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# BB101C

Build in Biasing Circuit MOS FET IC  
UHF RF Amplifier

# HITACHI

ADE-208-505  
1st. Edition

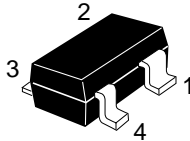
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## Features

- 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

CMPAK-4



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

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# BB101C

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## 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

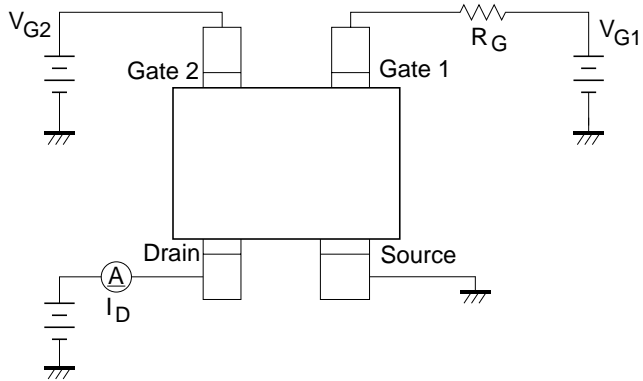
**Electrical Characteristics** (Ta = 25°C)

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	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V, R_G = 220 k\Omega$
Forward transfer admittance	$ y_{fs} $	16	22	—	mS	$V_{DS} = 5 V, V_{G1} = 5 V$ $V_{G2S} = 4 V$ $R_G = 220 k\Omega, f = 1 kHz$
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	$V_{G2S} = 4 V, R_G = 220 k\Omega$
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	$R_G = 220 k\Omega, f = 900 MHz$

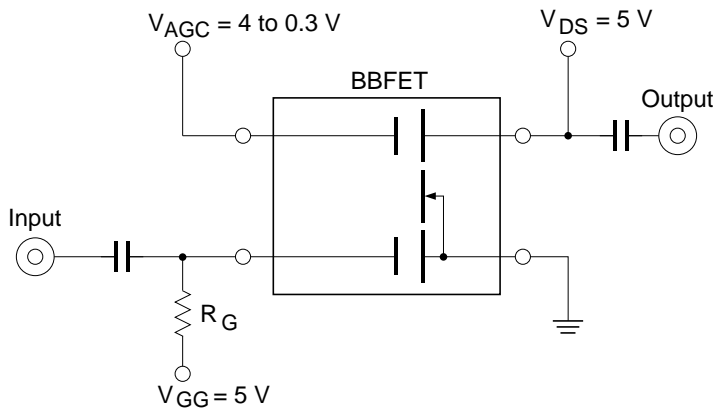
Note: Marking is "AU-".

## Main Characteristics

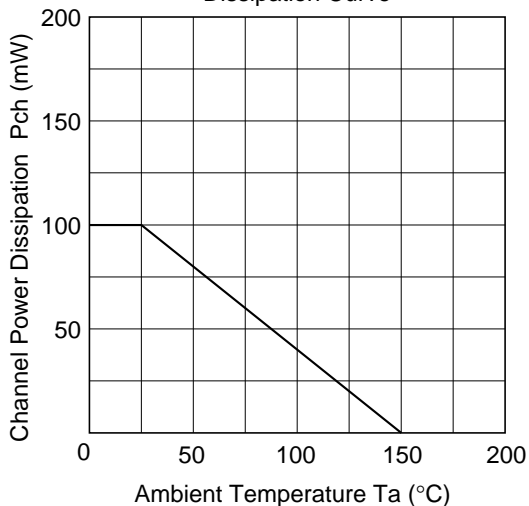
Test Circuit for Operating Items ( $I_{D(op)}$ ,  $|y_{fs}|$ ,  $C_{iss}$ ,  $C_{oss}$ ,  $C_{rss}$ , NF, PG)



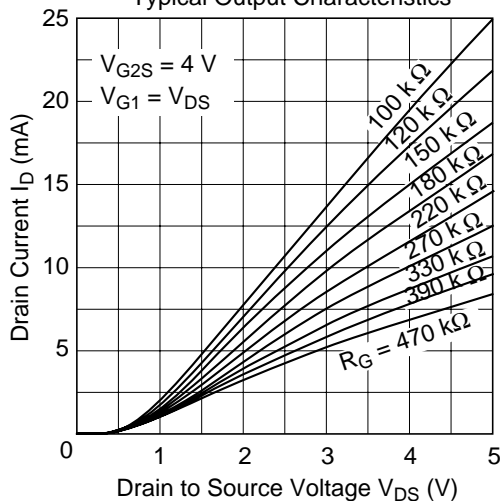
Application Circuit



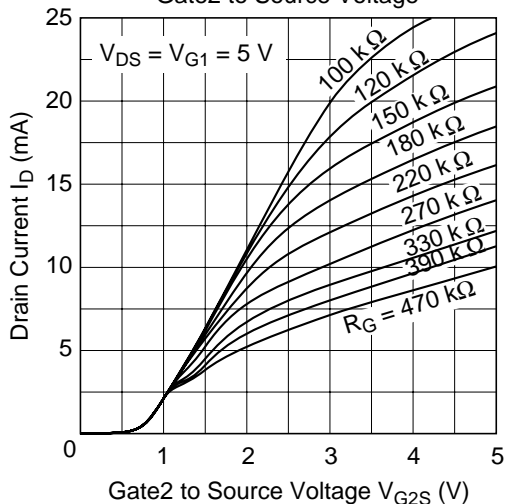
Maximum Channel Power Dissipation Curve



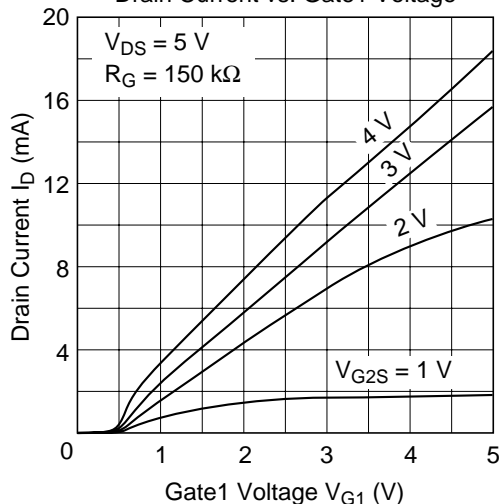
Typical Output Characteristics

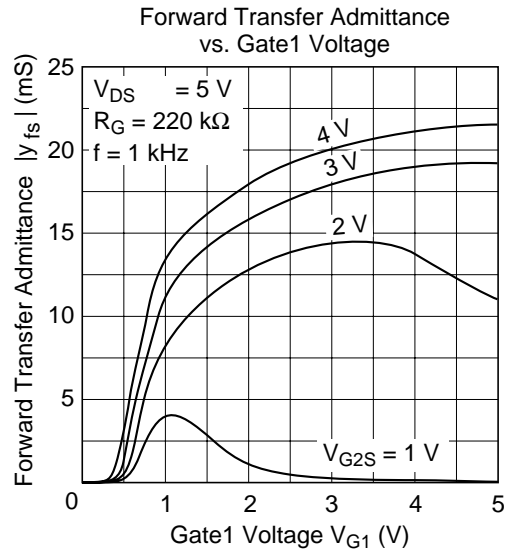
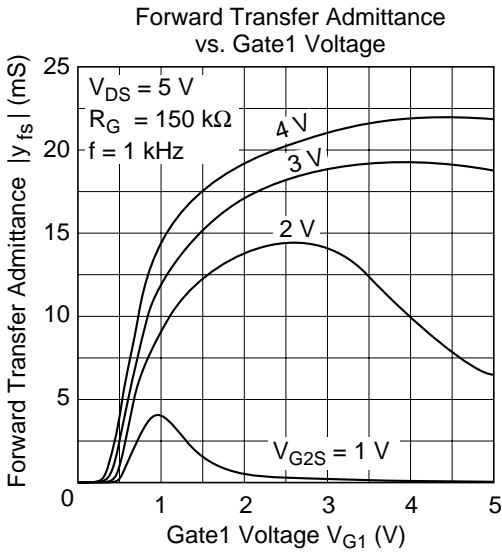
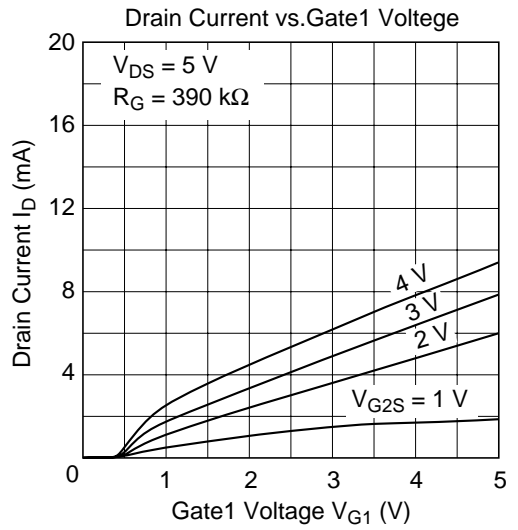
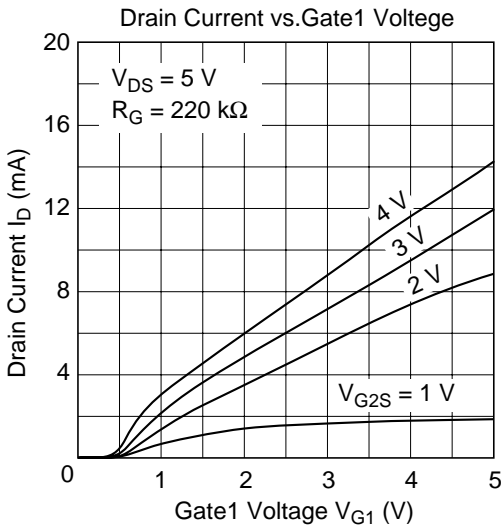


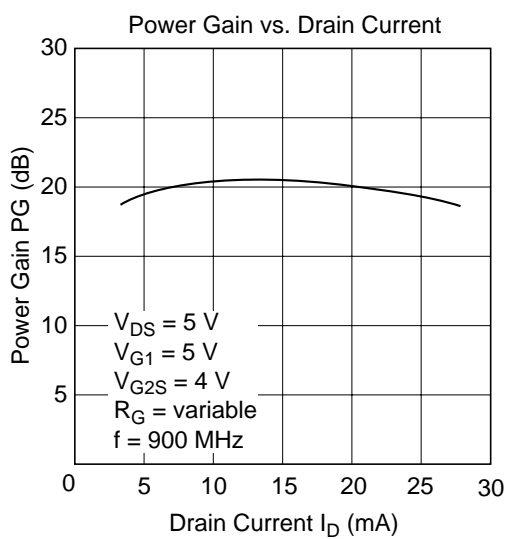
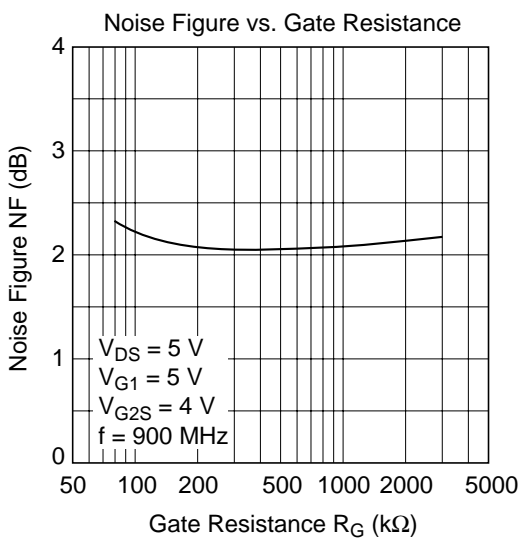
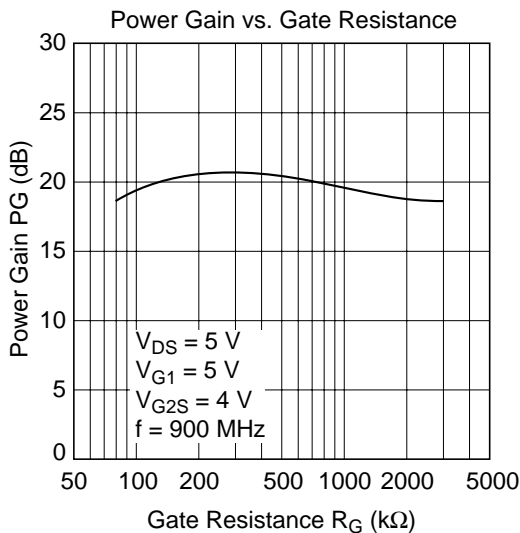
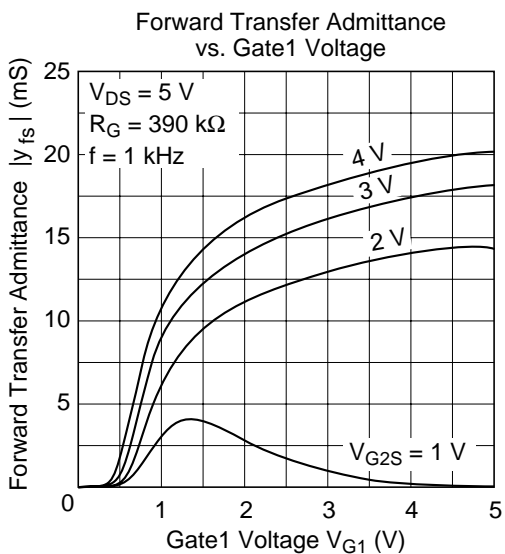
Drain Current vs. Gate2 to Source Voltage

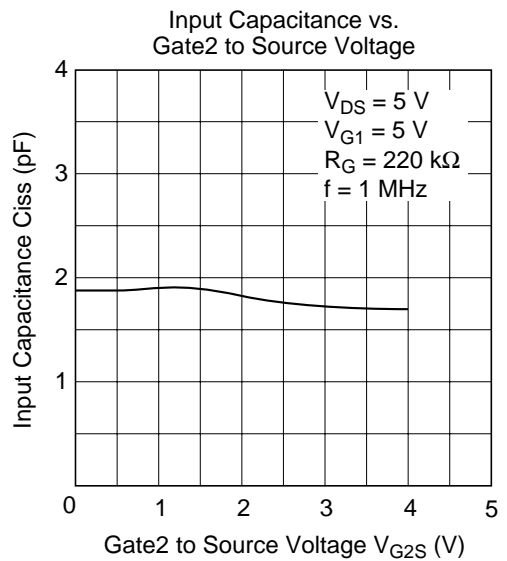
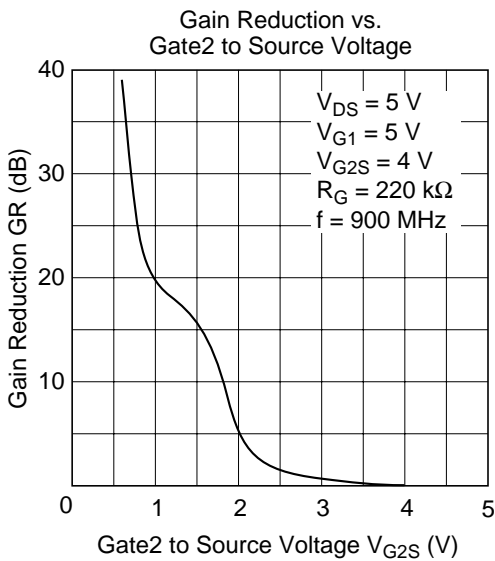
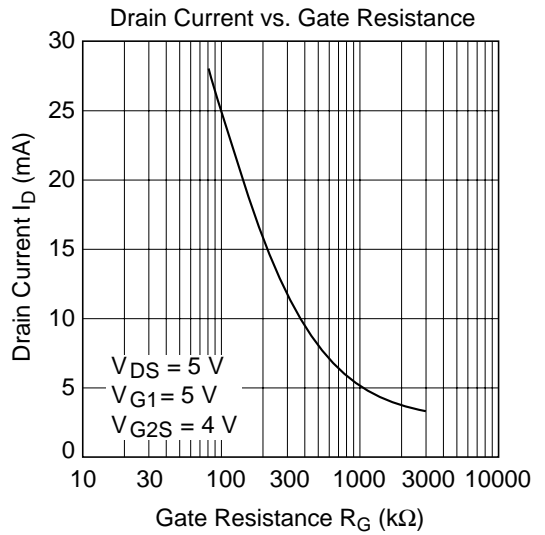
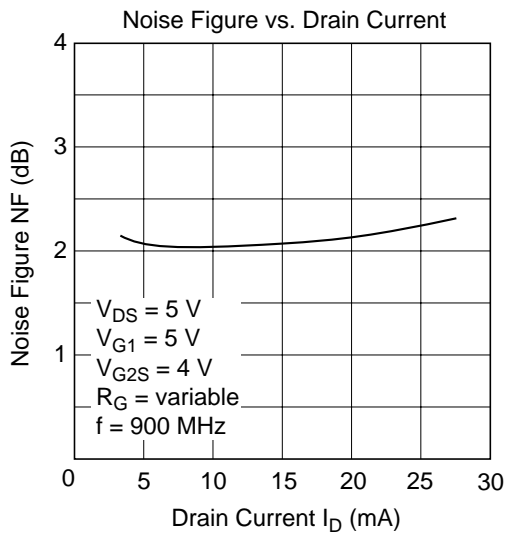


Drain Current vs. Gate1 Voltage

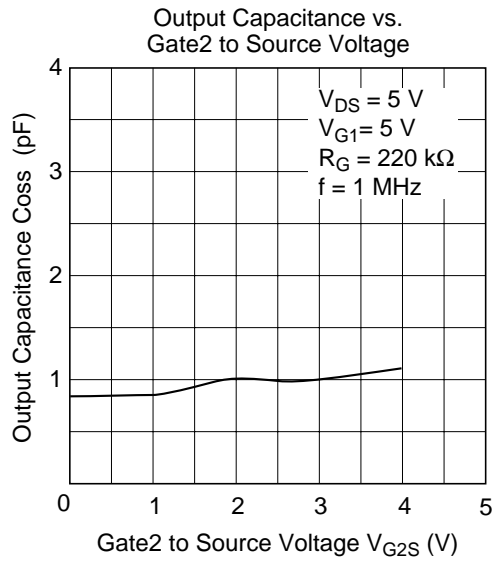






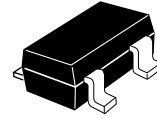
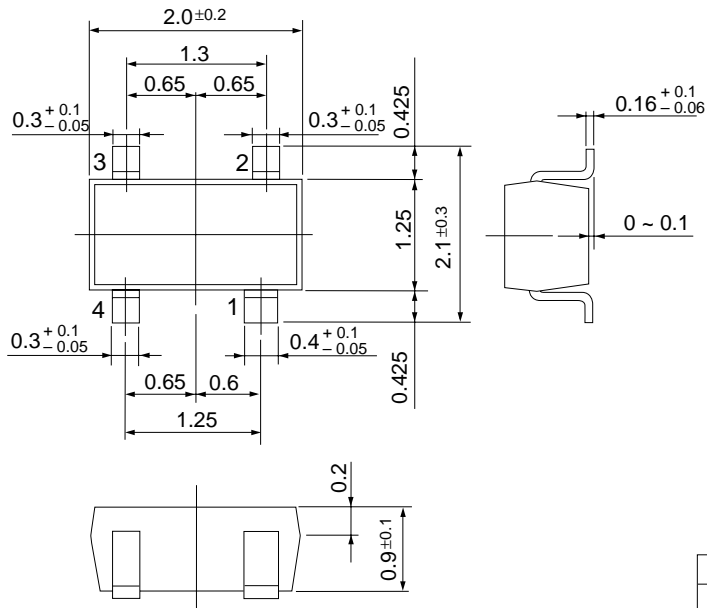






## Package Dimentions

Unit: mm



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

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