
BB301C

Build in Biasing Circuit MOS FET IC
VHF RF Amplifier

HITACHI

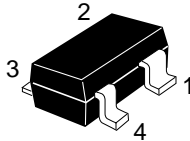
ADE-208-507
1st. Edition

Features

- Build in Biasing Circuit; To reduce using parts cost & PC board space.
- Low noise characteristics; (NF = 1.3 dB typ. at f = 200 MHz)
- Withstanding to ESD; Build in ESD absorbing diode . Withstand up to 200 V at C = 200 pF, Rs = 0 conditions.

Outline

CMPAK-4



1. Source
2. Gate1
3. Gate2
4. Drain

BB301C

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

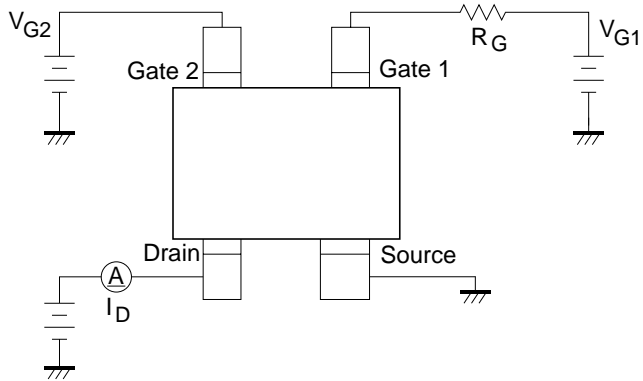
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Drain to source breakdown 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	$I_{G2} = \pm 10 \mu A$ $V_{G1S} = V_{DS} = 0$
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	$V_{G1S(off)}$	0.4	—	1.0	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	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V, R_G = 100 k\Omega$
Forward transfer admittance	$ y_{fs} $	15	20	—	mS	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V$ $R_G = 100 k\Omega, f = 1 kHz$
Input capacitance	Ciss	2.2	3.0	4.0	pF	$V_{DS} = 5 V, V_{G1} = 5 V$
Output capacitance	Coss	0.9	1.2	1.6	pF	$V_{G2S} = 4 V, R_G = 100 k\Omega$
Reverse transfer capacitance	Crss	—	0.018	0.04	pF	$f = 1 MHz$
Power gain	PG	22	26	—	dB	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V$
Noise figure	NF	—	1.3	1.9	dB	$R_G = 100 k\Omega, f = 200 MHz$

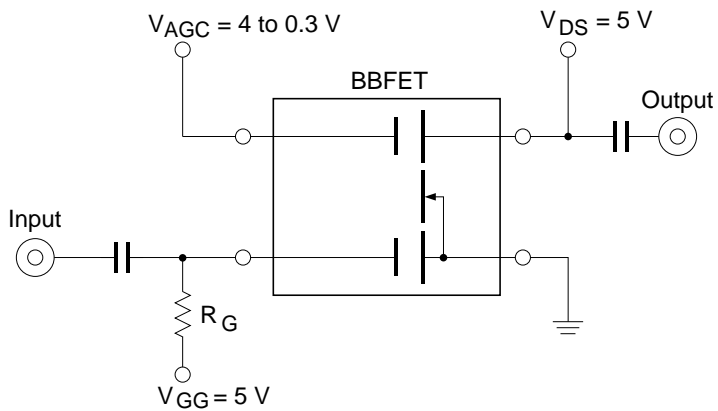
Note: Marking is "AW-".

Main Characteristics

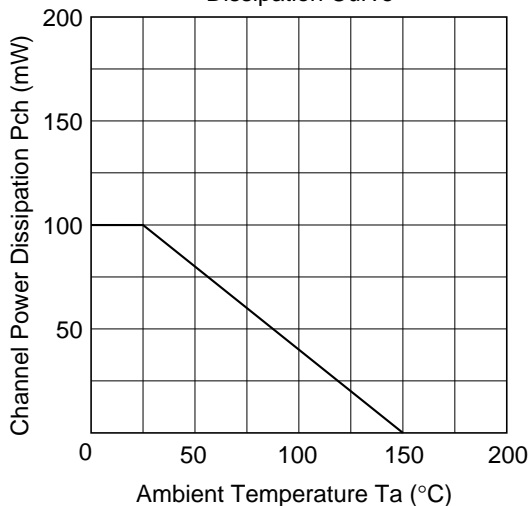
Test Circuit for Operating Items ($I_{D(op)}$, $|y_{fs}|$, C_{iss} , C_{oss} , C_{rss} , NF, PG)



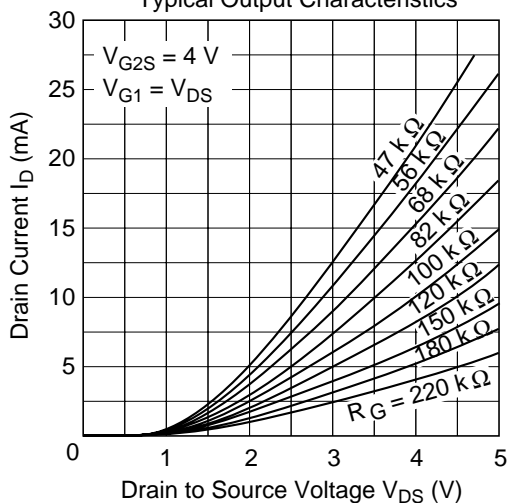
Application Circuit



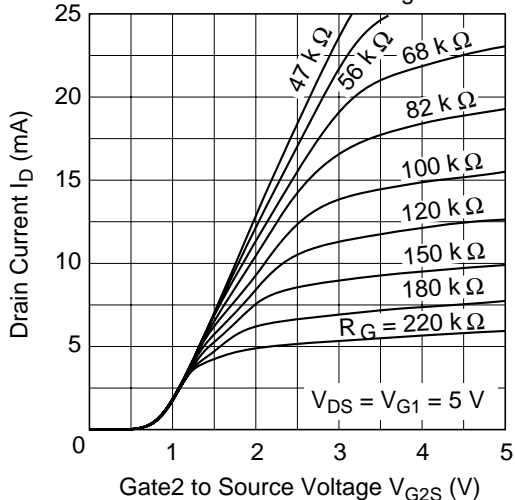
Maximum Channel Power
Dissipation Curve



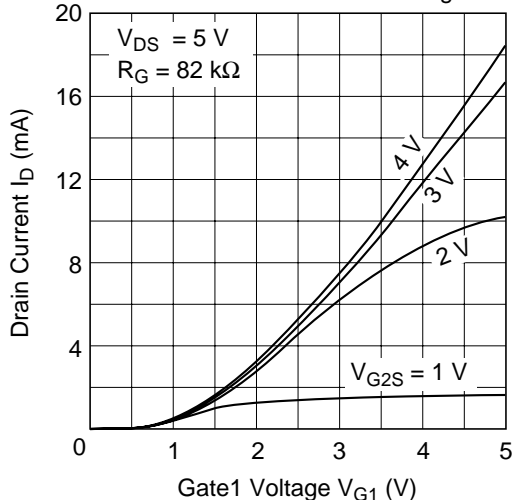
Typical Output Characteristics

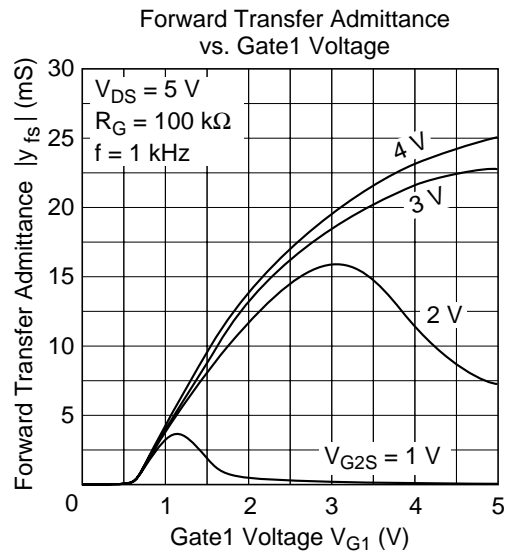
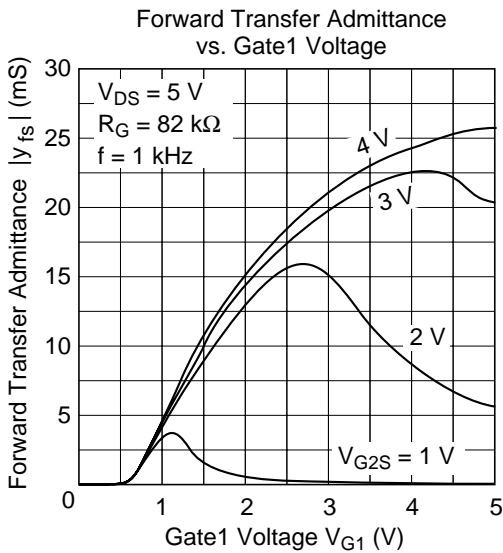
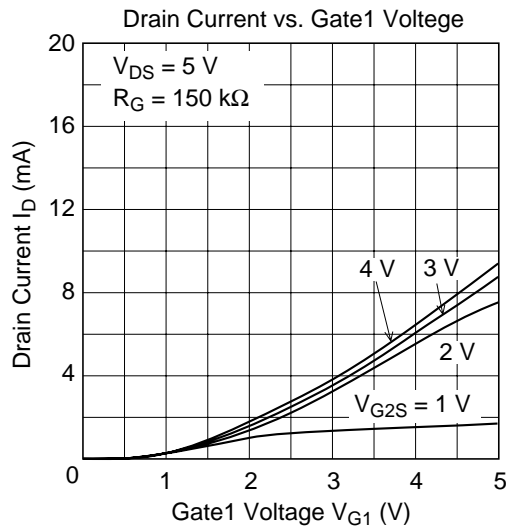
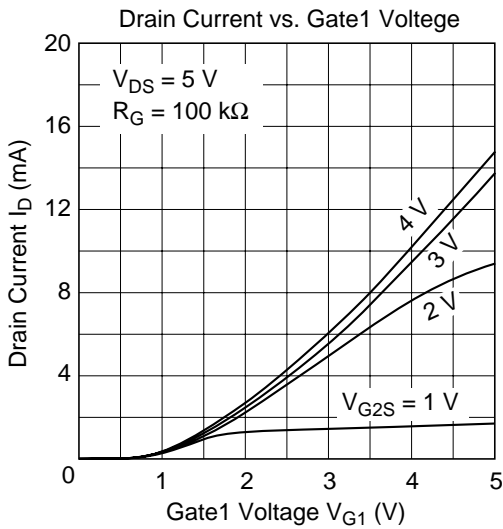


Drain Current vs.
Gate2 to Source Voltage

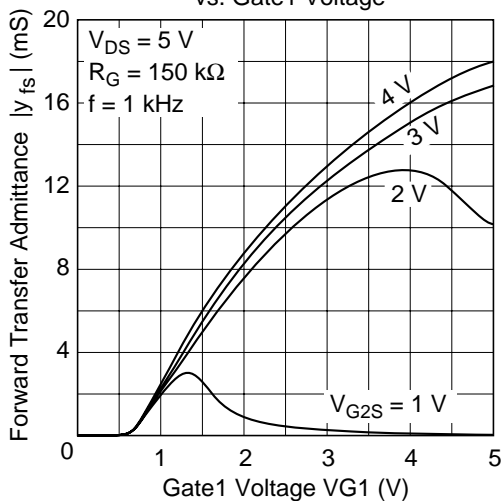


Drain Current vs. Gate1 Voltage

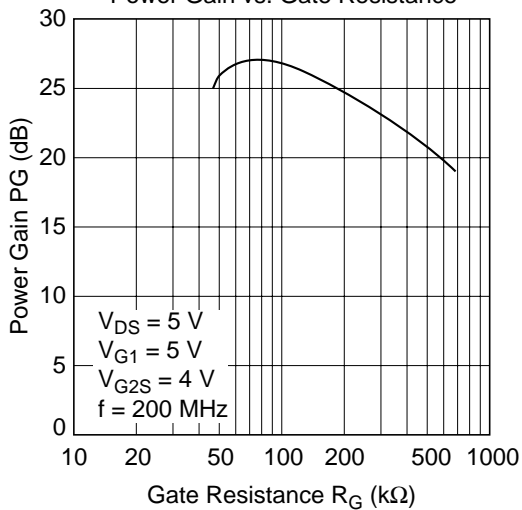




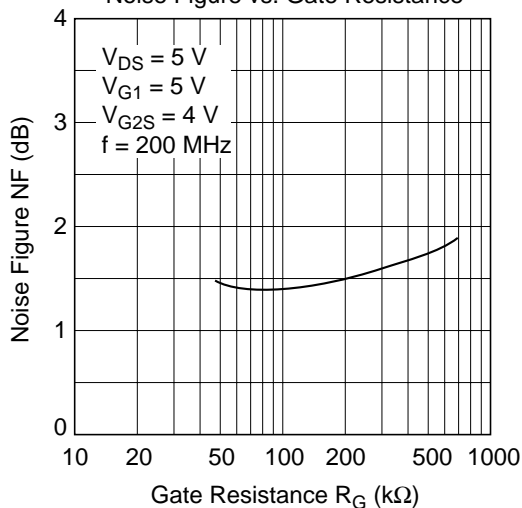
Forward Transfer Admittance vs. Gate1 Voltage



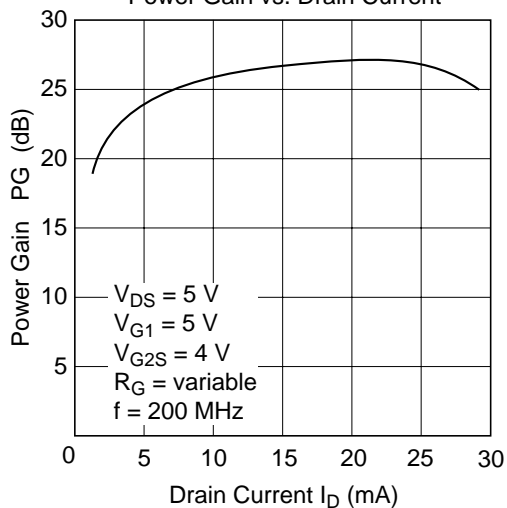
Power Gain vs. Gate Resistance

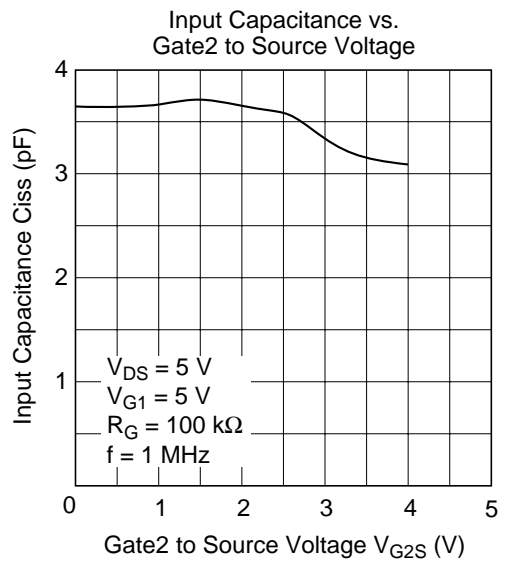
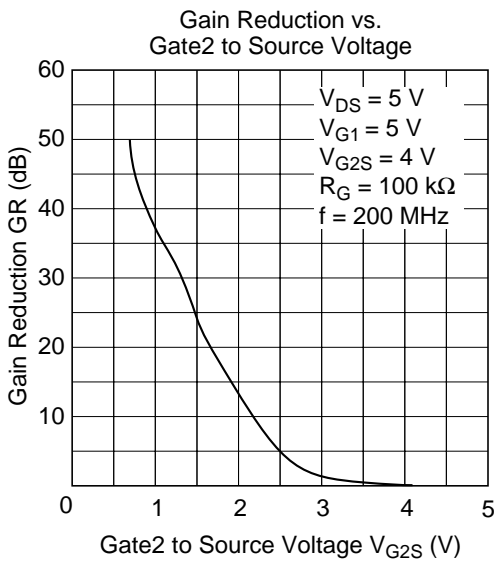
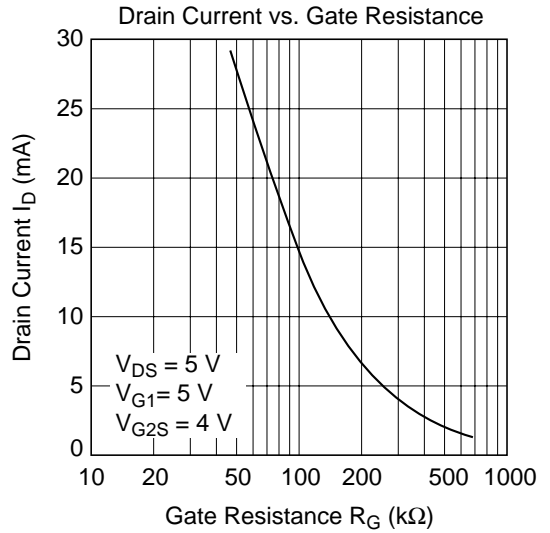
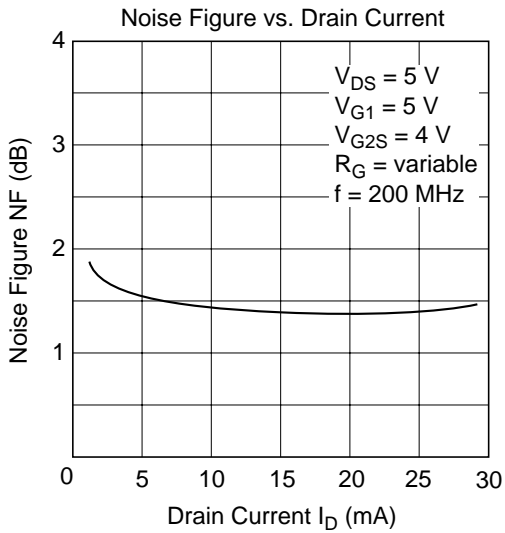


Noise Figure vs. Gate Resistance



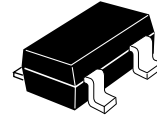
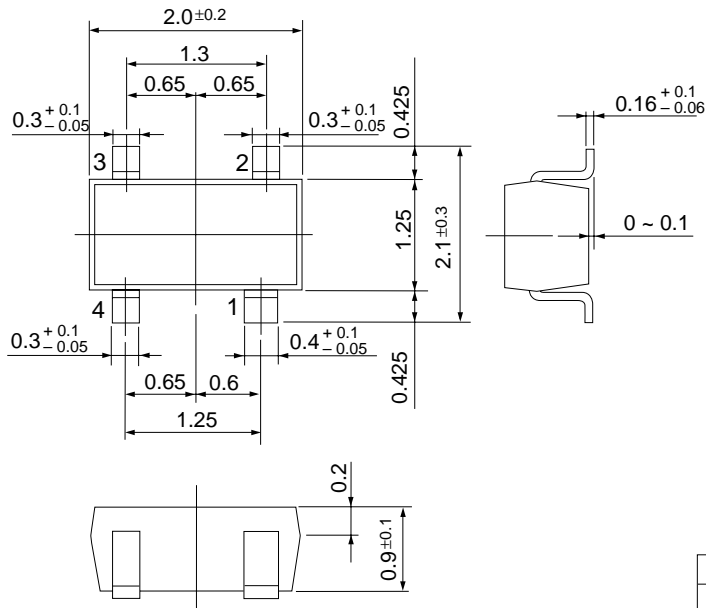
Power Gain vs. Drain Current





Package Dimentions

Unit: mm



Hitachi Code	CMPAK-4
EIAJ	SC-82AB
JEDEC	—

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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 North America : <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) 778322

Hitachi Asia Pte. Ltd.
16 Collyer Quay #20-00
Hitachi Tower
Singapore 049318
Tel: 535-2100
Fax: 535-1533

Hitachi Asia Ltd.
Taipei Branch Office
3F, Hung Kuo Building, No.167,
Tun-Hwa North Road, Taipei (105)
Tel: <886> (2) 2718-3666
Fax: <886> (2) 2718-8180

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
Telex: 40815 HITEC HX

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