

---

# BB101C

Build in Biasing Circuit MOS FET IC  
UHF RF Amplifier

## HITACHI

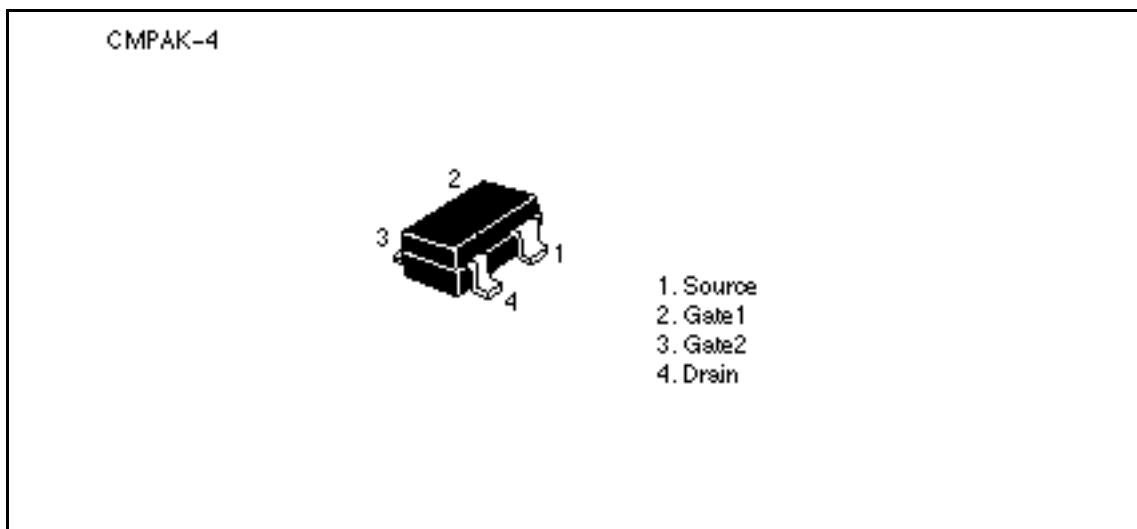
ADE-208-505  
1st. Edition

---

### Features

- Build in Biasing Circuit; To reduce using parts cost & PC board space.
- Low noise characteristics; (NF = 2.0 dB typ. at f = 900 MHz)
- Withstanding to ESD; Build in ESD absorbing diode. Withstand up to 200 V at C = 200 pF, Rs = 0 conditions.

### Outline



## BB101C

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

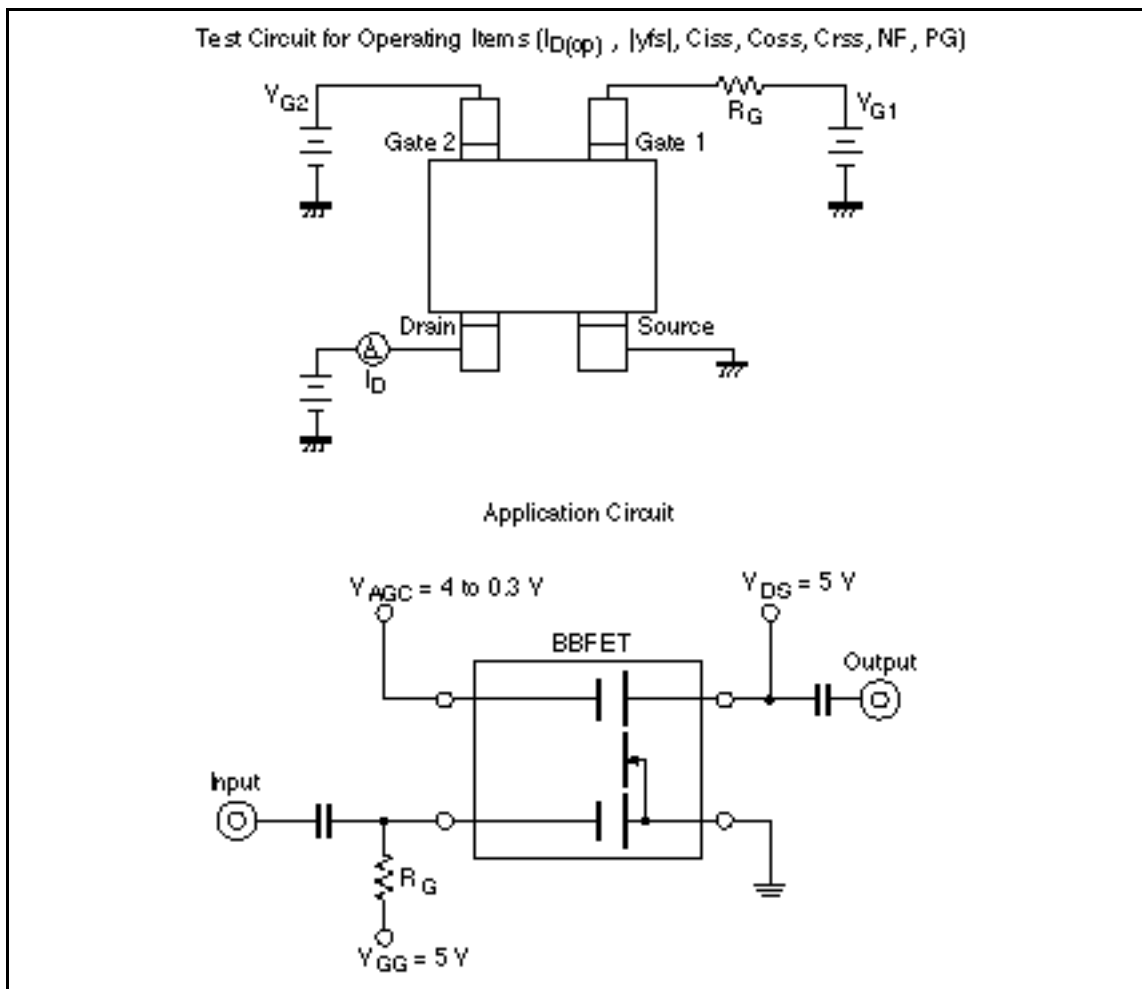
Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DS}$	6	V
Gate 1 to source voltage	$V_{G1S}$	+6 -0	V
Gate 2 to source voltage	$V_{G2S}$	±6	V
Drain current	$I_D$	25	mA
Channel power dissipation	Pch	100	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

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

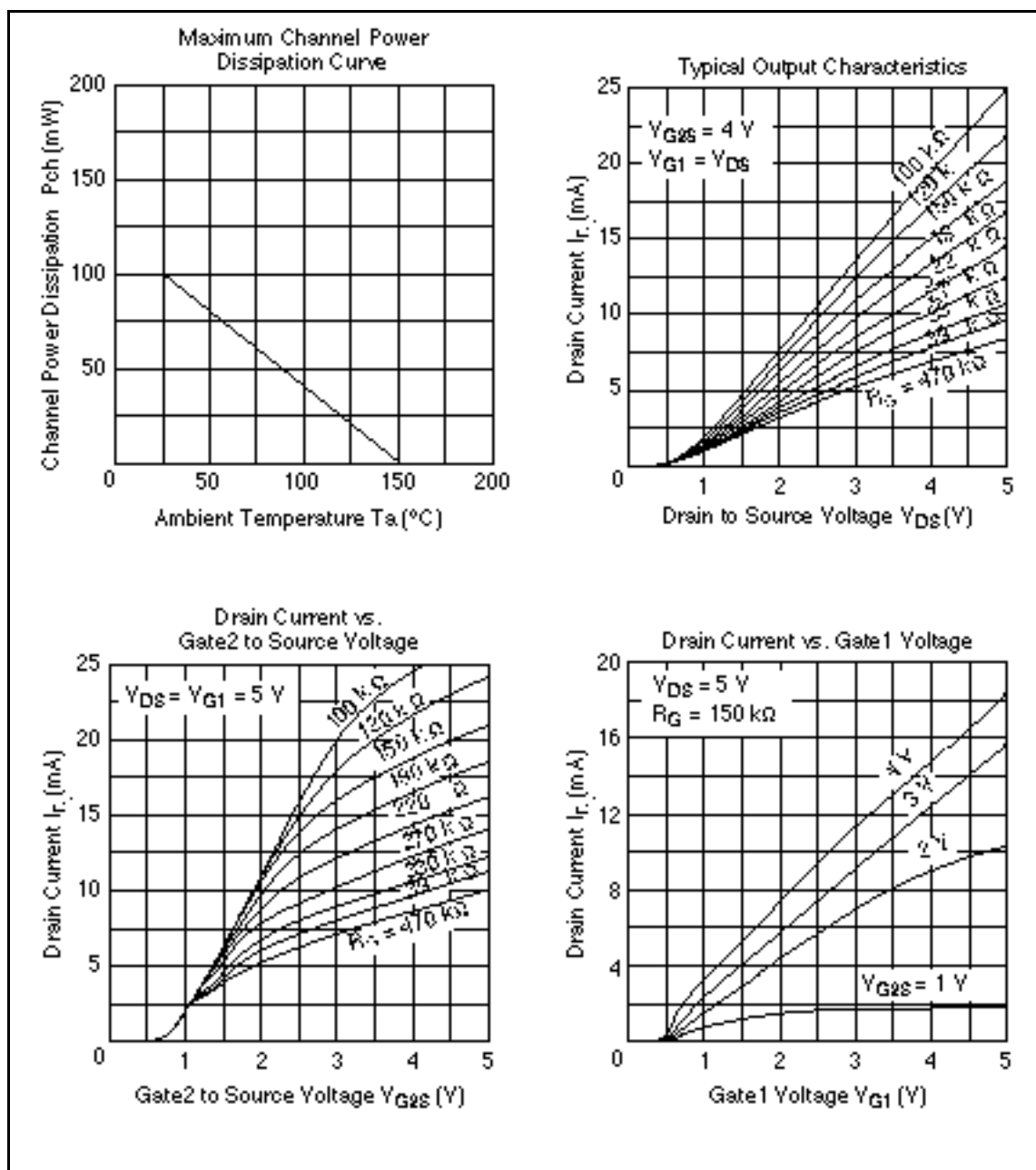
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source break down voltage	$V_{(BR)DSS}$	6	—	—	V	$I_D = 200 \mu A$ $V_{G1S} = V_{G2S} = 0$
Gate 1 to source breakdown voltage	$V_{(BR)G1SS}$	+6	—	—	V	$I_{G1} = +10 \mu A$ $V_{G2S} = V_{DS} = 0$
Gate 2 to source breakdown voltage	$V_{(BR)G2SS}$	±6	—	—	V	$I_{G2} = +10 \mu A$ $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff current	$I_{G1SS}$	—	—	+100	nA	$V_{G1S} = +5 V$ $V_{G2S} = V_{DS} = 0$
Gate 2 to source cutoff current	$I_{G2SS}$	—	—	±100	nA	$V_{G2S} = \pm 5 V$ $V_{G1S} = V_{DS} = 0$
Gate 1 to source cutoff voltage	$V_{G1S(off)}$	0.2	—	0.8	V	$V_{DS} = 5 V, V_{G2S} = 4 V$ $I_D = 100 \mu A$
Gate 2 to source cutoff voltage	$V_{G2S(off)}$	0.4	—	1.0	V	$V_{DS} = 5 V, V_{G1S} = 5 V$ $I_D = 100 \mu A$
Drain current	$I_{D(op)}$	10	15	20	mA	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V, R_G = 220 k$
Forward transfer admittance	$ y_{fs} $	16	22	—	mS	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V$ $R_G = 220 k, f = 1 kHz$
Input capacitance	Ciss	1.2	1.7	2.2	pF	$V_{DS} = 5 V, V_{G1} = 5 V$
Output capacitance	Coss	0.7	1.1	1.5	pF	$V_{G2S} = 4 V, R_G = 220 k$
Reverse transfer capacitance	Crss	—	0.012	0.03	pF	$f = 1 MHz$
Power gain	PG	16	20	—	dB	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V$
Noise figure	NF	—	2.0	3.0	dB	$R_G = 220 k, f = 900 MHz$

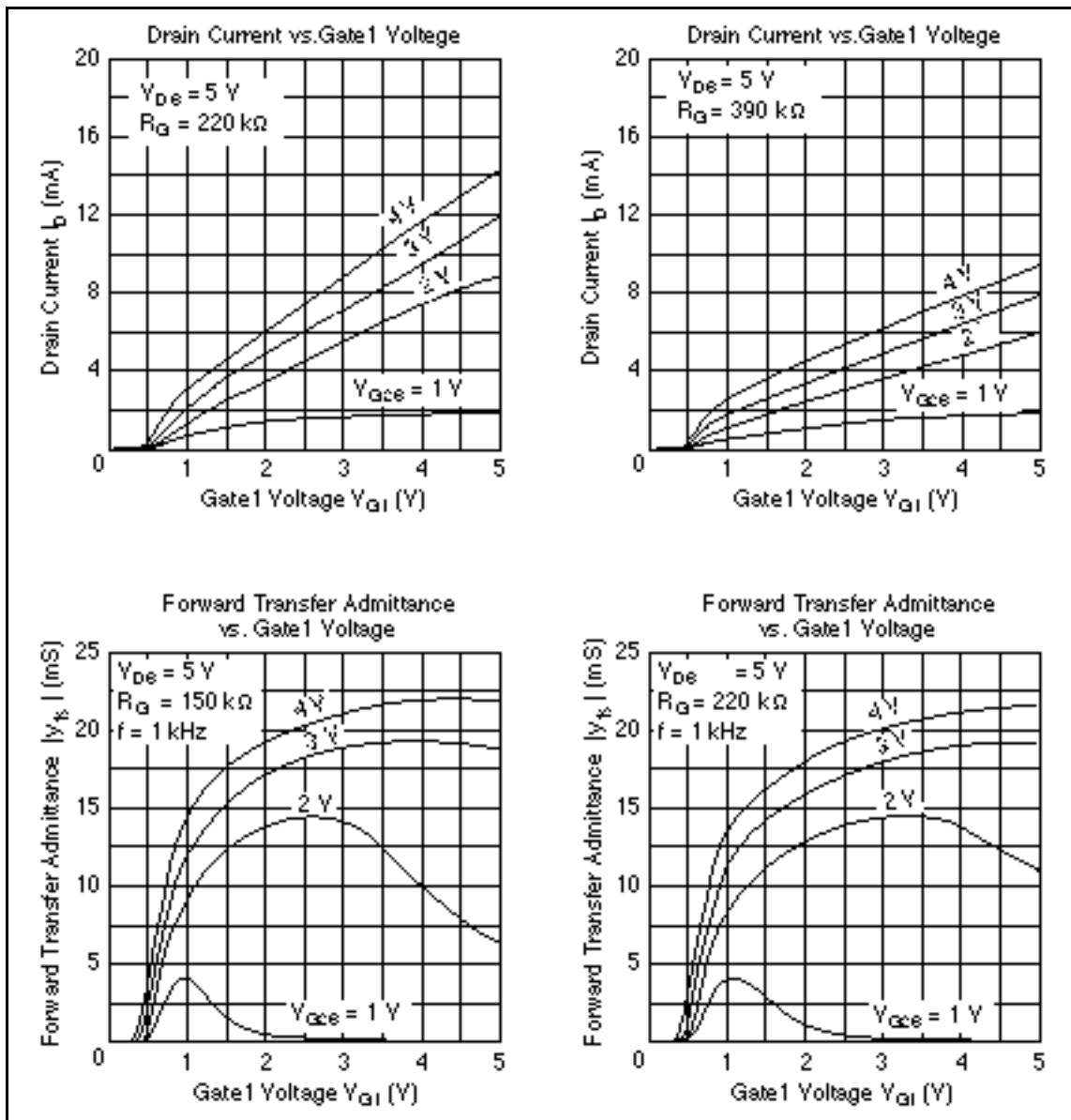
Note: Marking is "AU-".

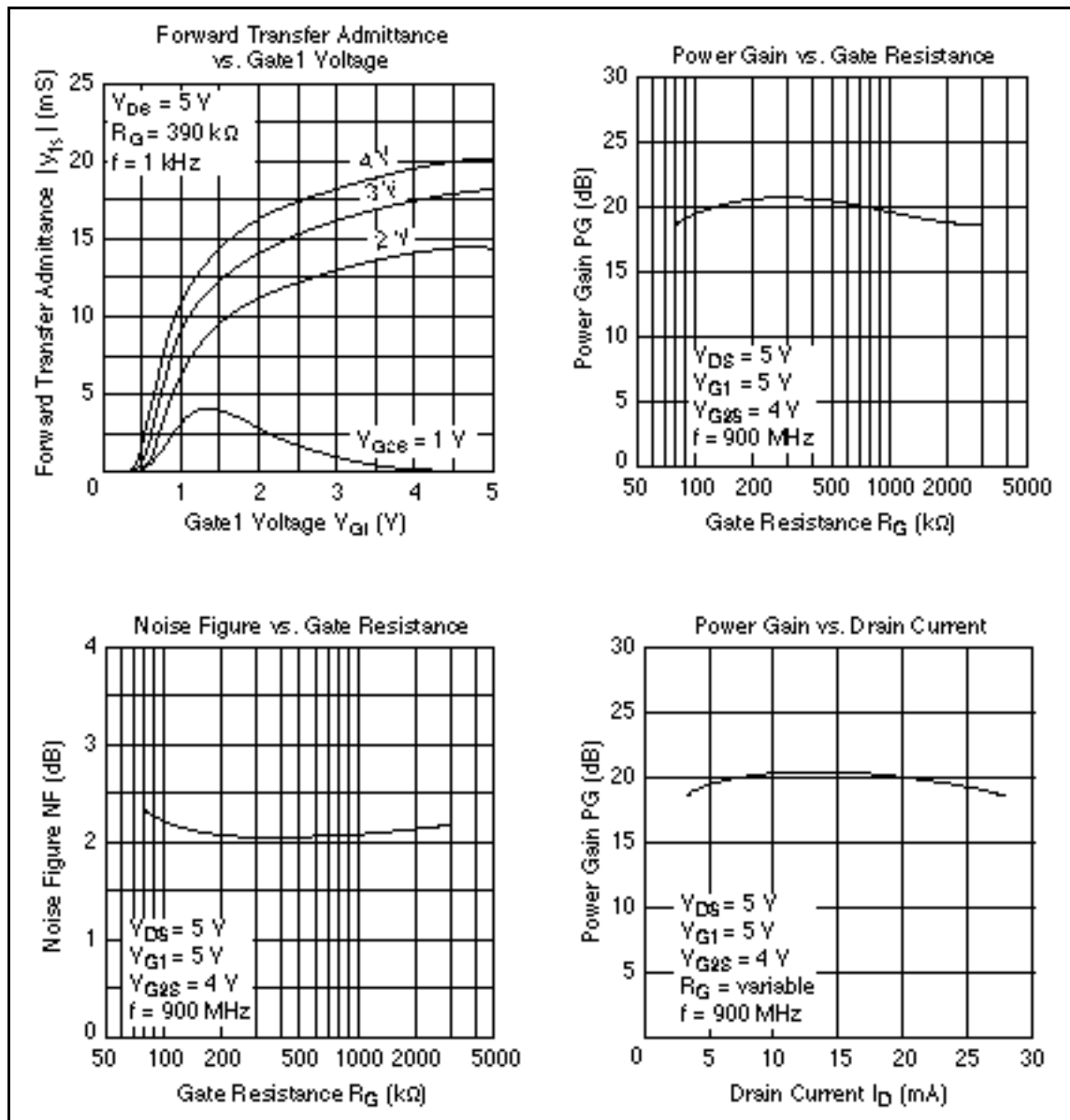
Main Characteristics

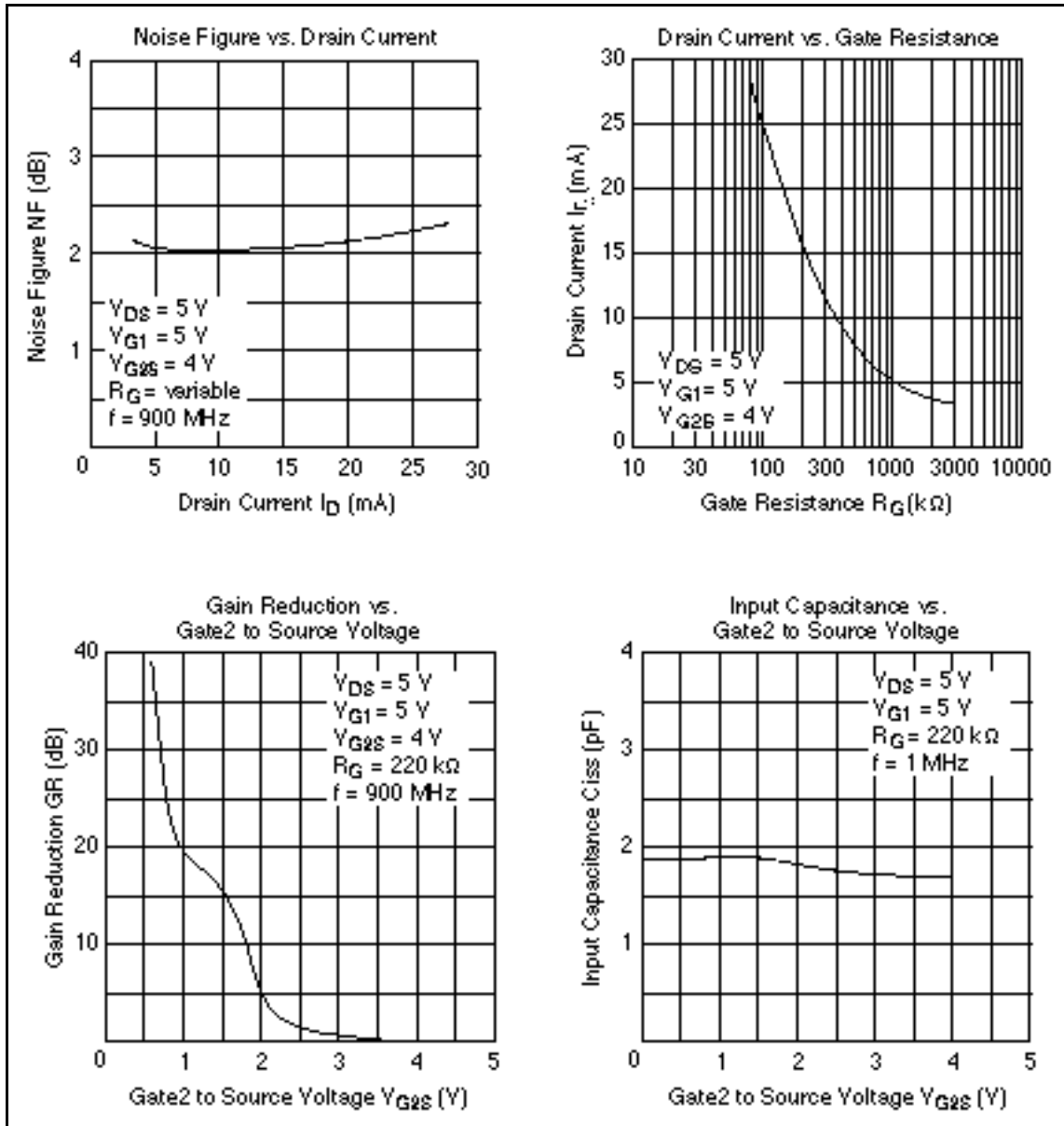


# BB101C

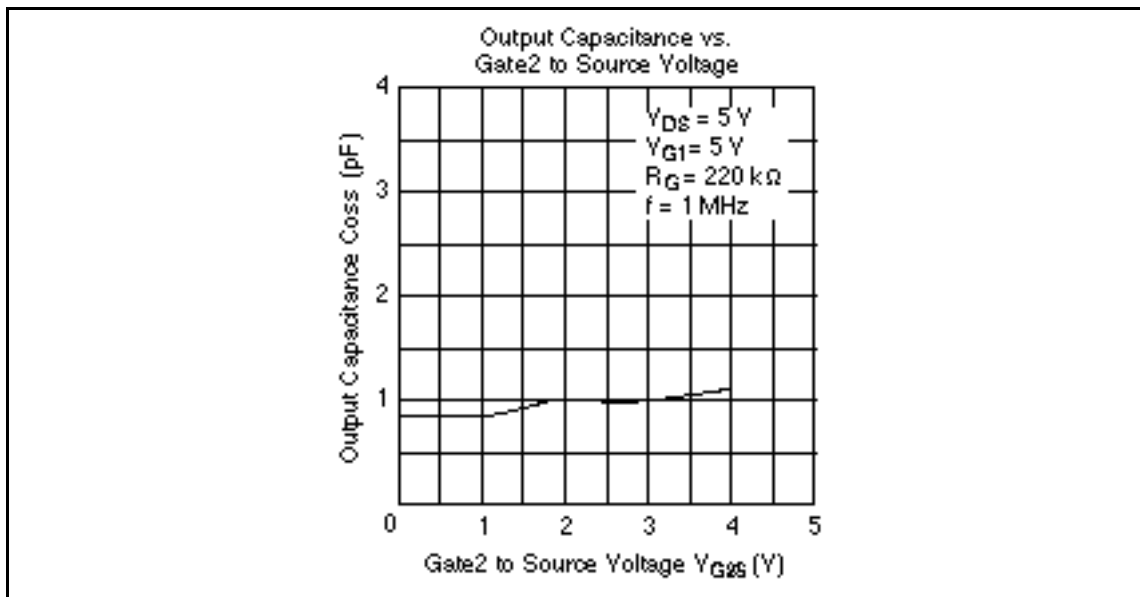








## BB101C

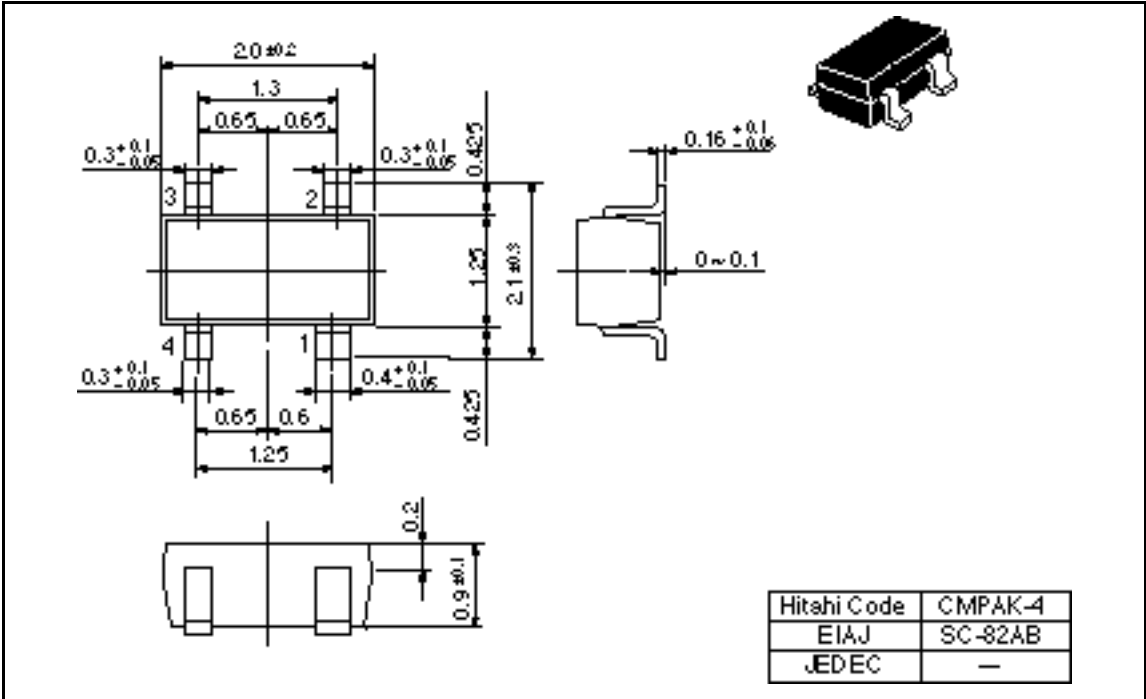


HITACHI



Package Dimensions

Unit: mm



When using this document, keep the following in mind:

1. This document may, wholly or partially, be subject to change without notice.
2. All rights are reserved: No one is permitted to reproduce or duplicate, in any form, the whole or part of this document without Hitachi's permission.
3. Hitachi will not be held responsible for any damage to the user that may result from accidents or any other reasons during operation of the user's unit according to this document.
4. Circuitry and other examples described herein are meant merely to indicate the characteristics and performance of Hitachi's semiconductor products. Hitachi assumes no responsibility for any intellectual property claims or other problems that may result from applications based on the examples described herein.
5. No license is granted by implication or otherwise under any patents or other rights of any third party or Hitachi, Ltd.
6. **MEDICAL APPLICATIONS:** Hitachi's products are not authorized for use in **MEDICAL APPLICATIONS** without the written consent of the appropriate officer of Hitachi's sales company. Such use includes, but is not limited to, use in life support systems. Buyers of Hitachi's products are requested to notify the relevant Hitachi sales offices when planning to use the products in **MEDICAL APPLICATIONS**.

---

---

# HITACHI

## **Hitachi, Ltd.**

Semiconductor & IC Div.

Nippon Bldg., 2-5-2, Ohite-machi, Chiyoda-ku, Tokyo 100, Japan

Tel Tokyo (03) 3270-2111

Fax (03) 3270-5109

For further information write to:

**Hitachi America, Ltd.**

Semiconductor & IC Div.

2000 Sierra Point Parkway

Folsom, CA 94005-4835

U.S.A.

Tel 415-589-8300

Fax 415-589-4207

**Hitachi Europe GmbH**

Electronic Components Group

Continental Europe

Darnecker Straße 3

D-85622 Feldkirchen

München

Tel 089-9 91 80-0

Fax 089-9 29 30 00

**Hitachi Europe Ltd.**

Electronic Components Div.

Northern Europe Headquarters

Whitebrook Park

Lower Cookham Road

High Wycombe

Berkshire SL6 6YA

United Kingdom

Tel 0628-885000

Fax 0628-778322

**Hitachi Asia Pte. Ltd.**

45 Collyer Quay #20-00

Hitachi Tower

Singapore 0104

Tel 535-2100

Fax 535-1533

**Hitachi Asia (Hong Kong) Ltd.**

Unit 705, North Tower,

World Finance Centre

Harbour City, Canton Road

Tsim Sha Tsui, Kowloon

Hong Kong

Tel 27359218

Fax 27308074