

2SC5827

Silicon NPN Epitaxial
VHF/UHF wide band amplifier

HITACHI

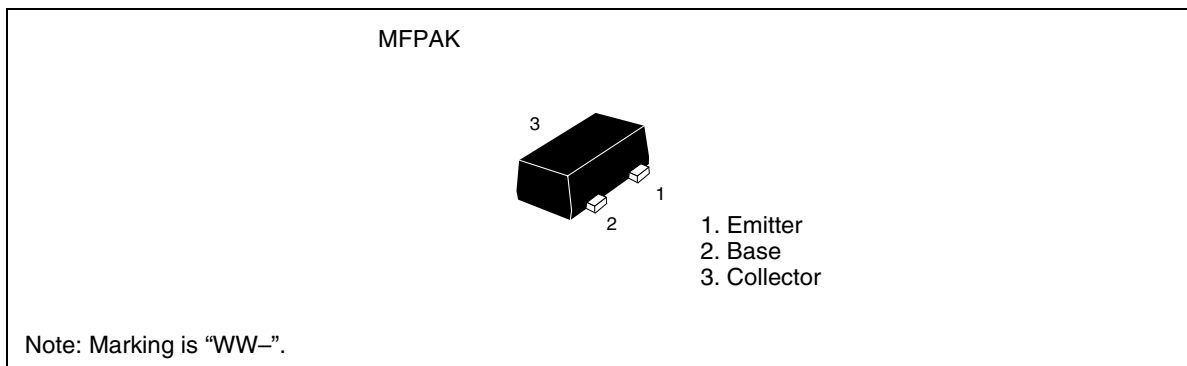
ADE-208-1464(Z)

Rev.0
Nov. 2001

Features

- Super compact package: MFPAK (1.4 x 0.8 x 0.59 mm)

Outline



2SC5827

Absolute Maximum Ratings

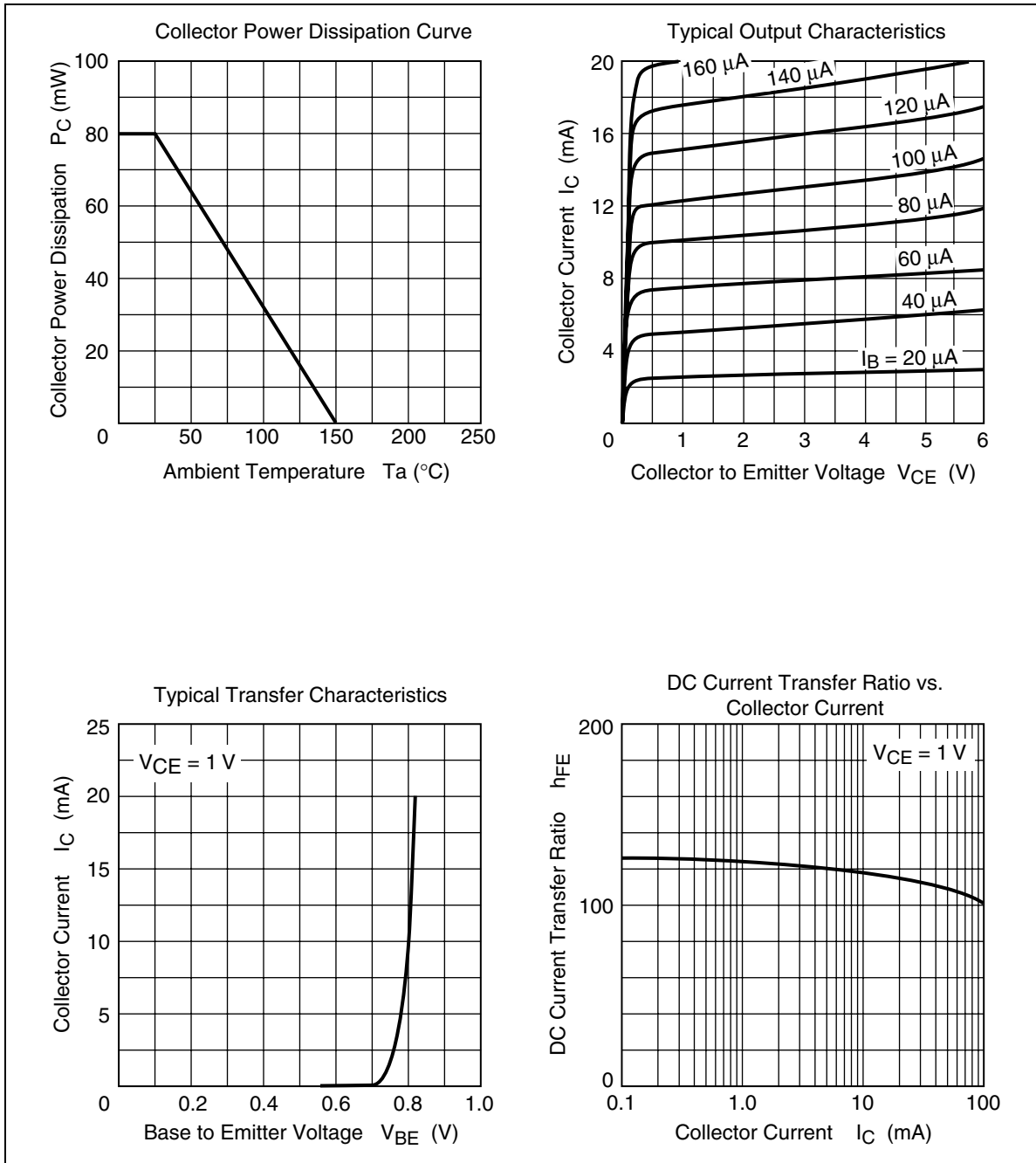
(Ta = 25 °C)

Item	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	15	V
Collector to emitter voltage	V_{CEO}	5.5	V
Emitter to base voltage	V_{EBO}	1.5	V
Collector current	I_C	80	mA
Collector power dissipation	Pc	80	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	-55 to +150	°C

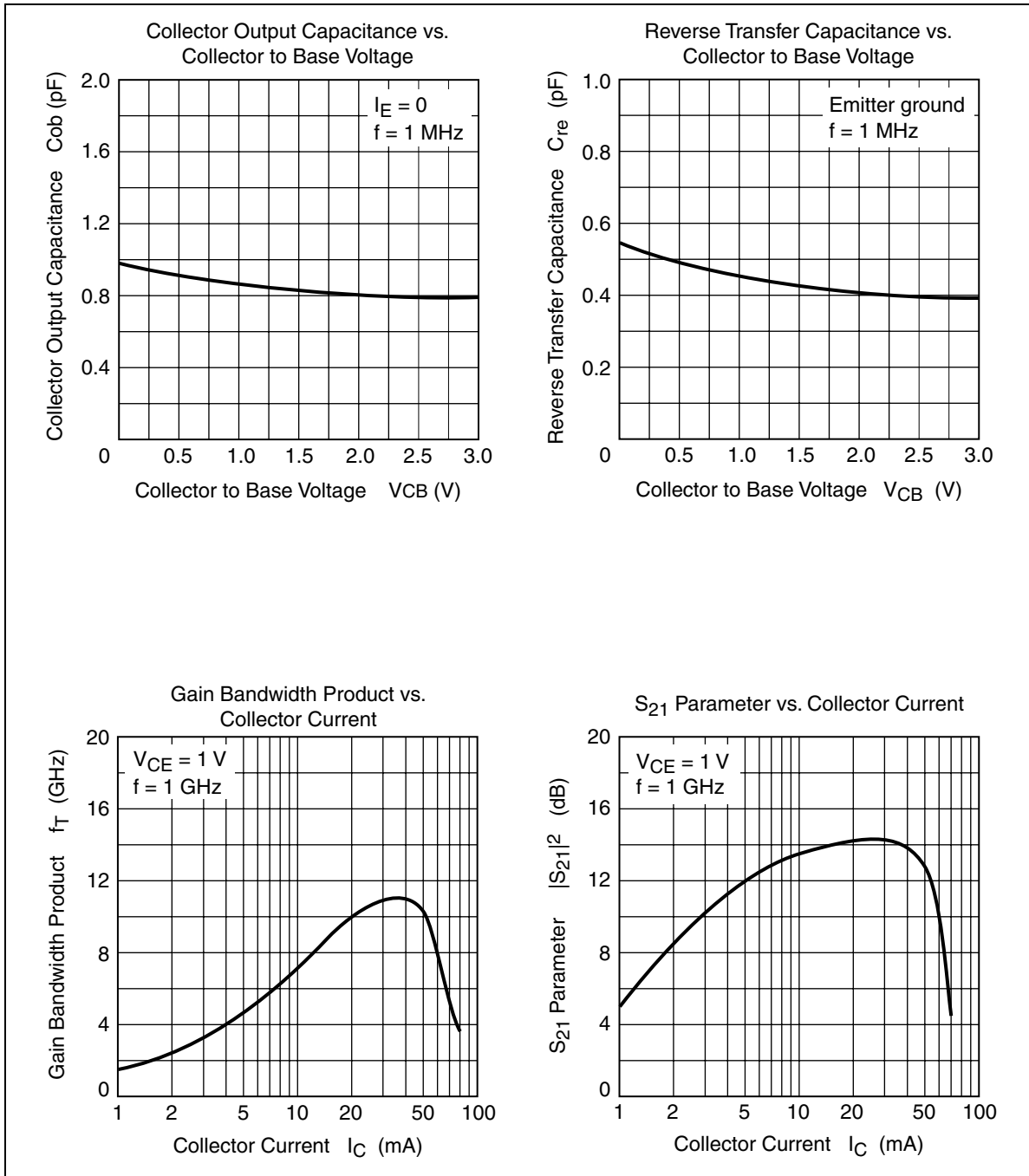
Electrical Characteristics

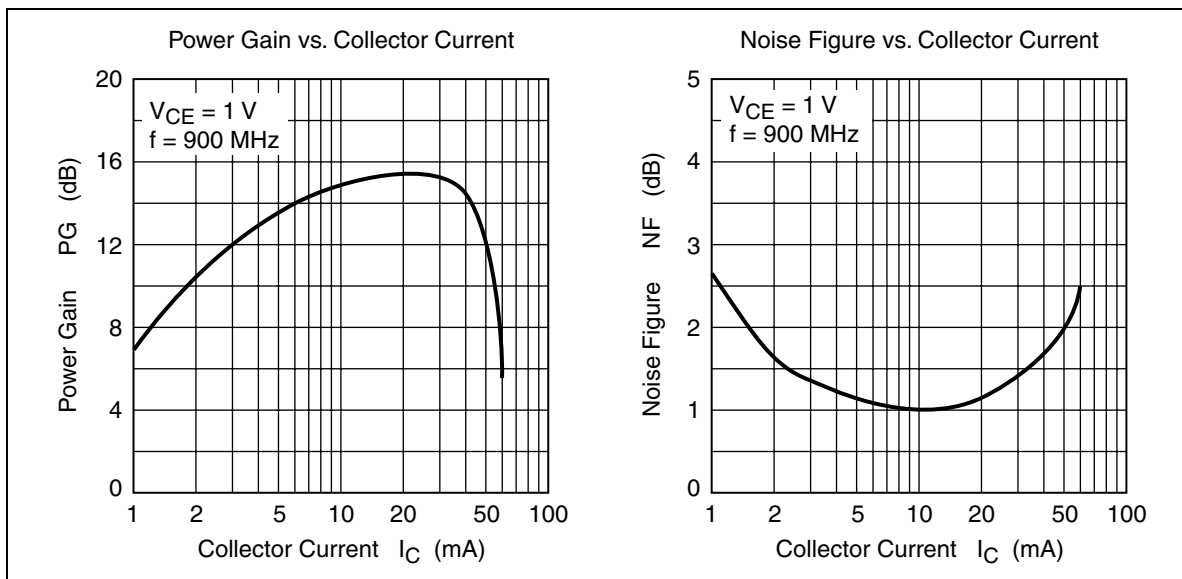
(Ta = 25 °C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Collector to base breakdown voltage	$V_{(BR)CBO}$	15	—	—	V	$I_C = 10 \mu A, I_E = 0$
Collector cutoff current	I_{CBO}	—	—	0.1	μA	$V_{CB} = 15 V, I_E = 0$
Collector cutoff current	I_{CEO}	—	—	1	μA	$V_{CE} = 5.5 V, R_{BE} = \text{Infinite}$
Emitter cutoff current	I_{EBO}	—	—	0.1	μA	$V_{EB} = 1.5 V, I_C = 0$
DC current transfer ratio	h_{FE}	100	120	150	—	$V_{CE} = 1 V, I_C = 5 mA$
Collector output capacitance	C_{ob}	—	0.85	1.15	pF	$V_{CB} = 1 V, I_E = 0, f = 1 MHz$
Gain bandwidth product	f_T	1.5	4.5	—	GHz	$V_{CE} = 1 V, I_C = 5 mA$
Power gain	PG	10.5	13.5	—	dB	$V_{CE} = 1 V, I_C = 5 mA, f = 900 MHz$
Noise figure	NF	—	1.1	1.8	dB	$V_{CE} = 1 V, I_C = 5 mA, f = 900 MHz$

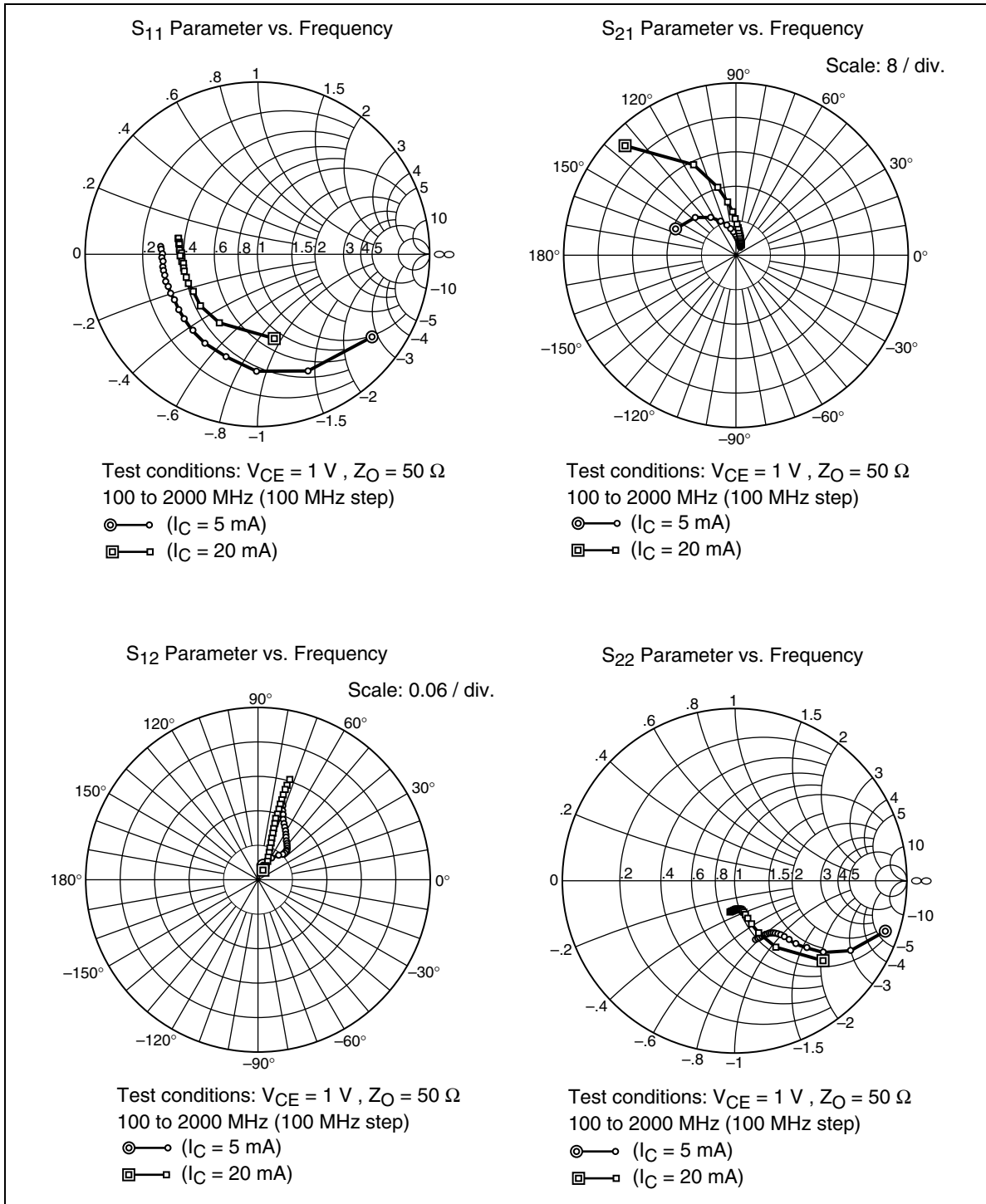


2SC5827





2SC5827



S Parameter

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

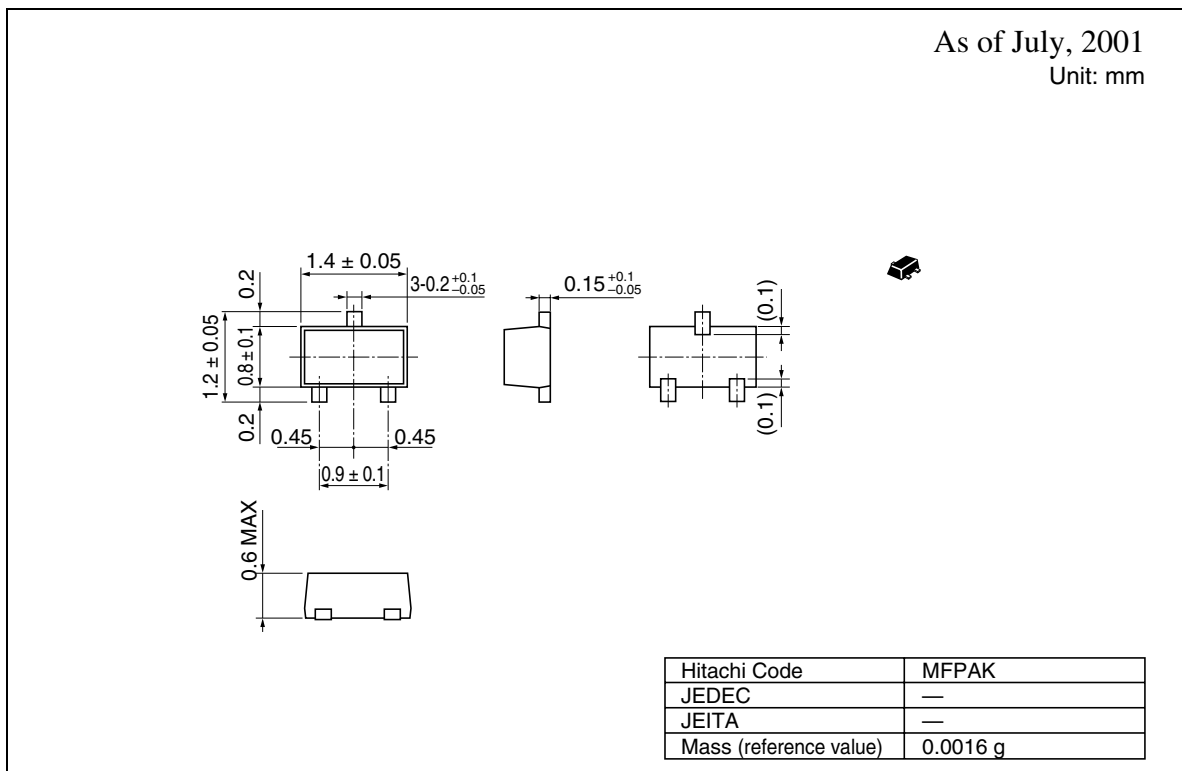
f(MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.820	-35.7	15.31	156.5	0.027	71.2	0.923	-18.5
200	0.738	-66.6	12.89	137.3	0.045	58.1	0.786	-31.0
300	0.679	-90.5	10.54	123.8	0.056	50.0	0.661	-38.8
400	0.622	-107.1	8.65	114.2	0.062	45.9	0.572	-42.8
500	0.600	-120.6	7.30	106.9	0.066	44.7	0.510	-45.7
600	0.579	-130.4	6.27	101.4	0.070	45.2	0.466	-47.1
700	0.567	-138.7	5.46	96.4	0.072	45.5	0.435	-48.3
800	0.559	-144.9	4.86	92.1	0.075	47.2	0.413	-49.5
900	0.550	-151.3	4.37	88.7	0.078	49.5	0.398	-50.8
1000	0.553	-155.8	3.99	85.2	0.081	51.5	0.386	-52.2
1100	0.551	-160.2	3.64	82.3	0.084	54.0	0.377	-53.5
1200	0.556	-163.5	3.36	79.0	0.089	56.7	0.371	-55.0
1300	0.552	-167.3	3.14	76.7	0.093	58.5	0.365	-56.5
1400	0.554	-170.2	2.92	74.2	0.098	60.7	0.363	-58.4
1500	0.555	-172.5	2.76	71.7	0.103	63.1	0.360	-60.0
1600	0.550	-175.8	2.58	69.3	0.108	65.2	0.361	-62.0
1700	0.556	-178.0	2.44	67.1	0.114	67.4	0.360	-63.9
1800	0.552	179.7	2.32	65.0	0.122	69.0	0.361	-66.1
1900	0.560	177.0	2.21	63.0	0.128	70.4	0.362	-68.0
2000	0.564	175.4	2.11	60.6	0.136	71.5	0.363	-70.4

2SC5827

($V_{CE} = 1 \text{ V}$, $I_C = 20 \text{ mA}$, $Z_o = 50 \Omega$)

f(MHz)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
100	0.499	-78.6	36.20	135.4	0.019	63.2	0.692	-42.1
200	0.454	-119.0	23.22	115.0	0.028	60.0	0.454	-58.1
300	0.445	-137.9	16.36	104.9	0.036	62.1	0.333	-65.1
400	0.429	-150.0	12.55	98.8	0.043	65.5	0.269	-68.4
500	0.434	-157.2	10.15	94.4	0.051	67.4	0.231	-70.5
600	0.433	-162.2	8.51	91.1	0.059	69.4	0.206	-72.1
700	0.435	-167.1	7.31	88.0	0.068	70.4	0.190	-73.4
800	0.435	-169.6	6.41	85.2	0.076	71.6	0.180	-75.2
900	0.432	-173.1	5.75	82.9	0.085	72.2	0.172	-77.0
1000	0.440	-174.7	5.19	80.9	0.093	72.9	0.169	-78.4
1100	0.438	-178.1	4.74	78.5	0.102	73.3	0.167	-80.0
1200	0.448	-179.0	4.33	76.3	0.111	73.9	0.165	-82.2
1300	0.440	178.9	4.05	74.7	0.119	73.4	0.165	-84.2
1400	0.452	176.8	3.75	72.8	0.128	73.4	0.165	-86.1
1500	0.453	175.7	3.52	71.1	0.137	73.5	0.167	-88.0
1600	0.456	172.5	3.33	69.3	0.145	73.4	0.170	-90.0
1700	0.460	172.2	3.13	67.1	0.154	73.4	0.172	-91.9
1800	0.457	171.1	2.97	65.6	0.164	73.2	0.176	-94.2
1900	0.467	168.4	2.83	64.0	0.172	72.9	0.179	-96.3
2000	0.469	168.6	2.70	62.4	0.183	72.4	0.183	-98.2

Package Dimensions



2SC5827

Disclaimer

1. Hitachi neither warrants nor grants licenses of any rights of Hitachi's or any third party's patent, copyright, trademark, or other intellectual property rights for information contained in this document. Hitachi bears no responsibility for problems that may arise with third party's rights, including intellectual property rights, in connection with use of the information contained in this document.
2. Products and product specifications may be subject to change without notice. Confirm that you have received the latest product standards or specifications before final design, purchase or use.
3. Hitachi makes every attempt to ensure that its products are of high quality and reliability. However, contact Hitachi's sales office before using the product in an application that demands especially high quality and reliability or where its failure or malfunction may directly threaten human life or cause risk of bodily injury, such as aerospace, aeronautics, nuclear power, combustion control, transportation, traffic, safety equipment or medical equipment for life support.
4. Design your application so that the product is used within the ranges guaranteed by Hitachi particularly for maximum rating, operating supply voltage range, heat radiation characteristics, installation conditions and other characteristics. Hitachi bears no responsibility for failure or damage when used beyond the guaranteed ranges. Even within the guaranteed ranges, consider normally foreseeable failure rates or failure modes in semiconductor devices and employ systemic measures such as fail-safes, so that the equipment incorporating Hitachi product does not cause bodily injury, fire or other consequential damage due to operation of the Hitachi product.
5. This product is not designed to be radiation resistant.
6. No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without written approval from Hitachi.
7. Contact Hitachi's sales office for any questions regarding this document or Hitachi semiconductor products.

Sales Offices

HITACHI

Hitachi, Ltd.

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

URL <http://www.hitachisemiconductor.com/>

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 Ltd.
Electronic Components Group
Whitebrook Park
Lower Cookham Road
Maidenhead
Berkshire SL6 8YA, United Kingdom
Tel: <44> (1628) 585000
Fax: <44> (1628) 585200

Hitachi Europe GmbH
Electronic Components Group
Dornacher Straße 3
D-85622 Feldkirchen
Postfach 201, D-85619 Feldkirchen
Germany
Tel: <49> (89) 9 9180-0
Fax: <49> (89) 9 29 30 00

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://semiconductor.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://semiconductor.hitachi.com.hk>

Copyright © Hitachi, Ltd., 2001. All rights reserved. Printed in Japan.
Colophon 5.0