

# 2SC5544

Silicon NPN Epitaxial  
VHF / UHF wide band amplifier

# HITACHI

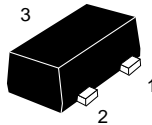
ADE-208-691 (Z)  
1st. Edition  
Nov. 1998

## 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-".

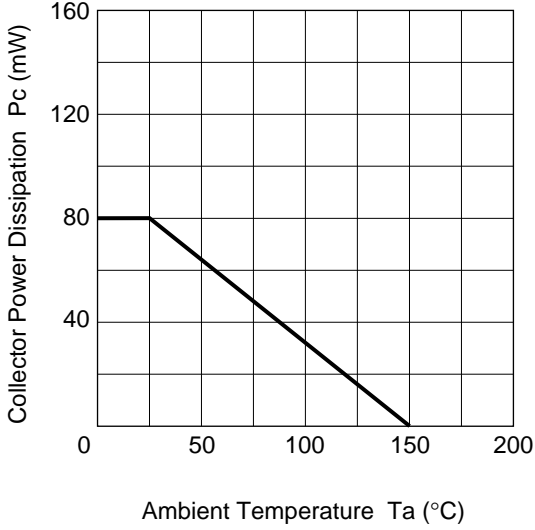
**Absolute Maximum Ratings** (Ta = 25°C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V <sub>CBO</sub>	15	V
Collector to emitter voltage	V <sub>CEO</sub>	8	V
Emitter to base voltage	V <sub>EBO</sub>	1.5	V
Collector current	I <sub>C</sub>	50	mA
Collector power dissipation	P <sub>c</sub>	80	mW
Junction temperature	T <sub>j</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to +150	°C

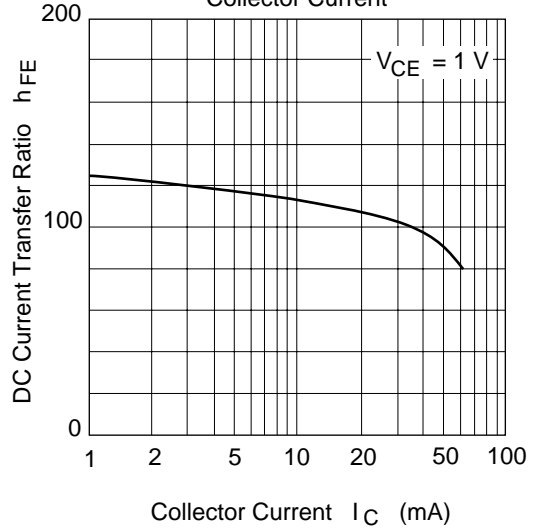
**Electrical Characteristics** (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector to base breakdown voltage	V <sub>(BR)CBO</sub>	15	—	—	V	I <sub>C</sub> = 10μA, I <sub>E</sub> = 0
Collector cutoff current	I <sub>CBO</sub>	—	—	1	μA	V <sub>CB</sub> = 12V, I <sub>E</sub> = 0
Collector cutoff current	I <sub>CEO</sub>	—	—	1	mA	V <sub>CE</sub> = 8V, R <sub>BE</sub> = ∞
Emitter cutoff current	I <sub>EBO</sub>	—	—	10	μA	V <sub>EB</sub> = 1.5V, I <sub>C</sub> = 0
DC current transfer ratio	h <sub>FE</sub>	85	—	170	V	V <sub>CE</sub> = 1V, I <sub>C</sub> = 5mA
Collector output capacitance	C <sub>ob</sub>	—	0.88	1.4	pF	V <sub>CB</sub> = 1V, I <sub>E</sub> = 0 f = 1MHz
Gain bandwidth product	f <sub>T</sub>	3	6	—	GHz	V <sub>CE</sub> = 1V, I <sub>C</sub> = 5mA
Power gain	PG	8	11.6	—	dB	V <sub>CE</sub> = 1V, I <sub>C</sub> = 5mA f = 900MHz
Noise figure	NF	—	1.0	2.0	dB	V <sub>CE</sub> = 1V, I <sub>C</sub> = 5mA f = 900MHz

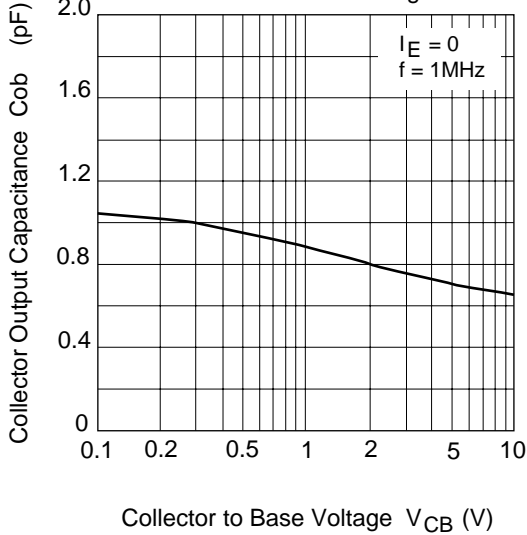
Maximum Collector Dissipation Curve



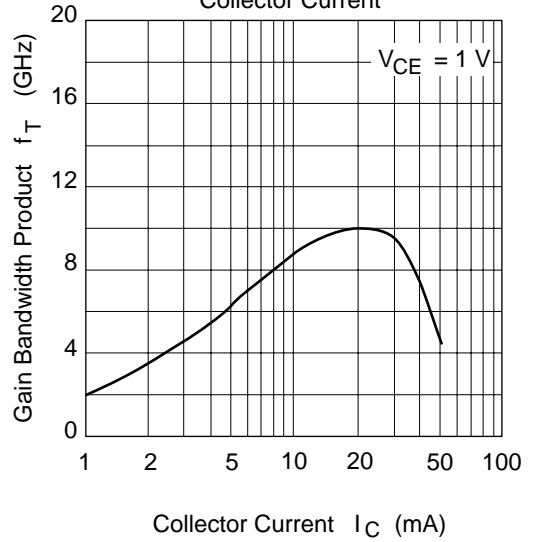
DC Current Transfer Ratio vs. Collector Current

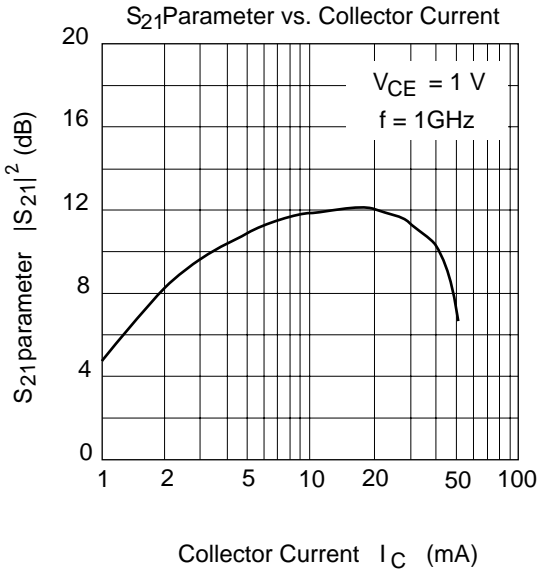
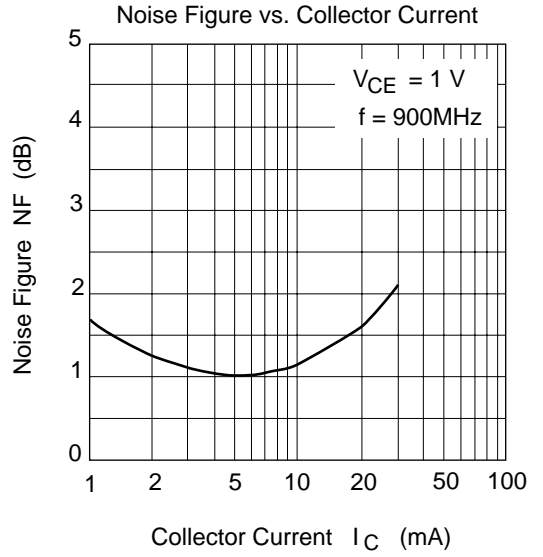
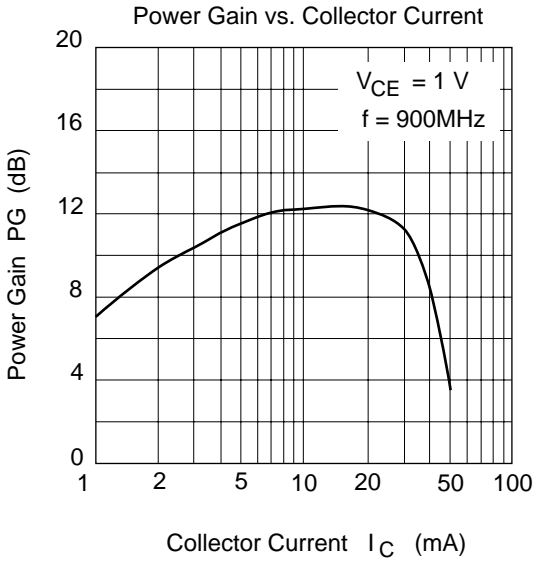


Collector Output Capacitance vs. Collector to Base Voltage

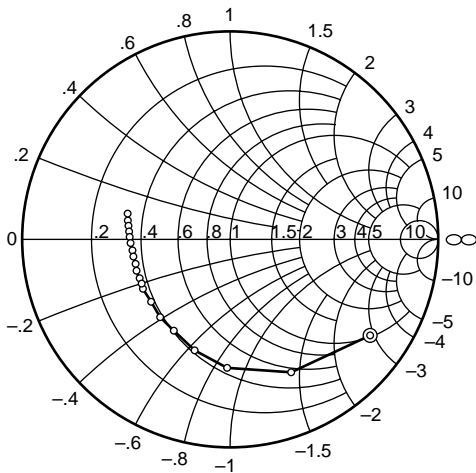


Gain Bandwidth Product vs. Collector Current





S11 Parameter vs. Frequency

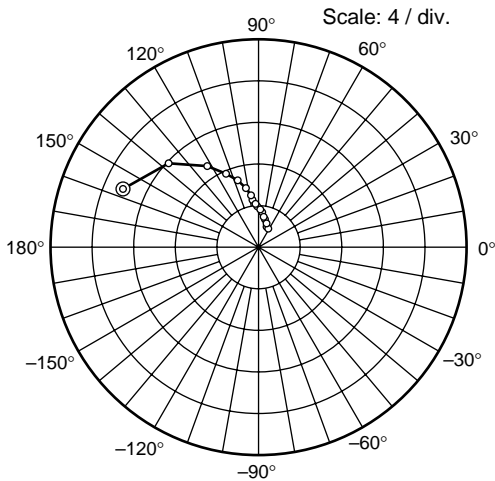


Condition :  $V_{CE} = 1 V, I_C = 5mA$

100 to 2000 MHz (100 MHz step)

⊙—○

S21 Parameter vs. Frequency

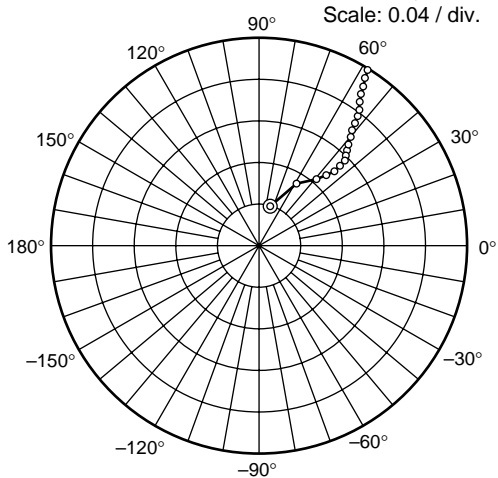


Condition :  $V_{CE} = 1 V, I_C = 5mA$

100 to 2000 MHz (100 MHz step)

⊙—○

S12 Parameter vs. Frequency

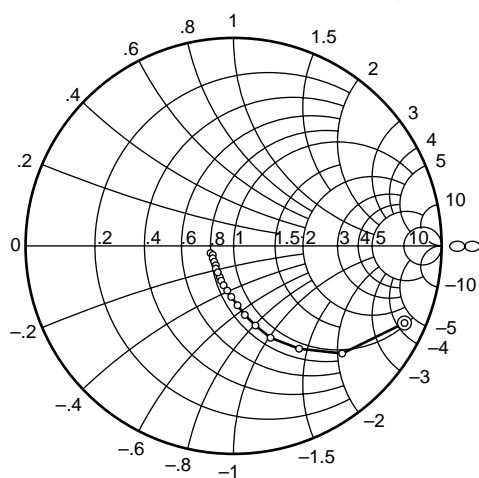


Condition :  $V_{CE} = 1 V, I_C = 5mA$

100 to 2000 MHz (100 MHz step)

⊙—○

S22 Parameter vs. Frequency



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

100 to 2000 MHz (100 MHz step)

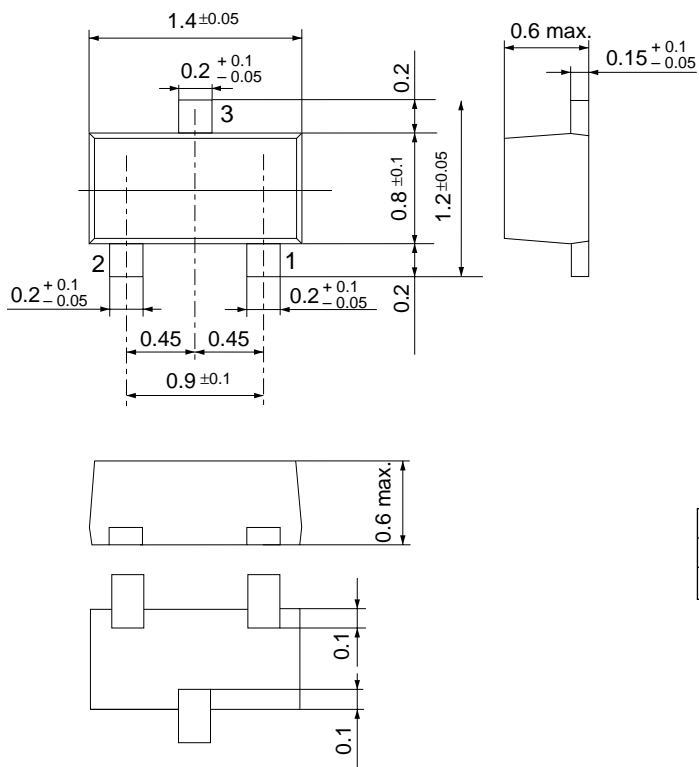
⊙—○

**Sparameter** ( $V_{CE} = 1V$ ,  $I_C = 5mA$ ,  $Z_o = 50\Omega$ )

f (MHz)	S11		S21		S12		S22	
	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



Hitachi Code	MFPK
EIAJ	—
JEDEC	—

## Cautions

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