

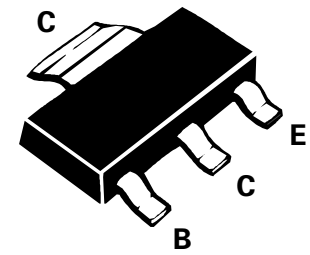
# PNP SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ISSUE 1 - JANUARY 1997

**FZT1151A**

## FEATURES

- \*  $V_{CEO} = -40V$
- \* 3 Amp Continuous Current
- \* 5 Amp Pulse Current
- \* Low saturation Voltage
- \* High Gain



**SOT223**

## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	$V_{CBO}$	-45	V
Collector-Emitter Voltage	$V_{CEO}$	-40	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Peak Pulse Current	$I_{CM}$	-5	A
Continuous Collector Current	$I_C$	-3	A
Base Current	$I_B$	-500	mA
Power Dissipation at $T_{amb}=25^{\circ}C$ †	$P_{tot}$	2.5	W
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^{\circ}C$

† The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 2 inches x 2 inches

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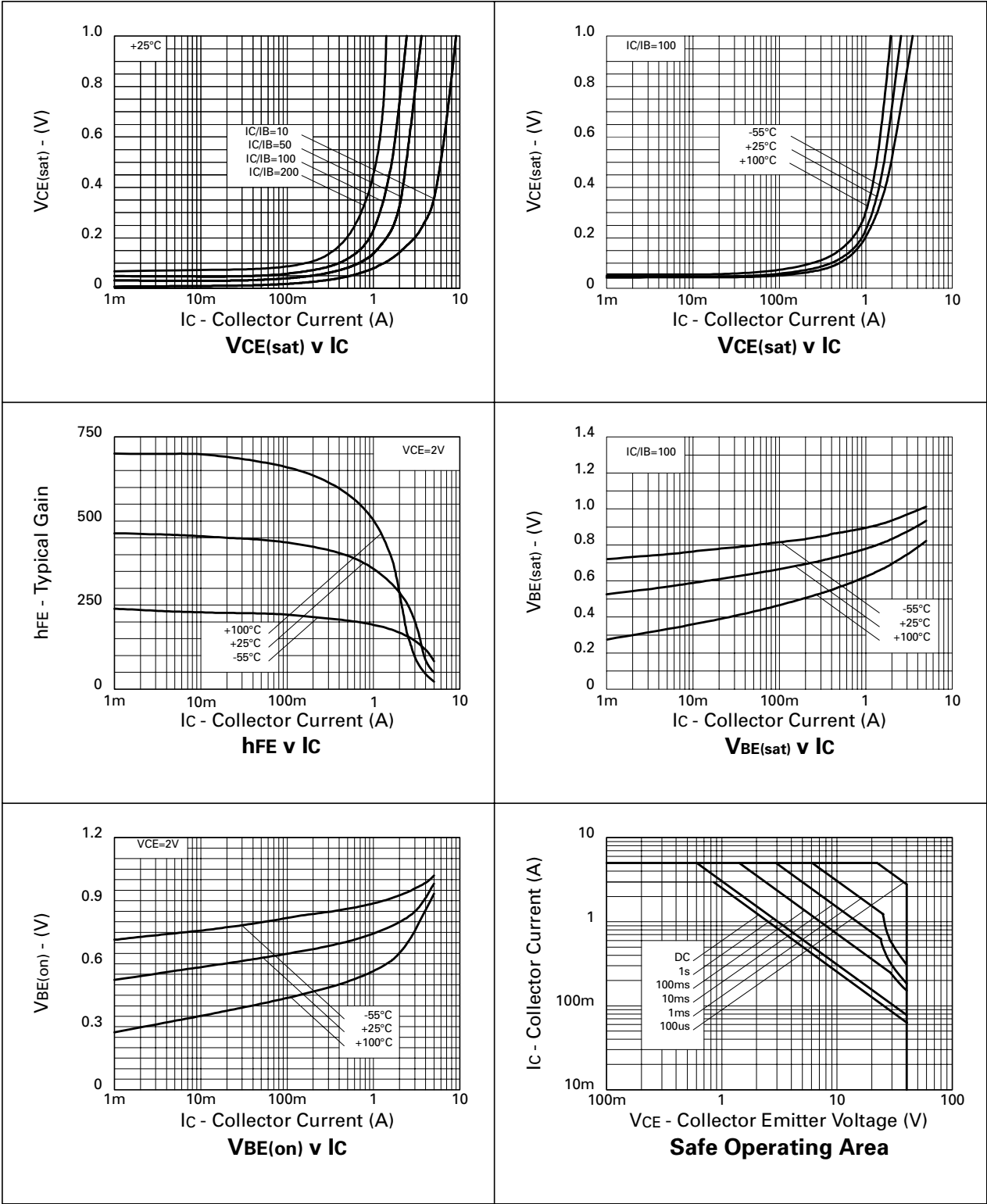
## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ ).

PARAMETER	SYMBOL	VALUE			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-45	-95		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CES}$	-40	-90		V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{CEO}$	-40	-85		V	$I_C = -10\text{mA}^*$
Collector-Emitter Breakdown Voltage	$V_{CEV}$	-40	-90		V	$I_C = -100\mu\text{A}, V_{EB} = +1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5	-8.5		V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$		-0.3	-100	nA	$V_{CB} = -36\text{V}$
Emitter Cut-Off Current	$I_{EBO}$		-0.3	-100	nA	$V_{EB} = -4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$		-0.3	-100	nA	$V_{CE} = -32\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-60 -120 -140 -170 -200	-90 -180 -220 -260 -300	mV mV mV mV mV	$I_C = -0.1\text{A}, I_B = -1.0\text{mA}^*$ $I_C = -0.5\text{A}, I_B = -5\text{mA}^*$ $I_C = -1\text{A}, I_B = -20\text{mA}^*$ $I_C = -1.8\text{A}, I_B = -70\text{mA}^*$ $I_C = -3\text{A}, I_B = -250\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-985	-1100	mV	$I_C = -3\text{A}, I_B = -250\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		-850	-1000	mV	$I_C = -3\text{A}, V_{CE} = -2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	270 250 180 100	450 400 300 190 45	800		$I_C = -10\text{mA}, V_{CE} = -2\text{V}^*$ $I_C = -0.5\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -2\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -3\text{A}, V_{CE} = -2\text{V}^*$ $I_C = -5\text{A}, V_{CE} = -2\text{V}^*$
Transition Frequency	$f_T$		145		MHz	$I_C = -50\text{mA}, V_{CE} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	$C_{cb}$		40		pF	$V_{CB} = -10\text{V}, f = 1\text{MHz}$
Switching Times	$t_{on}$		170		ns	$I_C = -2\text{A}, I_B = -20\text{mA},$ $V_{CC} = -30\text{V}$
	$t_{off}$		460		ns	$I_C = -2\text{A}, I_B = \pm 20\text{mA},$ $V_{CC} = -30\text{V}$

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

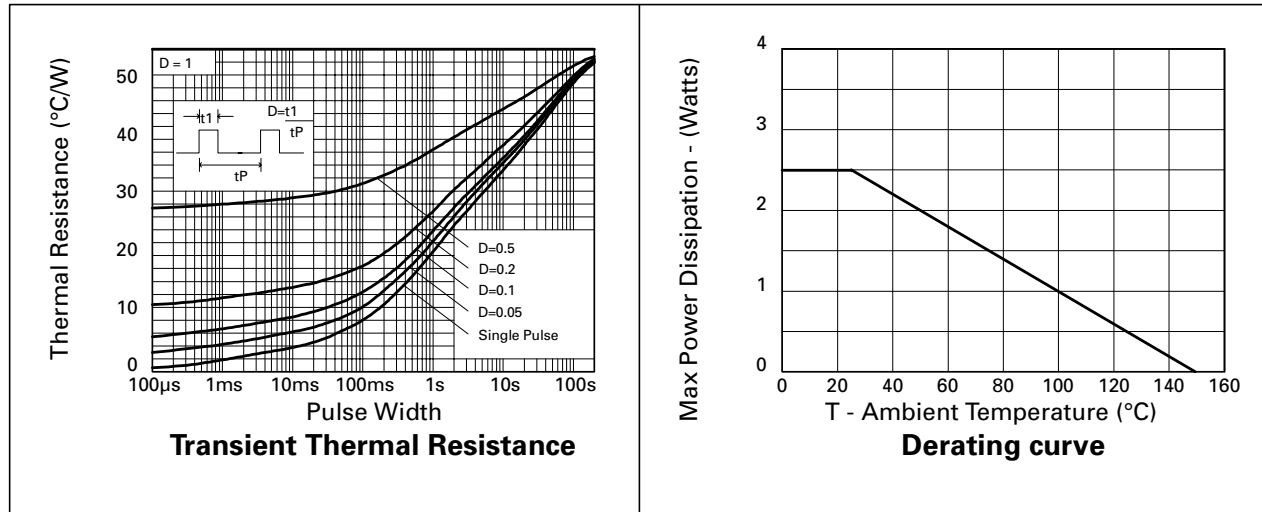
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## TYPICAL CHARACTERISTICS



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## THERMAL CHARACTERISTICS



### SPICE PARAMETERS

\*ZETEX FZT1151A Spice model Last revision 12/12/96

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.MODEL FZT1151A PNP IS =1.7e-12 NF =1.004 ISE=1.02e-13  
+ NE =1.55 BF =562 VAF=26.01 IKF=3.5 NR =.97  
+ ISC= 1.5e-13 NC =1.3 BR =38 VAR=2.41 IKR=0.3  
+ RE =25.37e-3 RB =250e-3 RC =25e-3 CJE=440e-12  
+ CJC=160e-12 VJC=1.058 MJC= 0.5678 TF =0.8e-9 TR =55.5e-9
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