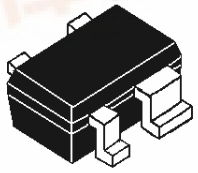
SMA540B

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)

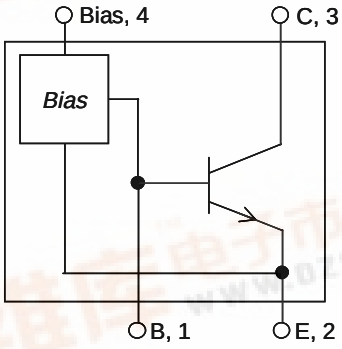


SOT323-4L (SC70)

ORDER CODE	BRANDING
SMA540BTR	TBD

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
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

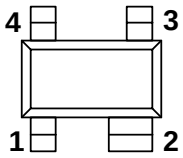
ELECTRICAL CHARACTERISTICS

(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
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
$F_{50\Omega}$	Noise Figure	Vd = 2V, Ic = 5mA, Zs = 50Ω	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} = 0.5mA, Vd = 2V			10		

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

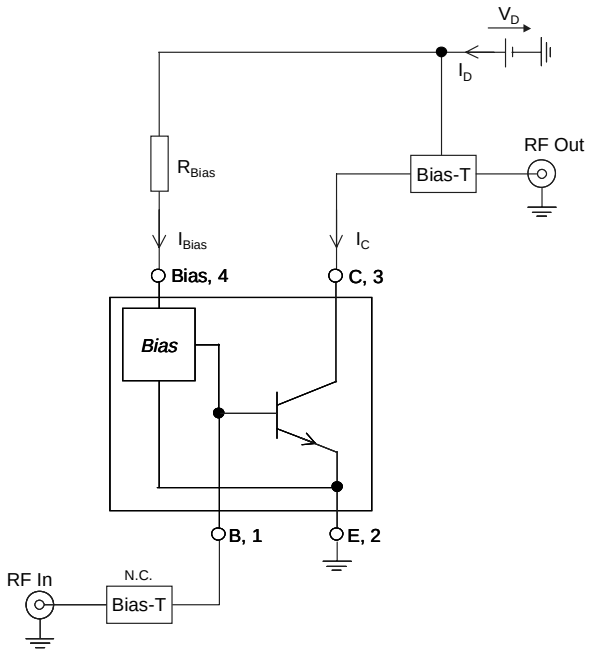
PIN CONNECTION



SOT343

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

Typical configuration (Fig. 1)



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