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# BB201M

Build in Biasing Circuit MOS FET IC  
UHF RF Amplifier

# HITACHI

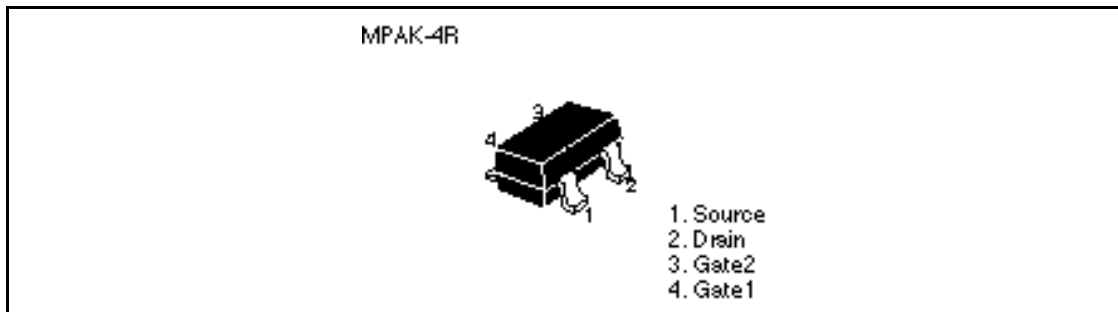
ADE-208-713A (Z)  
2nd. Edition  
Dec. 1998

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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 200V at C=200pF, Rs=0 conditins.
- Provide mini mold packages; MPAK-4R(SOT-143 var.)

## Outline



- Notes: 1. Marking is "AV-".  
2. BB201M is individual type number of HITACHI BBFET.



## BB201M

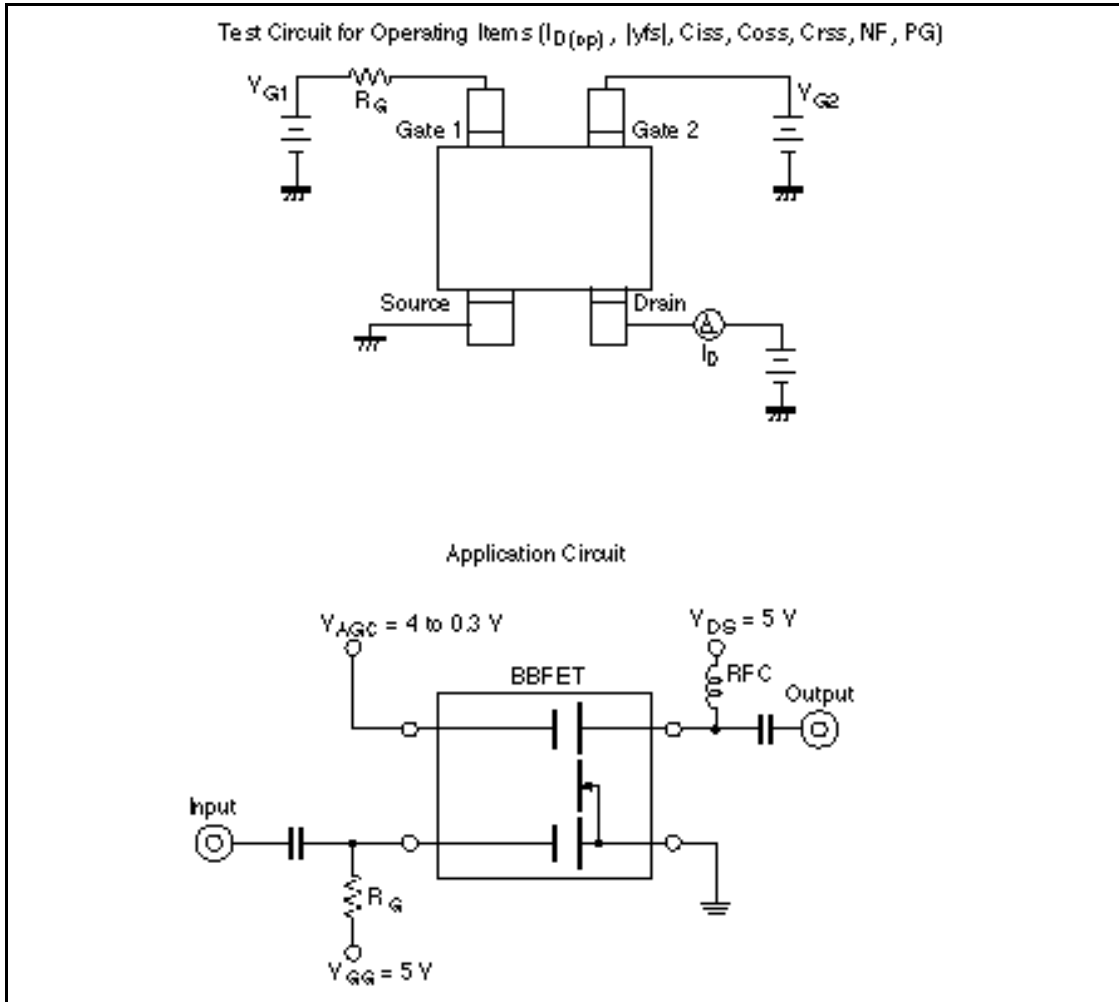
### Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DS}$	6	V
Gate1 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	150	mW
Channel temperature	Tch	150	°C
Storage temperature	Tstg	-55 to +150	°C

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

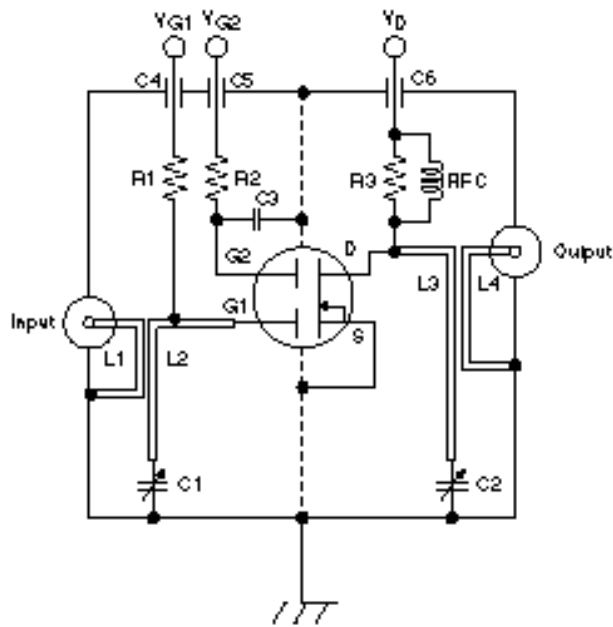
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Drain to source breakdown voltage	$V_{(BR)DSS}$	6	—	—	V	$I_D = 200\mu A, V_{G1S} = V_{G2S} = 0$
Gate1 to source breakdown voltage	$V_{(BR)G1SS}$	+6	—	—	V	$I_{G1} = +10\mu A, V_{G2S} = V_{DS} = 0$
Gate2 to source breakdown voltage	$V_{(BR)G2SS}$	±6	—	—	V	$I_{G2} = \pm 10\mu A, V_{G1S} = V_{DS} = 0$
Gate1 to cutoff current	$I_{G1SS}$	—	—	+100	nA	$V_{G1S} = +5V, V_{G2S} = V_{DS} = 0$
Gate2 to cutoff current	$I_{G2SS}$	—	—	±100	nA	$V_{G2S} = \pm 5V, V_{G1S} = V_{DS} = 0$
Gate1 to source cutoff voltage	$V_{G1S(off)}$	0.2	0.45	0.8	V	$V_{DS} = 5V, V_{G2S} = 4V$ $I_D = 100\mu A$
Gate2 to source cutoff voltage	$V_{G2S(off)}$	0.4	0.7	1.0	V	$V_{DS} = 5V, V_{G1S} = 5V$ $I_D = 100\mu A$
Drain current	$I_{D(op)}$	10	15	20	mA	$V_{DS} = 5V, V_{G1} = 5V, V_{G2S} = 4V$ $R_G = 220k$
Forward transfer admittance	$ y_{fs} $	16	22	—	mS	$V_{DS} = 5V, V_{G1} = 5V, V_{G2S} = 4V$ $R_G = 220k, f = 1kHz$
Input capacitance	$c_{iss}$	1.2	1.7	2.2	pF	$V_{DS} = 5V, V_{G1} = 5V$
Output capacitance	$c_{oss}$	0.7	1.1	1.5	pF	$V_{G2S} = 4V, R_G = 220k$
Reverse capacitance	$c_{rss}$	—	0.012	0.03	pF	$f = 1MHz$
Power gain	PG	16	20	—	dB	$V_{DS} = 5V, V_{G1} = 5V, V_{G2S} = 4V$
Noise figure	NF	—	2.0	3.0	dB	$R_G = 220k, f = 900MHz$

Main Characteristics



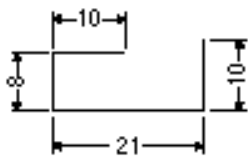
# BB201M

900MHz Power Gain, Noise Test Circuit

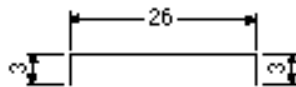


- C1, C2 : Variable Capacitor (10pF MAX)
- C3 : Disk Capacitor (1000pF)
- C4 to C6 : Air Capacitor (1000pF)
- R1 : 220 k $\Omega$
- R2 : 47 k $\Omega$
- R3 : 4.7 k $\Omega$

L1 :

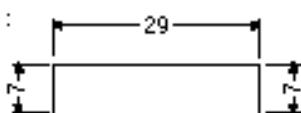


L2 :

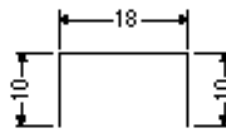


( $\phi$  1mm Copper wire)  
Unit : mm

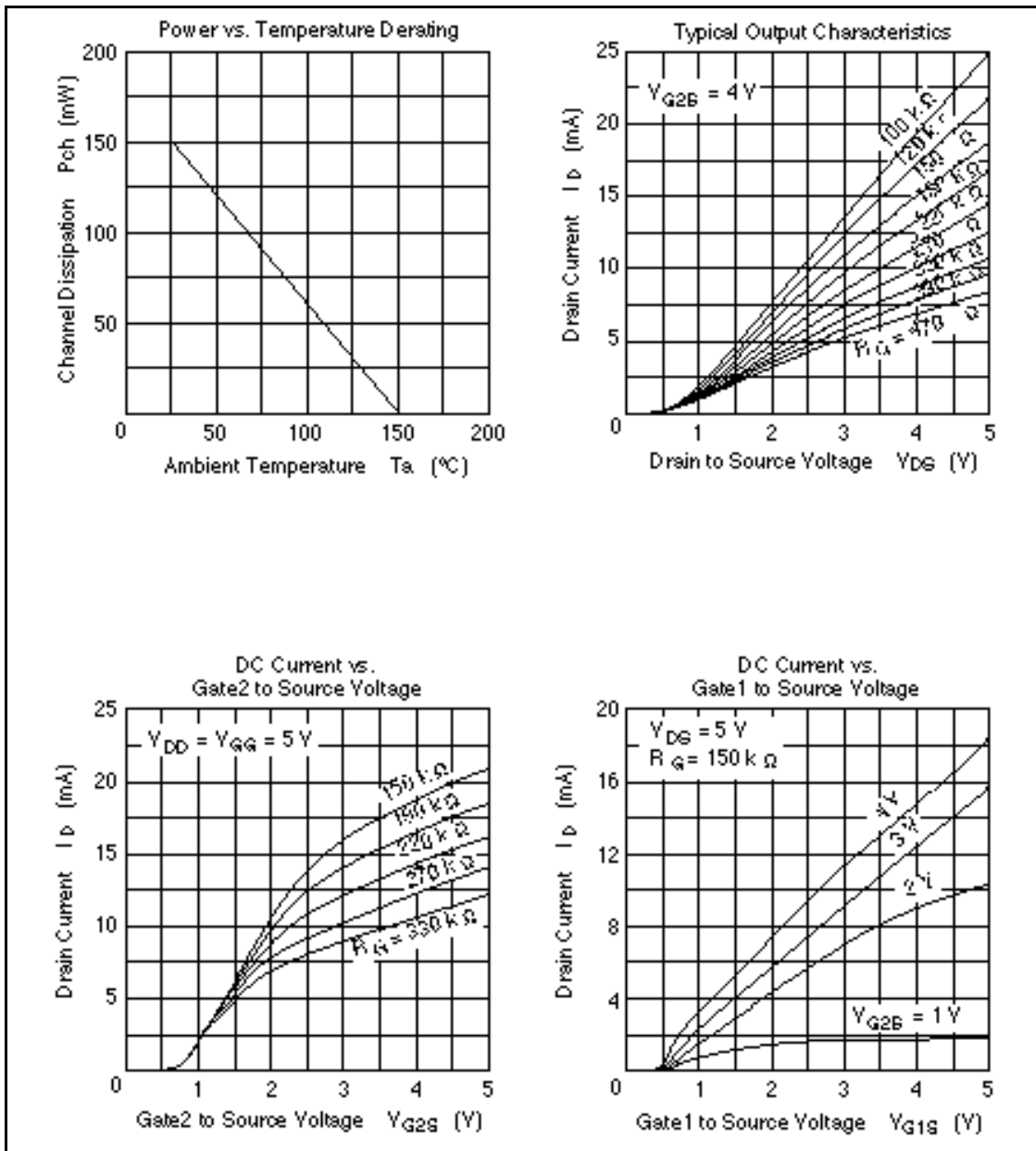
L3 :

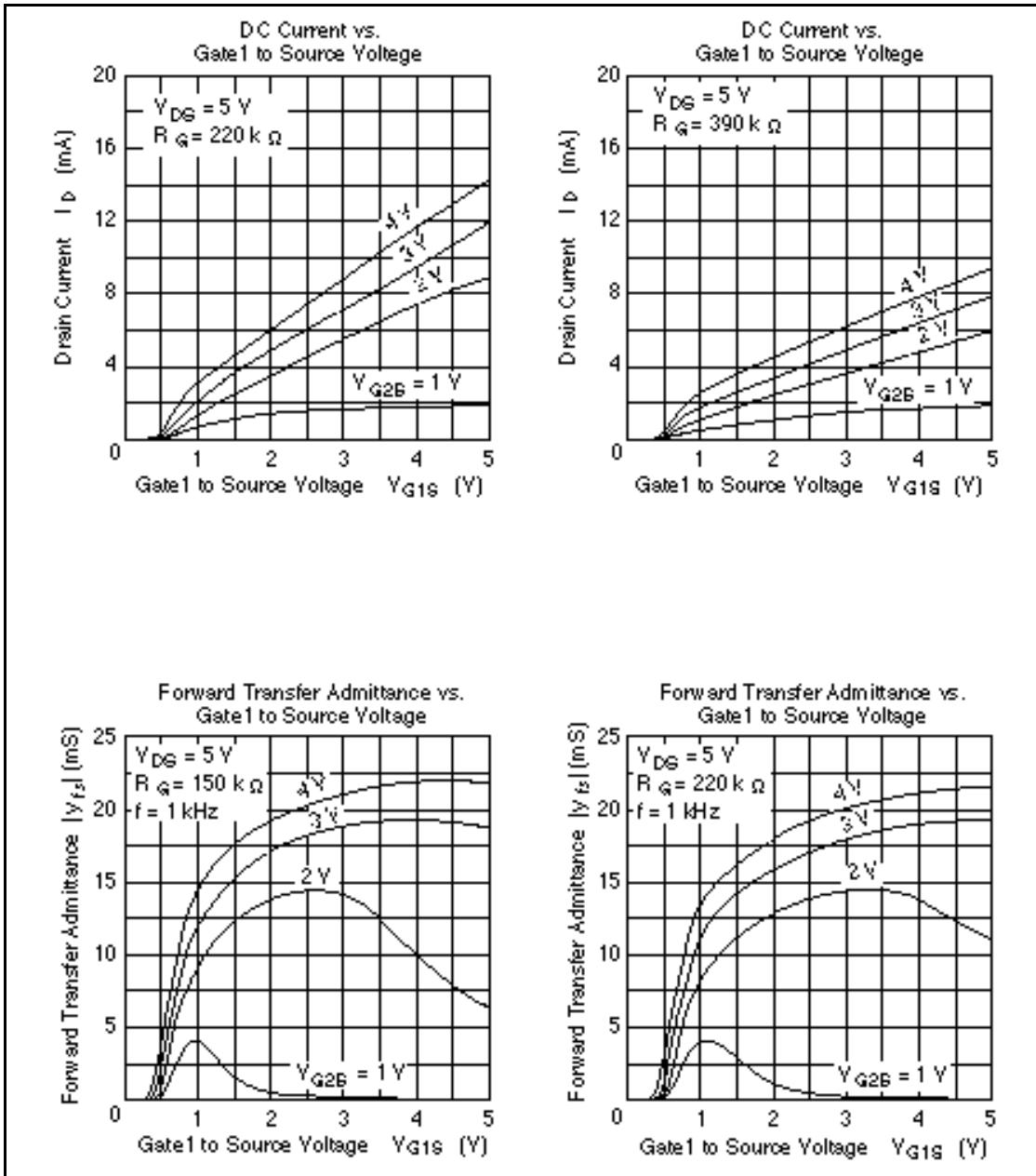


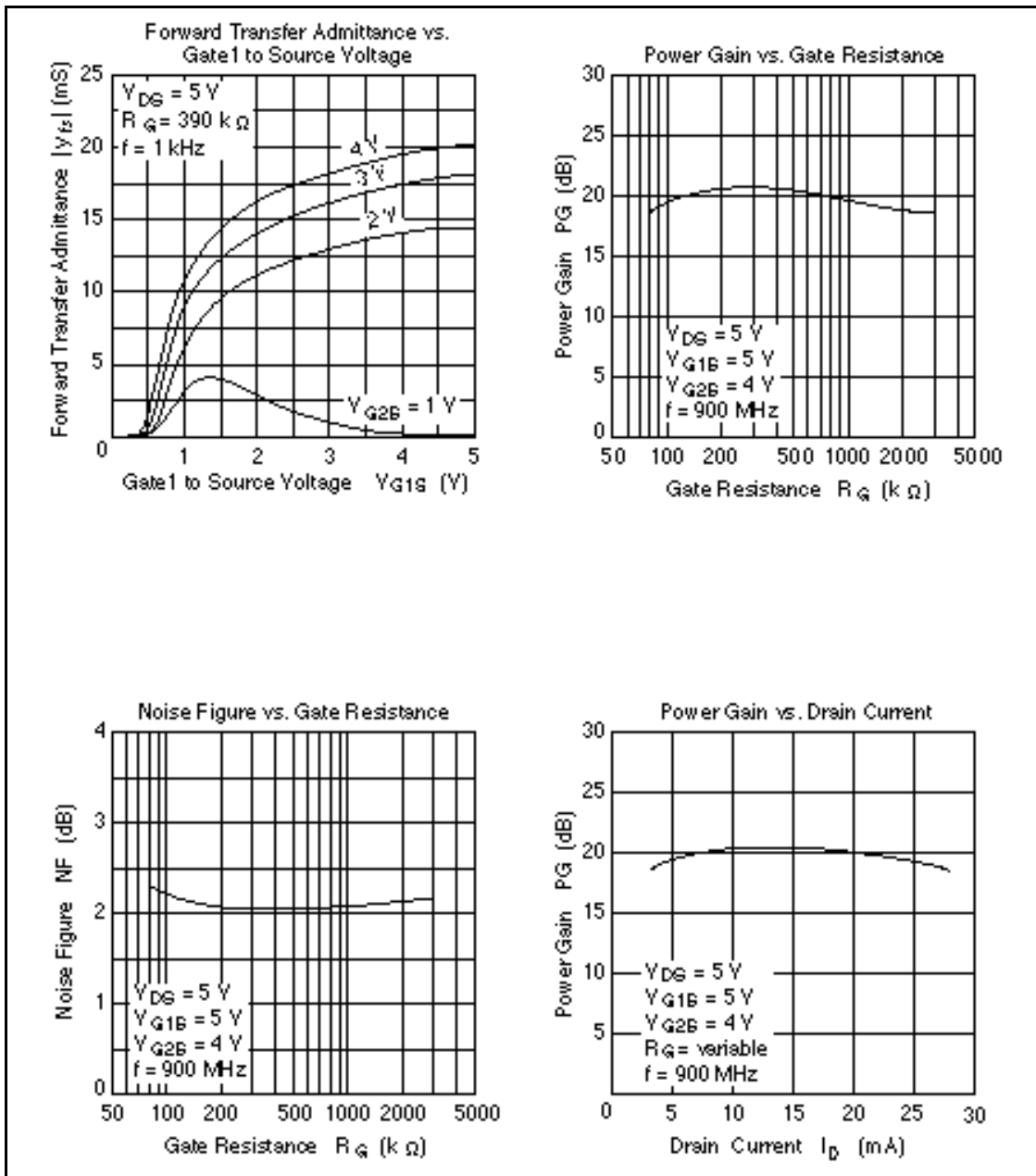
L4 :

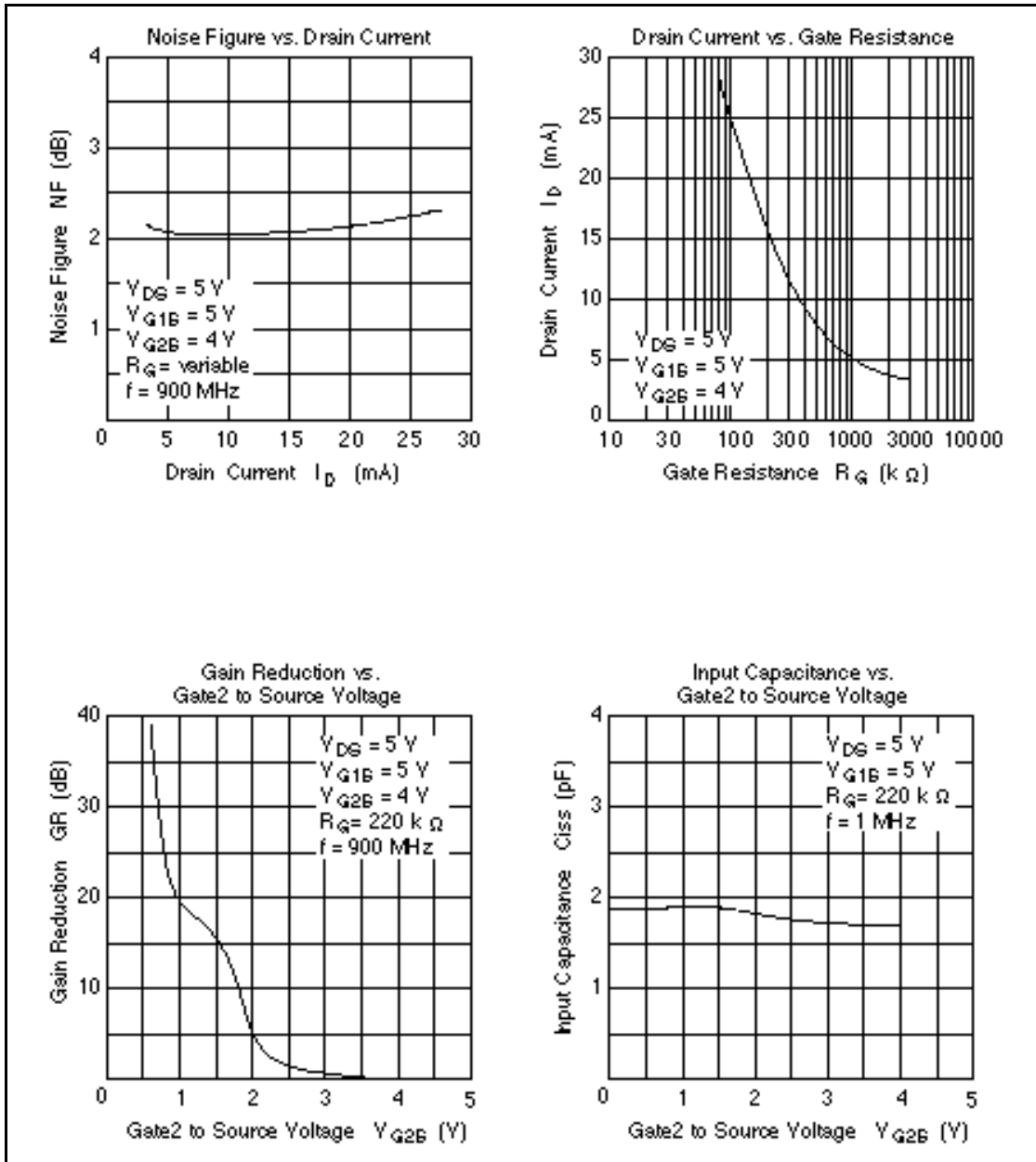


RFC :  $\phi$  1mm Copper wire with enamel 4turns inside dia. 6mm

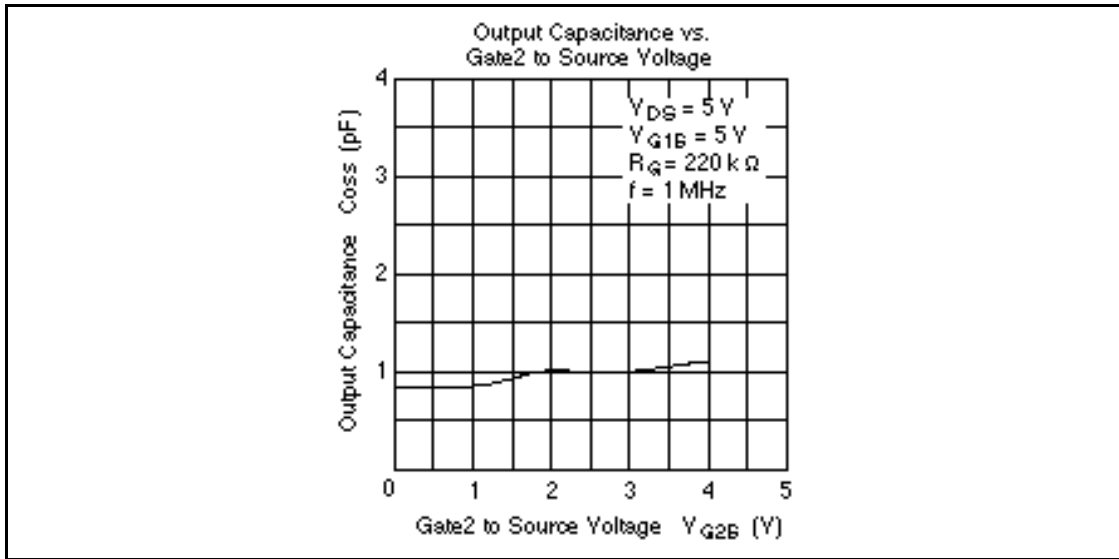








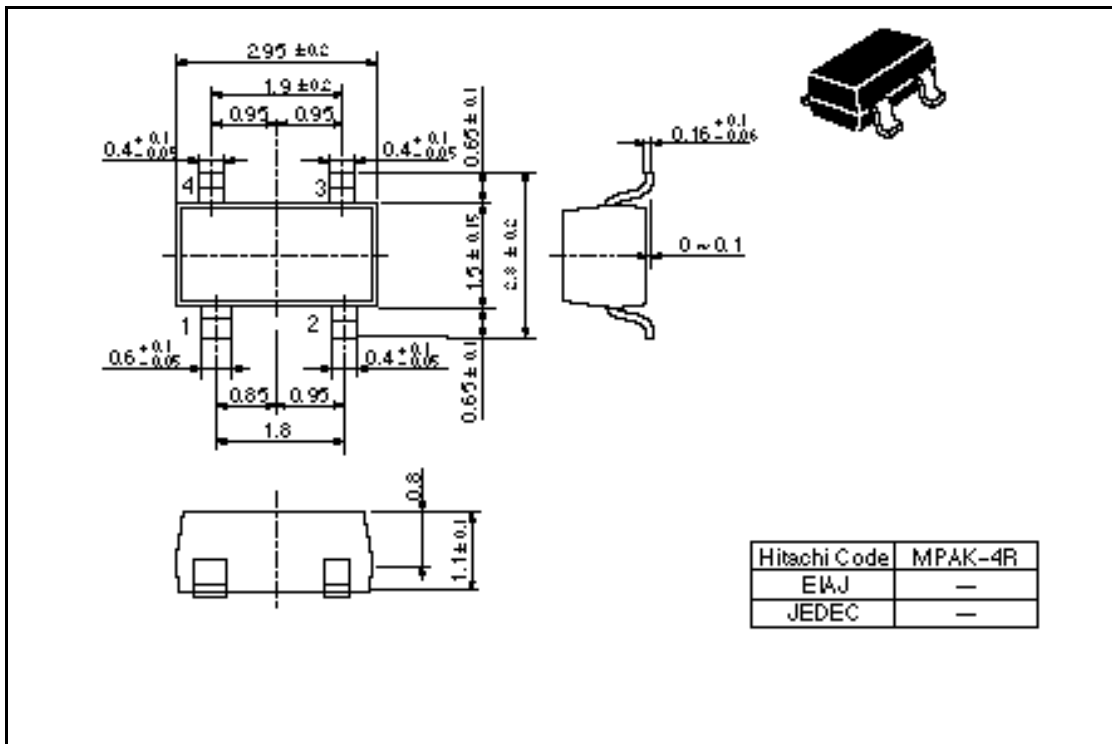




# BB201M

## Package Dimensions

Unit: mm



## Cautions

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