

ZX5T853G

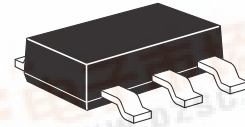
100V NPN LOW SAT MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

SUMMARY

$BV_{CEO} = 100V$; $R_{SAT} = 36m\Omega$; $I_C = 6A$

DESCRIPTION

Packaged in the SOT223 outline this new 5th generation low saturation 100V NPN transistor offers extremely low on state losses making it ideal for use in DC-DC circuits and various driving and power management functions.



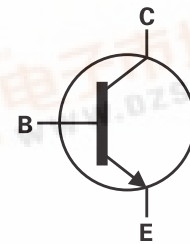
SOT223

FEATURES

- 6 amps continuous current
- Up to 10 amps peak current
- Very low saturation voltages

APPLICATIONS

- Motor driving
- Line switching
- High side switches
- Subscriber line interface cards (SLIC)



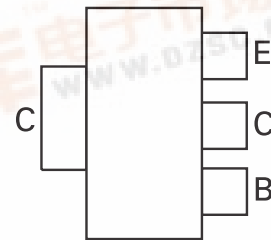
ORDERING INFORMATION

DEVICE	REEL SIZE	TAPE WIDTH	QUANTITY PER REEL
ZX5T853GTA	7"	12mm	1000 units
ZX5T853GTC	13"	embossed	4000 units

DEVICE MARKING

- X5T853

PINOUT



TOP VIEW



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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-base voltage	BV_{CBO}	200	V
Collector-emitter voltage	BV_{CEO}	100	V
Emitter-base voltage	BV_{EBO}	7	V
Continuous collector current ^(a)	I_C	6	A
Peak pulse current	I_{CM}	10	A
Power dissipation at $T_A = 25^\circ\text{C}$ ^(a)	P_D	3.0	W
Linear derating factor		24	mW/ $^\circ\text{C}$
Power dissipation at $T_A = 25^\circ\text{C}$ ^(b)	P_D	1.6	W
Linear derating factor		12.8	mW/ $^\circ\text{C}$
Operating and storage temperature range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

THERMAL RESISTANCE

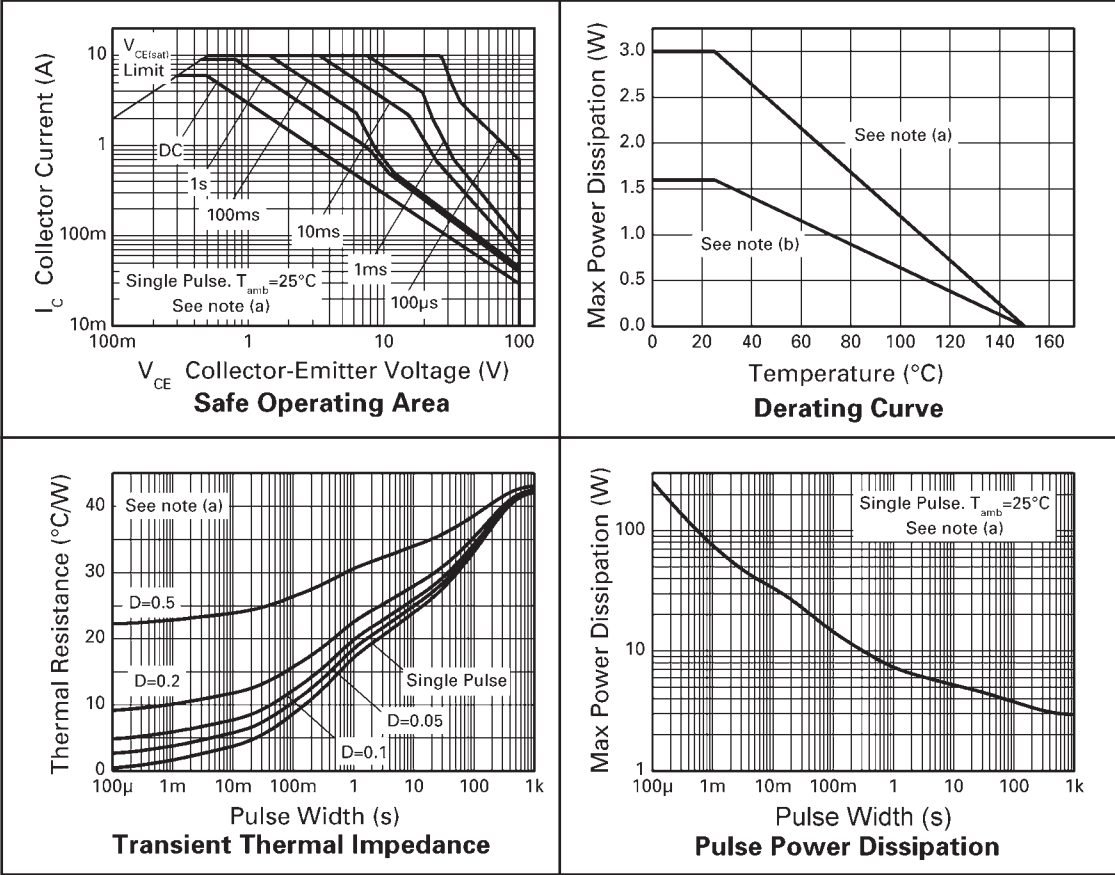
PARAMETER	SYMBOL	VALUE	UNIT
Junction to ambient ^(a)	$R_{\theta JA}$	42	$^\circ\text{C}/\text{W}$

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.

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CHARACTERISTICS



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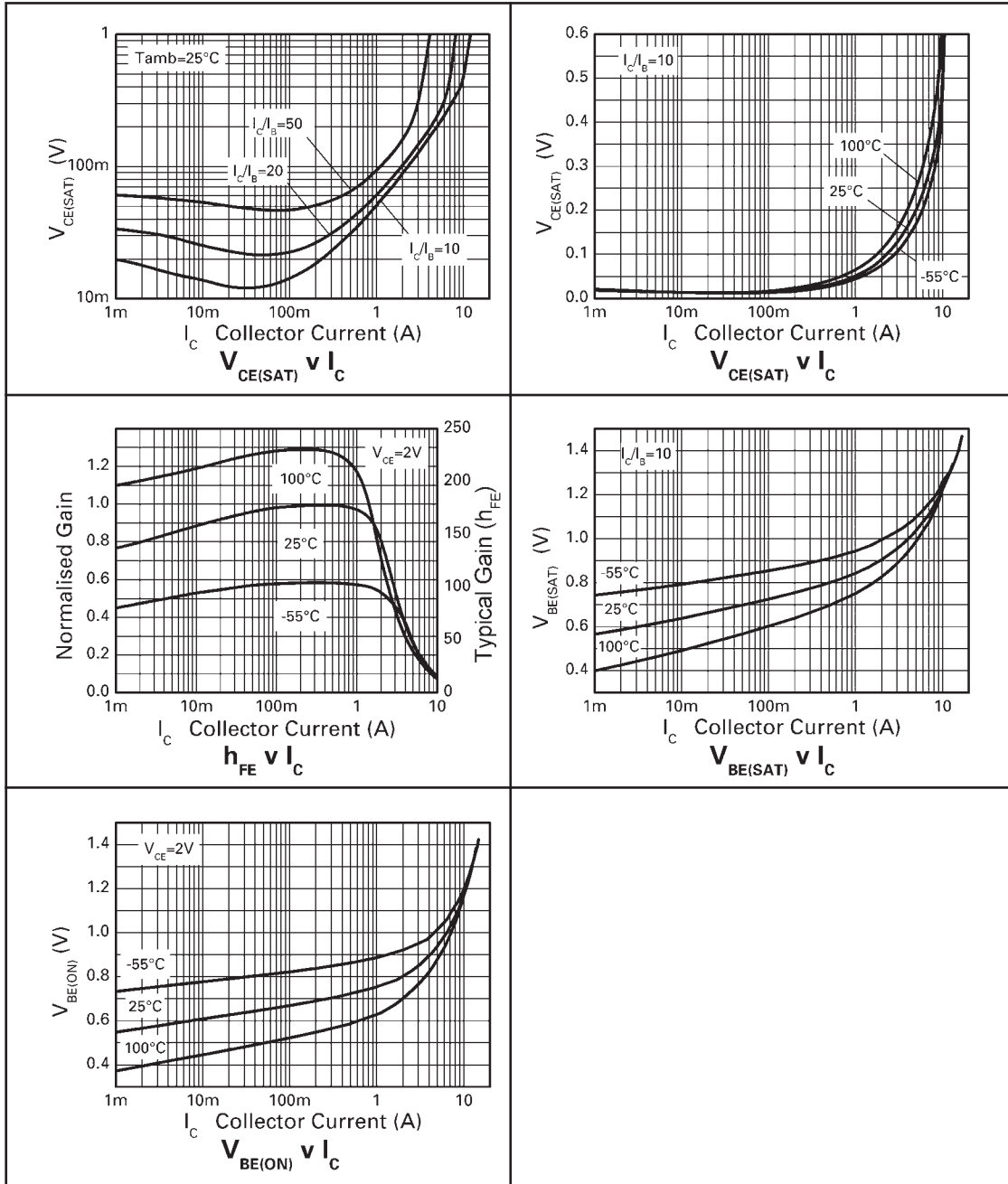
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Collector-base breakdown voltage	BV_{CBO}	200	235		V	$I_C=100\mu\text{A}$
Collector-emitter breakdown voltage	BV_{CER}	200	235		V	$I_C=1\mu\text{A}$, $R_B\leq 1\text{k}\Omega$
Collector-emitter breakdown voltage	BV_{CEO}	100	115		V	$I_C=10\text{mA}^*$
Emitter-base breakdown voltage	BV_{EBO}	7	8.1		V	$I_E=100\mu\text{A}$
Collector cut-off current	I_{CBO}			20 0.5	nA μA	$V_{CB}=150\text{V}$ $V_{CB}=150\text{V}$, $T_{amb}=100^{\circ}\text{C}$
Collector cut-off current	I_{CER} $R \leq 1\text{k}\Omega$			20 0.5	nA μA	$V_{CB}=150\text{V}$ $V_{CB}=150\text{V}$, $T_{amb}=100^{\circ}\text{C}$
Emitter cut-off current	I_{EBO}			10	nA	$V_{EB}=6\text{V}$
Collector-emitter saturation voltage	$V_{CE(SAT)}$		21 50 95 180	35 65 125 220	mV mV mV mV	$I_C=0.1\text{A}$, $I_B=5\text{mA}^*$ $I_C=1\text{A}$, $I_B=100\text{mA}^*$ $I_C=2\text{A}$, $I_B=100\text{mA}^*$ $I_C=5\text{A}$, $I_B=500\text{mA}^*$
Base-emitter saturation voltage	$V_{BE(SAT)}$		1020	1120	mV	$I_C=5\text{A}$, $I_B=500\text{mA}^*$
Base-emitter turn-on voltage	$V_{BE(ON)}$		920	1000	mV	$I_C=5\text{A}$, $V_{CE}=2\text{V}^*$
Static forward current transfer ratio	H_{FE}	100 100 30 10	230 200 60 20	300		$I_C=10\text{mA}$, $V_{CE}=2\text{V}^*$ $I_C=2\text{A}$, $V_{CE}=2\text{V}^*$ $I_C=5\text{A}$, $V_{CE}=2\text{V}^*$ $I_C=10\text{A}$, $V_{CE}=2\text{V}^*$
Transition frequency	f_T		130		MHz	$I_C=100\text{mA}$, $V_{CE}=10\text{V}$ $f=50\text{MHz}$
Output capacitance	C_{OBO}		26		pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}^*$
Switching times	t_{ON} t_{OFF}		41 1010		ns	$I_C=1\text{A}$, $V_{CC}=10\text{V}$, $I_{B1}=I_{B2}=100\text{mA}$

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

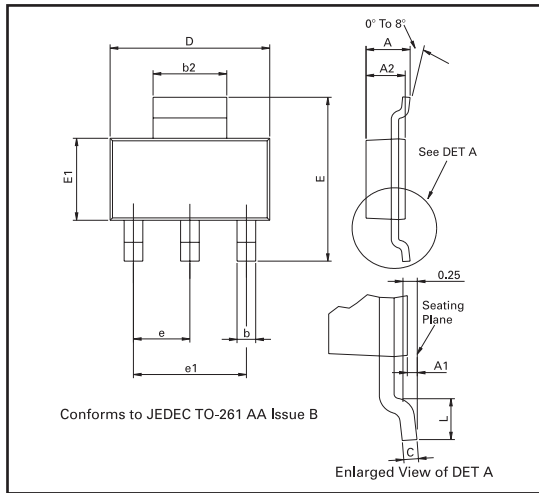
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TYPICAL CHARACTERISTICS

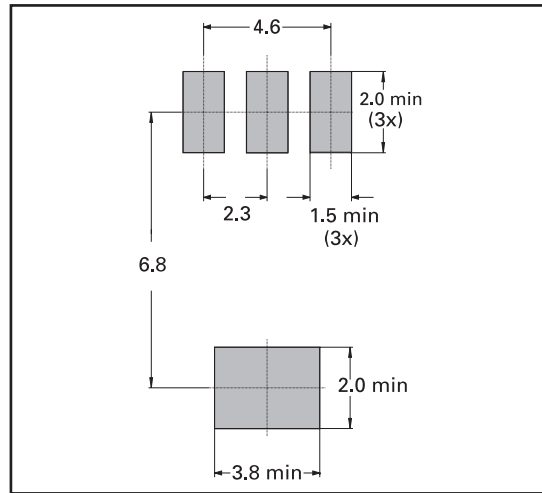


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PACKAGE OUTLINE



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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ISSUE 2 - SEPTEMBER 2003