
2SC5545

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

HITACHI

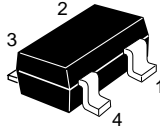
ADE-208-746 (Z)
1st. Edition
Jan. 1999

Features

- Excellent inter modulation characteristic
- High power gain and low noise figure ;
PG=16dB typ. , NF=1.1dB typ. at f=900MHz

Outline

MPAK-4



1. Collector
2. Emitter
3. Base
4. Emitter

Note: Marking is "ZS-".

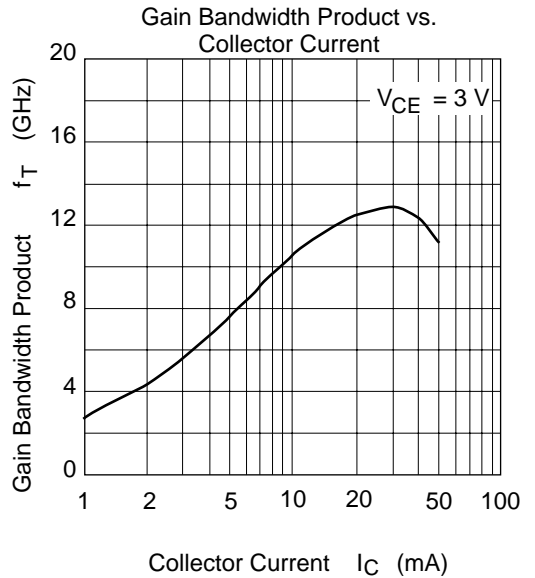
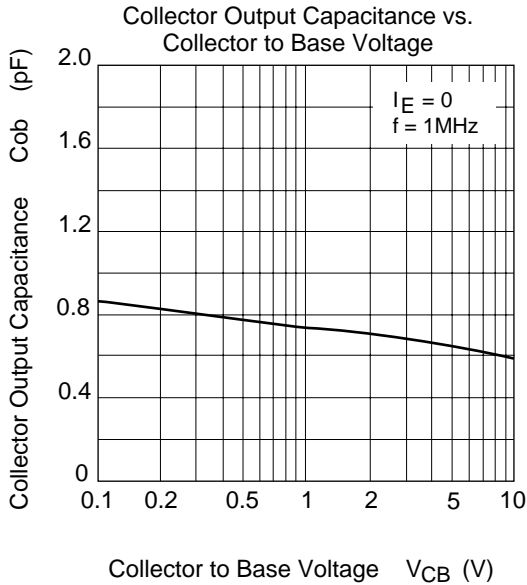
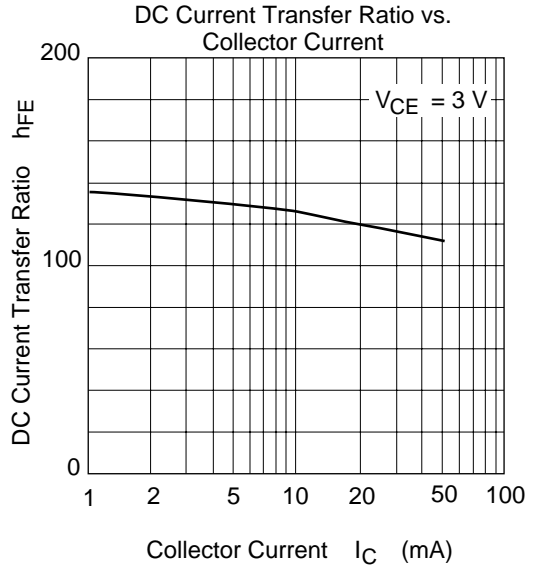
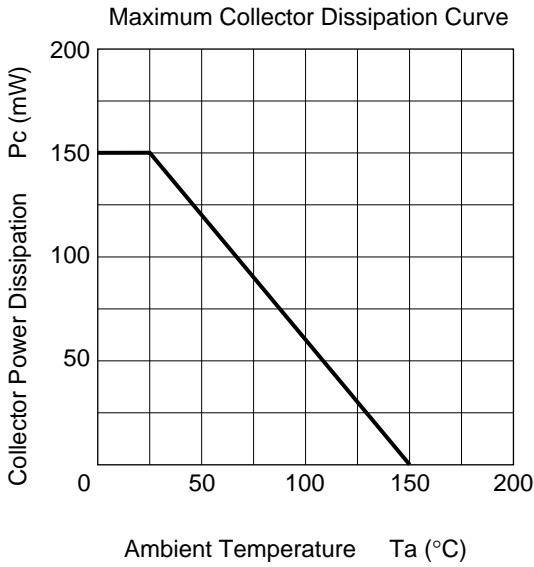
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	6	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_{C}	50	mA
Collector power dissipation	P_{c}	150	mW
Junction temperature	T_{j}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

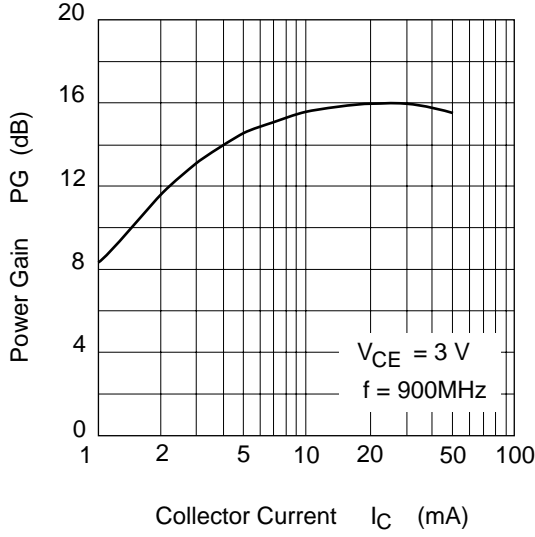
Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector to base breakdown voltage	$V_{(\text{BR})\text{CBO}}$	15	—	—	V	$I_{\text{C}} = 10\mu\text{A}$, $I_{\text{E}} = 0$
Collector cutoff current	I_{CBO}	—	—	1	μA	$V_{\text{CB}} = 12\text{V}$, $I_{\text{E}} = 0$
Collector cutoff current	I_{CEO}	—	—	1	mA	$V_{\text{CE}} = 6\text{V}$, $R_{\text{BE}} = \text{---}$
Emitter cutoff current	I_{EBO}	—	—	10	μA	$V_{\text{EB}} = 1.5\text{V}$, $I_{\text{C}} = 0$
DC current transfer ratio	h_{FE}	80	120	160	V	$V_{\text{CE}} = 3\text{V}$, $I_{\text{C}} = 20\text{mA}$
Collector output capacitance	C_{ob}	—	0.69	1.1	pF	$V_{\text{CB}} = 3\text{V}$, $I_{\text{E}} = 0$ $f = 1\text{MHz}$
Gain bandwidth product	f_{T}	10	12.6	—	GHz	$V_{\text{CE}} = 3\text{V}$, $I_{\text{C}} = 20\text{mA}$
Power gain	PG	14	16	—	dB	$V_{\text{CE}} = 3\text{V}$, $I_{\text{C}} = 20\text{mA}$ $f = 900\text{MHz}$
Noise figure	NF	—	1.1	2.0	dB	$V_{\text{CE}} = 3\text{V}$, $I_{\text{C}} = 5\text{mA}$ $f = 900\text{MHz}$

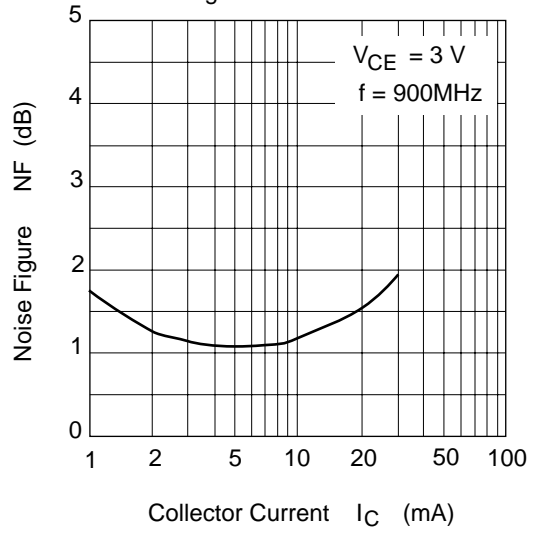
Main Characteristics



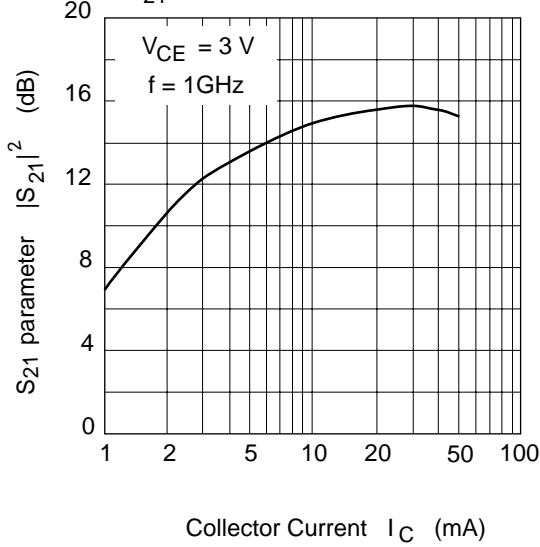
Power Gain vs. Collector Current



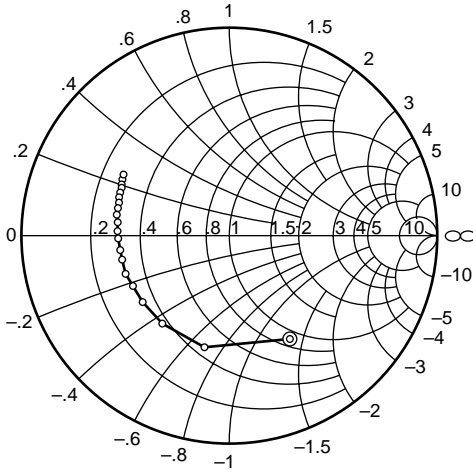
Noise Figure vs. Collector Current



S₂₁Parameter vs. Collector Current



S11 Parameter vs. Frequency

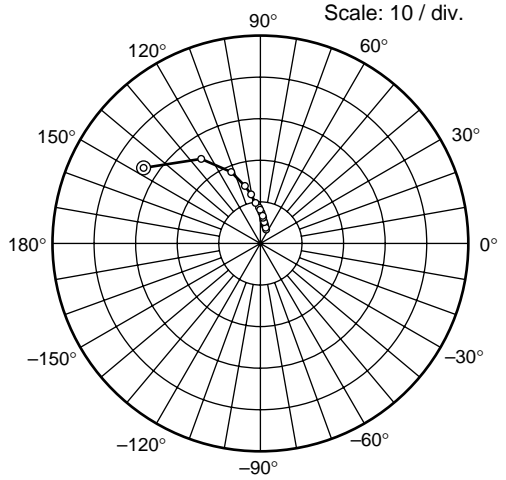


Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S21 Parameter vs. Frequency

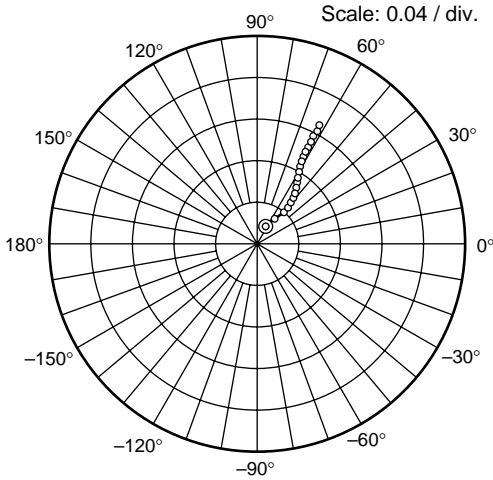


Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S12 Parameter vs. Frequency

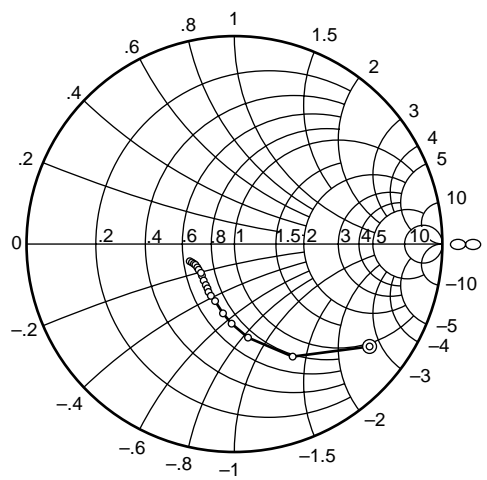


Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S22 Parameter vs. Frequency



Condition : $V_{CE} = 3\text{ V}$, $I_C = 20\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

Sparameter ($V_{CE} = 3V$, $I_C = 20mA$, $Z_o = 50\Omega$)

f (MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.567	-60.8	34.04	146.8	0.0207	67.3	0.817	-37.3
200	0.539	-102.7	24.61	125.5	0.0329	54.3	0.605	-63.5
300	0.528	-128.1	18.16	113.2	0.0399	50.6	0.463	-80.5
400	0.525	-143.2	14.26	105.5	0.0447	50.3	0.379	-92.4
500	0.518	-153.6	11.65	100.2	0.0495	51.6	0.327	-101.8
600	0.526	-161.2	9.82	96.4	0.0545	53.3	0.293	-109.6
700	0.526	-167.9	8.48	92.9	0.0594	54.8	0.269	-116.2
800	0.528	-172.8	7.46	90.0	0.0639	56.1	0.253	-121.9
900	0.532	-178.3	6.63	87.4	0.0698	57.7	0.242	-127.0
1000	0.535	178.2	6.00	85.1	0.0741	58.7	0.235	-131.2
1100	0.536	174.2	5.48	82.9	0.0801	59.5	0.229	-135.1
1200	0.549	170.6	5.04	81.0	0.0851	60.6	0.225	-139.1
1300	0.546	167.6	4.67	79.1	0.0901	60.9	0.223	-142.0
1400	0.547	165.4	4.34	77.4	0.0961	61.5	0.222	-144.7
1500	0.552	162.4	4.09	75.7	0.102	62.1	0.222	-147.2
1600	0.562	159.4	3.82	74.0	0.106	62.3	0.223	-149.7
1700	0.561	157.3	3.62	72.5	0.113	62.5	0.224	-152.3
1800	0.563	154.8	3.43	70.7	0.118	62.9	0.227	-154.3
1900	0.573	152.5	3.26	69.2	0.124	62.3	0.229	-155.8
2000	0.577	150.0	3.13	67.8	0.130	63.0	0.232	-157.6

Cautions

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