2SC5544

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

HITACHI

ADE-208-691 (Z)
1st. Edition
Nov. 1998

Features

- Super compact package;
  (1.4 × 0.8 × 0.59mm)
- Capable low voltage operation ;
  (V_{CE} = 1V)

Outline

MFPAK

1. Emitter
2. Base
3. Collector

Note: Marking is “YZ-”.

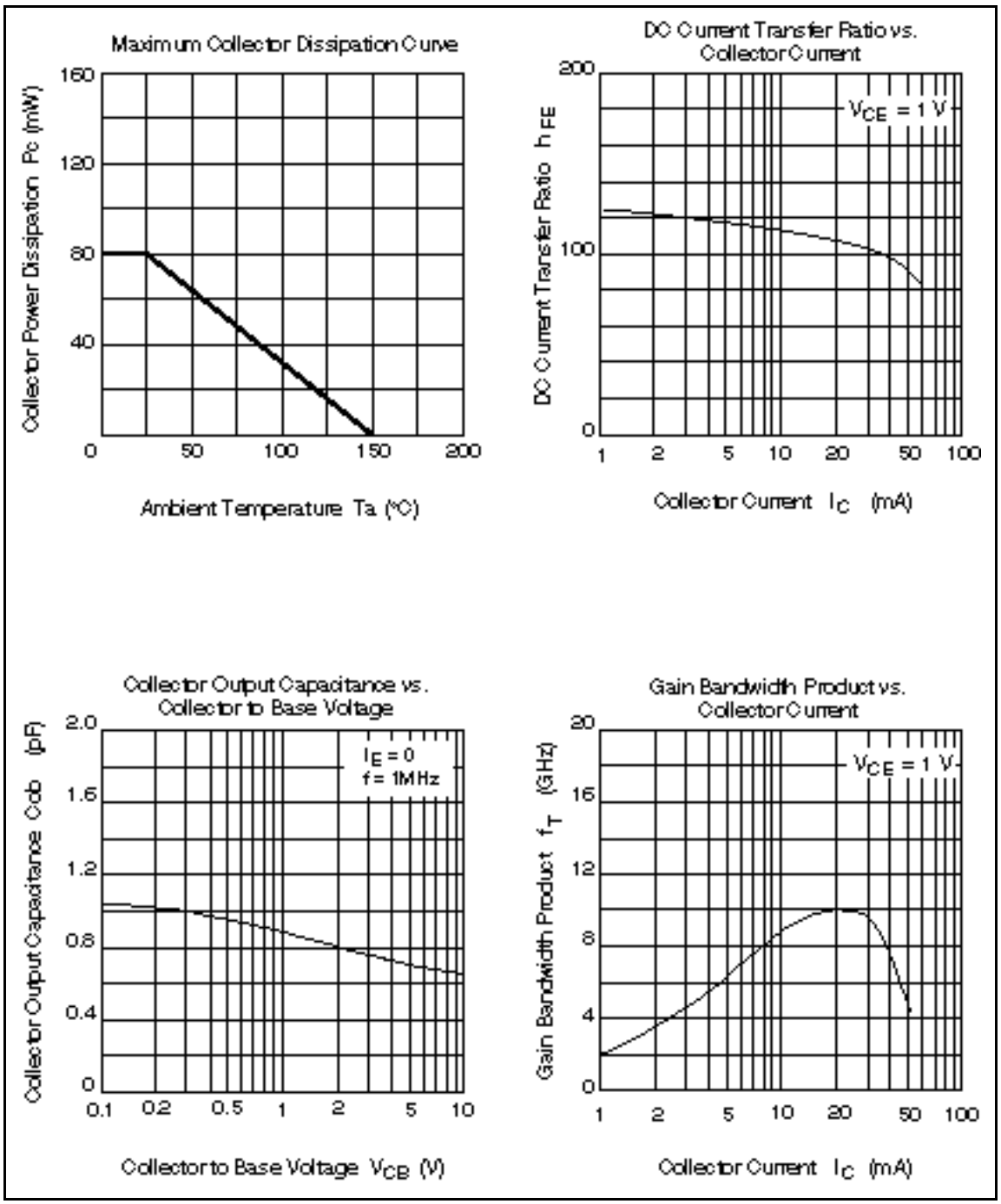
Hitachi semiconductor

Absolute Maximum Ratings (Ta = 25°C)

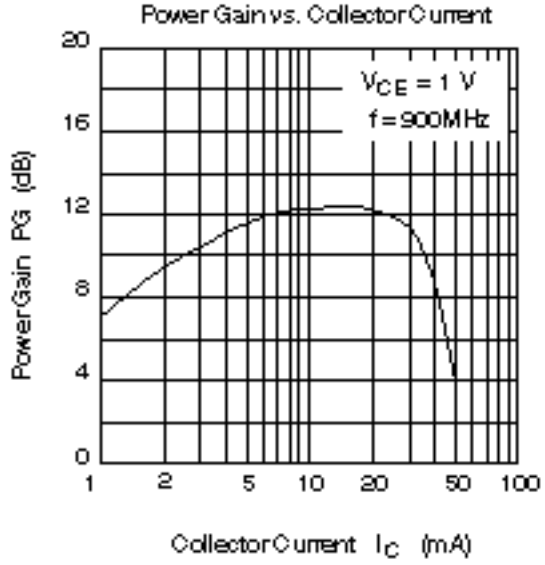
Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	8	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	50	mA
Collector power dissipation	Pc	80	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	–55 to +150	°C

Electrical Characteristics (Ta = 25°C)

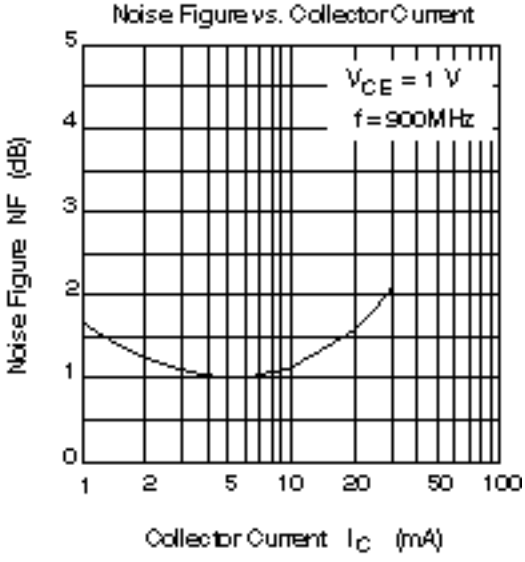
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	I_C = 10µA , I_E = 0
Collector cutoff current	I_{CBO}	—	—	1	µA	V_{CB} = 12V , I_E = 0
Collector cutoff current	I_{CEO}	—	—	1	mA	V_{CE} = 8V , R_{BE} = ∞
Emitter cutoff current	I_{EBO}	—	—	10	µA	V_{EB} = 1.5V , I_C = 0
DC current transfer ratio	h_{FE}	85	—	170	V	V_{CE} = 1V , I_C = 5mA
Collector output capacitance	Cob	—	0.88	1.4	pF	V_{CB} = 1V , I_E = 0 f = 1MHz
Gain bandwidth product	f_T	3	6	—	GHz	V_{CE} = 1V , I_C = 5mA
Power gain	PG	8	11.6	—	dB	V_{CE} = 1V, I_C = 5mA f = 900MHz
Noise figure	NF	—	1.0	2.0	dB	V_{CE} = 1V, I_C = 5mA f = 900MHz


Maximum Collector Dissipation Curve
Collector Power Dissipation Pc (mW)
160
120
80
40
0
50
100
150
200
Ambient Temperature Ta (°C)
DC Current Transfer Ratio vs.
Collector Current
DC Current Transfer Ratio hFE
200
100
0
VCE = 1 V
1
2
5
10
20
50
100
Collector Current IC (mA)
Collector Output Capacitance vs.
Collector to Base Voltage
Collector Output Capacitance Cob (pF)
2.0
1.6
1.2
0.8
0.4
0
IE = 0
f = 1MHz
0.1
0.2
0.5
1
2
5
10
Collector to Base Voltage VCB (V)
Gain Bandwidth Product vs.
Collector Current
Gain Bandwidth Product fT (GHz)
20
16
12
8
4
0
VCE = 1 V
1
2
5
10
20
50
100
Collector Current IC (mA)

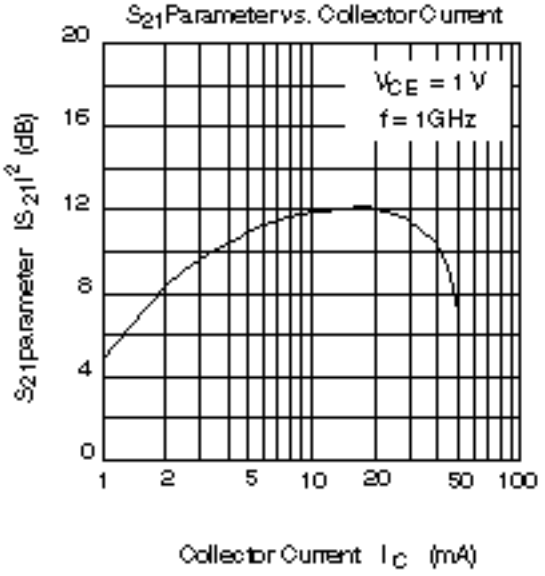
Power Gain vs. Collector Current



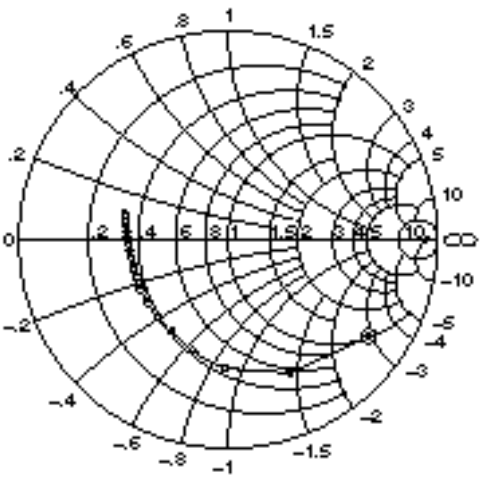
Noise Figure vs. Collector Current



S_{21} Parameter vs. Collector Current



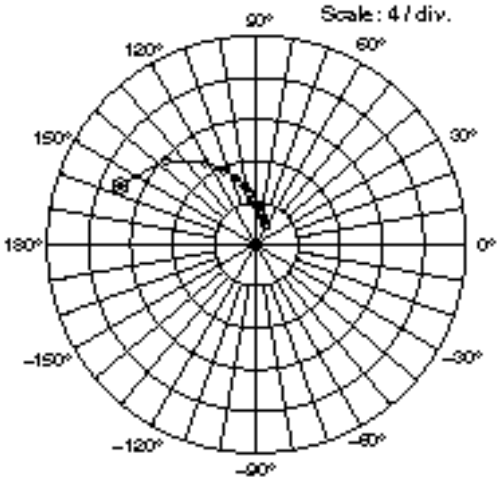
S11 Parametervs. Frequency



Condition : V_{CE} = 1 V , I_C = 5mA

100 to 2000MHz (100MHz step)

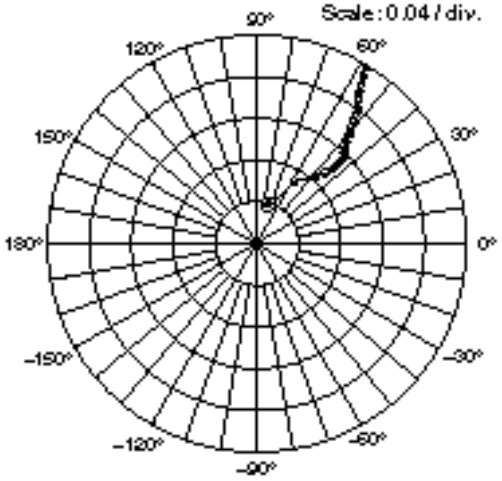
S21 Parametervs. Frequency



Condition : V_{CE} = 1 V , I_C = 5mA

100 to 2000 MHz (100 MHz step)

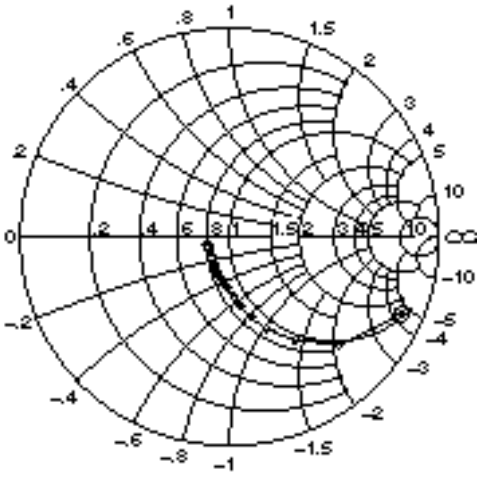
S12 Parametervs. Frequency



Condition : V_{CE} = 1 V , I_C = 5mA

100 to 2000MHz (100MHz step)

S22 Parametervs. Frequency



Condition : V_{CE} = 1 V , I_C = 5mA

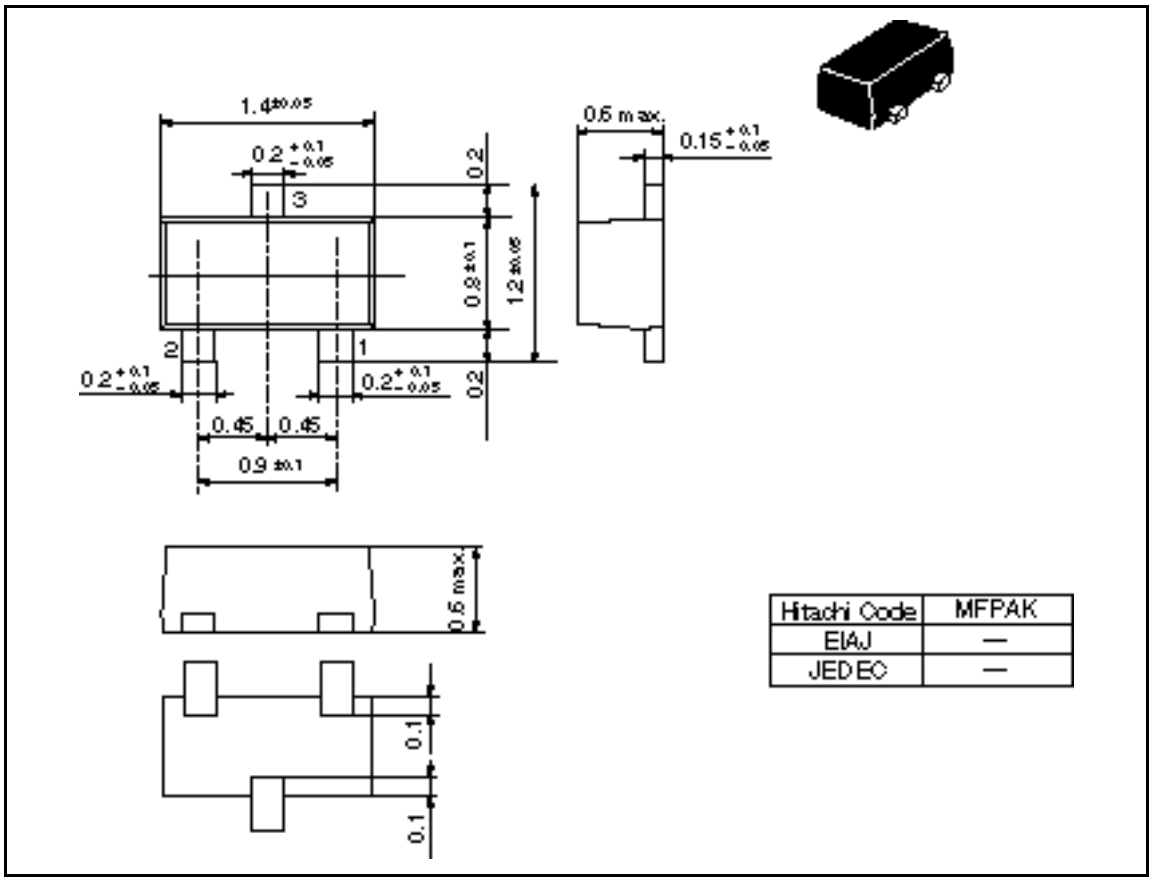
100 to 2000 MHz (100 MHz step)

Sparameter (V_{CE} = 1V, I_C = 5mA, Zo = 50Ω)

	S11		S21		S12		S22	
f (MHz)	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.806	–34.7	14.09	156.3	0.0395	71.3	0.905	–24.2
200	0.706	–66.0	11.64	136.7	0.0691	57.5	0.739	–44.3
300	0.617	–90.3	9.35	122.8	0.0860	49.4	0.586	–58.1
400	0.562	–108.0	7.66	113.8	0.0965	45.8	0.474	–67.6
500	0.527	–121.9	6.40	106.7	0.104	44.3	0.392	–74.9
600	0.500	–133.0	5.47	101.7	0.110	43.9	0.331	–81.1
700	0.487	–142.3	4.78	97.0	0.115	44.5	0.284	–86.2
800	0.480	–149.3	4.24	93.7	0.121	45.4	0.247	–91.2
900	0.481	–155.4	3.81	90.5	0.127	46.3	0.217	–96.2
1000	0.472	–161.4	3.46	87.8	0.132	47.7	0.193	–100.8
1100	0.473	–166.6	3.18	85.1	0.138	48.9	0.174	–106.2
1200	0.475	–170.5	2.94	82.8	0.144	50.3	0.157	–111.2
1300	0.478	–174.4	2.73	80.6	0.150	51.7	0.145	–115.7
1400	0.482	–178.1	2.56	78.6	0.157	52.8	0.135	–122.6
1500	0.488	178.4	2.41	76.6	0.163	53.7	0.125	–128.1
1600	0.494	175.9	2.28	74.9	0.171	55.0	0.119	–134.2
1700	0.503	172.5	2.16	73.2	0.177	55.9	0.116	–140.3
1800	0.509	169.9	2.06	71.4	0.185	56.9	0.114	–147.1
1900	0.515	167.7	1.97	69.8	0.191	57.5	0.114	–153.3
2000	0.520	165.8	1.89	68.4	0.199	58.3	0.115	–159.4

Package Dimensions

Unit: mm



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