



Microwave Low Noise SiGe Heterojunction Bipolar Transistor

HT9425

Features

- Operation Voltage: 2 V or 3 V
- Operating Temperature: -55°C to $+85^{\circ}\text{C}$
- Low Noise figure and High Gain
 $N_F=1.2\text{dB}$ (Typ), $G_a=17\text{dB}$ (Typ)
@ $V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$
- Very High Power Gain
 $G_{\max}=20\text{dB}$ (Typ) @ $V_{CE}=2\text{V}$, $I_C=25\text{mA}$, $f=2\text{GHz}$
- High Transition Frequency
- Cost Effective dual-emitter 4-lead SOT343R package

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.

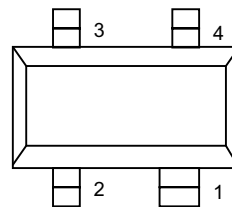
Product Description

The HT9425 is an SiGe double polysilicon NPN HBT (Heterojunction bipolar transistor) designed for high frequency low noise amplifier. It has advantages such as low noise figure, high power gain, high voltage, broad dynamic range and good linearity. The HT9425 is available in cost effective dual-emitter 4-lead SOT343R package for low noise amplifier applications.

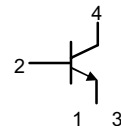
Pin Configuration

Pin Name	Description
1	Emitter
2	Base
3	Emitter
4	Collector

4-lead SOT343R



Top View



Order information

Part Number	Temp. Range ($^{\circ}\text{C}$)	Package
HT9425M4S	-55 — $+85$	SOT-343R





Microwave Low Noise SiGe Heterojunction Bipolar Transistor

HT9425

Electrical Specifications

Absolute Maximum Ratings

Symbol	Parameter	Max. Value	Unit
I_C	Collector Current (DC)	30	mA
P_{tot}	Total Power Dissipation	135	mW
T_j	Operating Junction Temperature	150	°C

Comments:

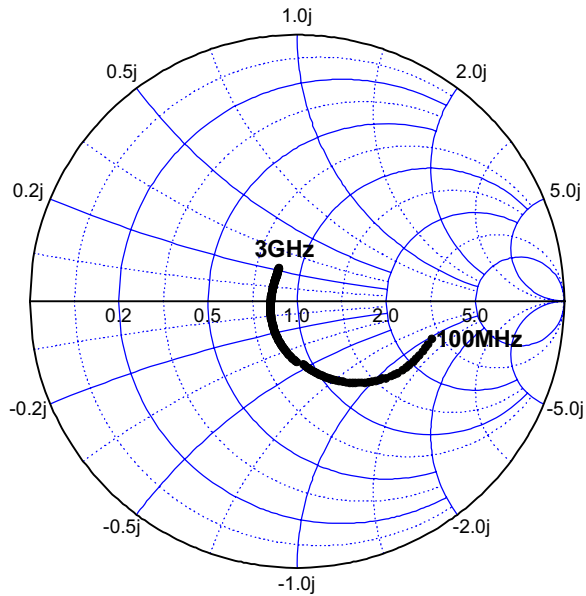
Stresses greater than those listed under Absolute Maximum Ratings may cause permanent damage to the device. This is stress rating only and functional operational sections of this specification are not implied. Exposure to absolute maximum rating conditions for extended period may affect reliability.

Electrical Characteristic

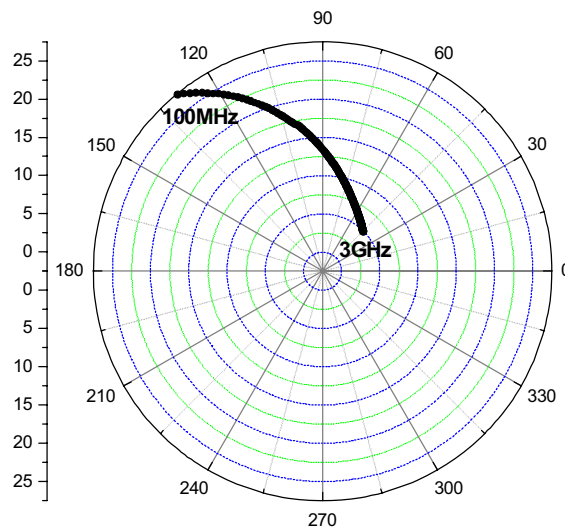
Symbol	Parameter	Conditions ($T_{amb}=25^{\circ}C$)	Min.	Typ.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C=2.5\mu A, I_E=0$	9	—	—	V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C=1mA, I_B=0$	4.5	—	—	V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E=2.5\mu A, I_C=0$	1	—	—	V
I_{CBO}	Collector-Base Leakage Current	$I_E=0, V_{CB}=4.5V$	—	—	100	nA
h_{FE}	DC Current Gain	$V_{CE}=2V, I_C=25mA$	50	100	150	—
f_T	Transition Frequency	$V_{CE}=2V, I_C=25mA, f=2GHz$	—	25	—	GHz
G_{max}	Maximum Power Gain	$V_{CE}=2V, I_C=25mA, f=2GHz$	—	20	—	dB
$ S_{21} ^2$	Insertion Power Gain	$V_{CE}=2V, I_C=25mA, f=2GHz$	—	17	—	dB
N_F	Noise Figure	$V_{CE}=2V, f=900MHz, S = \Gamma_{opt}$	—	0.8	—	dB
		$V_{CE}=2V, f=2GHz, S = \Gamma_{opt}$	—	1.2	—	dB
P_{1dB}	Output Power at 1 dB Gain Compression	$I_C=25mA, V_{CE}=2V, f=2GHz,$ $Z_S = Z_{Sopt}, Z_L = Z_{Lopt}$	—	12	—	dBm

Typical Characteristics

► Figure 1: S_{11} ($V_{CE} = 2V$, $I_C = 25\text{ mA}$)

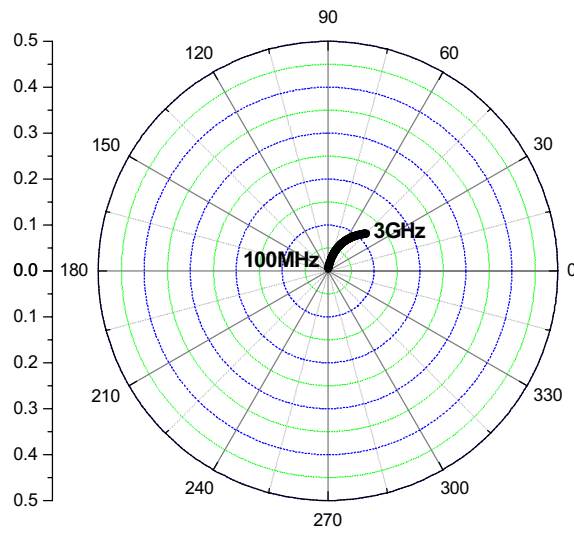


► Figure 2: S_{21} ($V_{CE} = 2V$, $I_C = 25\text{ mA}$)

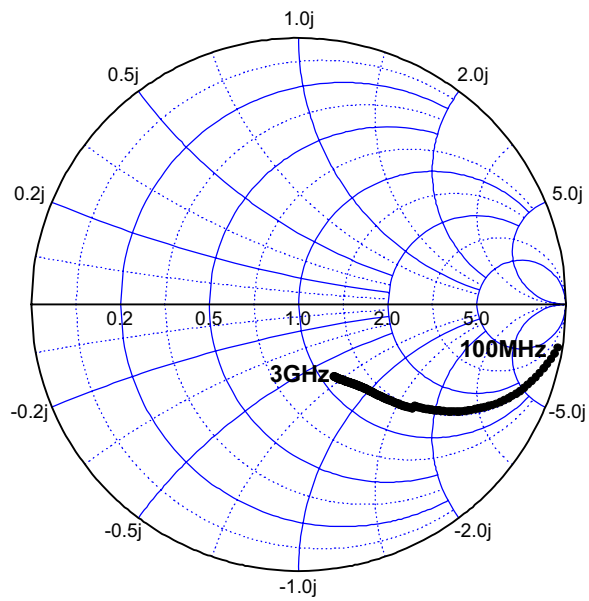


Typical Characteristics

► Figure 3: S_{12} ($V_{CE} = 2V$, $I_C = 25\text{ mA}$)



► Figure 4: S_{22} ($V_{CE} = 2V$, $I_C = 25\text{ mA}$)

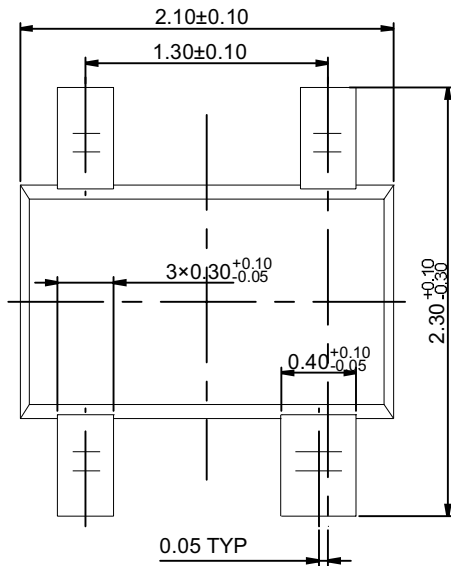




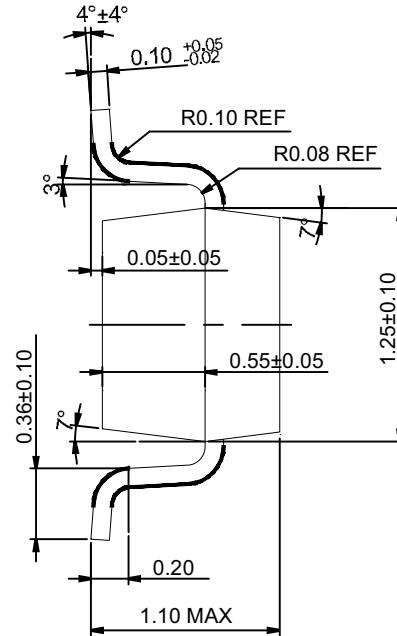
Microwave Low Noise SiGe Heterojunction Bipolar Transistor

HT9425

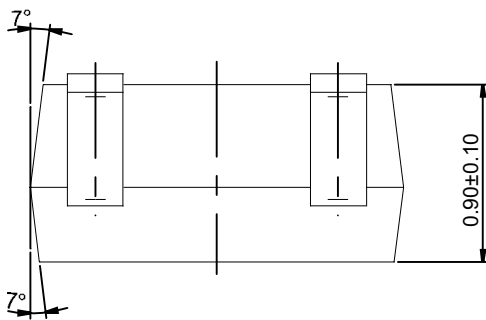
■ 4-lead SOT343R package diagram



Top View



End View



Side View