

Microwave, low noise, SiGe NPN HBT

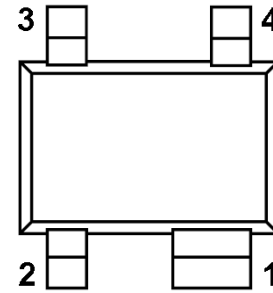
UHF 25 GHz, low noise transistor with SiGe HBT technique, high power gain, low noise and large dynamic range. The adoption of subminiature SOT-343R package, especially suitable for high density surface patch installation, mainly for the VHF, UHF broadband high frequency low noise amplifier.

FEATURES

- High transition frequency
- Top: -55°C~+85°C
- $N_F=1.2\text{dB}$, $G_a=17\text{dB(TYP)}$ @ $V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$
- $G_{max}=20\text{dB(Typ)}$ @ $V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$

APPLICATIONS

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



Top view

PIN	DESCRIPTION
1	emitter
2	base
3	emitter
4	collector

Absolute maximum rating

SYMBOL	PARAMETER	MAX.	UNIT
I_c	collector-current	30	V
P_{tot}	total power dissipation	135	mW
T_j	operating junction temperature	150	mA

CHARACTERISTICS $T_j = 25\text{ }^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$V_{(BR)CBO}$	Collector base breakdown voltage	$I_C=2.5\mu\text{A}$, $I_E=0$	9	-	-	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	$I_C=1\text{mA}$, $I_B=0$	4.5	-	-	V
$V_{(BR)EBO}$	emitter base breakdown voltage	$I_E=2.5\mu\text{A}$, $I_C=0$	1	-	-	V
I_{CBO}	collector-base leakage current	$I_E=0$, $V_{CB}=4.5\text{V}$	-	-	100	nA
HFE	DC current gain	$V_{CE}=2\text{V}$, $I_C=25\text{mA}$	50	100	150	-
f_t	transition frequency	$V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$	-	25	-	GHz
G_{max}	maximum power gain	$V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$	-	20	-	dB
$ S_{21} _2$	insertion power gain	$V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$	-	17	-	dB
NF	noise figure	$V_{CE}=2\text{V}$, $f=900\text{MHz}$, $S=\Gamma_{opt}$	-	0.8	-	dB
		$V_{CE}=2\text{V}$, $f=2\text{GHz}$, $S=\Gamma_{opt}$	-	1.2	-	dB
P_{1dB}	output power at 1 dB gain compression	$I_O=25\text{mA}$, $V_{CE}=2\text{V}$, $f=2\text{GHz}$, $Z_S=Z_{Sopt}$, $Z_L=Z_{Lopt}$	-	12	-	dBm

TYPICAL CHARACTERISTICS

($I_C = 25\text{ mA}$; $V_{CE} = 2\text{ V}$)

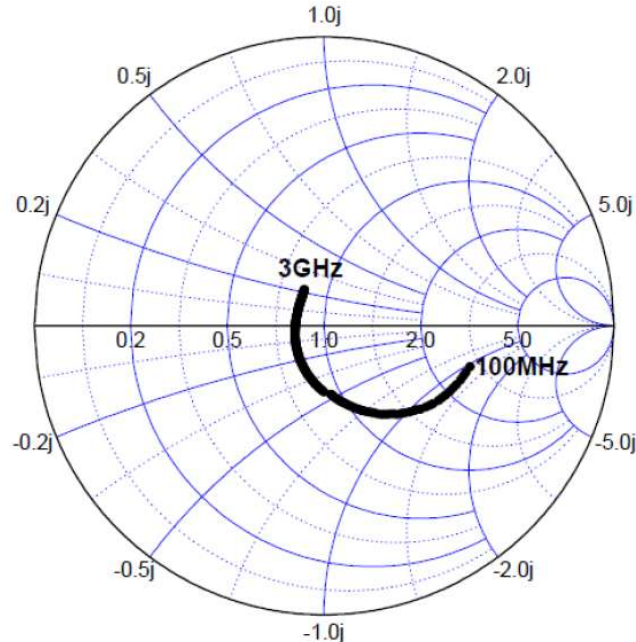


Fig.1 Common emitter input reflection coefficient (S_{11}); typical values

($I_C = 25 \text{ mA}$; $V_{CE} = 2 \text{ V}$.)

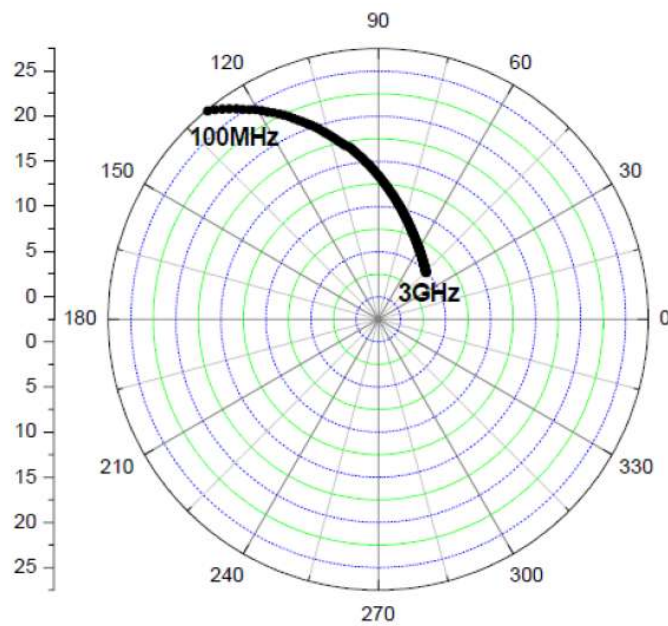


Fig.2 Common emitter forward transmission coefficient (S21); typical values.

S_{12} ($V_{CE} = 2 \text{ V}$, $I_C = 25 \text{ mA}$)

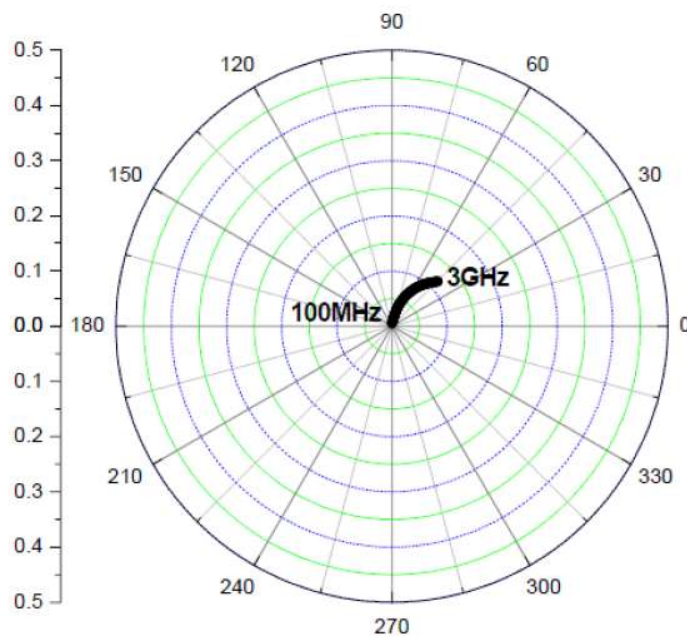


Fig.3 Common emitter reverse transmission coefficient (S12); typical values

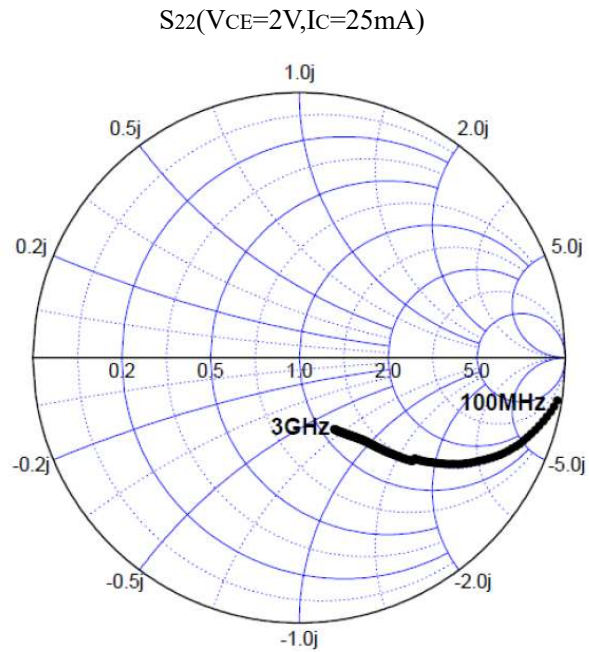


Fig.4 Common emitter output reflection coefficient (S22); typical values

SOT-343R Dimension

