV_{EBO}	-7.0	-8.0		V	$I_E = -100\mu\text{A}$
Collector cut-off current	I_{CBO}		<1	-20 -0.5	nA μA	$V_{CB} = -40\text{V}$ $V_{CB} = -40\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Collector cut-off current	I_{CER} $R < 1\text{k}\Omega$		<1	-20 -0.5	nA μA	$V_{CB} = -40\text{V}$ $V_{CB} = -40\text{V}$, $T_{amb} = 100^{\circ}\text{C}$
Emitter cut-off current	I_{EBO}		<1	-10	nA	$V_{EB} = -6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		-30 -40 -60 -70 -170	-45 -60 -85 -90 -210	mV mV mV mV mV	$I_C = -0.5\text{A}$, $I_B = -20\text{mA}$ * $I_C = -1\text{A}$, $I_B = -100\text{mA}$ * $I_C = -1\text{A}$, $I_B = -20\text{mA}$ * $I_C = -2\text{A}$, $I_B = -200\text{mA}$ * $I_C = -5.5\text{A}$, $I_B = -500\text{mA}$ *
Base-emitter saturation voltage	$V_{BE(SAT)}$		-1030	-1130	mV	$I_C = -5.5\text{A}$, $I_B = -500\text{mA}$ *
Base-emitter turn-on voltage	$V_{BE(ON)}$		-900	-1000	mV	$I_C = -5.5\text{A}$, $V_{CE} = -1\text{V}$ *
Static forward current transfer ratio	h_{FE}	100 100 70 10	225 200 145 20	300		$I_C = -10\text{mA}$, $V_{CE} = -1\text{V}$ * $I_C = -1\text{A}$, $V_{CE} = -1\text{V}$ * $I_C = -5\text{A}$, $V_{CE} = -1\text{V}$ * $I_C = -20\text{A}$, $V_{CE} = -1\text{V}$ *
Transition frequency	f_T		110			$I_C = -100\text{mA}$, $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output capacitance	C_{OBO}		83		pF	$V_{CB} = -10\text{V}$, $f = 1\text{MHz}$ *
Switching times	t_{ON} t_{OFF}		43 230		ns	$I_C = -1\text{A}$, $V_{CC} = -10\text{V}$, $I_{B1} = I_{B2} = -100\text{mA}$

NOTES

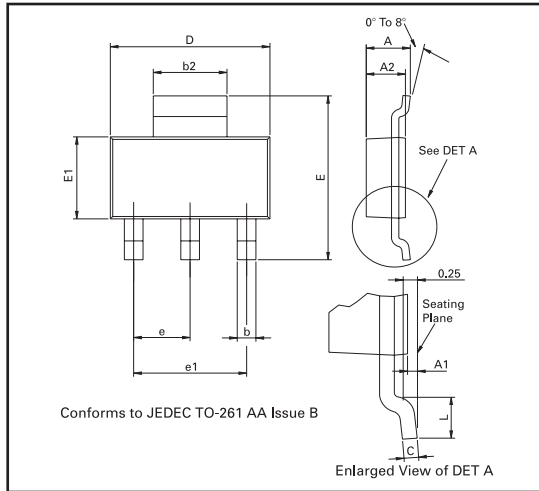
* Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS

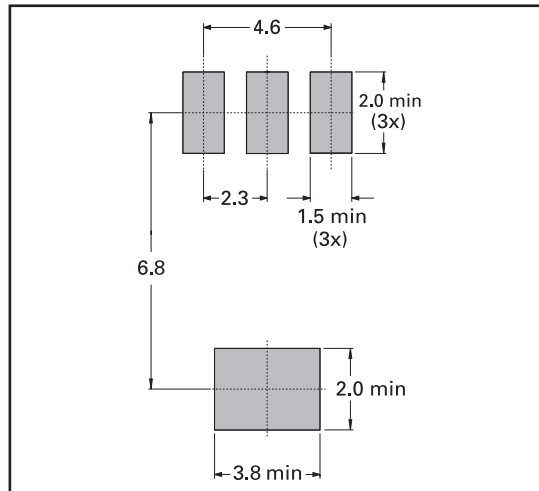


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PACKAGE OUTLINE



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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