



SMA540B

Active Biased RF Transistor

PRELIMINARY DATA

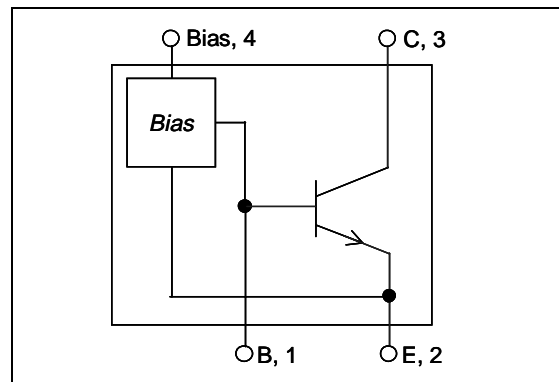
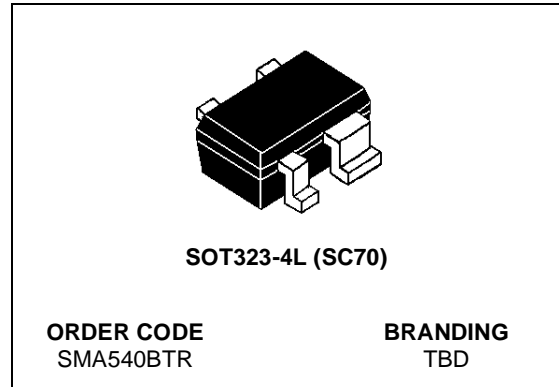
- HIGH GAIN LOW NOISE AMPLIFIERS
 $G_{ms} = 19$ dB at 1.8 GHz
- CURRENT EASY ADJUSTABLE BY AN EXTERNAL RESISTOR
- OPEN COLLECTOR OUTPUT
- TYPICAL SUPPLY VOLTAGE: 1.4-3.3 V
- TRANSITION FREQUENCY 42 GHz
- ULTRA MINIATURE SOT323-4L PACKAGE (LEAD FREE)

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 $I_C = 10 * I_{BIAS}$. 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, $T_s = 107$ °C	120	mW
T_{op}	Operating temperature	-40 to +85	°C
T_{stg}	Storage temperature	-65 to +150	°C
T_j	Max. operating junction temperature	150	°C

THERMAL RESISTANCE

R_{thjs}	Thermal Resistance Junction soldering point	< 270	°C/W
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SMA540B

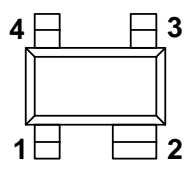
ELECTRICAL CHARACTERISTICS

($T_A=25\text{ }^\circ\text{C}$, $Z_{L/S} = 50\Omega$, 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
$F_{50\Omega}$	Noise Figure	$V_d = 2V, I_c = 5mA, Z_s = 50\Omega$	$f = 1.8GHz$		1.3		dB
P_{-1dB}	Output Power at 1dB Compression Point	$V_d = 2V, I_c = 20mA,$	$f = 1.8GHz$		9		dBm
OIP3	Output 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): $G_{ms} = |S_{21} / S_{12}|$

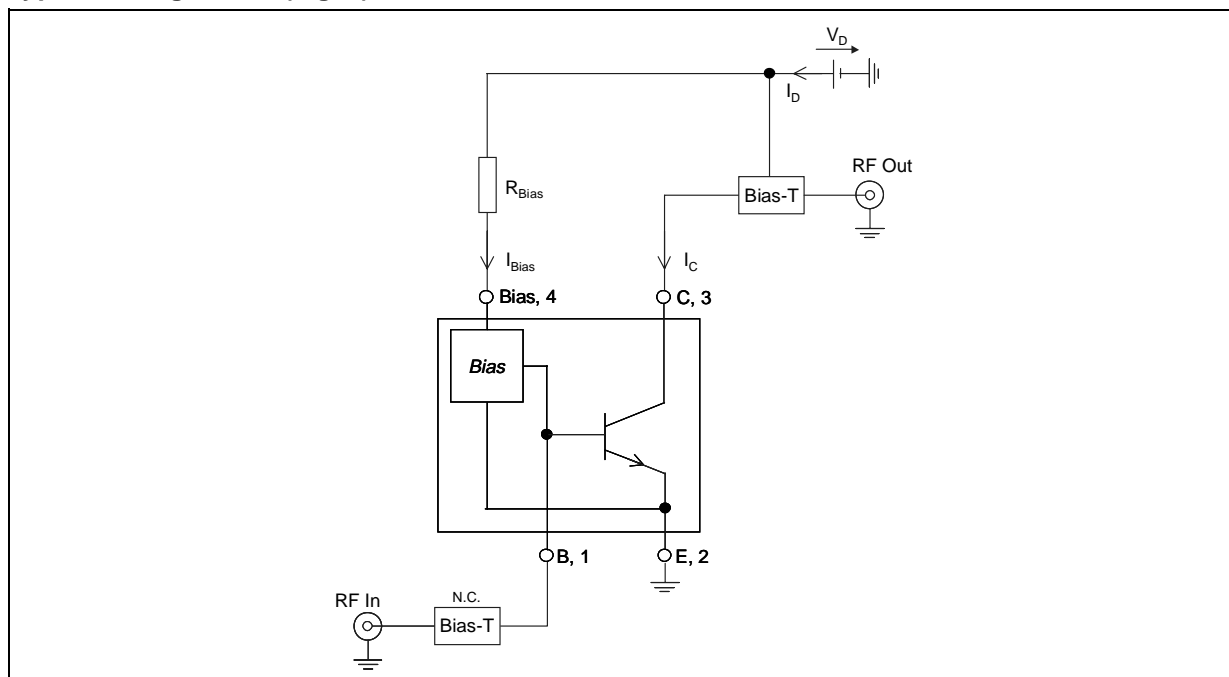
PIN CONNECTION



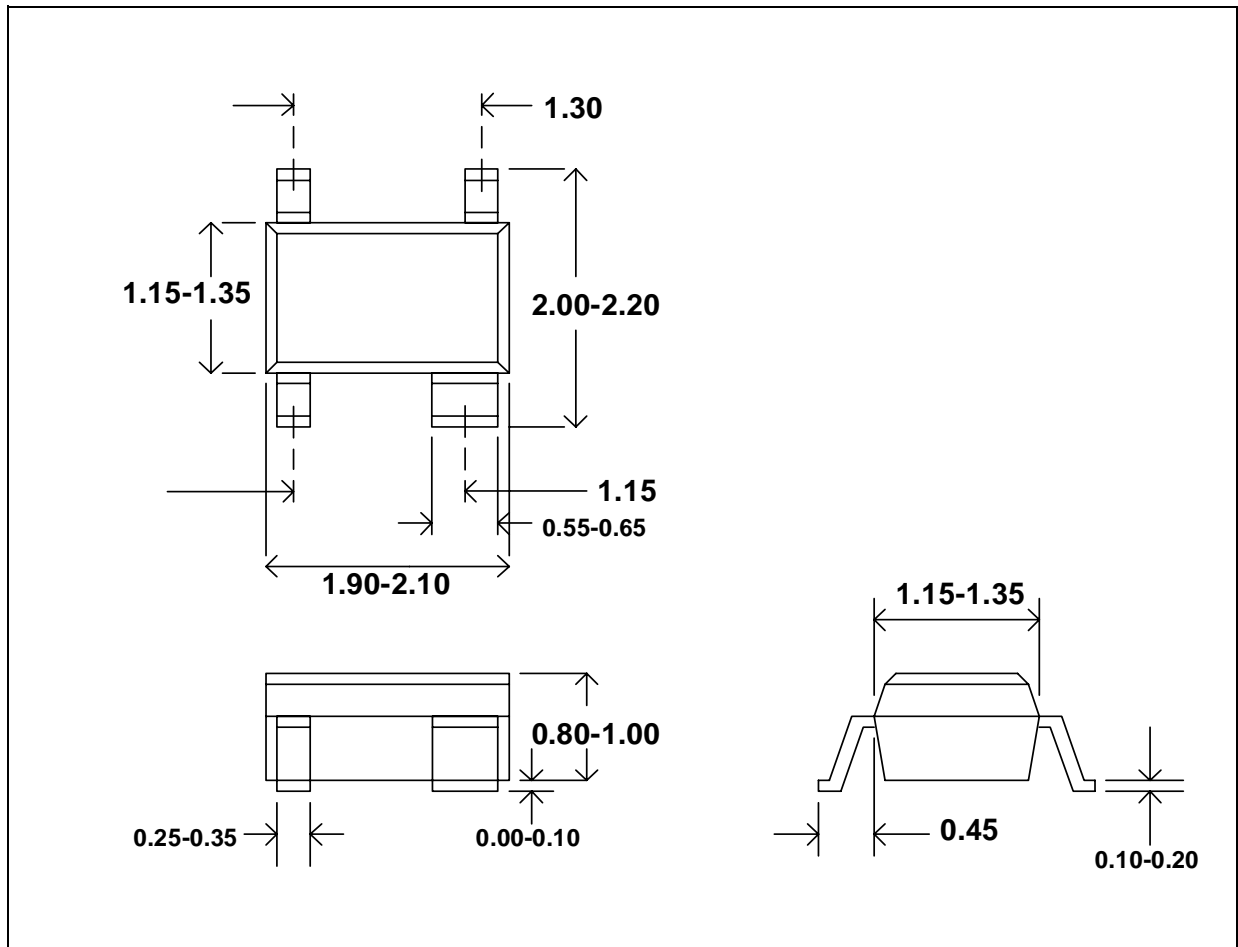
Pin No.	Description
1	BASE
2	EMITTER
3	COLLECTOR
4	BIAS

SOT343

Typical configuration (Fig. 1)



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



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