

SOT223 NPN SILICON PLANAR

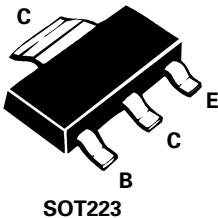
MEDIUM POWER HIGH GAIN TRANSISTOR

ISSUE 1 - AUGUST 1997

FEATURES

- * $V_{CEO} = 10V$
- * 5 Amp Continuous Current
- * 20 Amp Pulse Current
- * Low Saturation Voltage
- * High Gain
- * Extremely Low Equivalent On-resistance; $R_{CE(sat)} = 44m\Omega$ at 5A

FZT1047A



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	35	V
Collector-Emitter Voltage	V_{CEO}	10	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Current	I_{CM}	20	A
Continuous Collector Current	I_C	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	$^{\circ}C$

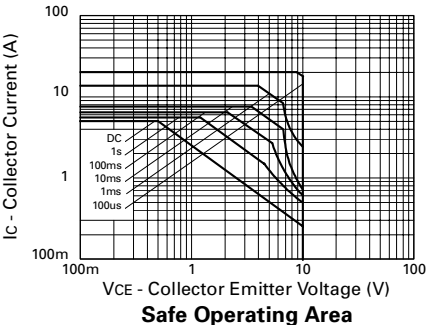
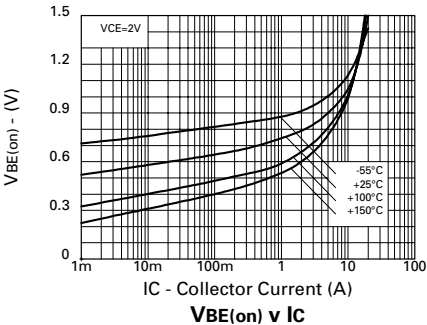
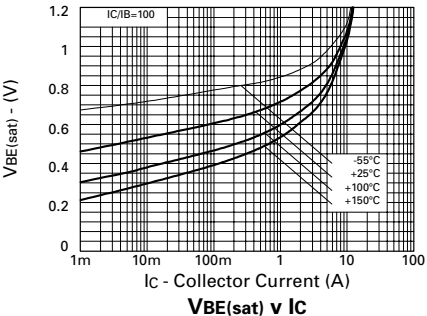
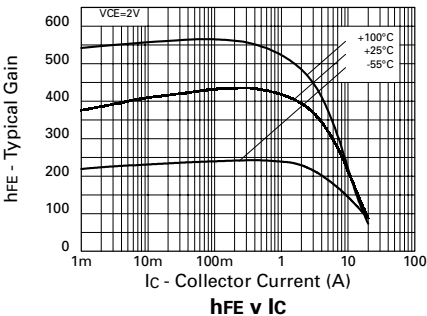
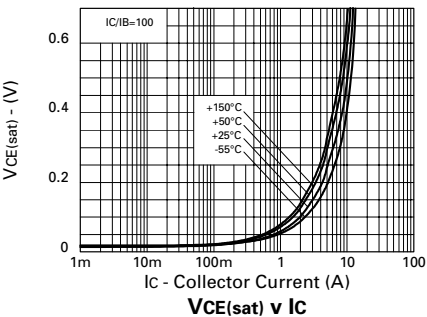
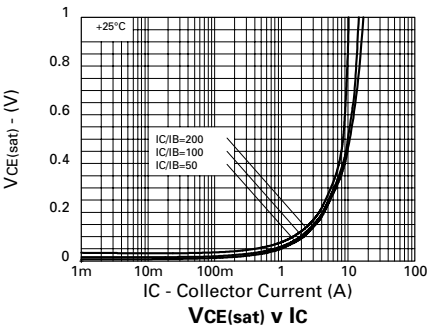
FZT1047A

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

PARAMETER	SYMBOL	VALUE			UNIT	CONDITIONS.
		MIN.	TYP.	MAX.		
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	35	65		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CES}	35	55		V	$I_C=100\mu\text{A}$
Collector-Emitter Breakdown Voltage	V_{CEO}	10	16		V	$I_C=10\text{mA}$
Collector-Emitter Breakdown Voltage	V_{CEV}	35	60		V	$I_C=100\mu\text{A}$, $V_{EB}=1\text{V}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	8.9		V	$I_E=100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}		0.3	10	nA	$V_{CB}=20\text{V}$
Emitter Cut-Off Current	I_{EBO}		0.3	10	nA	$V_{EB}=4\text{V}$
Collector Emitter Cut-Off Current	I_{CES}		0.3	10	nA	$V_{CES}=20\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		25	40	mV	$I_C=0.5\text{A}$, $I_B=10\text{mA}^*$
			50	70	mV	$I_C=1\text{A}$, $I_B=10\text{mA}^*$
			140	200	mV	$I_C=3\text{A}$, $I_B=15\text{mA}^*$
			220	350	mV	$I_C=5\text{A}$, $I_B=25\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		925	1000	mV	$I_C=5\text{A}$, $I_B=25\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		890	975	mV	$I_C=5\text{A}$, $V_{CE}=2\text{V}^*$
Static Forward Current Transfer Ratio	h_{FE}	280	430	1200		$I_C=10\text{mA}$, $V_{CE}=2\text{V}^*$
		290	440			$I_C=0.5\text{A}$, $V_{CE}=2\text{V}^*$
		300	450			$I_C=1\text{A}$, $V_{CE}=2\text{V}^*$
		200	330			$I_C=5\text{A}$, $V_{CE}=2\text{V}^*$
		60	110			$I_C=20\text{A}$, $V_{CE}=2\text{V}^*$
Transition Frequency	f_T		150		MHz	$I_C=50\text{mA}$, $V_{CE}=10\text{V}$ $f=50\text{MHz}$
Output Capacitance	C_{obo}		85	110	pF	$V_{CB}=10\text{V}$, $f=1\text{MHz}$
Switching Times	t_{on}		130		ns	$I_C=4\text{A}$, $I_B=40\text{mA}$, $V_{CC}=10\text{V}$
	t_{off}		230		ns	$I_C=4\text{A}$, $I_B=\pm 40\text{mA}$, $V_{CC}=10\text{V}$

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle $\leq 2\%$

TYPICAL CHARACTERISTICS



FZT1047A

SPICE PARAMETERS

*ZETEX FZT1047A Spice model Last revision 18/03/97

*

.MODEL FZT1047A NPN IS=9.73E-13 NF=1.0 BF=550 IKF=8.0 VAF=120

+ ISE=2.6E-13 NE=1.38 NR=1.0 BR=400 IKR=5 VAR=15

+ ISC=8E-13 NC=1.4 RB=0.1 RE=0.017 RC=0.010

+ CJC=195.4E-12 CJE=540.4E-12 MJC=0.257 MJE=0.359

+ VJC=0.390 VJE=0.753 TF=450E-12 TR=1.2E-9

*

© 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, United Kingdom.

Telephone: (44)161-627 5105 (Sales), (44)161-627 4963 (General Enquiries)

Fax: (44)161-627 5467

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: (516) 543-7100
Fax: (516) 864-7630

Zetex (Asia) Ltd.
3510 Metroplaza, Tower 2
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 1997
Internet:
<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.