

# 2SC5555

Silicon NPN Epitaxial  
VHF / UHF wide band amplifier

# HITACHI

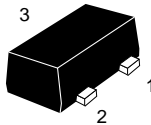
ADE-208-693 (Z)  
1st. Edition  
Nov. 1998

## 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 "ZD-".

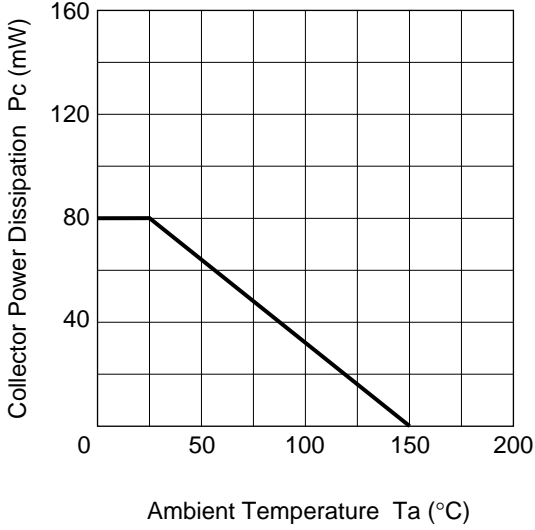
**Absolute Maximum Ratings** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to base voltage	$V_{\text{CBO}}$	15	V
Collector to emitter voltage	$V_{\text{CEO}}$	8	V
Emitter to base voltage	$V_{\text{EBO}}$	1.5	V
Collector current	$I_{\text{C}}$	50	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	$^\circ\text{C}$

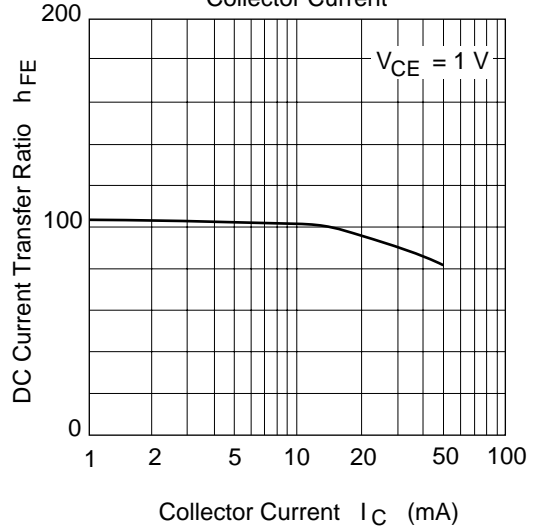
**Electrical Characteristics** ( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector 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	$I_{\text{CBO}}$	—	—	1	$\mu\text{A}$	$V_{\text{CB}} = 12\text{V}$ , $I_{\text{E}} = 0$
Collector cutoff current	$I_{\text{CEO}}$	—	—	1	mA	$V_{\text{CE}} = 8\text{V}$ , $R_{\text{BE}} = \text{---}$
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	100	160	V	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$
Collector output capacitance	$C_{\text{ob}}$	—	0.55	0.85	pF	$V_{\text{CB}} = 1\text{V}$ , $I_{\text{E}} = 0$ $f = 1\text{MHz}$
Gain bandwidth product	$f_{\text{T}}$	6	9	—	GHz	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$
Power gain	PG	11	14	—	dB	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$ $f = 900\text{MHz}$
Noise figure	NF	—	1.1	2.0	dB	$V_{\text{CE}} = 1\text{V}$ , $I_{\text{C}} = 5\text{mA}$ $f = 900\text{MHz}$

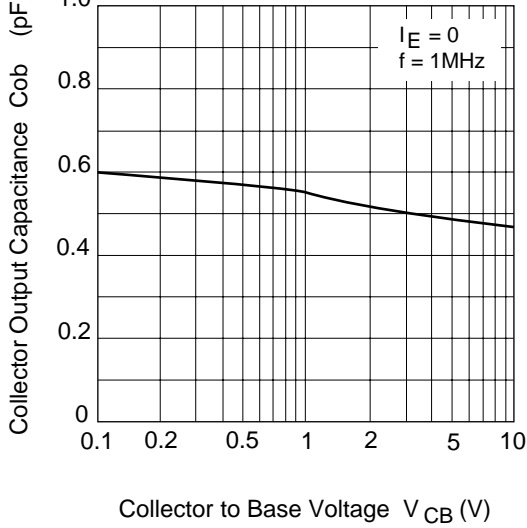
Maximum Collector Dissipation Curve



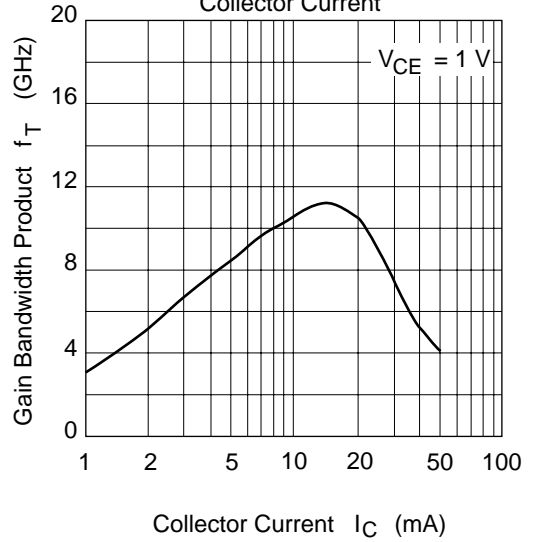
DC Current Transfer Ratio vs. Collector Current

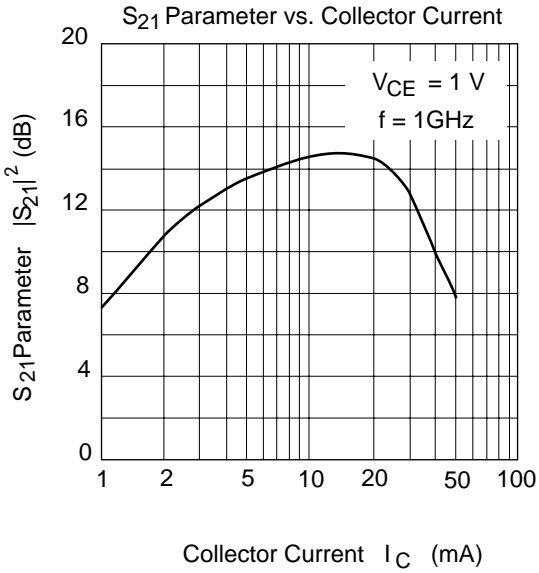
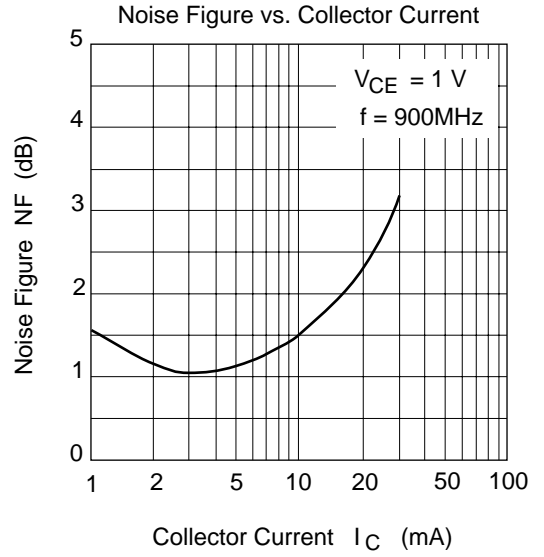
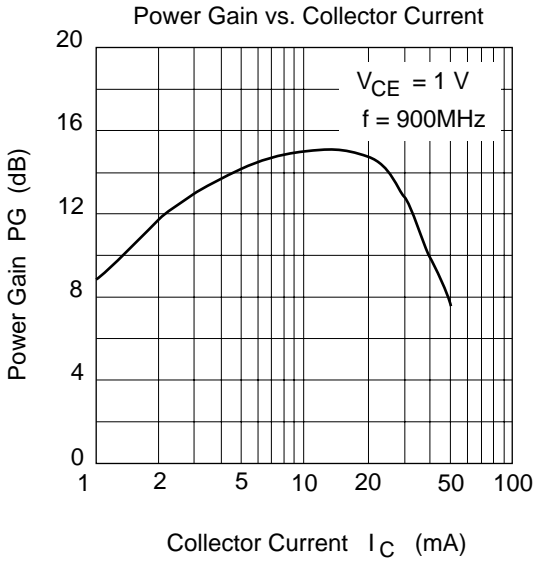


Collector Output Capacitance vs. Collector to Base Voltage

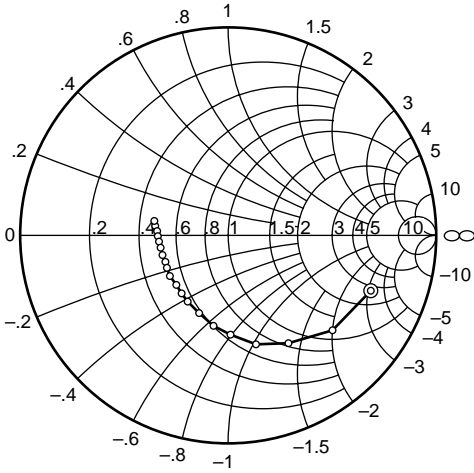


Gain Bandwidth Product vs. Collector Current





S11 Parameter vs. Frequency

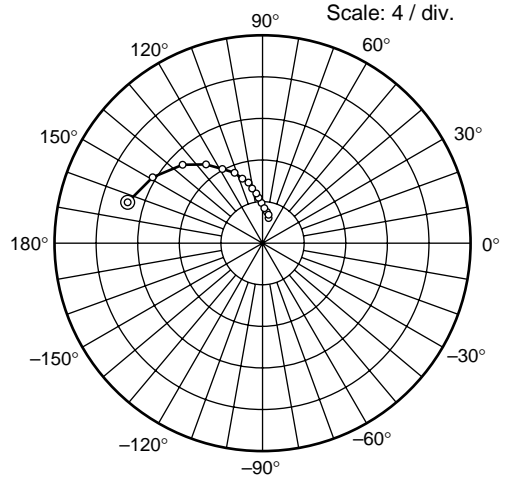


Condition :  $V_{CE} = 1 V, I_C = 5mA$

100 to 2000 MHz (100 MHz step)

⊙—○

S21 Parameter vs. Frequency

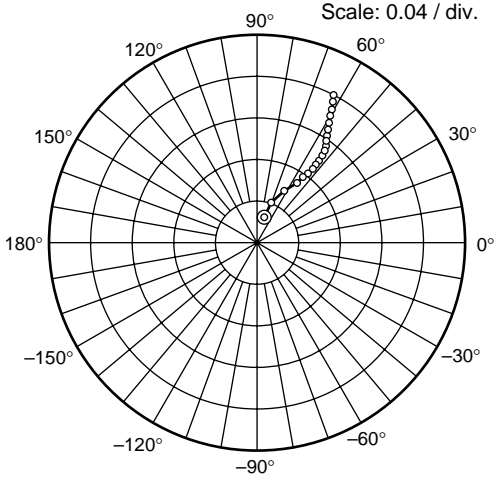


Condition :  $V_{CE} = 1 V, I_C = 5mA$

100 to 2000 MHz (100 MHz step)

⊙—○

S12 Parameter vs. Frequency

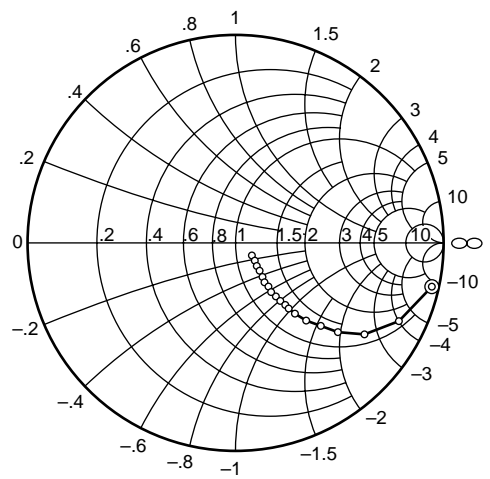


Condition :  $V_{CE} = 1 V, I_C = 5mA$

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)

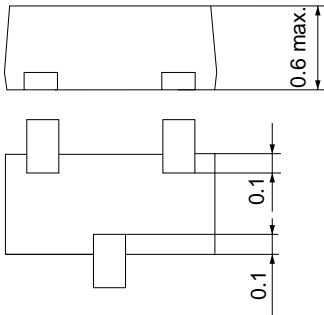
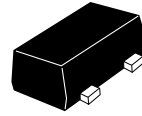
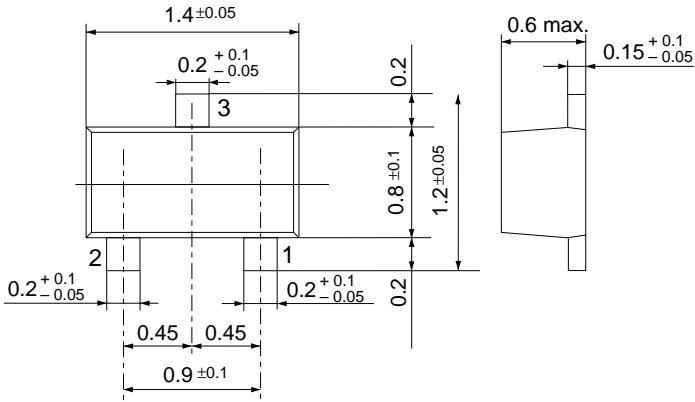
⊙—○

**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	0.734	-21.4	13.62	163.7	0.0220	78.7	0.956	-13.4
200	0.676	-41.9	12.34	148.7	0.0421	69.3	0.865	-25.5
300	0.598	-59.8	10.79	136.0	0.0572	61.9	0.753	-34.7
400	0.530	-75.6	9.38	126.5	0.0678	57.2	0.652	-41.0
500	0.471	-88.8	8.18	118.9	0.0756	55.0	0.568	-45.4
600	0.429	-100.8	7.19	112.9	0.0821	53.9	0.498	-48.3
700	0.395	-110.8	6.40	107.8	0.0881	53.4	0.442	-50.2
800	0.370	-120.6	5.74	103.5	0.0940	53.4	0.395	-51.7
900	0.349	-130.0	5.20	100.1	0.0990	54.0	0.355	-52.3
1000	0.336	-136.4	4.74	96.9	0.104	54.6	0.323	-52.7
1100	0.332	-144.1	4.39	93.9	0.109	55.5	0.294	-52.9
1200	0.327	-151.6	4.05	91.4	0.115	56.4	0.270	-52.8
1300	0.322	-157.0	3.77	89.1	0.120	57.4	0.250	-52.2
1400	0.325	-162.9	3.54	86.9	0.125	58.0	0.230	-52.6
1500	0.322	-168.0	3.32	84.9	0.130	58.8	0.215	-52.0
1600	0.331	-172.6	3.14	82.7	0.138	59.8	0.200	-51.5
1700	0.338	-177.0	2.97	80.9	0.143	60.3	0.185	-51.5
1800	0.337	179.0	2.84	79.4	0.149	61.5	0.171	-51.2
1900	0.341	175.4	2.71	77.9	0.154	61.7	0.158	-51.1
2000	0.358	170.8	2.59	76.0	0.161	62.4	0.147	-50.9

Package Dimensions

Unit: mm



Hitachi Code	MFPK
EIAJ	—
JEDEC	—

## Cautions

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