



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# SOT223 PNP SILICON PLANAR HIGH CURRENT (HIGH PERFORMANCE) TRANSISTORS

**FZT951  
FZT953**

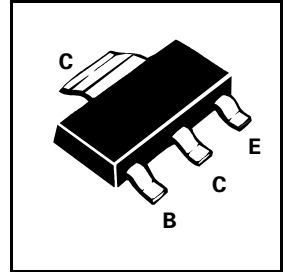
**ISSUE 3 - APRIL 2000**

## FEATURES

- \* 5 Amps continuous current , up to 15 Amps peak current
- \* Very low saturation voltages
- \* Excellent gain characteristics specified up to 10 Amps
- \*  **$P_{tot} = 3 \text{ watts}$**
- \* FZT951 exhibits extremely low equivalent on resistance;  
 **$R_{CE(sat)} = 55m\Omega \text{ at } 4A$**

COMPLEMENTARY TYPES - FZT951 = FZT851  
FZT953 = FZT853

PARTMARKING DETAILS - DEVICE TYPE IN FULL



## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	FZT951	FZT953	UNIT
Collector-Base Voltage	$V_{CBO}$	-100	-140	V
Collector-Emitter Voltage	$V_{CEO}$	-60	-100	V
Emitter-Base Voltage	$V_{EBO}$	-6		V
Peak Pulse Current	$I_{CM}$	-15	-10	A
Continuous Collector Current	$I_C$	-5		A
Power Dissipation at $T_{amb}=25^\circ\text{C}$	$P_{tot}$	3		W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150		$^\circ\text{C}$

\*The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 4 square inch minimum

# FZT951

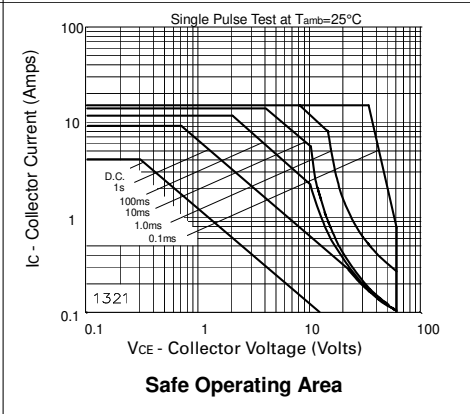
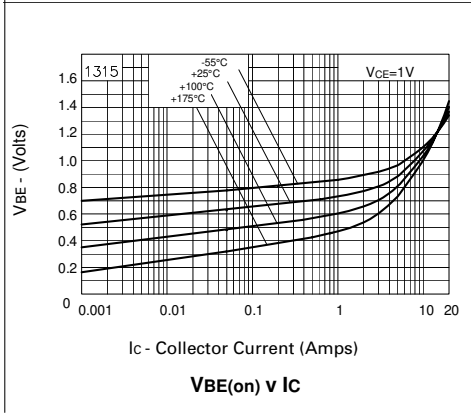
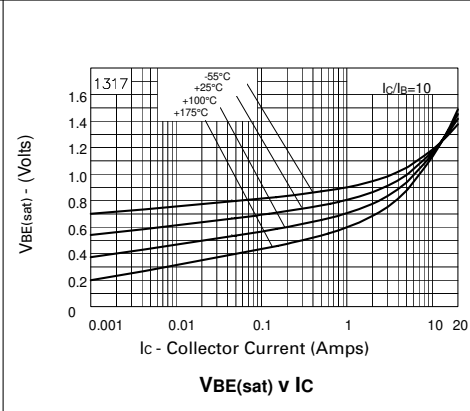
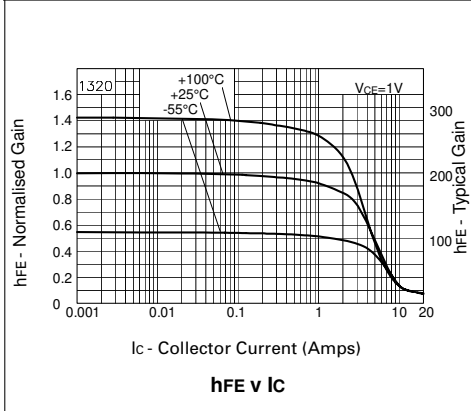
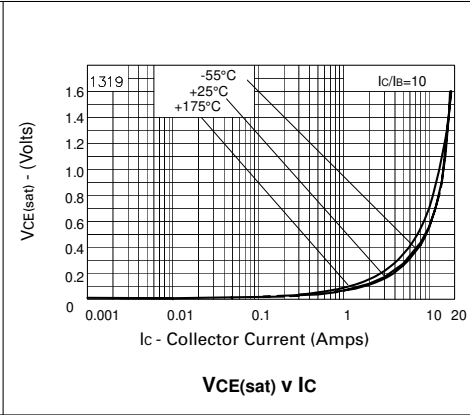
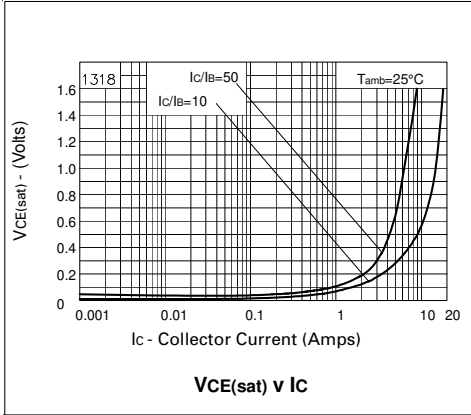
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-100	-140		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)ICER}$	-100	-140		V	$I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)ICEO}$	-60	-90		V	$I_C = -10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{k}\Omega$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -80\text{V}$ $V_{CB} = -80\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-20 -85 -155 -370	-50 -140 -210 -460	mV mV mV mV	$I_C = -100\text{mA}$ , $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$ , $I_B = -200\text{mA}^*$ $I_C = -5\text{A}$ , $I_B = -500\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1080	-1240	mV	$I_C = -5\text{A}$ , $I_B = -500\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-935	-1070	mV	$I_C = -5\text{A}$ , $V_{CE} = -1\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	100 100 75 10	200 200 90 25	300		$I_C = -10\text{mA}$ , $V_{CE} = -1\text{V}^*$ $I_C = -2\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -5\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$ , $V_{CE} = -1\text{V}^*$
Transition Frequency	$f_T$		120		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$		74		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		82 350		ns ns	$I_C = -2\text{A}$ , $I_{B1} = -200\text{mA}$ $I_{B2} = 200\text{mA}$ , $V_{CC} = -10\text{V}$

\* Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

# FZT951

## TYPICAL CHARACTERISTICS



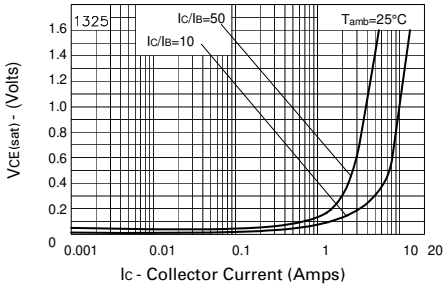
# FZT953

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

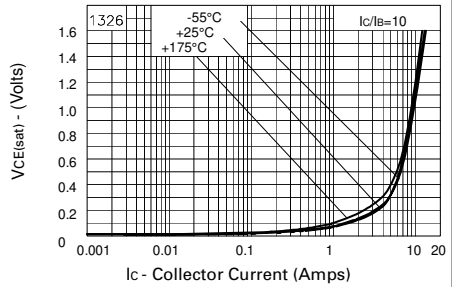
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-140	-170		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	-140	-170		V	$I_C = -1\mu\text{A}$ , $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-100	-120		V	$I_C = -10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-6	-8		V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Collector Cut-Off Current	$I_{CER}$ $R \leq 1\text{k}\Omega$			-50 -1	nA $\mu\text{A}$	$V_{CB} = -100\text{V}$ $V_{CB} = -100\text{V}$ , $T_{amb} = 100^{\circ}\text{C}$
Emitter Cut-Off Current	$I_{EBO}$			-10	nA	$V_{EB} = -6\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-20 -90 -160 -300	-50 -115 -220 -420	mV mV mV mV	$I_C = -100\text{mA}$ , $I_B = -10\text{mA}^*$ $I_C = -1\text{A}$ , $I_B = -100\text{mA}^*$ $I_C = -2\text{A}$ , $I_B = -200\text{mA}^*$ $I_C = -4\text{A}$ , $I_B = -400\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1010	-1170	mV	$I_C = -4\text{A}$ , $I_B = -400\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-925	-1160	mV	$I_C = -4\text{A}$ , $V_{CE} = -1\text{V}^*$
Static Forward Current Transfer	$h_{FE}$	100 100 50 30	200 200 90 50 15	300		$I_C = -10\text{mA}$ , $V_{CE} = -1\text{V}^*$ $I_C = -1\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -3\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -4\text{A}$ , $V_{CE} = -1\text{V}^*$ $I_C = -10\text{A}$ , $V_{CE} = -1\text{V}^*$
Transition Frequency	$f_T$		125		MHz	$I_C = -100\text{mA}$ , $V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{obo}$		65		pF	$V_{CB} = -10\text{V}$ , $f = 1\text{MHz}$
Switching Times	$t_{on}$ $t_{off}$		110 460		ns ns	$I_C = -2\text{A}$ , $I_{B1} = -200\text{mA}$ $I_{B2} = 200\text{mA}$ , $V_{CC} = -10\text{V}$

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$   
Spice parameter data is available upon request for this device

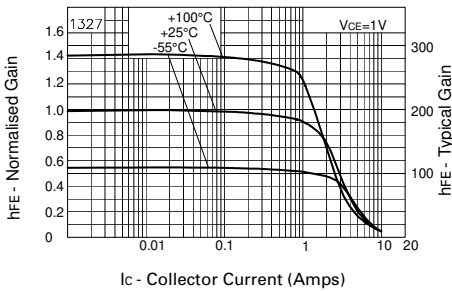
## TYPICAL CHARACTERISTICS



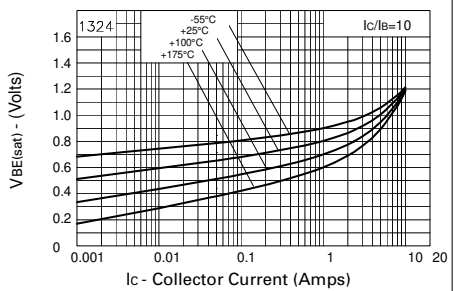
**$V_{CE(sat)}$  v  $I_C$**



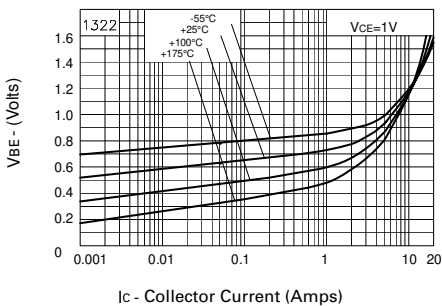
**$V_{CE(sat)}$  v  $I_C$**



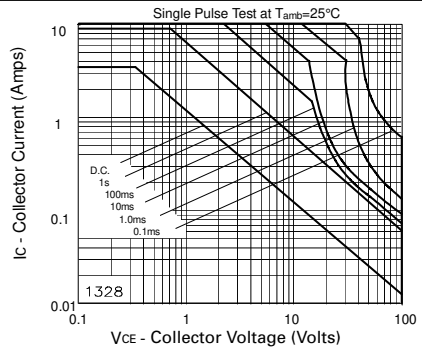
**$h_{FE}$  v  $I_C$**



**$V_{BE(sat)}$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**



**Safe Operating Area**