



SMA540B

Active Biased RF Transistor

PRELIMINARY DATA

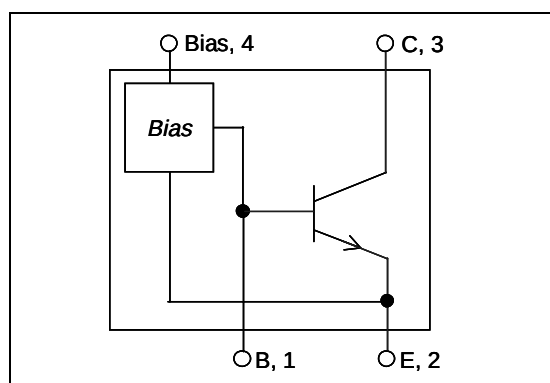
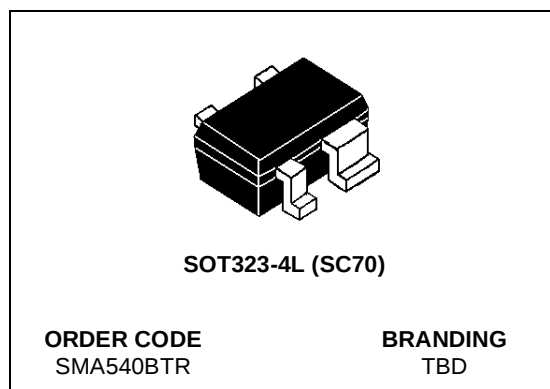
- HIGH GAIN LOW NOISE AMPLIFIERS
 $G_{ms} = 19 \text{ dB}$ at 1.8 GHz
- CURRENT EASY ADJUSTABLE BY AN EXTERNAL RESISTOR
- OPEN COLLECTOR OUTPUT
- TYPICAL SUPPLY VOLTAGE: 1.4-3.3 V
- TRANSITION FREQUENCY 42 GHz
- ULTRA MINIATURE SOT323-4L PACKAGE (LEAD FREE)

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	$^\circ\text{C/W}$
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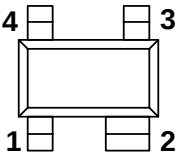
ELECTRICAL CHARACTERISTICS

(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 |

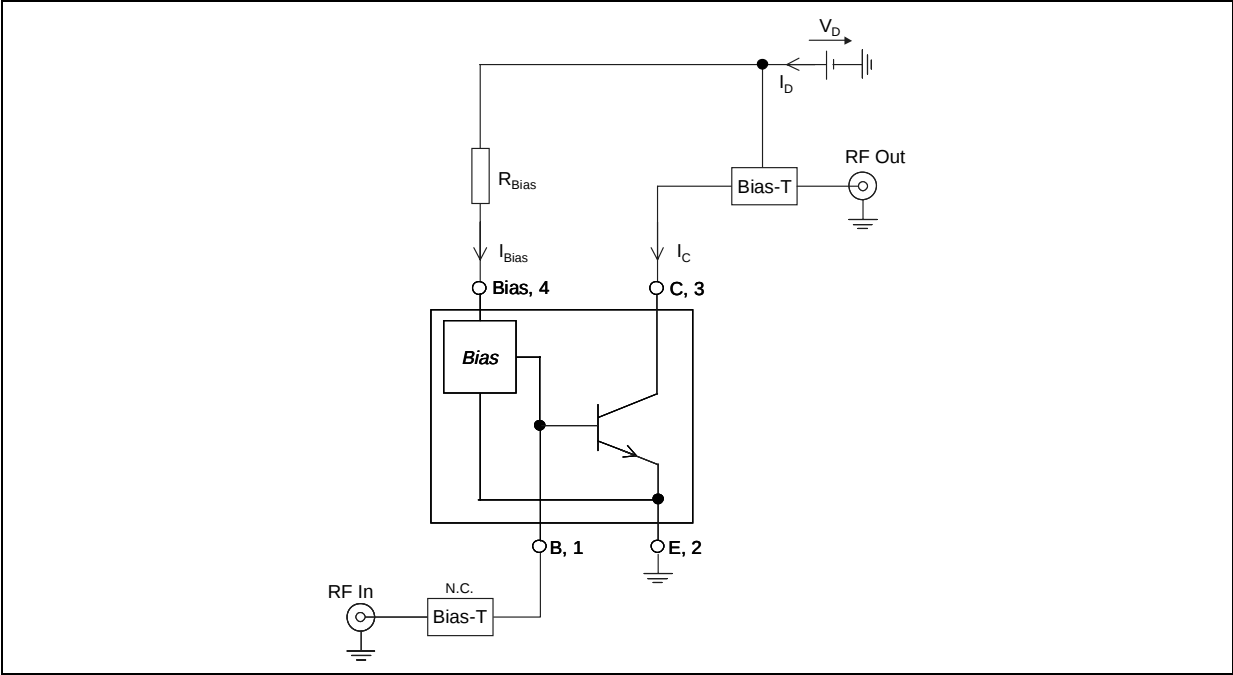
PIN CONNECTION



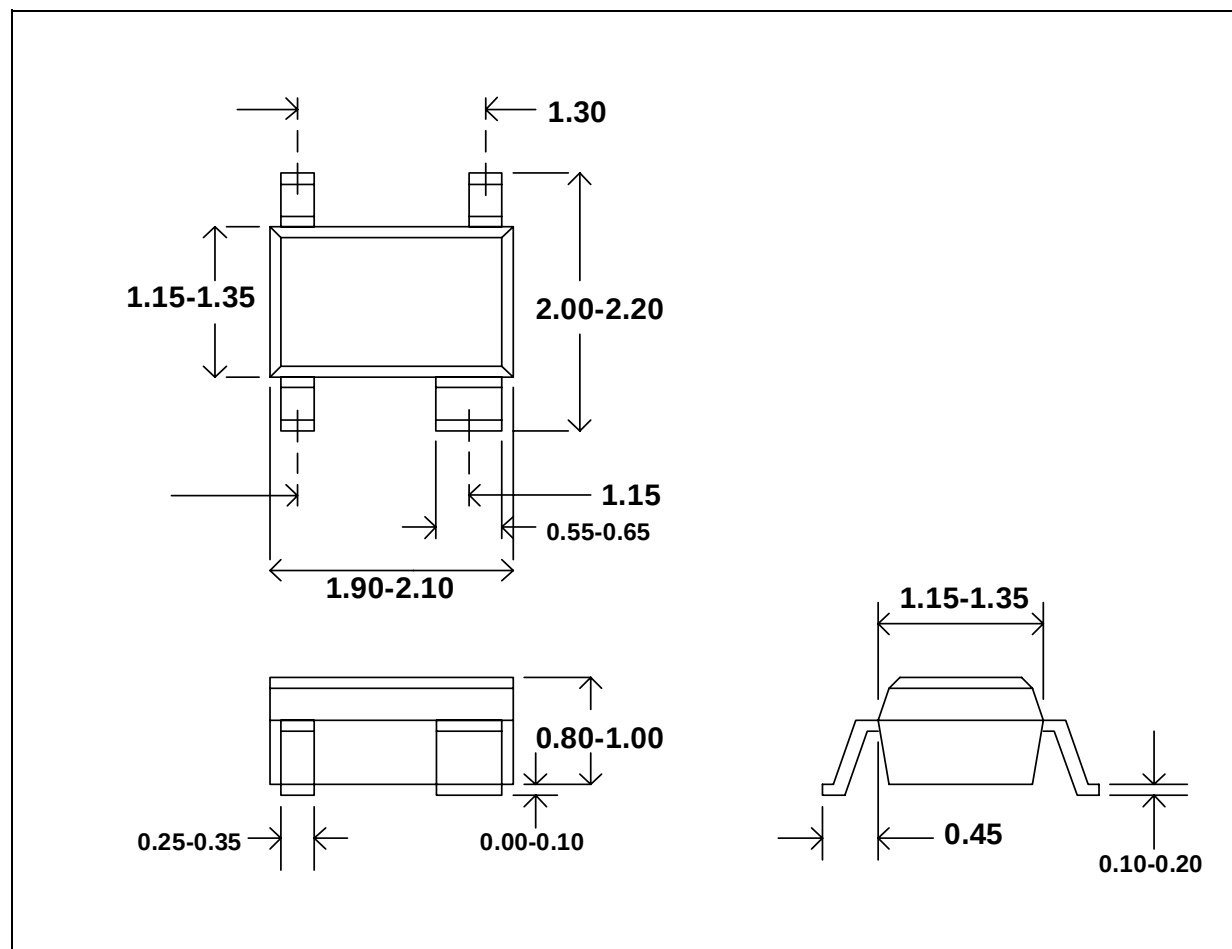
SOT343

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

Typical configuration (Fig. 1)



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



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