
2SC5543

Silicon NPN Epitaxial
VHF / UHF wide band amplifier

HITACHI

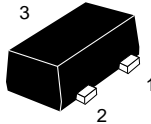
ADE-208-690 (Z)
1st. Edition
Oct. 1998

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 "YA-".

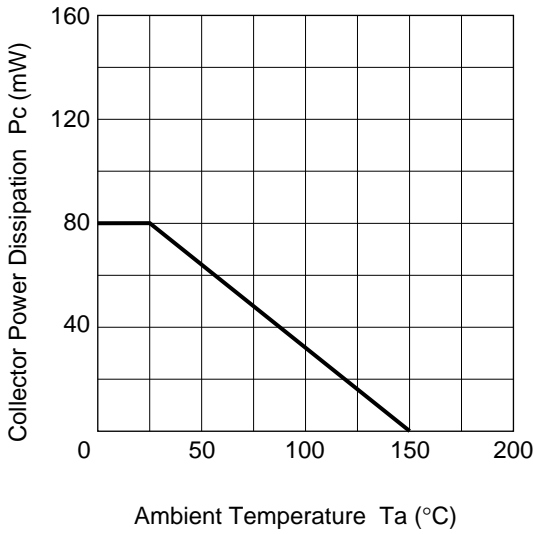
Absolute Maximum Ratings (Ta = 25°C)

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	20	mA
Collector power dissipation	Pc	80	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

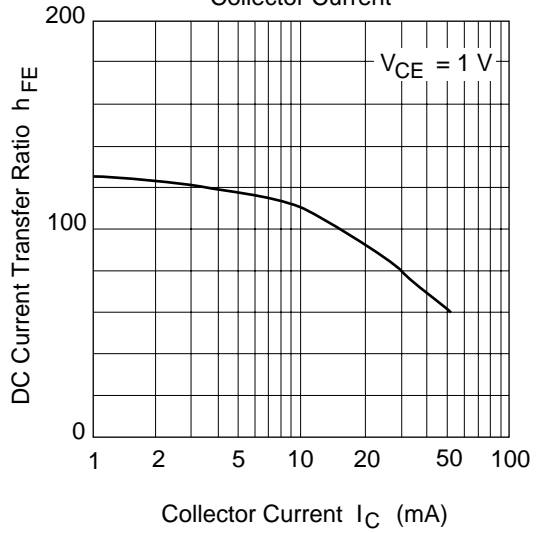
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Collector cutoff current	I_{CBO}	—	—	10	μA	$V_{CB} = 15V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	1	mA	$V_{CE} = 8V, R_{BE} = \infty$
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	—	0.51	0.9	pF	$V_{CB} = 1V, I_E = 0$ f = 1MHz
Gain bandwidth product	f_T	5.5	8.5	—	GHz	$V_{CE} = 1V, I_C = 5mA$
Power gain	PG	11	13.7	—	dB	$V_{CE} = 1V, I_C = 5mA$ f = 900MHz
Noise figure	NF	—	1.1	2.5	dB	$V_{CE} = 1V, I_C = 5mA$ f = 900MHz

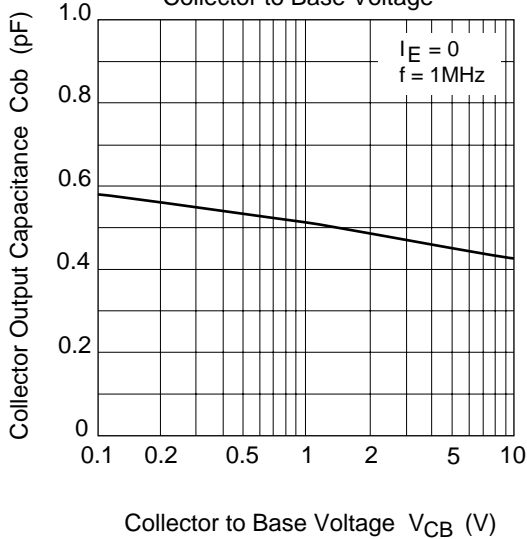
Maximum Collector Dissipation Curve



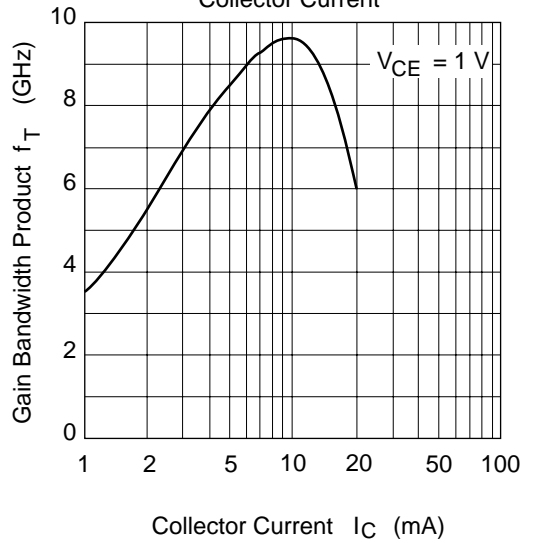
DC Current Transfer Ratio vs. Collector Current

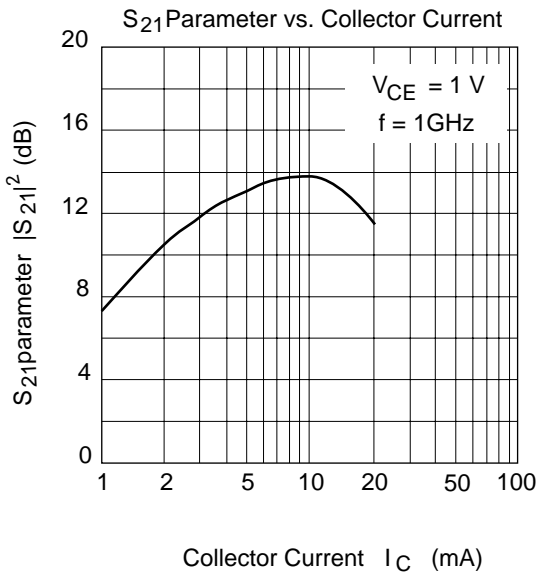
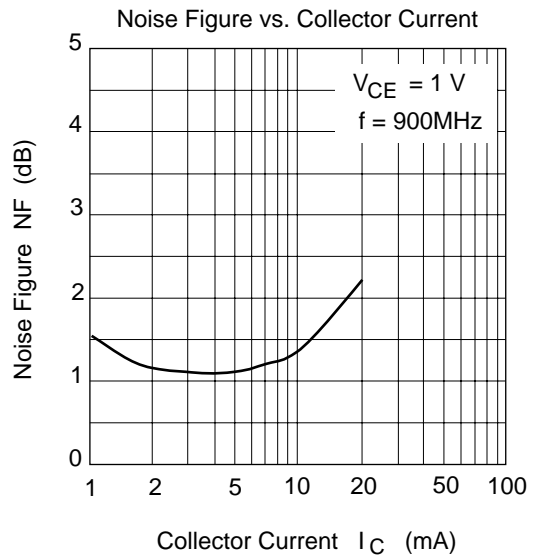
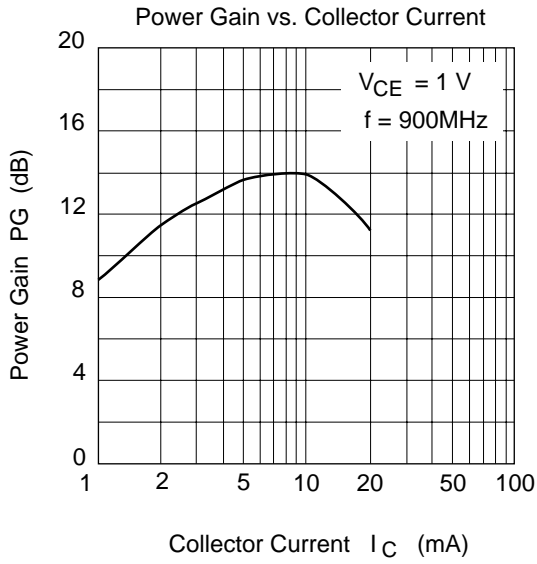


Collector Output Capacitance vs. Collector to Base Voltage

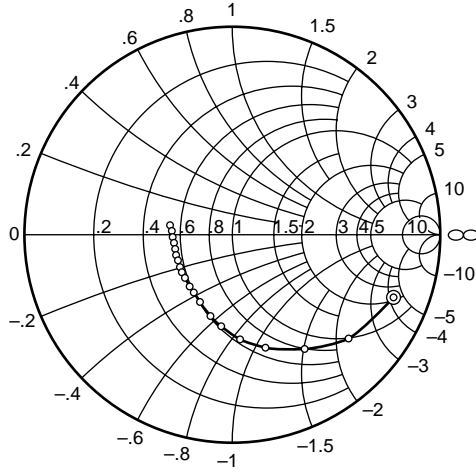


Gain Bandwidth Product vs. Collector Current





S11 Parameter vs. Frequency

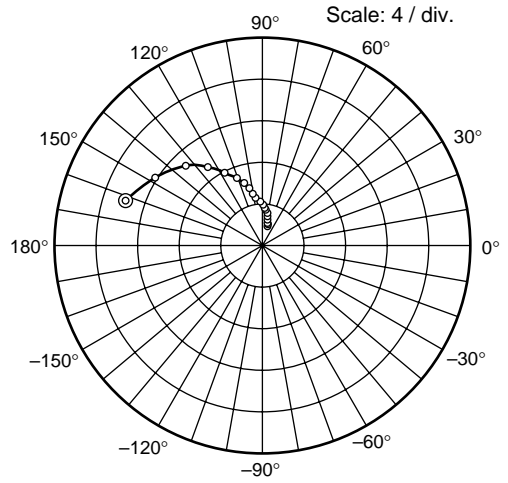


Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S21 Parameter vs. Frequency

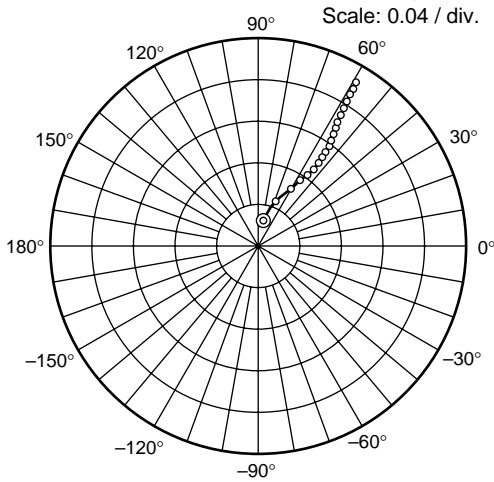


Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

100 to 2000 MHz (100 MHz step)

⊙—○

S12 Parameter vs. Frequency

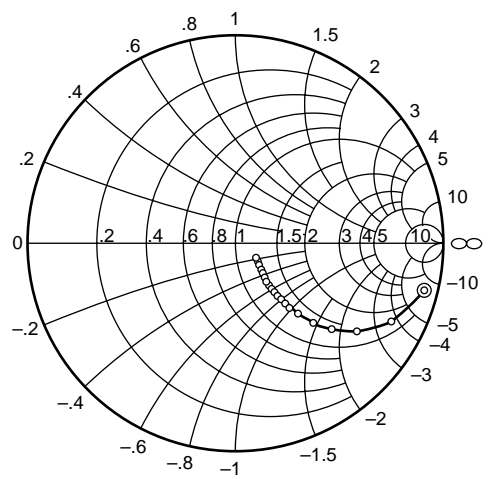


Condition : $V_{CE} = 1\text{ V}$, $I_C = 5\text{ mA}$

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)

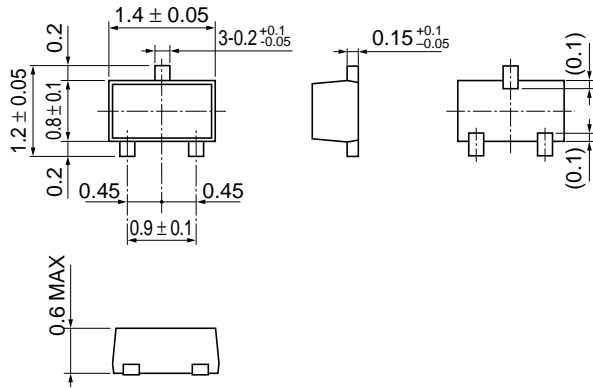
⊙—○

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	0.836	-20.7	13.66	162.9	0.0249	77.4	0.948	-14.2
200	0.757	-41.1	12.22	146.9	0.0472	68.0	0.846	-26.9
300	0.649	-58.5	10.57	134.1	0.0637	60.8	0.727	-36.2
400	0.564	-73.2	9.14	124.5	0.0750	56.9	0.623	-42.5
500	0.496	-85.2	7.90	116.8	0.0840	54.2	0.538	-46.2
600	0.436	-97.1	6.91	111.2	0.0916	53.4	0.469	-48.8
700	0.396	-106.2	6.12	105.9	0.0985	53.0	0.413	-50.4
800	0.364	-114.9	5.49	102.0	0.105	53.2	0.368	-51.1
900	0.338	-123.9	4.96	98.3	0.111	53.6	0.327	-51.1
1000	0.316	-130.6	4.52	95.3	0.118	54.1	0.297	-51.2
1100	0.305	-140.0	4.16	92.3	0.124	54.7	0.270	-50.7
1200	0.296	-146.5	3.86	89.8	0.130	55.3	0.246	-49.7
1300	0.293	-153.0	3.59	87.5	0.137	56.1	0.229	-48.7
1400	0.286	-159.5	3.36	85.4	0.143	56.6	0.209	-47.9
1500	0.287	-166.0	3.17	83.2	0.150	57.2	0.195	-46.3
1600	0.285	-170.7	3.00	81.4	0.157	57.7	0.180	-45.0
1700	0.289	-175.8	2.83	79.8	0.164	58.2	0.167	-43.8
1800	0.294	178.7	2.71	77.9	0.171	58.8	0.154	-42.4
1900	0.302	175.4	2.59	75.9	0.178	59.0	0.144	-40.2
2000	0.308	171.1	2.47	74.5	0.185	59.2	0.133	-38.6

Package Dimensions

As of January, 2001
Unit: mm



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

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HITACHI

Hitachi, Ltd.

Semiconductor & Integrated Circuits.
 Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan
 Tel: Tokyo (03) 3270-2111 Fax: (03) 3270-5109

URL	NorthAmerica	: http://semiconductor.hitachi.com/
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For further information write to:

Hitachi Semiconductor
 (America) Inc.
 179 East Tasman Drive,
 San Jose, CA 95134
 Tel: <1> (408) 433-1990
 Fax: <1> (408) 433-0223

Hitachi Europe GmbH
 Electronic Components Group
 Dornacher Straße 3
 D-85622 Feldkirchen, Munich
 Germany
 Tel: <49> (89) 9 9180-0
 Fax: <49> (89) 9 29 30 00

Hitachi Europe Ltd.
 Electronic Components Group.
 Whitebrook Park
 Lower Cookham Road
 Maidenhead
 Berkshire SL6 8YA, United Kingdom
 Tel: <44> (1628) 585000
 Fax: <44> (1628) 585160

Hitachi Asia Ltd.
 Hitachi Tower
 16 Collyer Quay #20-00,
 Singapore 049318
 Tel : <65>-538-6533/538-8577
 Fax : <65>-538-6933/538-3877
 URL : <http://www.hitachi.com.sg>

Hitachi Asia Ltd.
 (Taipei Branch Office)
 4/F, No. 167, Tun Hwa North Road,
 Hung-Kuo Building,
 Taipei (105), Taiwan
 Tel : <886>-(2)-2718-3666
 Fax : <886>-(2)-2718-8180
 Telex : 23222 HAS-TP
 URL : <http://www.hitachi.com.tw>

Hitachi Asia (Hong Kong) Ltd.
 Group III (Electronic Components)
 7/F., North Tower,
 World Finance Centre,
 Harbour City, Canton Road
 Tsim Sha Tsui, Kowloon,
 Hong Kong
 Tel : <852>-(2)-735-9218
 Fax : <852>-(2)-730-0281
 URL : <http://www.hitachi.com.hk>

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