

MB54502

LOW NOISE AMPLIFIER (2 CIRCUITS)

LOW NOISE AND CURRENT AMPLIFIER

INTRODUCTION

The Fujitsu MB54502 includes two independent amplifiers which are used for mobile telecommunication applications such as handy phones and car phones. Both of the amplifiers achieve low current consumption as well as the low noise performance. Using Fujitsu's advanced technology, MB54502 achieves an Icc of 2mA typ. respectively (total 4mA typ.).

ELECTRICAL CHARACTERISTICS

- Supply voltage 3V (typ.)
- Current consumption 2mA (typ.)
- Input frequency 1.1GHz(max.)
- Gain 14dB (typ.) *1
- Noise figure 2.2dB (typ.) *1
- 1dB compression point -6dBm (typ.) *1
- Amplitude tolerance 2.5dB (typ.) *1
- Input return loss 8dB (typ.) *1
- Output return loss 8dB (typ.) *1

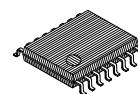
*1 : Measured by the circuit of "measurement circuit example".
(fin = 820MHz)

PACKAGE

- 16-pin Plastic Shrink Small Outline Package (Suffix: -PFV)

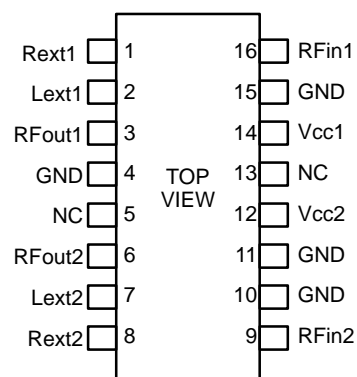
ABSOLUTE MAXIMUM RATINGS

Parameters	Symbol	Value	Unit
Supply Voltage	Vcc	-0.5 to 7.0	V
Output Voltage	Vo	-0.5 to Vcc+0.5	V
Output Current	Io	0 to 10	mA
Storage Temperature	TSTG	-55 to +125	°C



**PLASTIC PACKAGE
FP-16P-M05**

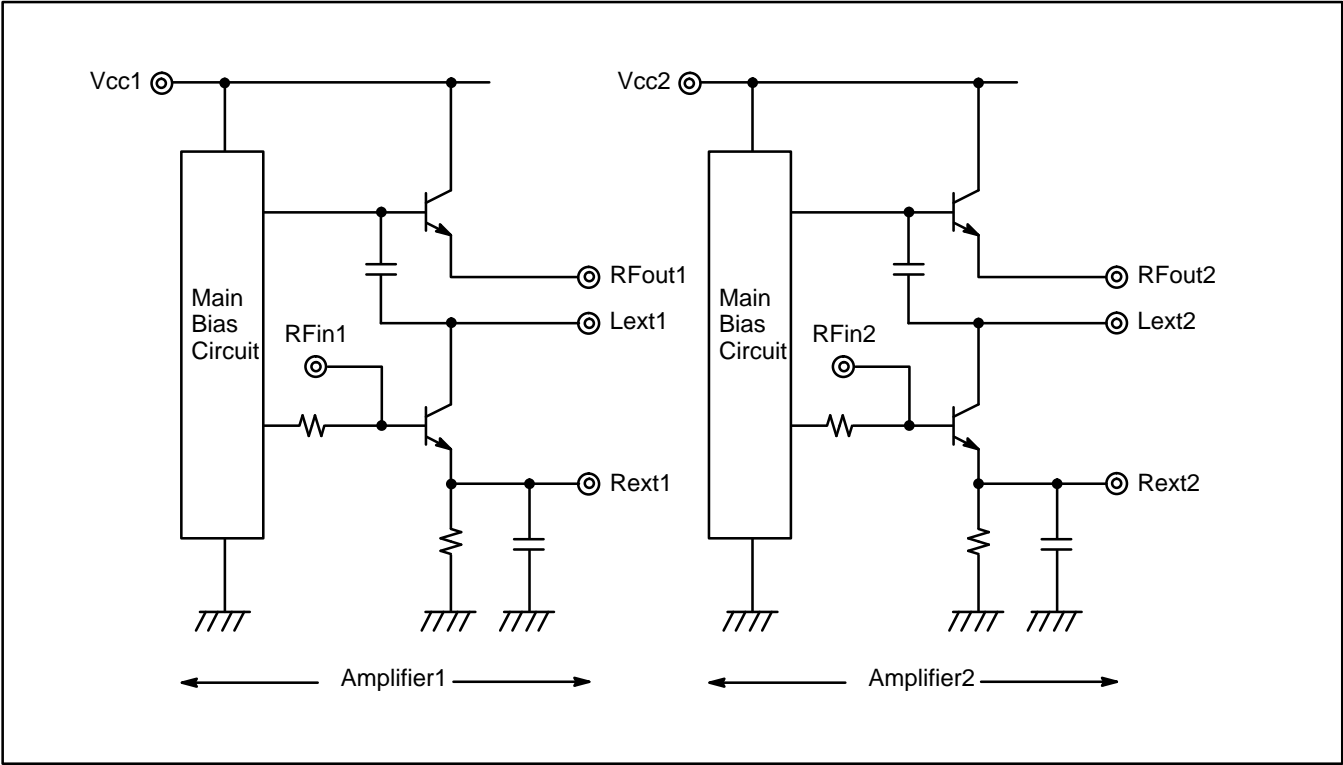
PIN ASSIGNMENT



NOTE: Permanent device damage may occur if the above **Absolute Maximum Ratings** are exceeded. Functional operation should be restricted to the conditions as detailed in the operational sections of this data sheet. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

This device contains circuitry to protect the inputs against damage due to high static voltages or electric fields. However, it is advised that normal precautions be taken to avoid application of any voltage higher than maximum rated voltages to this high impedance circuit.

EQUIVALENT CIRCUIT



PIN DESCRIPTIONS

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	Rext1	Emitter (amplifier 1)	9	RFin2	Input (amplifier 2)
2	Lext1	Load connection (amplifier 1)	10	GND	Ground
3	RFout1	Output (amplifier 1)	11	GND	Ground
4	GND	Ground	12	Vcc2	Power supply (amplifier 2)
5	NC	No connection	13	NC	No connection
6	RFout2	Output (amplifier 2)	14	Vcc1	Power supply (amplifier 1)
7	Lext2	Load connection (amplifier 2)	15	GND	Ground
8	Rext2	Emitter (amplifier 2)	16	RFin1	Input (amplifier 1)

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Supply Voltage	V _{CC}	2.7	3.0	5.5	V
Input Voltage	V _I	GND	–	V _{CC}	V
Operating Temperature	T _a	–40	–	+85	°C

Notes: To protect against damage by electrostatic discharge, note the following handling precautions:

- Store and transport devices in conductive containers.
- Use properly grounded workstations, tools, and equipment.
- Turn off power before inserting or removing this device into or from a socket.
- Protect leads with conductive sheet, when transporting a board mounted device.

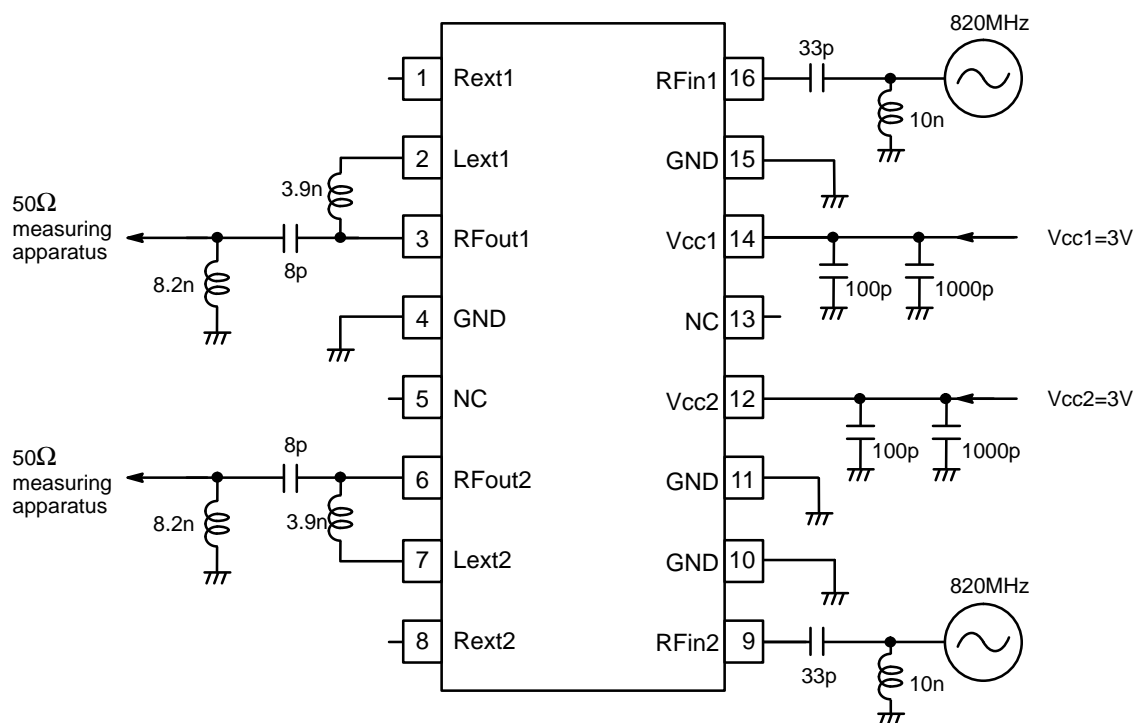
ELECTRICAL CHARACTERISTICS

(Vcc1 = +3.0V, Vcc2=0.0V, Ta = 25°C
or Vcc1 = 0.0V, Vcc2=+3.0V, Ta = 25°C)

Parameter	Symbol	Conditions	Target Value			Unit
			Min.	Typ.	Max.	
Supply Voltage	V _{CC}		2.7	3.0	5.5	V
Supply Current	I _{CC}	1 amplifier active	–	2.0	–	mA
Operating Frequency	f _{in}		–	820	1100	MHz
Gain	Gain		–	14	–	dB
Noise Figure	NF		–	2.2	–	dB
1dB Compression Point	P _{1dB}	Output	–	–6	–	dBm
Amplitude Tolerance	–	820 ± 50 MHz	–	2.5	–	dB
Input Return Loss	RL _{IN}		–	8	–	dB
Output Return Loss	RL _{OUT}		–	8	–	dB

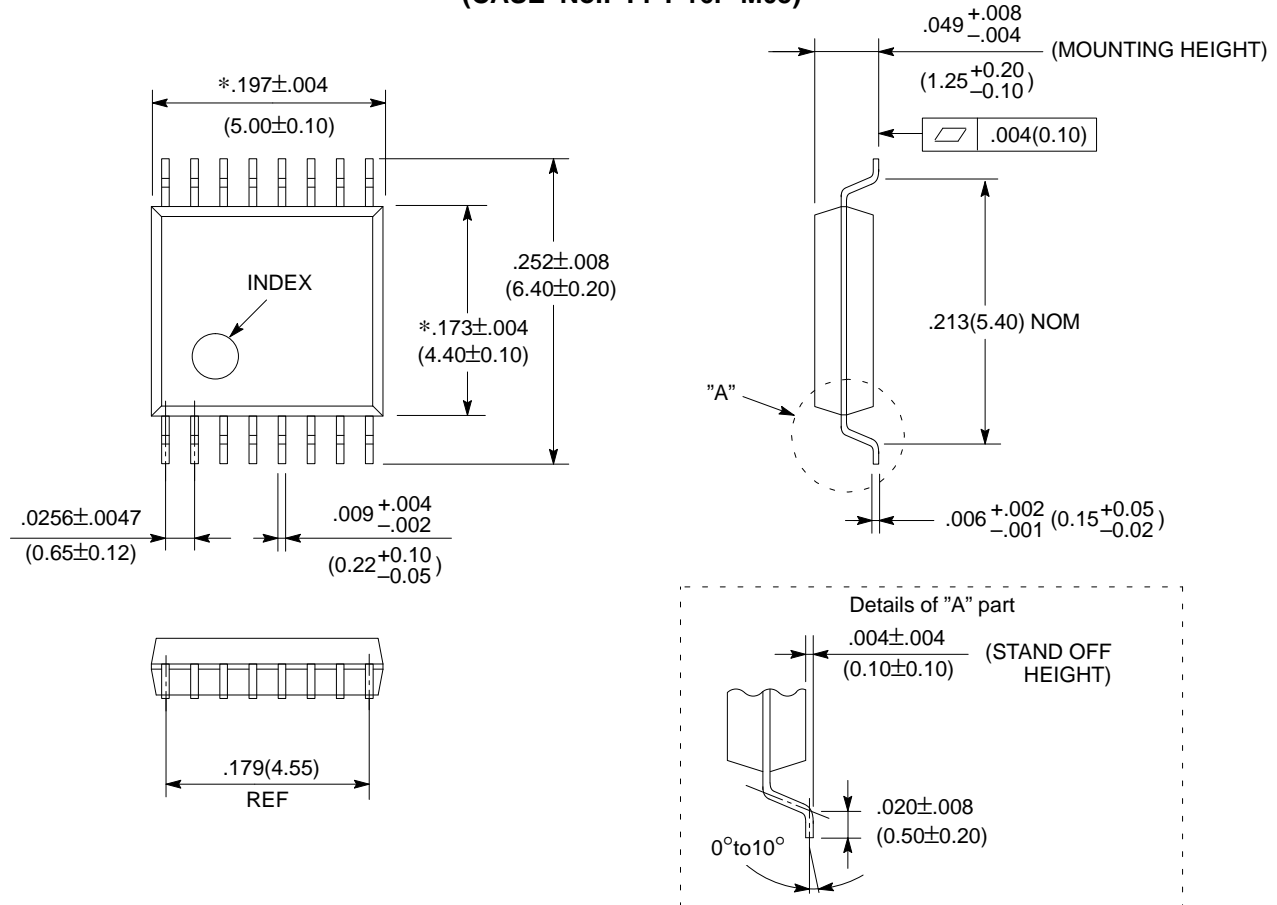
Remark: Electrical characteristics depend on external circuits (elements) or status of mounting.
The above characteristics are measured by the test circuit in the next page.

MEASUREMENT CIRCUIT (EXAMPLE)



PACKAGE DIMENSIONS

16-LEAD PLASTIC FLAT PACKAGE (CASE No.: FPT-16P-M05)



*:This dimension does not include resin protrusion.

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Dimensions in
inches (millimeters)

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Circuit diagrams utilizing Fujitsu products are included as a means of illustrating typical semiconductor applications. Complete information sufficient for construction purposes is not necessarily given.

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