DATA SHEET

NEC

BIPOLAR ANALOG INTEGRATED CIRCUIT

μPC1676G

GENERAL PURPOSE WIDE BNAD AMPLIFIER

DESCRIPTION

The μPC1676G is a silicon monolithic integrated circuit employing small package (4pins mini mold) and designed for use as a wide band amplifier covers from HF band to UHF band.

FEATURES

- Excellent frequency response : 1.2 GHz TYP.
  @ 3 dB down below flat gain.
- High power gain : 22 dB TYP. @ f = 0.5 GHz.
- High isolation.
- Super small package.
- Uni- and low voltage operation : V_{CC} = 5 V
- Input and output matching 50 Ω.

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

Supply Voltage	V_{CC}	6	V
Total Power Dissipation	P_T	200	mW
Operating Temperature	T_{opt}	–40 to +85	°C
Storage Temperature	T_{stg}	–55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C, V_{CC} = 5 V)

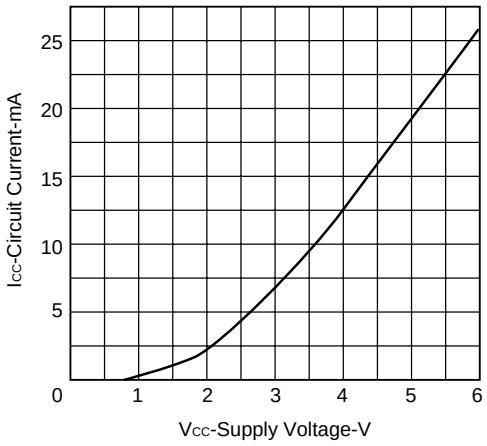
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Circuit Current	I_{CC}	14	19	24	mA	No Signal
Power Gain	G_P	19	22	24	dB	f = 0.5 GHz
Noise Figure	NF		4.5	6.0	dB	f = 0.5 GHz
Upper Limit Operating Frequency	f_u	1.0	1.2		GHz	3 dB down below flat gain
Isolation	ISL	24	28		dB	f = 0.5 GHz
Input Return Loss	RL_{in}	9	12		dB	f = 0.5 GHz
Output Return Loss	RL_{out}	6	9		dB	f = 0.5 GHz
Maximum Output Level	P_O	3	5		dBm	f = 0.5 GHz, P_{in} = 0 dBm

NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

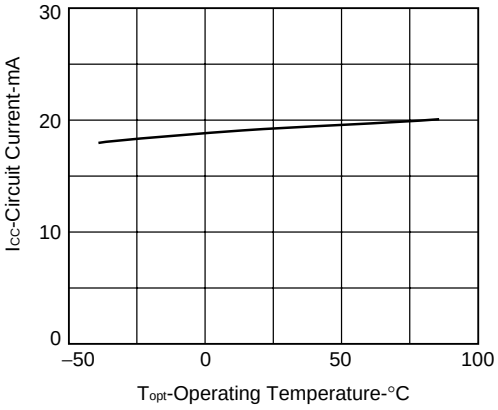
Document No. P12447EJ2V0DS00 (2nd edition)
(Previous No. IC-1891)
Date Published March 1997 N
Printed in Japan

TYPICAL CHARACTERISTICS (T_A = 25 °C)

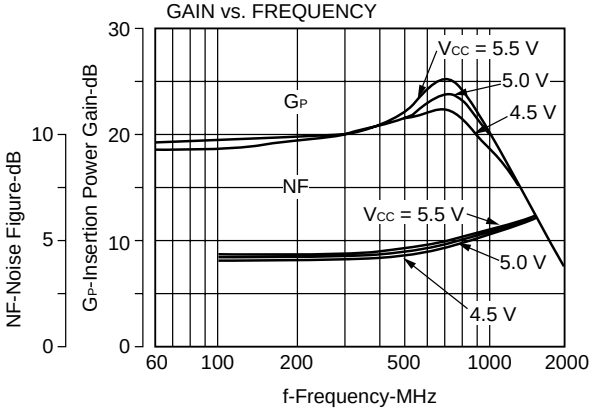
CIRCUIT CURRENT vs. SUPPLY VOLTAGE



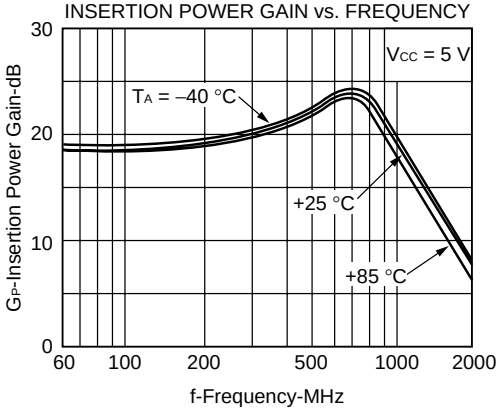
CIRCUIT CURRENT vs. OPERATING TEMPERATURE



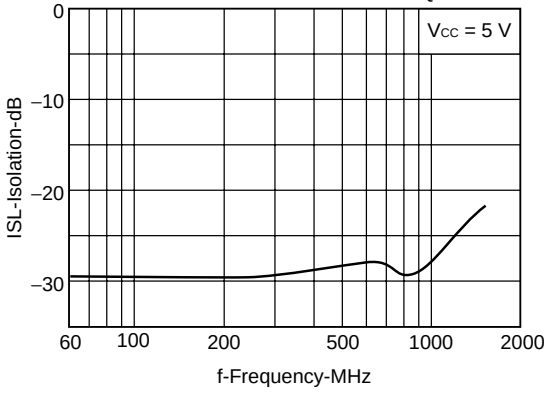
NOISE FIGURE AND INSERTION POWER GAIN vs. FREQUENCY



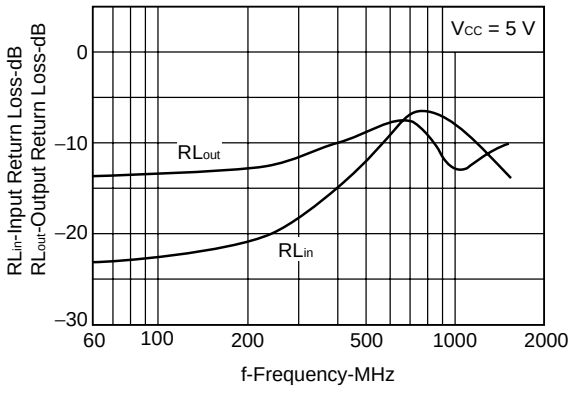
INSERTION POWER GAIN vs. FREQUENCY



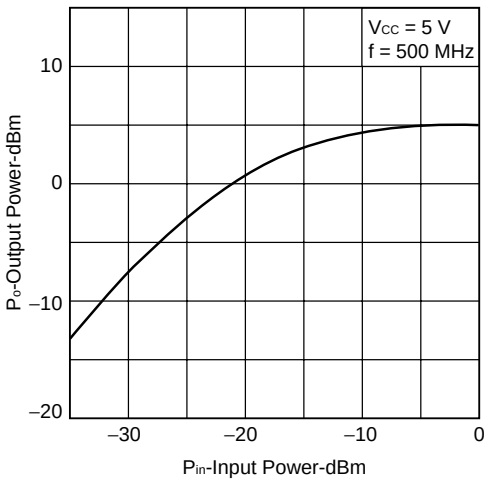
REVERSE INSERTION GAIN vs. FREQUENCY



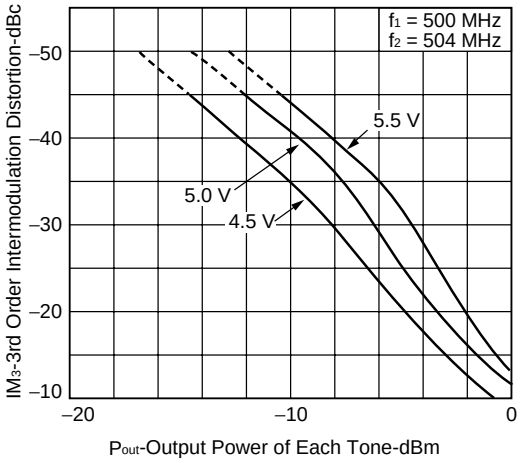
INPUT AND OUTPUT RETURN LOSS vs. FREQUENCY



OUTPUT POWER vs. INPUT POWER



THIRD ORDER INTERMODULATION DISTORTION vs. OUTPUT POWER OF EACH TONE



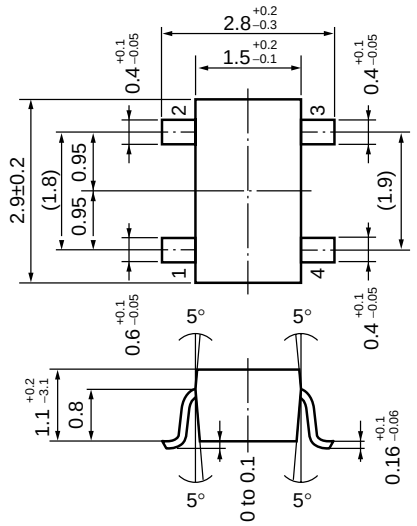
S-PARAMETER

V_{CC} = 5 V, Z_O = 50

f (MHz)	$\lvert S_{11} \rvert$	$\angle S_{11}$	$\lvert S_{21} \rvert$	$\angle S_{21}$	$\lvert S_{12} \rvert$	$\angle S_{12}$	$\lvert S_{22} \rvert$	$\angle S_{22}$
100	0.072	–26.5	8.955	–15.3	0.034	–2.0	0.220	171.2
200	0.093	–63.5	9.327	–31.3	0.035	–3.4	0.233	161.3
400	0.175	–120.4	11.021	–66.2	0.038	–8.4	0.303	139.4
600	0.355	–176.4	14.504	–114.3	0.042	–18.4	0.408	107.7
800	0.485	118.7	14.530	177.1	0.037	–25.7	0.361	65.5
1000	0.387	77.5	9.478	123.1	0.044	–20.5	0.231	61.6
1200	0.298	59.2	6.301	85.6	0.057	–28.3	0.251	68.0
1400	0.243	50.5	4.562	53.8	0.070	–41.5	0.292	61.9
1600	0.208	47.1	3.506	24.5	0.083	–56.4	0.313	51.5

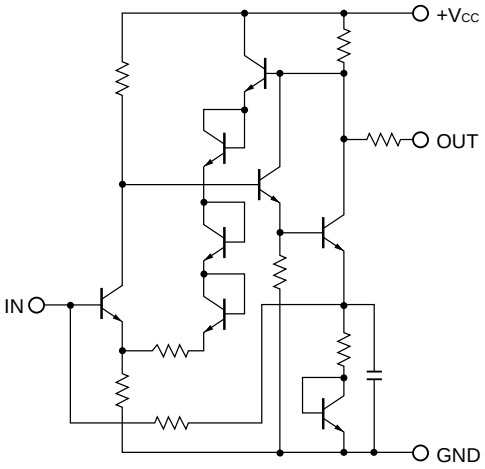
PACKAGE DIMENSIONS

PACKAGE DIMENSIONS
(Units: mm)



PIN CONNECTIONS
1. GND
2. OUTPUT
3. V_{CC}
4. INPUT

EQUIVALENT CIRCUIT



[MEMO]

[MEMO]

[MEMO]

M4 96.5