FUJITSU SEMICONDUCTOR
DATA SHEET

DS04-23506-1E

ASSP

LOW NOISE AMPLIFIER (2 CIRCUITS)

MB54502

■ DESCRIPTION

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.).

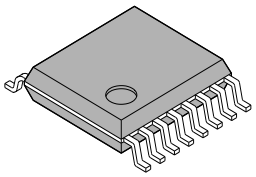
■ FEATURES

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

■ PACKAGE

16-pin Plastic SSOP



(FPT-16P-M05)

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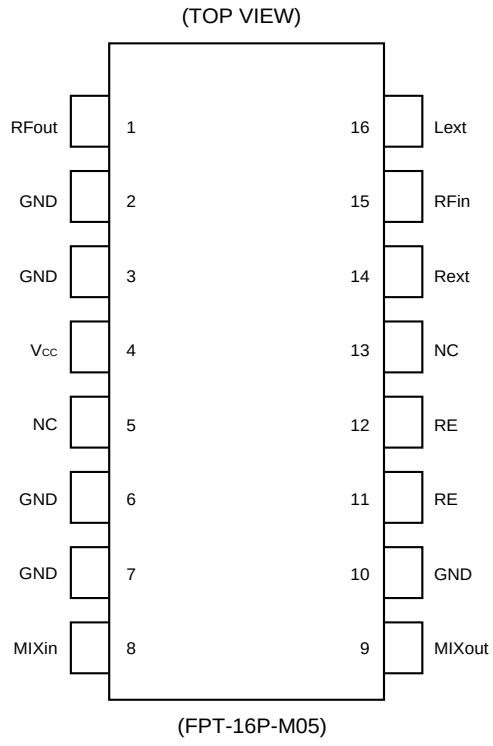
■ PIN ASSIGNMENT



■ ABSOLUTE MAXIMUM RATINGS

Parameters	Symbol	Value	Unit
Supply Voltage	V_{CC}	–0.5 to 7.0	V
Output Voltage	V_O	–0.5 to V_{CC} + 0.5	V
Output Current	I_O	0 to 10	mA
Storage Temperature	T_{STG}	–55 to +125	°C

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.

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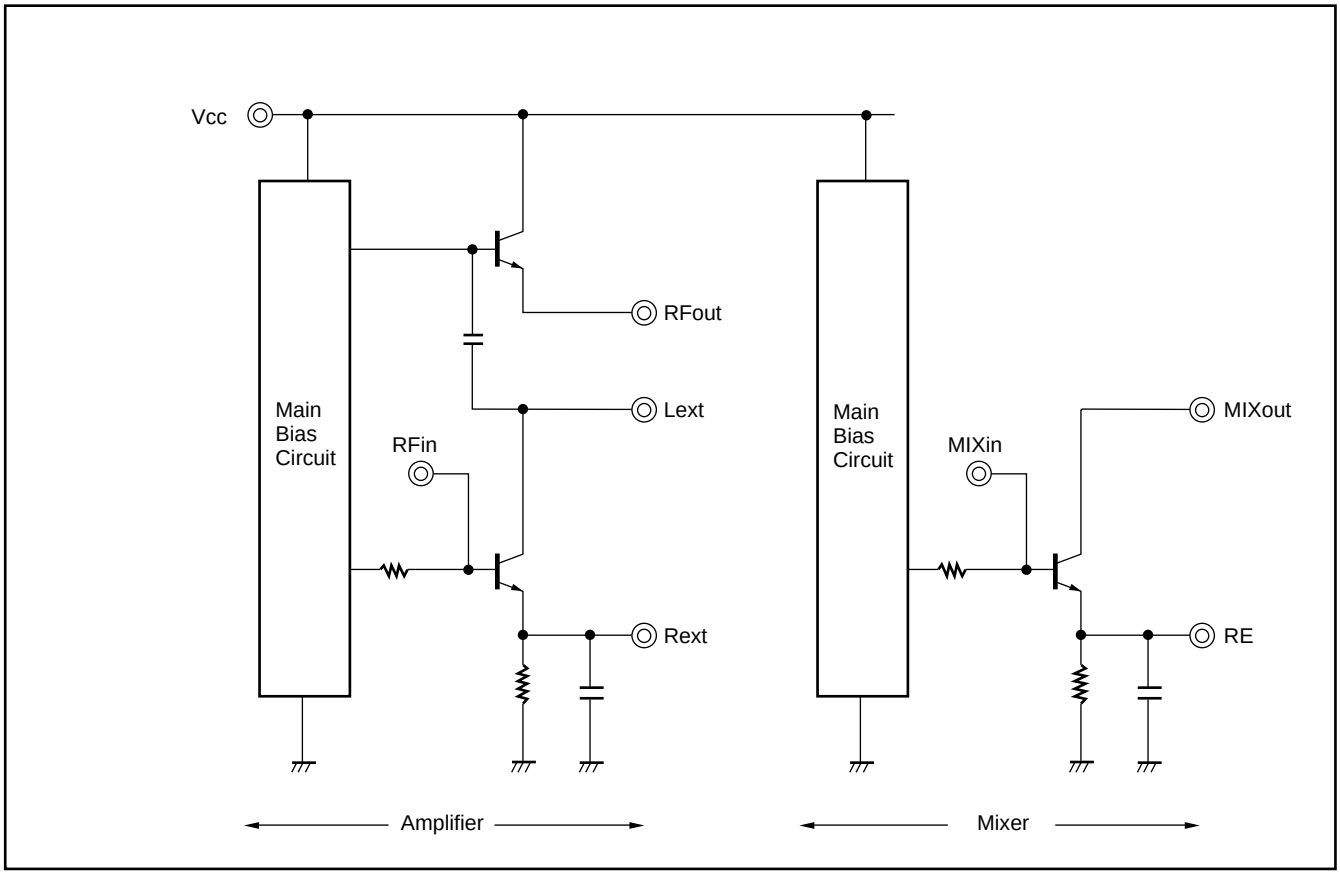
■ EQUIVALENT CIRCUIT



■ PIN DESCRIPTION

Pin No.	Pin Name	Description	Pin No.	Pin Name	Description
1	Rext1	Emitter (amplifier 1)	9	RFin2	Input (amplifier 2)
2	Lext1	Load connection (amplifier1)	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	Ta	–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	fin	—	—	820	1100	MHz
Gain	Gain	—	—	14	—	dB
Noise Figure	NF	—	—	2.2	—	dB
1dB Compression Point	P_{1dB}	Output	—	–6	—	dBm
Amplitude Tolerance	–	820 ± 50MHz	—	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.

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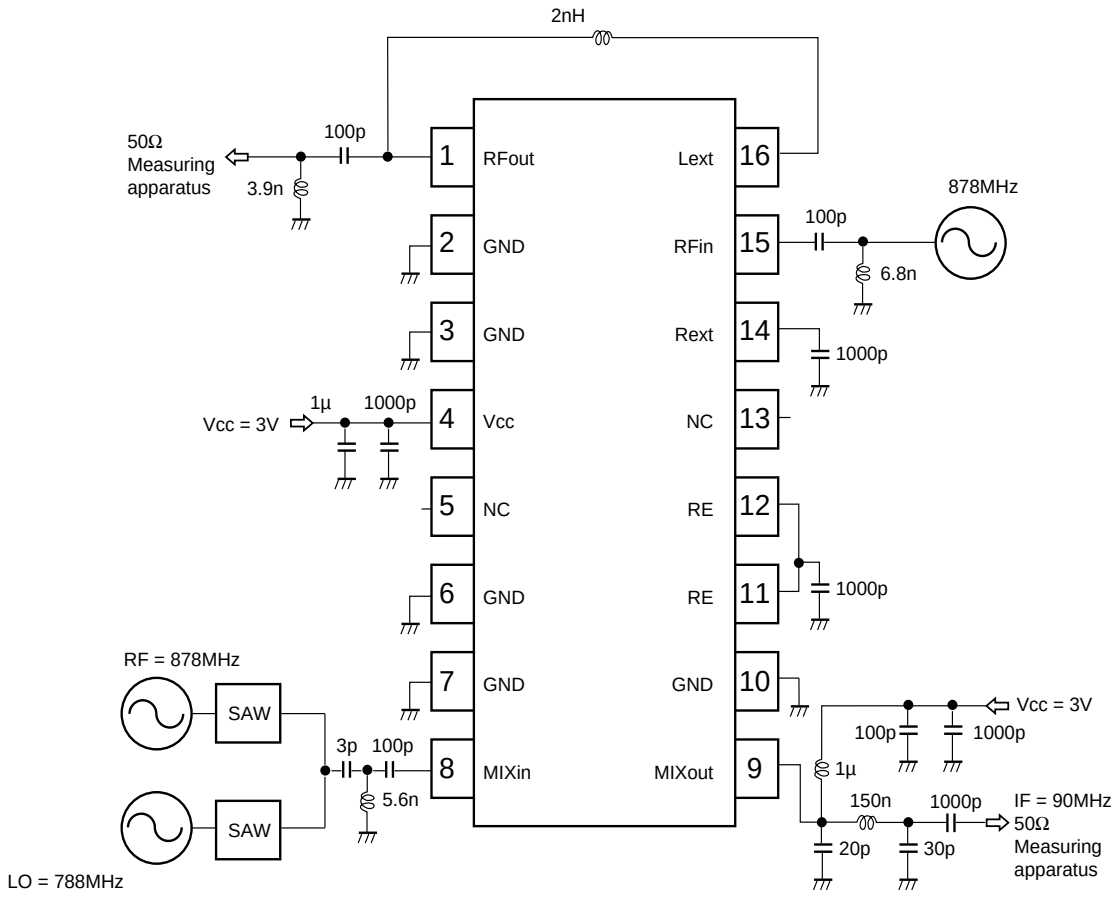
■ MEASUREMENT CIRCUIT (EXAMPLE)



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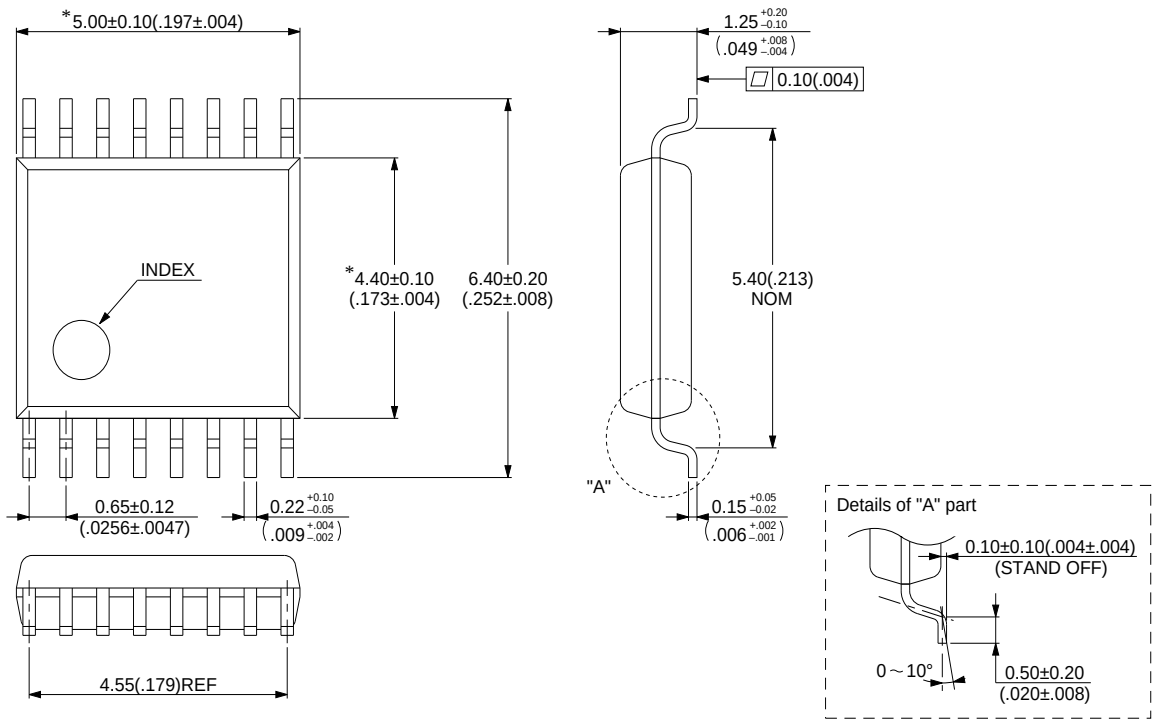
■ PACKAGE DIMENSION

16 pins, Plastic SSOP
(FPT-16P-M05)

*:These dimensions do not include resin protrusion.



Dimensions in mm (inches)

FUJITSU LIMITED

For further information please contact:

Japan
FUJITSU LIMITED
Corporate Global Business Support Division
Electronic Devices
KAWASAKI PLANT, 4-1-1, Kamikodanaka
Nakahara-ku, Kawasaki-shi
Kanagawa 211-88, Japan
Tel: (044) 754-3763
Fax: (044) 754-3329

North and South America
FUJITSU MICROELECTRONICS, INC.
Semiconductor Division
3545 North First Street
San Jose, CA 95134-1804, U.S.A.
Tel: (408) 922-9000
Fax: (408) 432-9044/9045

Europe
FUJITSU MIKROELEKTRONIK GmbH
Am Siebenstein 6-10
63303 Dreieich-Buchschlag
Germany
Tel: (06103) 690-0
Fax: (06103) 690-122

Asia Pacific
FUJITSU MICROELECTRONICS ASIA PTE. LIMITED
#05-08, 151 Lorong Chuan
New Tech Park
Singapore 556741
Tel: (65) 281-0770
Fax: (65) 281-0220

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