

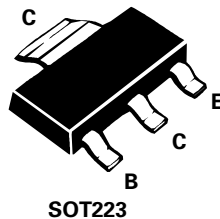
SOT223 NPN SILICON PLANAR MEDIUM POWER HIGH GAIN TRANSISTOR

ISSUE 2 - MARCH 2001

FZT1053A

FEATURES

- * $V_{CE0} = 75V$
- * 4.5 Amp Continuous Current
- * 10 Amp Pulse Current
- * Low Saturation Voltage
- * High Gain
- * Extremely Low Equivalent On-resistance; $R_{CE(sat)} = 78m\Omega$ at 4.5A



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	75	V
Emitter-Base Voltage	V_{EBO}	7.5	V
Peak Pulse Current	I_{CM}	10	A
Continuous Collector Current	I_C	4.5	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	$^{\circ}C$

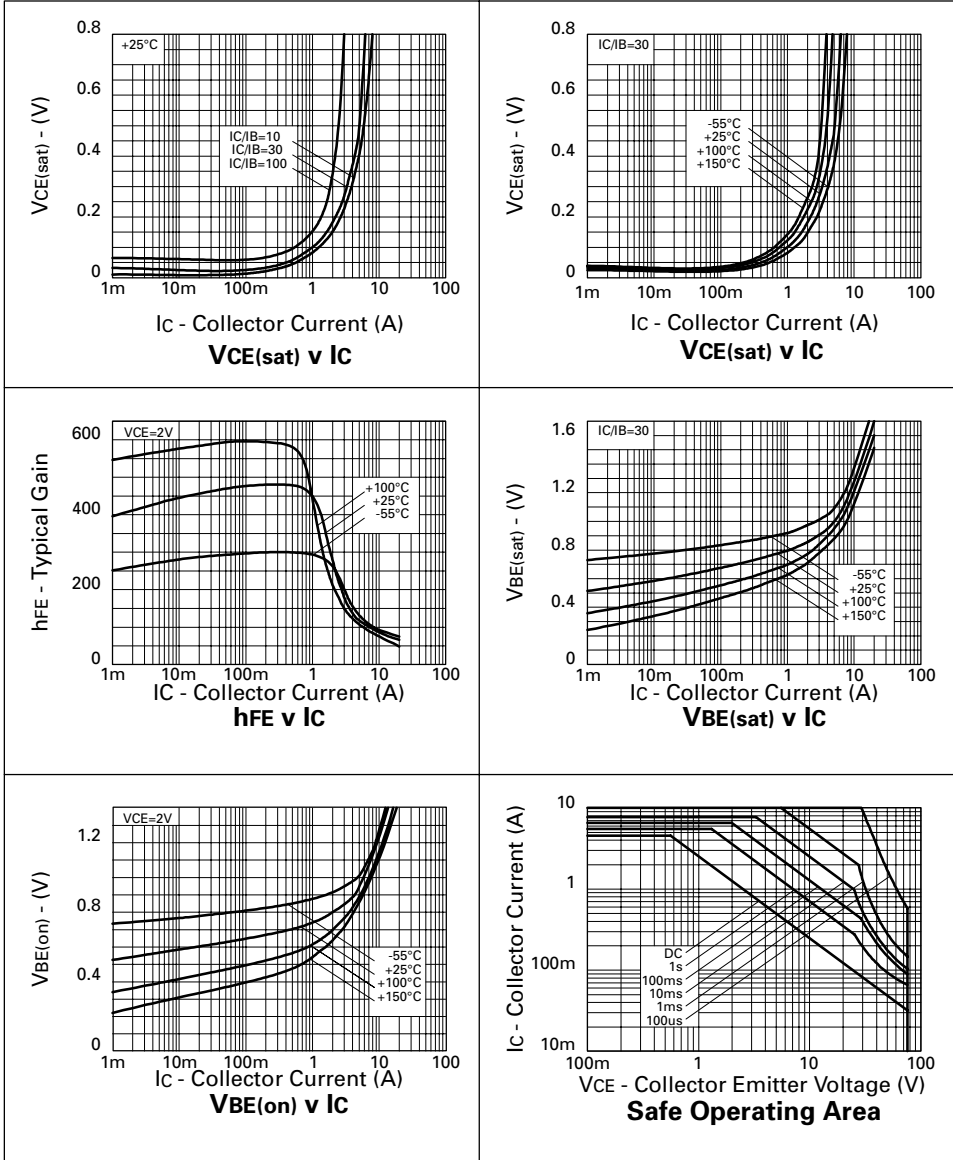
† The power which can be dissipated assuming the device is mounted in typical manner on a PCB with copper equal to 2 inches x 2 inches.

FZT1053A

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	150	250		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CES}	150	250		V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CEO}	75	100		V	$I_C = 10\text{mA}$
Collector-Emitter Breakdown Voltage	V_{CEV}	150	250		V	$I_C = 100\mu\text{A}, V_{EB} = 1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	7.5	8.8		V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}		0.9	10	nA	$V_{CB} = 120\text{V}$
Emitter Cut-Off Current	I_{EBO}		0.3	10	nA	$V_{EB} = 4\text{V}$
Collector Emitter Cut-Off Current	I_{CES}		1.5	10	nA	$V_{CES} = 120\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		21 55 150 160 350	30 75 200 210 440	mV	$I_C = 0.2\text{A}, I_B = 20\text{mA}^*$ $I_C = 0.5\text{A}, I_B = 20\text{mA}^*$ $I_C = 1\text{A}, I_B = 10\text{mA}^*$ $I_C = 2\text{A}, I_B = 100\text{mA}^*$ $I_C = 4.5\text{A}, I_B = 200\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		900	1000	mV	$I_C = 3\text{A}, I_B = 100\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		825	950	mV	$I_C = 3\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	270 300 300 40	440 450 450 60 20	1200		$I_C = 10\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 0.5\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 4.5\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 10\text{A}, V_{CE} = 2\text{V}^*$
Switching Times	t_{on}		162		ns	$I_C = 2\text{A}, I_{B1} = I_{B2} = \pm 20\text{mA}, V_{CC} = 50\text{V}$
	t_{off}		900		ns	$I_C = 2\text{A}, I_{B1} = I_{B2} = \pm 20\text{mA}, V_{CC} = 50\text{V}$
Transition Frequency	f_T		140		MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	C_{obo}		21	30	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$

TYPICAL CHARACTERISTICS



FZT1053A

SPICE PARAMETERS

***ZETEX FZT1053A Spice model Last revision 18/3/97**

*

.MODEL FZT1053A

NPN IS=2.1E-12 NF=1.0 BF=600 IKF=2.2 VAF=100

+ ISE=0.9E-13 NE=1.25 NR=0.99 BR=150 IKR=2.5 VAR=15

+ ISC=5.0E-10 NC=1.76 RB=0.1 RE=0.028 RC=0.016

+ CJC=75.1E-12 CJE=520E-12 MJC=0.415 MJE=0.367

+ VJC=0.512 VJE=0.766 TF=550E-12 TR=22E-9

*

(C) 1997 ZETEX PLC

The copyright in this model and the design embodied belong to Zetex PLC ("Zetex"). It is supplied free of charge by Zetex for the purpose of research and design and may be used or copied intact (including this notice) for that purpose only. All other rights are reserved. The model is believed accurate but no condition or warranty as to its merchantability or fitness for purpose is given and no liability in respect of any use is accepted by Zetex PLC, its distributors or agents. Zetex PLC, Fields New Road, Chadderton, Oldham OL9 8NP



Zetex plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany
Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Zetex Inc.
47 Mall Drive, Unit 4
Commack NY 11725
USA
Telephone: (631) 543-7100
Fax: (631) 864-7630

Zetex (Asia) Ltd.
3701-04 Metroplaza, Tower 1
Hing Fong Road,
Kwai Fong, Hong Kong
Telephone:(852) 26100 611
Fax: (852) 24250 494

These are supported by
agents and distributors in
major countries world-wide
© Zetex plc 2001

<http://www.zetex.com>

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.