

BB501C

Built in Biasing Circuit MOS FET IC UHF RF Amplifier

REJ03G0830-0600 (Previous ADE-208-701D) Rev.6.00 Aug.10.2005

Features

- Built in Biasing Circuit; To reduce using parts cost & PC board space.
- High gain;

PG = 21.5 dB typ. at f = 900 MHz

• Low noise;

NF = 1.85 dB typ. at f = 900 MHz

Withstanding to ESD;

Built in ESD absorbing diode. Withstand up to 200V at C=200pF, Rs=0 conditions.

• Provide mini mold packages; CMPAK-4(SOT-343mod)

Outline

RENESAS Package code: PTSP0004ZA-A

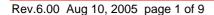
(Package name: CMPAK-4)



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

Notes: 1. Marking is "AS -".

2. BB501C is individual type number of RENESAS BBFET.



Absolute Maximum Ratings

 $(Ta = 25^{\circ}C)$

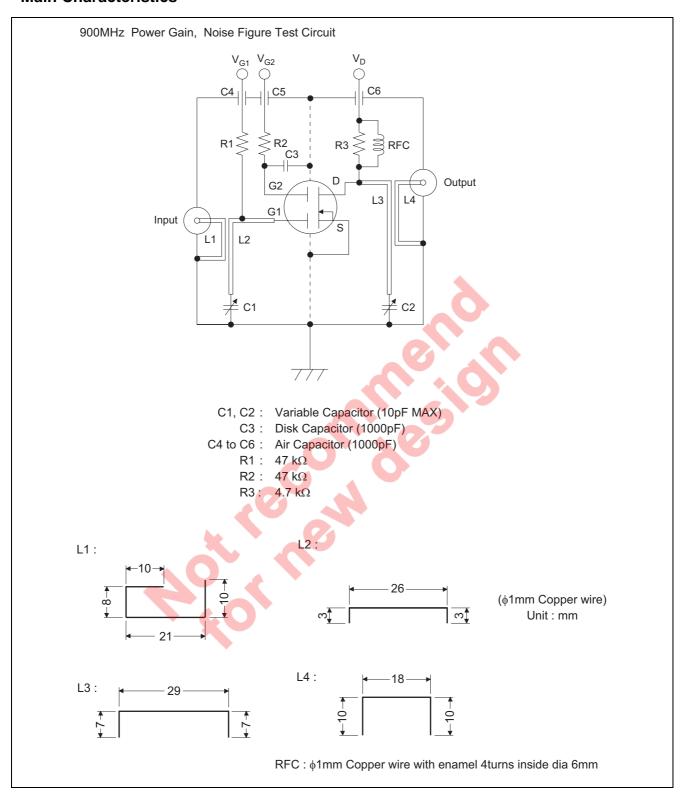
Item	Symbol	Ratings	Unit
Drain to source voltage	V _{DS}	6	V
Gate1 to source voltage	V_{G1S}	+6	V
		- 0	
Gate2 to source voltage	V _{G2S}	+6	V
		-0	
Drain current	I _D	20	mA
Channel power dissipation	Pch	100	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

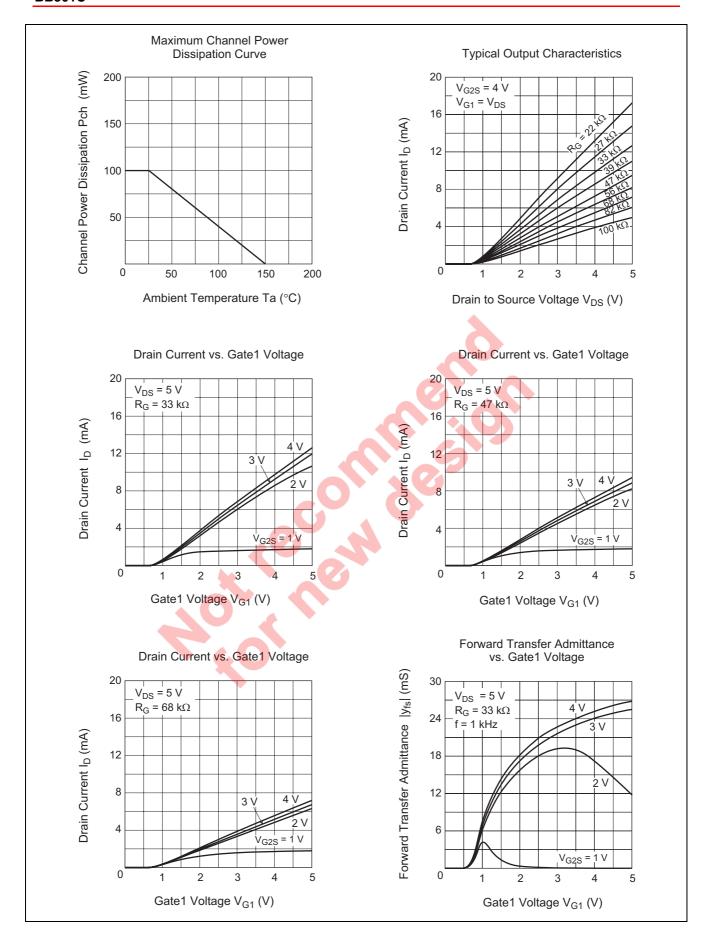
Electrical Characteristics

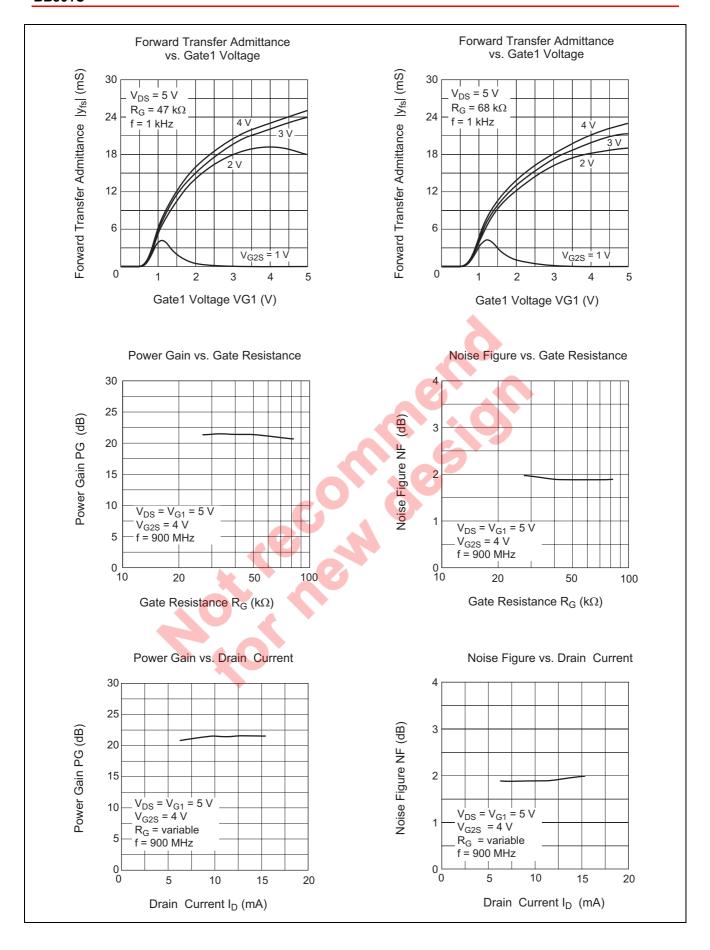
 $(Ta = 25^{\circ}C)$

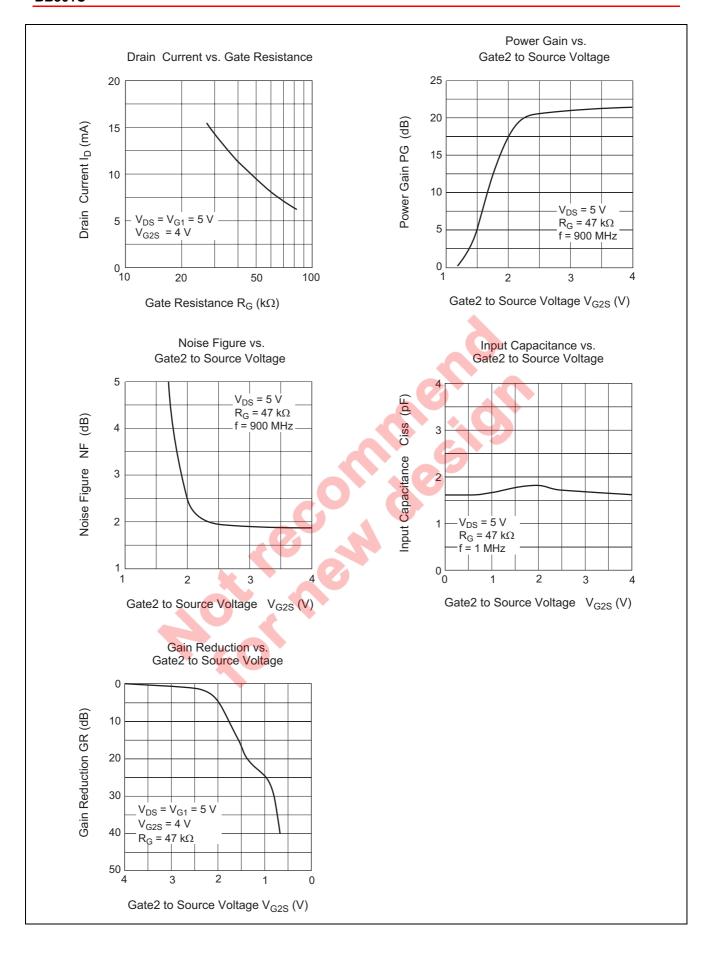
Item	Symbol	Min	Тур	Max	Unit	Test conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	6		_	V	$I_D = 200 \mu\text{A}, V_{G1S} = V_{G2S} = 0$
Gate1 to source breakdown voltage	$V_{(BR)G1SS}$	+6		_	V	$I_{G1} = +10 \mu A, V_{G2S} = V_{DS} = 0$
Gate2 to source breakdown voltage	$V_{(BR)G2SS}$	+6			V	$I_{G2} = +10 \mu A, V_{G1S} = V_{DS} = 0$
Gate1 to source cutoff current	I _{G1SS}	_	_	+100	nA	$V_{G1S} = +5 \text{ V}, V_{G2S} = V_{DS} = 0$
Gate2 to source cutoff current	I _{G2SS}	_	_	+100	nA	$V_{G2S} = +5 \text{ V}, V_{G1S} = V_{DS} = 0$
Gate1 to source cutoff voltage	V _{G1S(off)}	0.5	0.7	1.0	V	$V_{DS} = 5 \text{ V}, V_{G2S} = 4 \text{ V}$
						I _D = 100 μA
Gate2 to source cutoff voltage	$V_{G2S(off)}$	0.5	0.7	1.0	V	$V_{DS} = 5 \text{ V}, V_{G1S} = 5 \text{ V}$
						$I_D = 100 \mu A$
Drain current	I _{D(op)}	7	10	13	mA	$V_{DS} = 5 \text{ V}, V_{G1} = 5 \text{ V}$
						$V_{G2S} = 4 \text{ V}, R_G = 47 \text{ k}\Omega$
Forward transfer admittance	y _{fs}	19	24	29	mS	$V_{DS} = 5 \text{ V}, V_{G1} = 5 \text{ V}, V_{G2S} = 4 \text{ V}$
	10					$R_G = 47 \text{ k}\Omega, f = 1 \text{ kHz}$
Input capacitance	Ciss	1.4	1.7	2.0	pF	$V_{DS} = 5 \text{ V}, V_{G1} = 5 \text{ V}$
Output capacitance	Coss	0.7	1.1	1.5	pF	$V_{G2S} = 4 \text{ V}, R_G = 47 \text{ k}\Omega$
Reverse transfer capacitance	Crss	_	0.019	0.04	pF	f = 1 MHz
Power gain	PG	17	21.5	_	dB	$V_{DS} = 5 \text{ V}, V_{G1} = 5 \text{ V}$
Noise figure	NF	_	1.85	2.4	dB	$V_{G2S} = 4 \text{ V}, R_G = 47 \text{ k}\Omega$
						f = 900 MHz

Main Characteristics

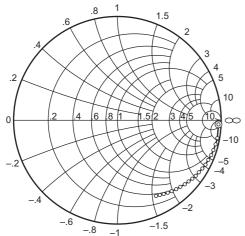








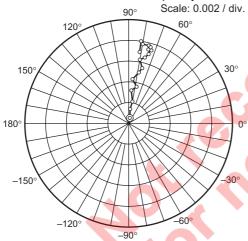
S11 Parameter vs. Frequency



Test Condition: $V_{DS} = 5 \text{ V}$, $V_{G1} = 5 \text{ V}$ $V_{G2S} = 4 \text{ V}$, $R_G = 47 \text{ k}\Omega$, $Zo = 50\Omega$

50 to 1000 MHz (50 MHz step)

S12 Parameter vs. Frequency

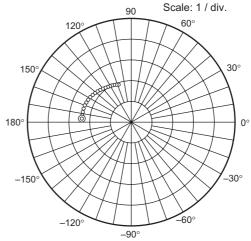


Test Condition: V_{DS} = 5 V , V_{G1} = 5 V V_{G2S} = 4 V , R_{G} = 47 k Ω , Zo = 50 Ω

50 to 1000 MHz (50 MHz step)

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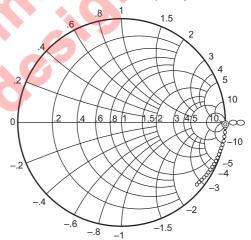
S21 Parameter vs. Frequency



Test Condition: $V_{DS} = 5 \text{ V}$, $V_{G1} = 5 \text{ V}$ $V_{G2S} = 4 \text{ V}$, $R_G = 47 \text{ k}\Omega$, $Zo = 50\Omega$

50 to 1000 MHz (50 MHz step)

S22 Parameter vs. Frequency



Test Condition: V_{DS} = 5 V , V_{G1} = 5 V $V_{G2S} = 4 \ V \ , R_G = 47 \ k\Omega \ ,$ Zo = 50Ω

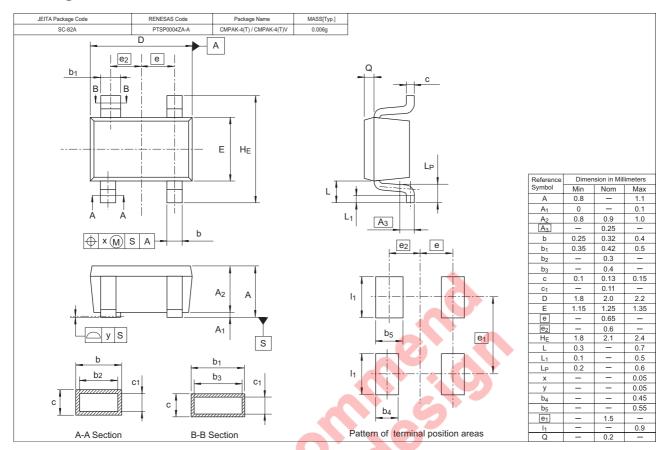
50 to 1000 MHz (50 MHz step)

<u>____</u>

S Parameter

 $(V_{DS} = V_{G1} = 5V,\, V_{G2S} = 4V,\, R_G = 47 k\Omega,\, Zo = 50\Omega)$

Package Dimensions



Ordering Information

Part Name	Quantity		Shipping Container
BB501CAS-TL-E	3000	φ 17	'8 mm Reel, 8 mm Emboss Taping

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