

SMA540B

Active Biased RF Transistor

PRELIMINARY DATA

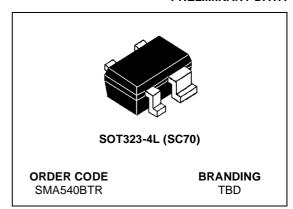
- HIGH GAIN LOW NOISE AMPLIFIERS G_{ms} = 19 dB at 1.8 GHz
- CURRENT EASY ADJUSTABLE BY AN EXTERNAL RESISTOR
- OPEN COLLECTOR OUTPUT
- TYPICAL SUPPLY VOLTAGE: 1.4-3.3 V
- TRANSITION FREQUENCY 42 GHz
- ULTRA MINIATURE SOT323-4L PACKAGE (LEAD FREE)

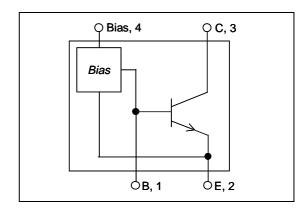
APPLICATIONS

- 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 IC = 10 * IBIAS. The IBIAS 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	
Ic	Collector current	40	mA	
Ib	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	
Tj	Max. operating junction temperature	150	°C	

THERMAL RESISTANCE

R _{thjs}	Thermal Resistance Junction soldering point	< 270	°C/W
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January, 15 2003 1/4

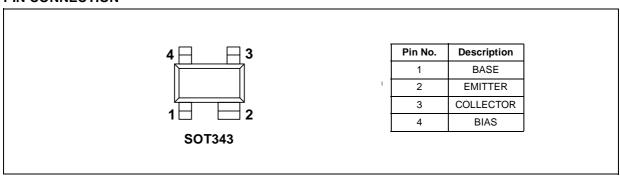
ELECTRICAL CHARACTERISTICS

 $(T_A \!\!=\!\! 25~^oC,\! Z_{L/S} \!\!=\! 50\Omega,$ tested in circuit shown in $\,$ fig.1, unless otherwise specified)

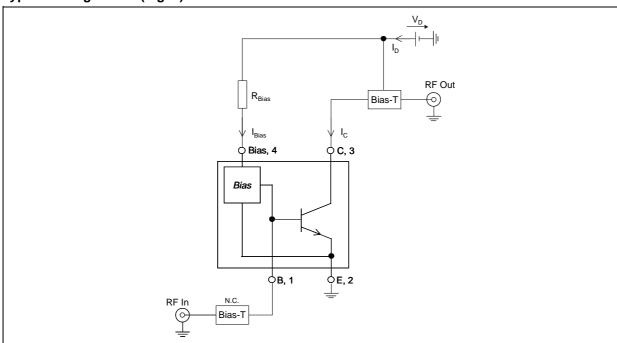
Symbol	Parameter	Test Conditions		Min.	Тур.	Max.	Unit
Gms ⁽¹⁾	Maximum stable gain	Vd = 2V, Ic = 20mA	f = 1.8GHz		19		dB
S21 ²	Insertion power gain	Vd = 2V, Ic = 20mA	f = 1.8GHz		17.5		dB
F _{50Ω}	Noise Figure	$Vd = 2V$, $Ic = 5mA$, $Zs = 50\Omega$	f = 1.8GHz		1.3		dB
P _{-1dB}	Output Power at 1dB Compression Point	Vd = 2V, Ic = 20mA,	f = 1.8GHz		9		dBm
OIP3	Ouput third order intercept point	Vd = 2V, Ic = 20mA	f = 1.8GHz		19		dBm
C _{CB}	Collector-base capacitance	Vcb = 2V, f = 1MHz			0.13		pF
CR	Current Ratio (Ic/I _{Bias})	$I_{Bias} = 0.5 \text{mA}, Vd = 2V$			10		

Note(1): $Gms = |S_{21} / S_{12}|$

PIN CONNECTION

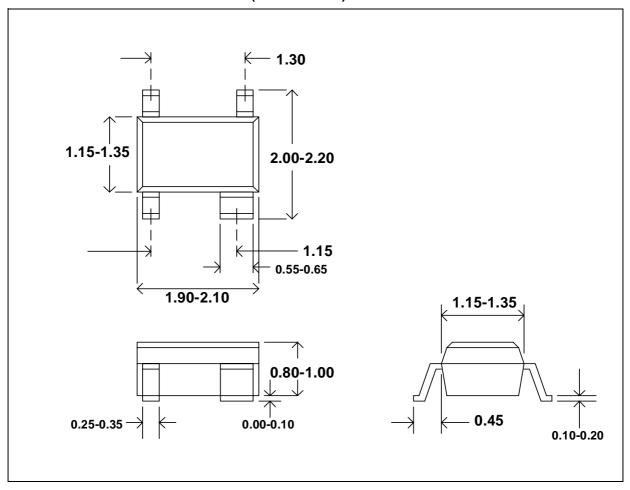


Typical configuration (Fig. 1)



2/4

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



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57