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# 2SC5554

Silicon NPN Epitaxial  
VHF / UHF wide band amplifier

# HITACHI

ADE-208-692 (Z)  
1st. Edition  
Oct. 1998

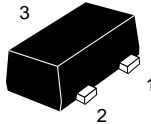
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## Features

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

## Outline

MFPAK



1. Emitter
2. Base
3. Collector

Note: Marking is "YH-".

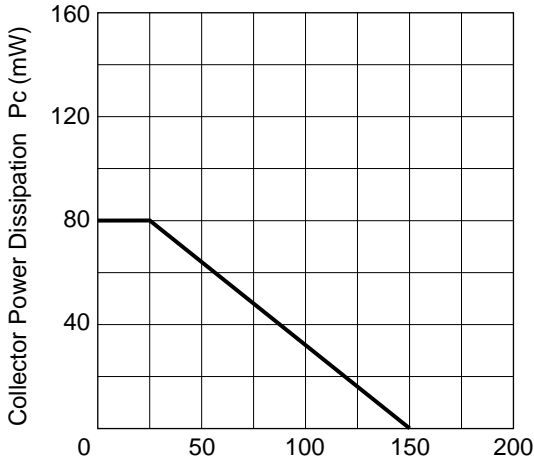
**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	15	V
Collector to emitter voltage	$V_{\text{CEO}}$	9	V
Emitter to base voltage	$V_{\text{EBO}}$	1.5	V
Collector current	$I_{\text{C}}$	20	mA
Collector power dissipation	$P_{\text{C}}$	80	mW
Junction temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage temperature	$T_{\text{stg}}$	-55 to +150	$^\circ\text{C}$

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

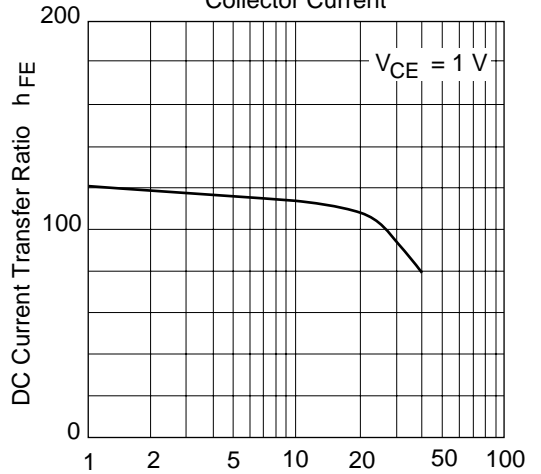
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector cutoff current	$I_{\text{CBO}}$	—	—	10	$\mu\text{A}$	$V_{\text{CB}} = 15\text{V}$ , $I_{\text{E}} = 0$
Collector cutoff current	$I_{\text{CEO}}$	—	—	1	mA	$V_{\text{CE}} = 9\text{V}$ , $R_{\text{BE}} = \infty$
Emitter cutoff current	$I_{\text{EBO}}$	—	—	10	$\mu\text{A}$	$V_{\text{EB}} = 1.5\text{V}$ , $I_{\text{C}} = 0$
DC current transfer ratio	$h_{\text{FE}}$	50	120	250	V	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$
Collector output capacitance	$C_{\text{ob}}$	—	0.6	0.9	pF	$V_{\text{CB}} = 1\text{V}$ , $I_{\text{E}} = 0$ $f = 1\text{MHz}$
Gain bandwidth product	$f_{\text{T}}$	3.5	7	—	GHz	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$
Power gain	PG	9	12	—	dB	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$ $f = 900\text{MHz}$
Noise figure	NF	—	1.4	3	dB	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$ $f = 900\text{MHz}$

Maximum Collector Dissipation Curve



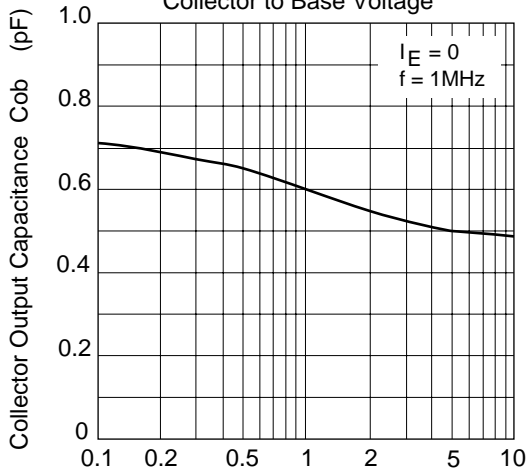
Ambient Temperature Ta (°C)

DC Current Transfer Ratio vs. Collector Current



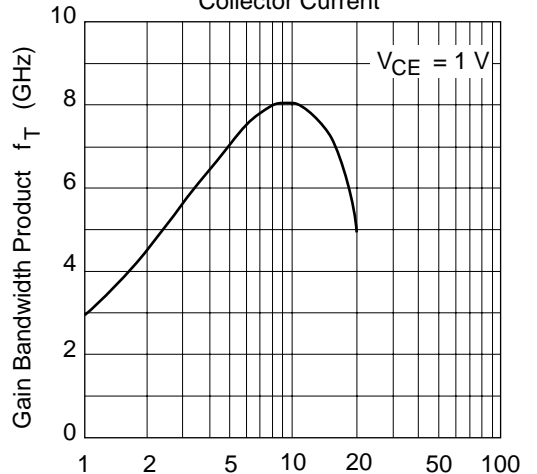
Collector Current IC (mA)

Collector Output Capacitance vs. Collector to Base Voltage

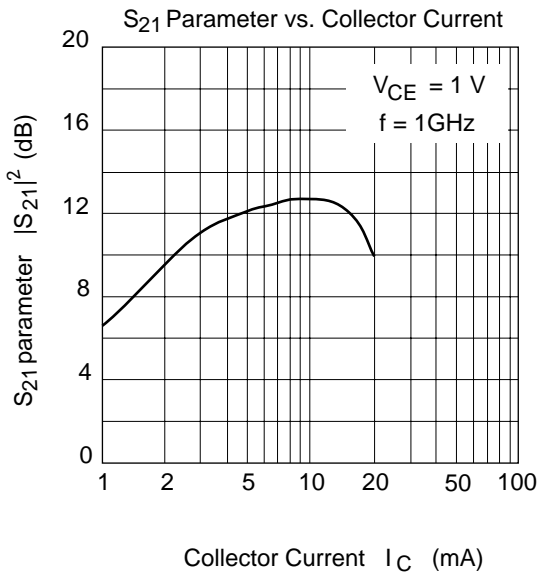
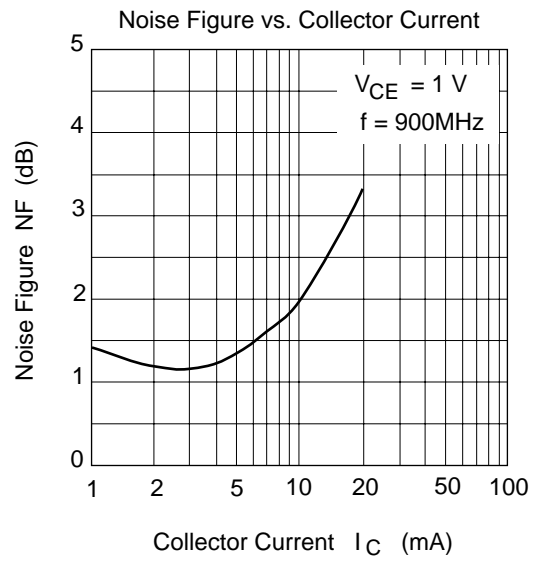
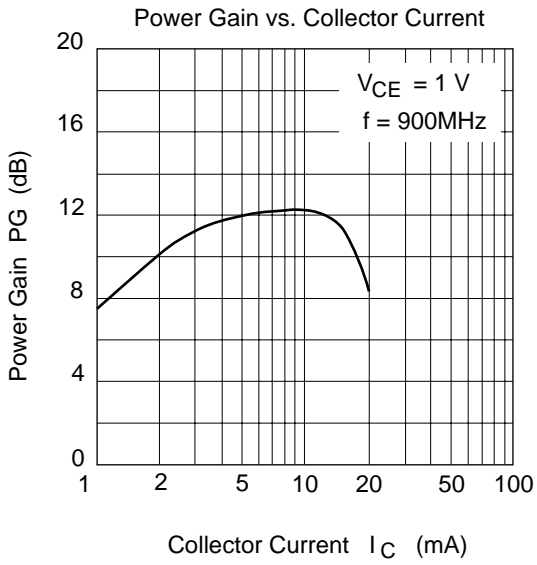


Collector to Base Voltage VCB (V)

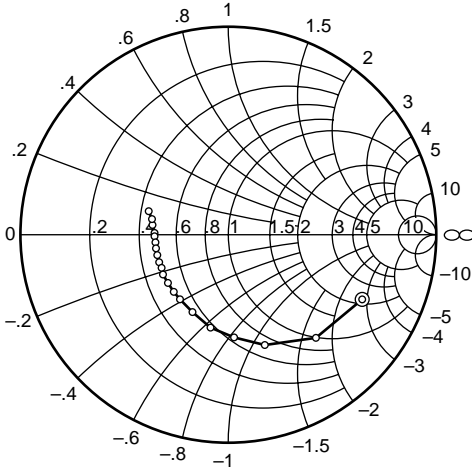
Gain Bandwidth Product vs. Collector Current



Collector Current IC (mA)



S11 Parameter vs. Frequency

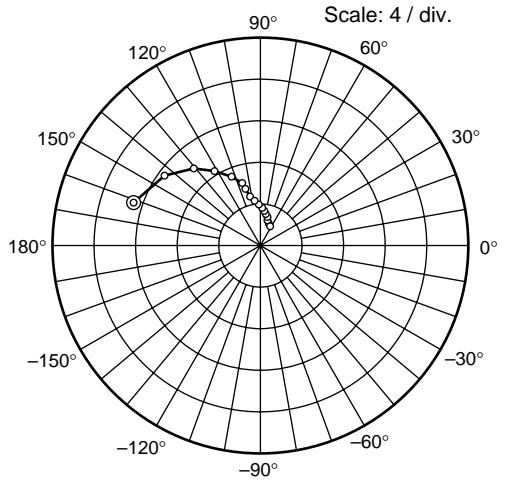


Condition :  $V_{CE} = 1\text{ V}$  ,  $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S21 Parameter vs. Frequency

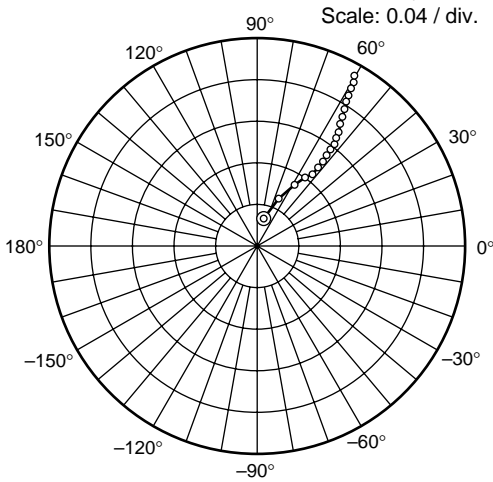


Condition :  $V_{CE} = 1\text{ V}$  ,  $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S12 Parameter vs. Frequency

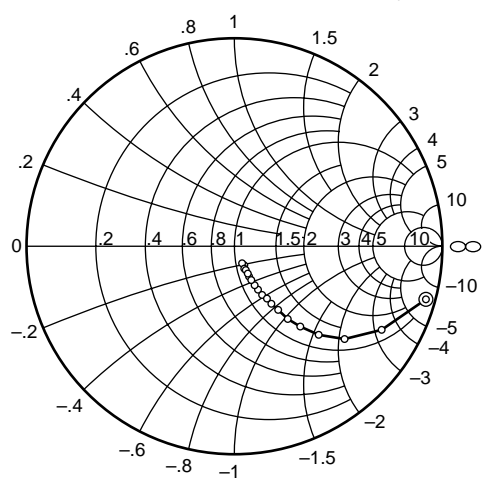


Condition :  $V_{CE} = 1\text{ V}$  ,  $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S22 Parameter vs. Frequency



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

100 to 2000 MHz (100 MHz step)

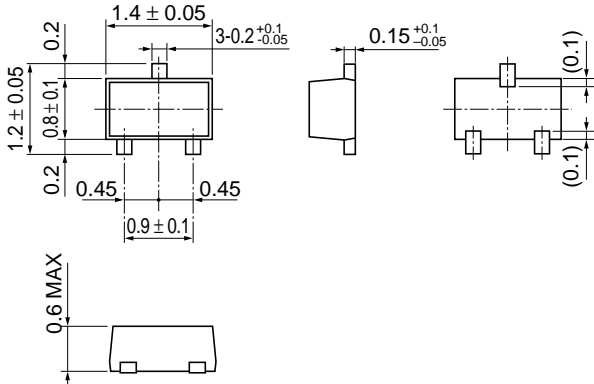
⊙—○

**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	0.715	-25.4	13.06	161.3	0.0279	76.6	0.947	-16.1
200	0.647	-50.1	11.47	144.2	0.0517	65.6	0.828	-30.2
300	0.559	-71.5	9.74	131.0	0.0681	58.4	0.697	-40.4
400	0.501	-88.2	8.28	121.3	0.0798	54.6	0.587	-47.0
500	0.453	-102.5	7.08	113.7	0.0882	52.4	0.501	-51.3
600	0.416	-114.8	6.16	108.1	0.0955	51.8	0.433	-54.3
700	0.393	-125.4	5.43	103.1	0.102	51.7	0.378	-56.2
800	0.378	-134.4	4.84	99.3	0.109	52.1	0.333	-57.3
900	0.369	-142.8	4.37	95.7	0.115	52.7	0.295	-58.0
1000	0.357	-149.5	3.99	92.5	0.122	53.5	0.266	-58.4
1100	0.361	-156.6	3.66	89.7	0.128	54.2	0.240	-58.6
1200	0.358	-162.2	3.38	87.2	0.135	55.1	0.217	-58.5
1300	0.358	-167.5	3.15	84.9	0.141	56.0	0.199	-58.0
1400	0.362	-172.5	2.96	82.7	0.148	56.9	0.180	-58.0
1500	0.362	-177.3	2.78	80.9	0.155	57.2	0.166	-57.2
1600	0.369	178.8	2.64	78.6	0.163	58.1	0.151	-56.9
1700	0.373	174.7	2.50	77.2	0.169	58.8	0.137	-56.6
1800	0.377	171.1	2.38	75.1	0.177	59.2	0.126	-56.4
1900	0.388	168.3	2.28	73.3	0.183	59.6	0.113	-56.2
2000	0.395	165.3	2.18	71.8	0.191	60.1	0.102	-55.7

Package Dimensions

As of January, 2001  
Unit: mm



Hitachi Code	MFPAK
JEDEC	—
EIAJ	—
Mass (reference value)	0.0016 g

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