2SC5545

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

HITACHI

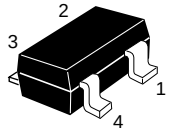
ADE-208-746 (Z)
1st. Edition
Jan. 1999

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-”.

Hitachi semiconductor

Absolute Maximum Ratings (Ta = 25°C)

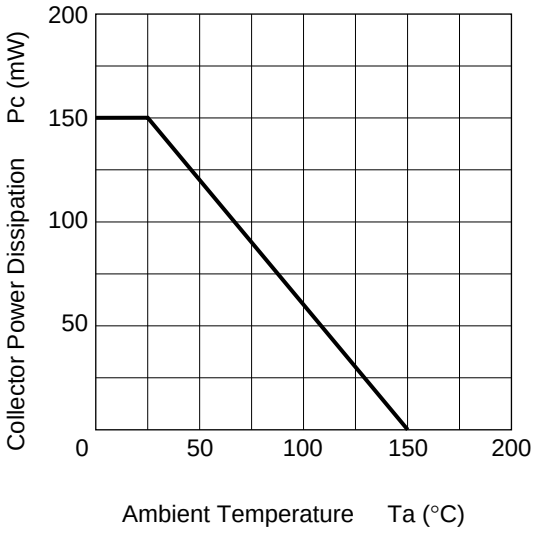
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	6	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	50	mA
Collector power dissipation	Pc	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Electrical Characteristics (Ta = 25°C)

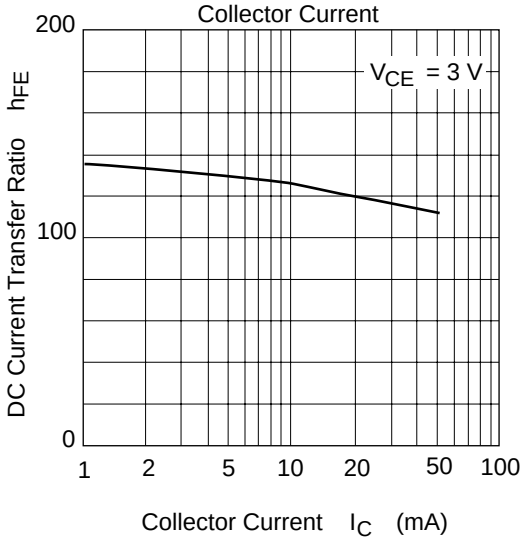
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	I_C = 10µA , I_E = 0
Collector cutoff current	I_{CBO}	—	—	1	µA	V_{CB} = 12V , I_E = 0
Collector cutoff current	I_{CEO}	—	—	1	mA	V_{CE} = 6V , R_{BE} = Åá
Emitter cutoff current	I_{EBO}	—	—	10	µA	V_{EB}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

Main Characteristics

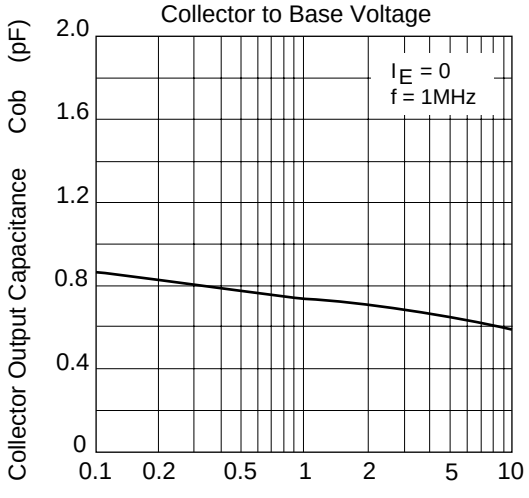
Maximum Collector Dissipation Curve



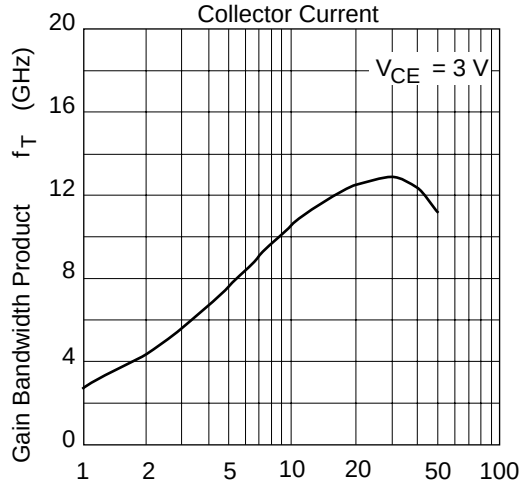
DC Current Transfer Ratio vs. Collector Current



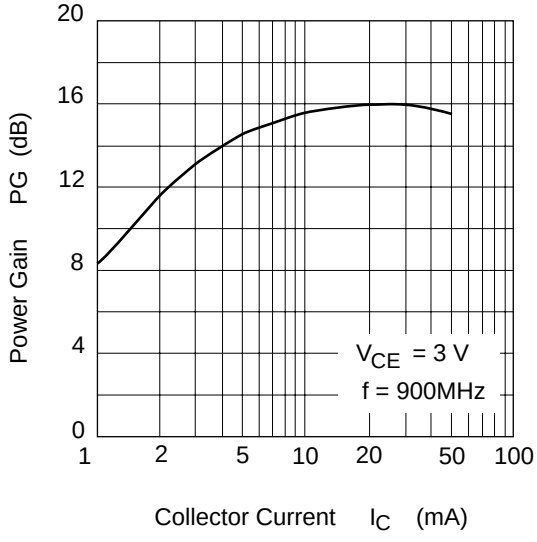
Collector Output Capacitance vs. Collector to Base Voltage



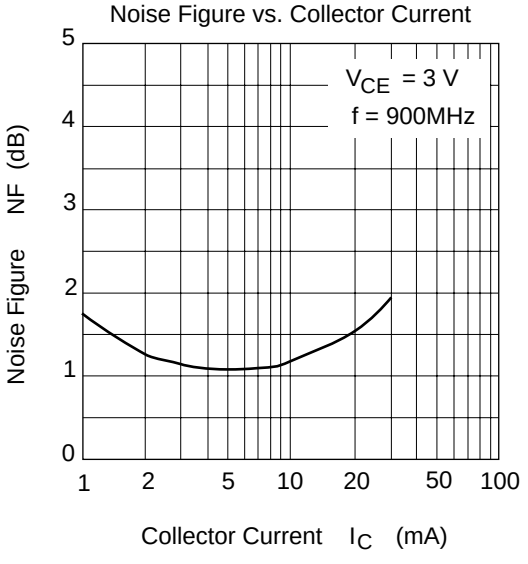
Gain Bandwidth Product vs. Collector Current



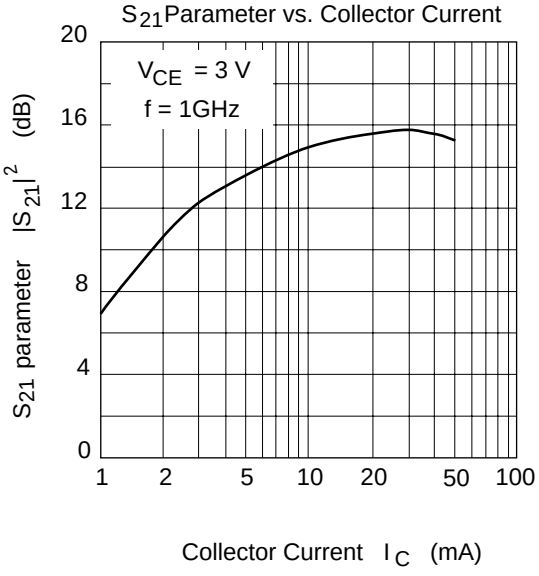
Power Gain vs. Collector Current



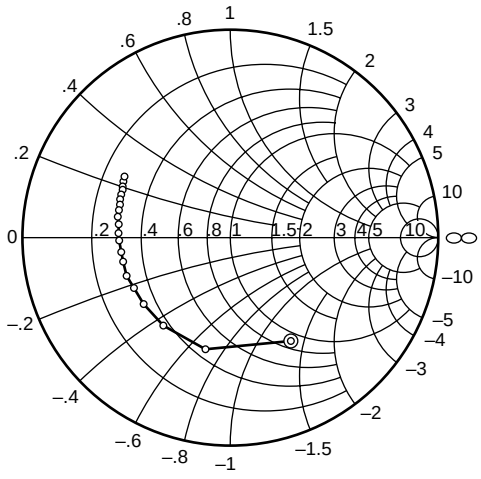
Noise Figure vs. Collector Current



S_{21} Parameter vs. Collector Current



S11 Parameter vs. Frequency

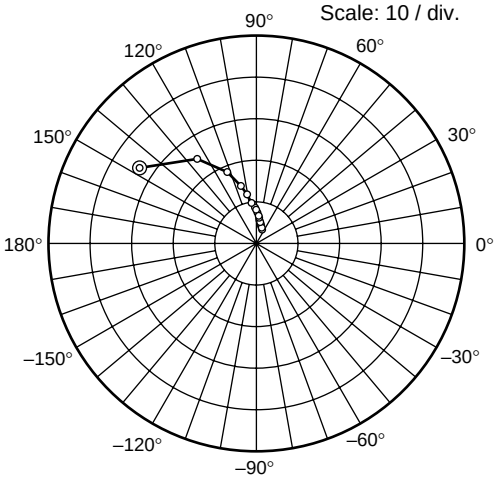


Condition : V_{CE} = 3 V , I_C = 20 mA

100 to 2000 MHz (100 MHz step)

S21 Parameter vs. Frequency

Scale: 10 / div.

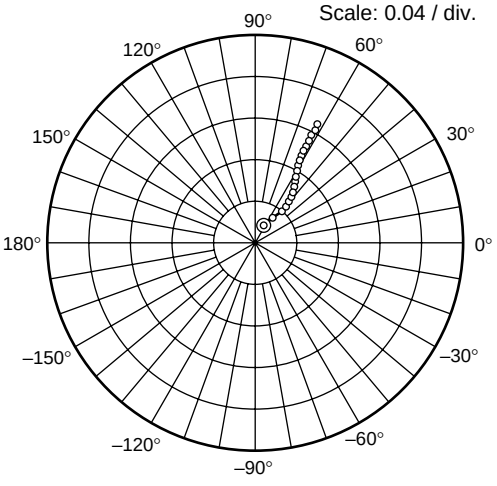


Condition : V_{CE} = 3 V , I_C = 20 mA

100 to 2000 MHz (100 MHz step)

S12 Parameter vs. Frequency

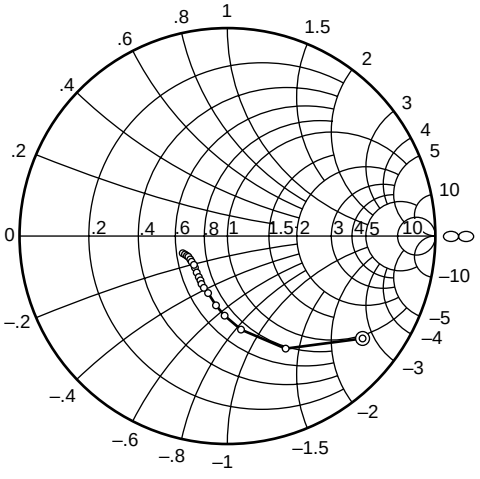
Scale: 0.04 / div.



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

100 to 2000 MHz (100 MHz step)

S22 Parameter vs. Frequency



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

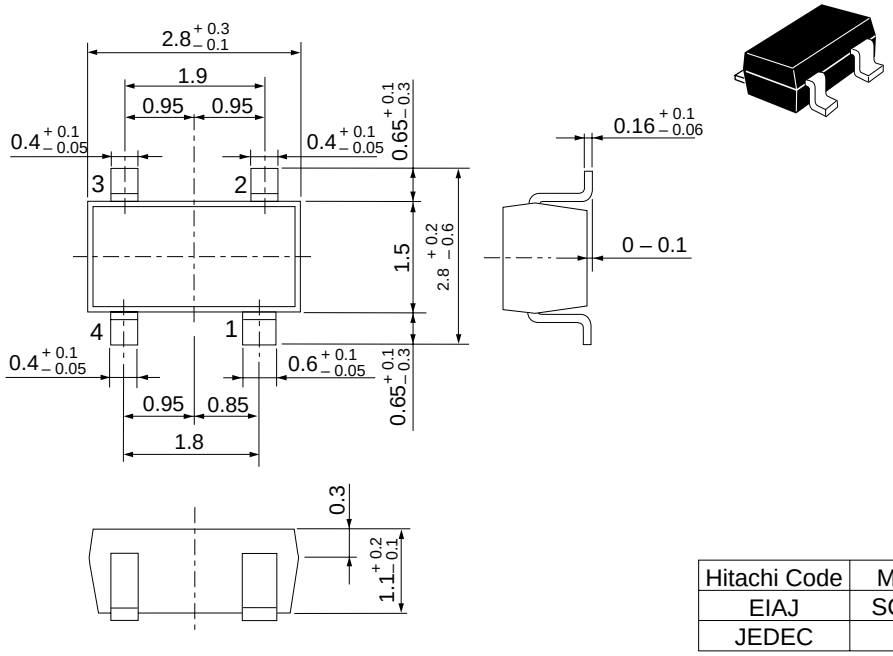
100 to 2000 MHz (100 MHz step)

Sparameter (V_{CE} = 3V, I_C = 20mA, Zo = 50Ω)

	S11		S21		S12		S22	
f (MHz)	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

Package Dimensions

Unit: mm



Hitachi Code	MPAK–4
EIAJ	SC–61AA
JEDEC	—

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