



SMA540B

Active Biased RF Transistor

PRELIMINARY DATA

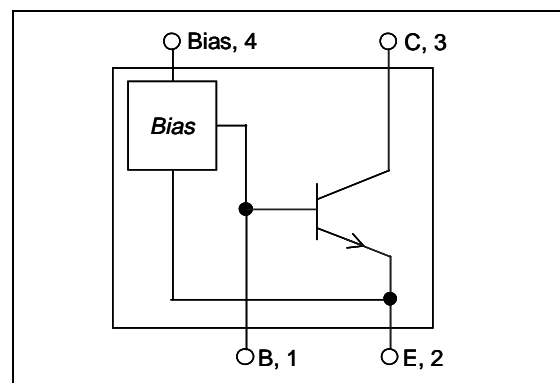
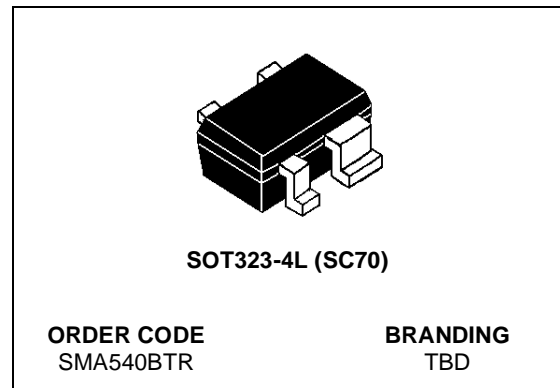
- HIGH GAIN LOW NOISE AMPLIFIERS
 $G_{ms} = 19 \text{ dB at } 1.8 \text{ GHz}$
- CURRENT EASY ADJUSTABLE BY AN EXTERNAL RESISTOR
- OPEN COLLECTOR OUTPUT
- TYPICAL SUPPLY VOLTAGE: 1.4-3.3 V
- TRANSITION FREQUENCY 42 GHz
- ULTRA MINIATURE SOT323-4L PACKAGE (LEAD FREE)

APPLICATIONS

- WIDEBAND APPLICATIONS
- CELLULAR AND CORDLESS TELEPHONES
- HIGH FREQUENCY OSCILLATORS

DESCRIPTION

The SMA540B is a NPN Transistor integrating a current mirror as biasing. In this way the IC (collector current) can be controlled setting the current at Bias pin according to $I_C = 10 \cdot I_{BIAS}$. The I_{BIAS} current is easy adjustable using an external resistor. SMA540B is housed in ultra miniature SOT323-4L package(LEAD FREE), the relative dimensions are 1.15mmx1.8mm with 0.8mm thickness.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{ceo}	Collector emitter voltage	4.5	V
V_{ebo}	Emitter base voltage	1.5	V
I_c	Collector current	40	mA
I_b	Base current	4	mA
I_{BIAS}	BIAS Current	4	mA
P_{tot}	Total dissipation, $T_s = 107^\circ\text{C}$	120	mW
T_{op}	Operating temperature	-40 to +85	$^\circ\text{C}$
T_{stg}	Storage temperature	-65 to +150	$^\circ\text{C}$
T_j	Max. operating junction temperature	150	$^\circ\text{C}$

THERMAL RESISTANCE

R_{thjs}	Thermal Resistance Junction soldering point	< 270	$^\circ\text{C/W}$
------------	---	-------	--------------------

SMA540B

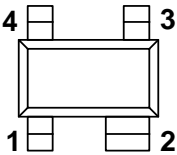
ELECTRICAL CHARACTERISTICS

(T_A=25 °C,Z_{L/S} = 50Ω, tested in circuit shown in fig.1, unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
G _{ms} ⁽¹⁾	Maximum stable gain	V _d = 2V, I _c = 20mA	f = 1.8GHz		19		dB
S ₂₁ ²	Insertion power gain	V _d = 2V, I _c = 20mA	f = 1.8GHz		17.5		dB
F _{50Ω}	Noise Figure	V _d = 2V, I _c = 5mA, Z _s = 50Ω	f = 1.8GHz		1.3		dB
P _{-1dB}	Output Power at 1dB Compression Point	V _d = 2V, I _c = 20mA,	f = 1.8GHz		9		dBm
OIP3	Ouput third order intercept point	V _d = 2V, I _c = 20mA	f = 1.8GHz		19		dBm
C _{CB}	Collector-base capacitance	V _{cb} = 2V, f = 1MHz			0.13		pF
CR	Current Ratio (I _c /I _{Bias})	I _{Bias} = 0.5mA, V _d = 2V			10		

Note(1): G_{ms} = | S₂₁ / S₁₂ |

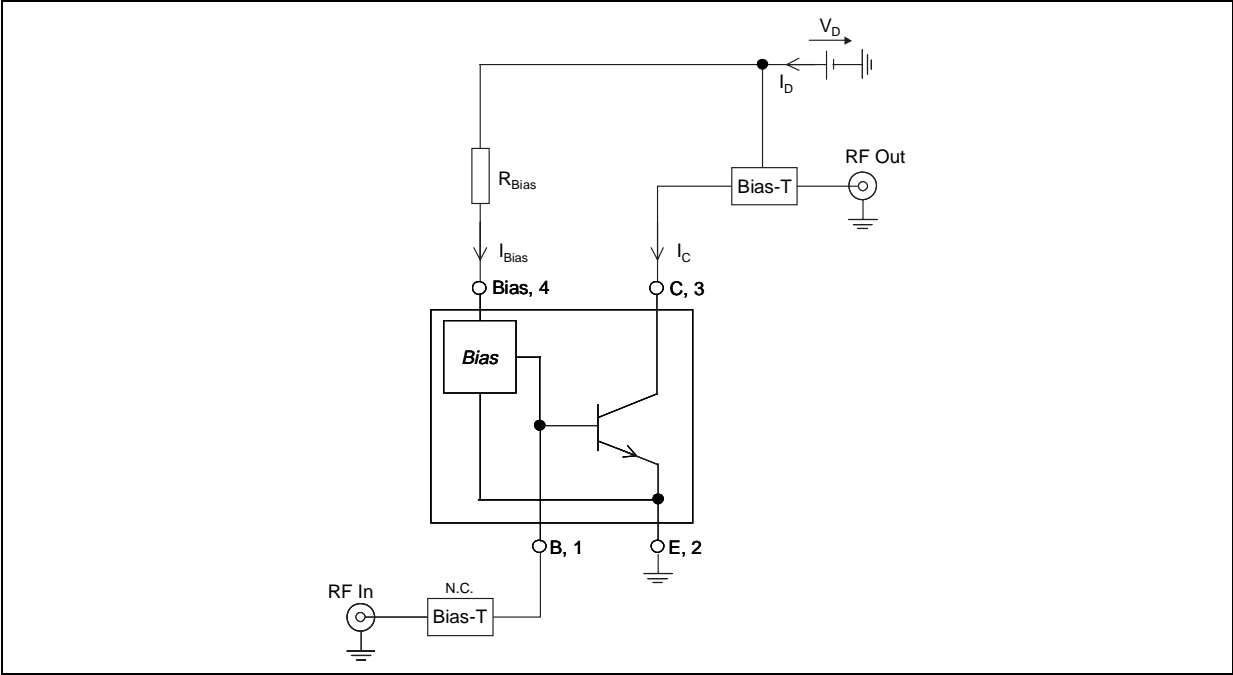
PIN CONNECTION



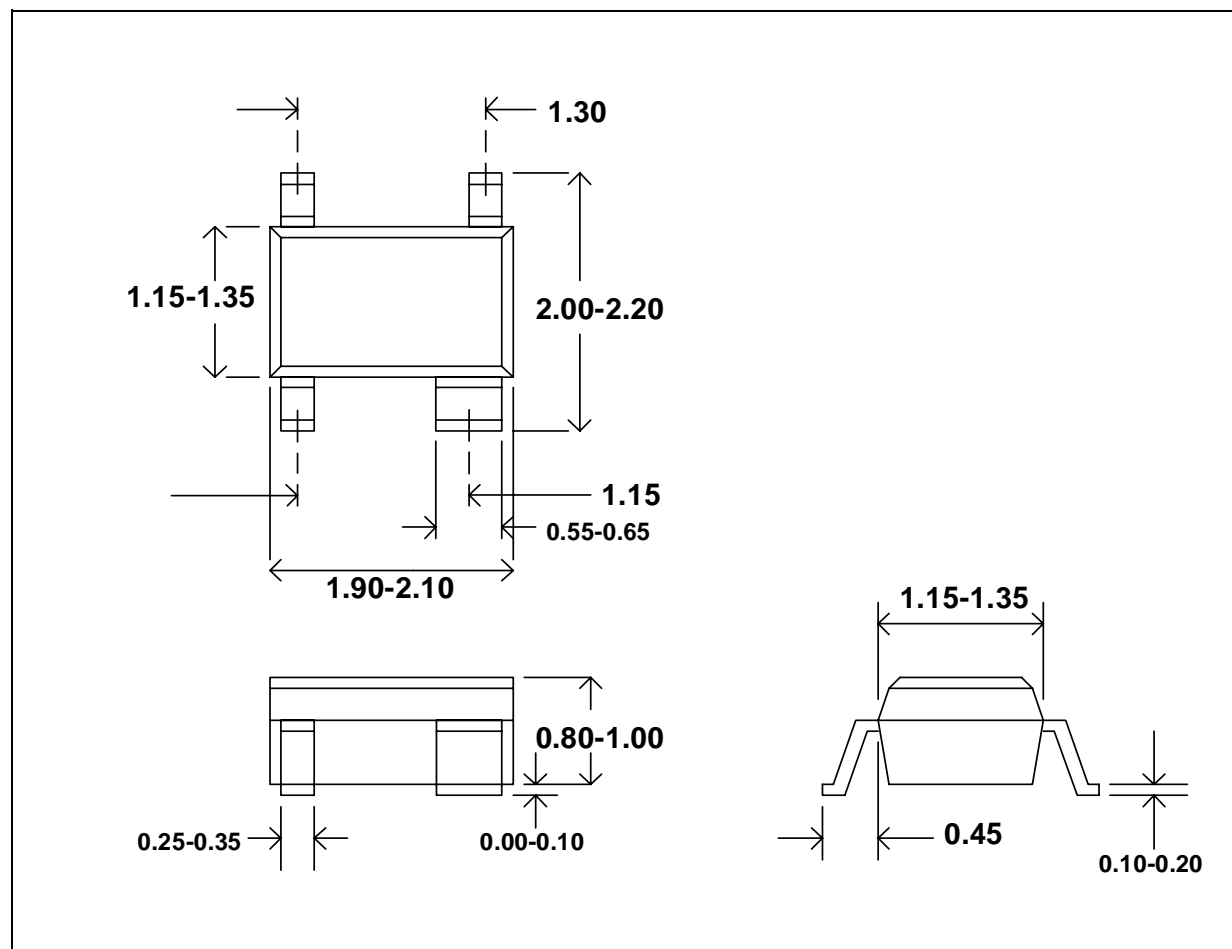
SOT343

Pin No.	Description
1	BASE
2	EMITTER
3	COLLECTOR
4	BIAS

Typical configuration (Fig. 1)



PACKAGE DIMENSIONS SOT323-4L (SC-70 4 leads)



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is registered trademark of STMicroelectronics
® 2003 STMicroelectronics - All Rights Reserved

All other names are the property of their respective owners.

STMicroelectronics GROUP OF COMPANIES
Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan -
Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.
<http://www.st.com>