silicon MMIC amplifier BGA2001

FEATURES

- Low current, low voltage
- Very high power gain
- Low noise figure
- Integrated temperature compensated biasing
- Supply and RF output pin combined

APPLICATIONS

- RF front end
- Wideband applications, e.g. analog and digital cellular telephones, cordless telephones (PHS, DECT, etc.)
- Radar detectors
- Low noise amplifiers
- Satellite television tuners (SATV)
- High frequency oscillators.

DESCRIPTION

Silicon MMIC amplifier consisting of an NPN double polysilicon transistor with integrated biasing for low voltage applications in a plastic, 4-pin dual-emitter SOT343R package.

PINNING SOT343R

PIN	DESCRIPTION
1	ground
2	RF input
3	ground
4	V_S + RF output

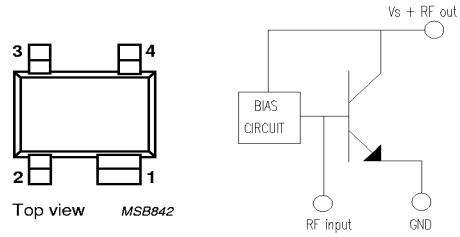

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Fig.1 Simplified outline and symbol

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_S	DC supply voltage	RF input AC coupled	–	4.5	V
I_S	DC supply current	V_S = 2.5 V; RF input AC coupled	4	–	mA
MSG	maximum stable gain	V_S = 2.5 V; f = 2 GHz; T_{amb} = 25 °C	19	–	dB
F	noise figure	V_S = 2.5 V; f = 2 GHz; $\Gamma_S = \Gamma_{opt}$	1.8	–	dB

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_S	supply voltage	RF input AC coupled	–	4.5	V
I_S	supply current (DC)	forced by DC voltage on RF input	–	30	mA
P_{tot}	total power dissipation	up to T_s = 100 °C	–	135	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	operating junction temperature		–	150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th\ j\text{-}s}$	thermal resistance from junction to soldering point	350	K/W

CHARACTERISTICS

RF input AC coupled; T_j = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_S	supply current	V_S = 1 V	–	0.5	–	mA
		V_S = 2.5 V	–	4	–	mA
		V_S = 4.5 V	–	8	–	mA
MSG	maximum stable gain	V_S = 2.5 V; I_S = 4 mA; f = 900 MHz	–	22	–	dB
		V_S = 2.5 V; I_S = 4 mA; f = 2 GHz	–	19	–	dB
$\|S_{21}\|^2$	insertion power gain	V_S = 2.5 V; I_S = 4 mA; f = 900 MHz	–	18	–	dB
		V_S = 2.5 V; I_S = 4 mA; f = 2 GHz	–	14	–	dB
F	noise figure	V_S = 2.5 V; I_S = 4 mA; f = 900 MHz; $\Gamma_S = \Gamma_{opt}$	–	1.5	–	dB
		V_S = 2.5 V; I_S = 4 mA; f = 2 GHz; $\Gamma_S = \Gamma_{opt}$	–	1.8	–	dB

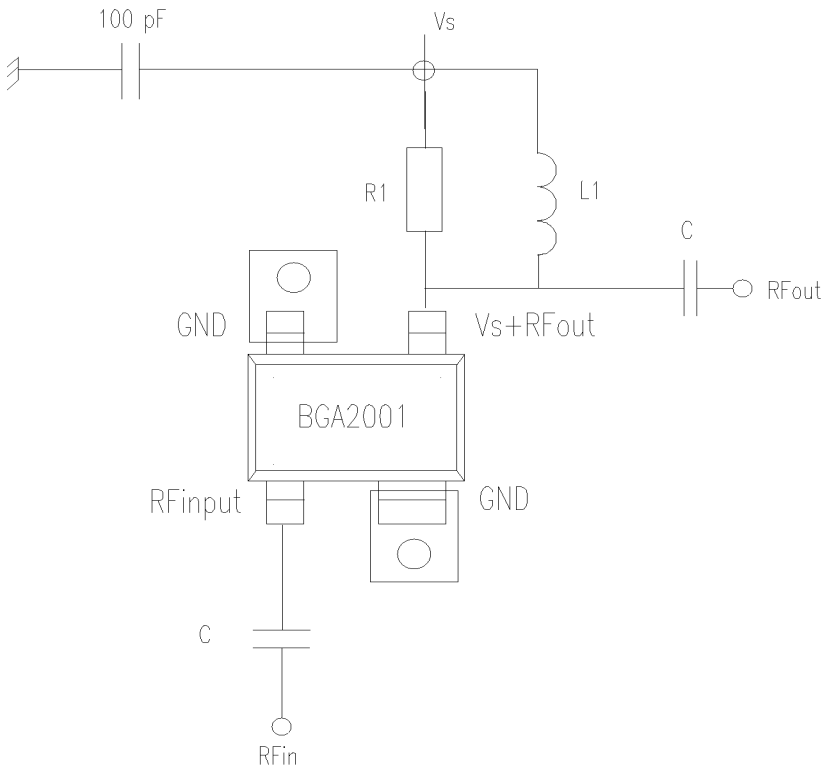
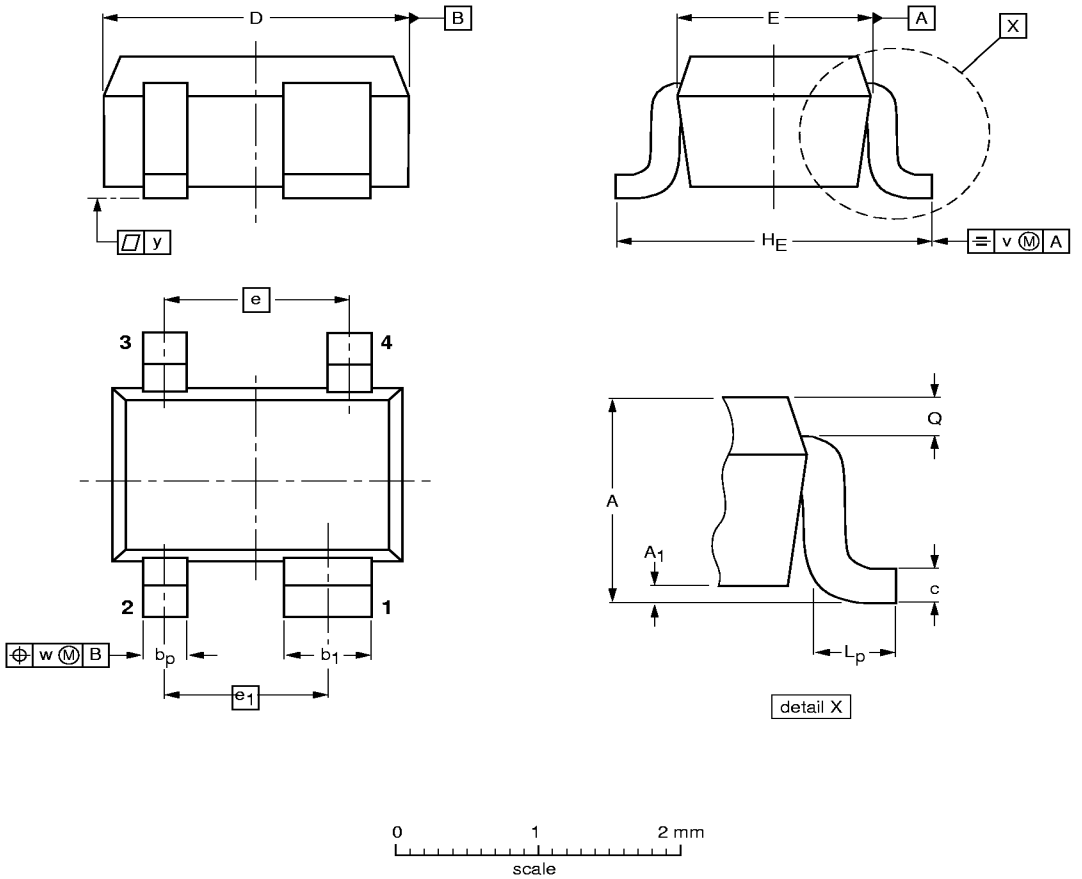


Fig.2 Typical application circuit

PACKAGE OUTLINE

Plastic surface mounted package; reverse pinning; 4 leads **SOT343R**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	b_1	c	D	E	e	e_1	H_E	L_p	Q	v	w	y
mm	1.1 0.8	0.1	0.4 0.3	0.7 0.5	0.25 0.10	2.2 1.8	1.35 1.15	1.3	1.15	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT343R						97-05-21