FUJITSU SEMICONDUCTOR
DATA SHEET

DS04-11107-3E

LINEAR IC

QUAD OPERATIONAL AMPLIFIER

MB3614

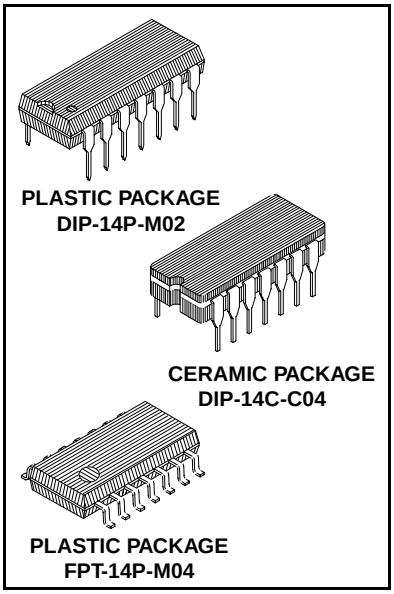
QUAD OPERATIONAL AMPLIFIER OPERATES FROM A SINGLE OR DUAL POWER SUPPLY

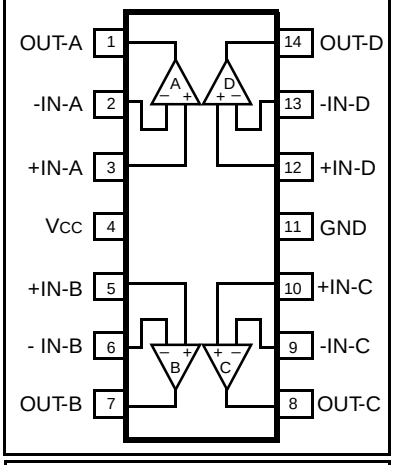
The Fujitsu MB3614 is a Quad operational amplifier having a phase compensatory circuitry and operates from a single power supply or dual power supplies.

The device has equivalent electrical characteristics of current industrial standard operational amplifier and requires low power supply current.

MB3614 can be high density mounted because it integrates 4 circuits in DIP/FPT 14-pin package.

- No phase compensation required
- Wide power supply voltage
  - — Single power supply: +3 to +30 V
  - — Dual power supplies: ±1.5 to ±15 V
- Wide input common mode range: 0 to (V_{CC} -1.5) V
- Low power supply current: 0.8 mA typ.
- Low input offset voltage: 2 mV typ.
- Package
  - — 14-pin Plastic DIP package (Suffix: -P)
  - — 14-pin Ceramic DIP package (Suffix: -Z)
  - — 14-pin Plastic FPT package (Suffix: -PF)





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.

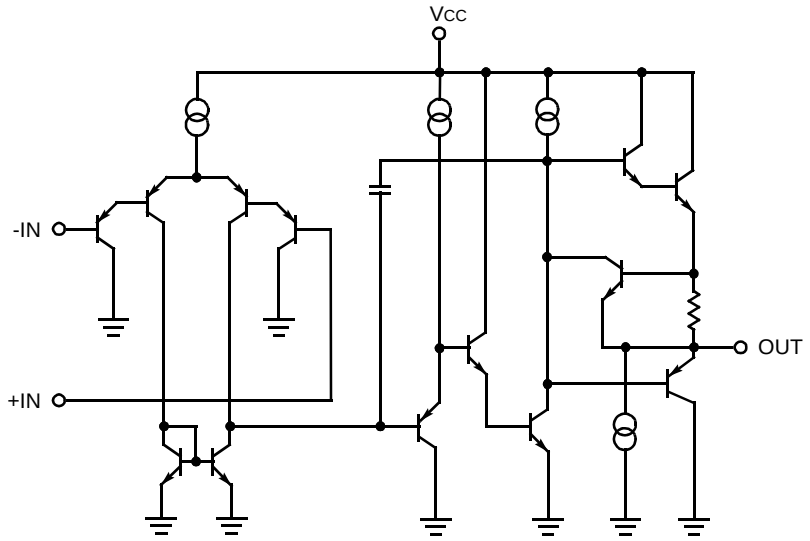
■ ABSOLUTE MAXIMUM RATINGS (see NOTE)

(T_A=25°C)

Rating		Symbol	Value	Unit
Power Supply Voltage		V_{CC}	36	V
Differential Input Voltage		V_{ID}	36	V
Input Common Mode Voltage		V_I	-0.3 to +36	V
Power Dissipation		P_D	570	mW
Operating Temperature		T_A	-20 to +75	°C
Storage Temperature	Plastic	T_{STG}	-55 to +125	°C
	Ceramic	T_{STG}	-65 to +150	°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.

Fig. 1 — EQUIVALENT CIRCUIT



■ ELECTRICAL CHARACTERISTICS

(V_{CC} = 5 V, T_A = 25°C)

Parameter	Symbol	Condition	Value			Unit
			Min	Typ	Max	
Input Offset Voltage	V_{IO}	—	—	2	7	mV
Input Offset Current	I_{IO}	—	—	5	50	nA
Input Bias Current	I_I *	—	—	45	250	nA
Power Supply Current	I_{CC}	$R_L = \infty$	—	0.8	2.0	mA
Input Common Mode Voltage	V_{CM}	—	0	—	V_{CC} -1.5	V
Voltage Gain	A_V	$R_L \geq 2k\Omega$	25	100	—	V/mV
Output Voltage	V_{OH}	V_{CC} = 30V, R_L = 2kΩ	26	28	—	V
	V_{OL}	V_{CC} = 5V, $R_L \leq 10k\Omega$	—	5	20	mV
Output Current	I_{SOURCE}	V_{CC} = 15V, V_{IN} + = 1V	20	40	—	mA
	I_{SINK}	V_{CC} = 15V, V_{IN} - = 1V	10	20	—	mA
Common Mode Rejection Ratio	CMRR	—	65	85	—	dB
Power Supply Voltage Rejecton Ratio	SVRR	—	65	100	—	dB
Channel Separation	CS	—	—	120	—	dB

Note:

* A direction of the input bias current flows from IC because first input transistor consists of PNP.

■ TYPICAL CHARACTERISTICS CURVES

Fig. 2 - Power Supply Current vs. Power Supply Voltage

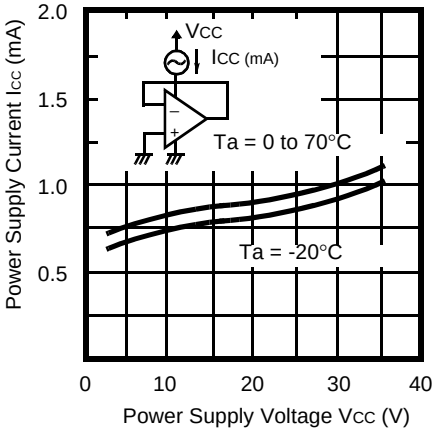


Fig. 3 - Input Bias Current vs. Temperature

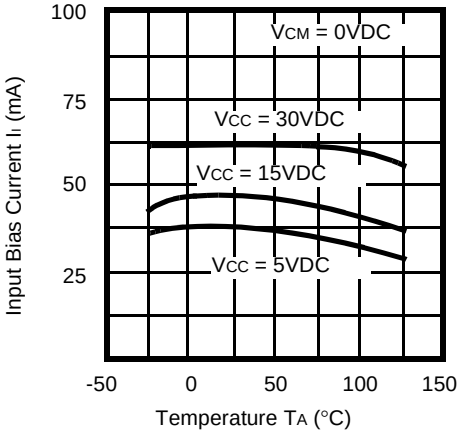


Fig. 4 - Voltage Gain vs. Power Supply Voltage

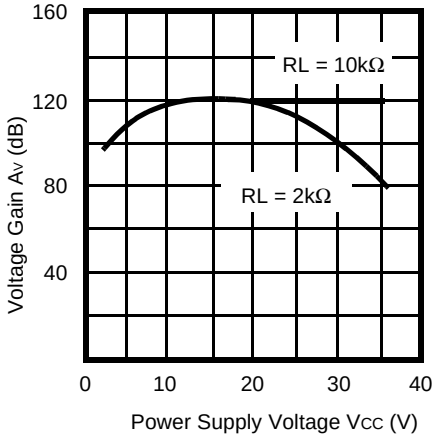


Fig. 5 - Voltage Gain vs. Frequency

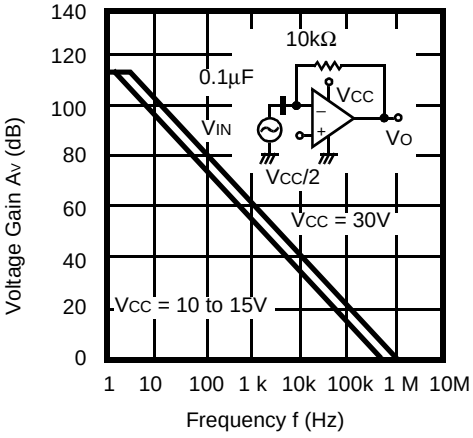


Fig. 6 - Output Voltage vs. Frequency

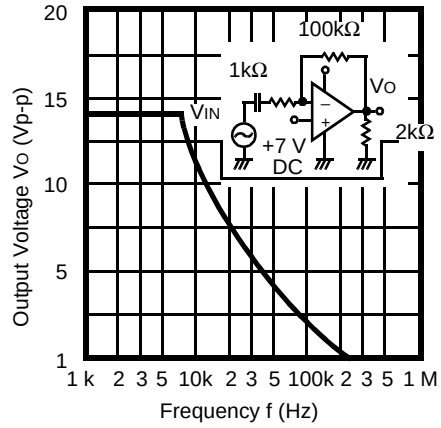
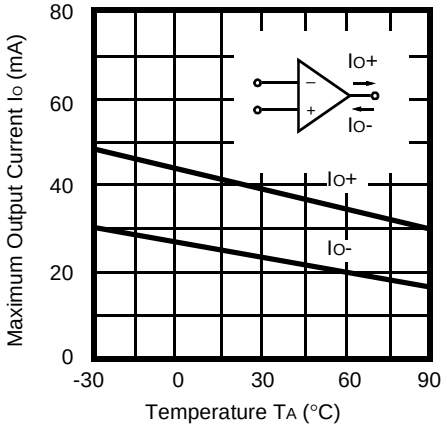
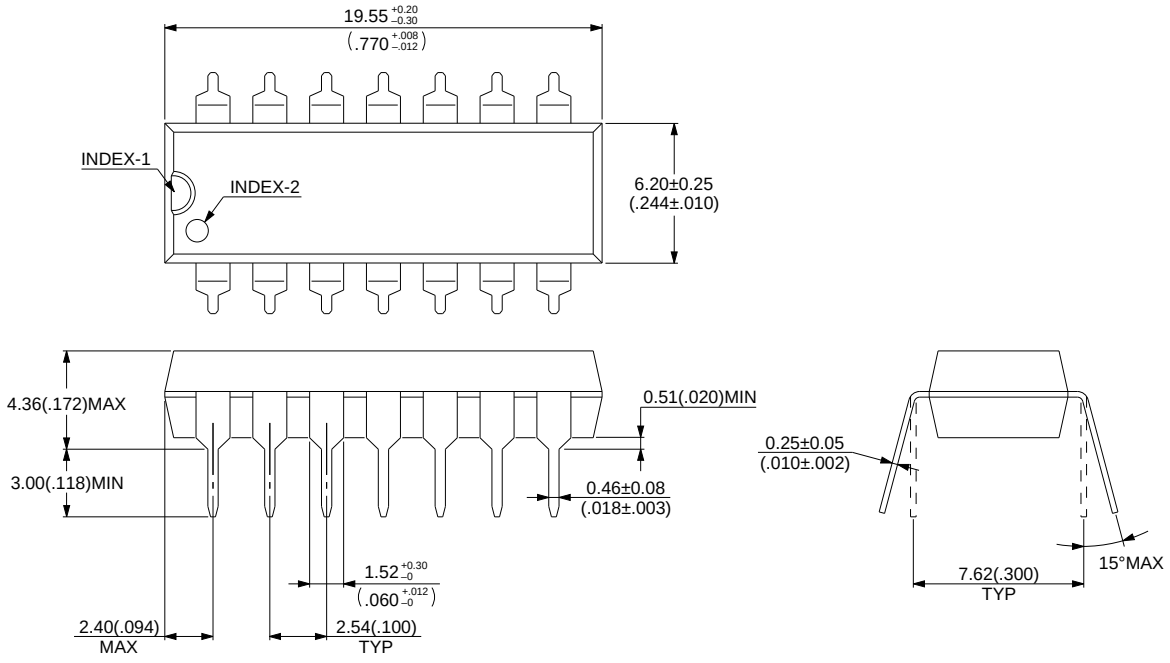


Fig. 7 - Maximum Output Voltage vs. Temperature



■ PACKAGE DIMENSIONS

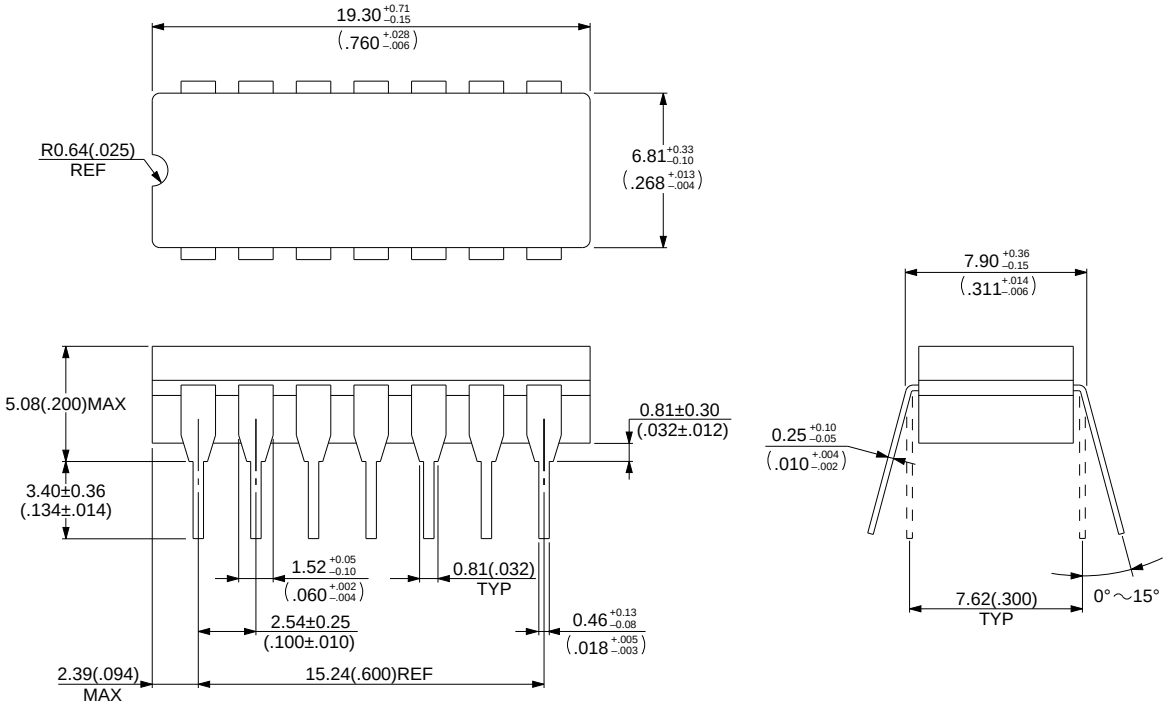
14 pin, Plastic DIP
(DIP-14P-M02)



Dimensions in mm(inches).

■ PACKAGE DIMENSIONS (Continued)

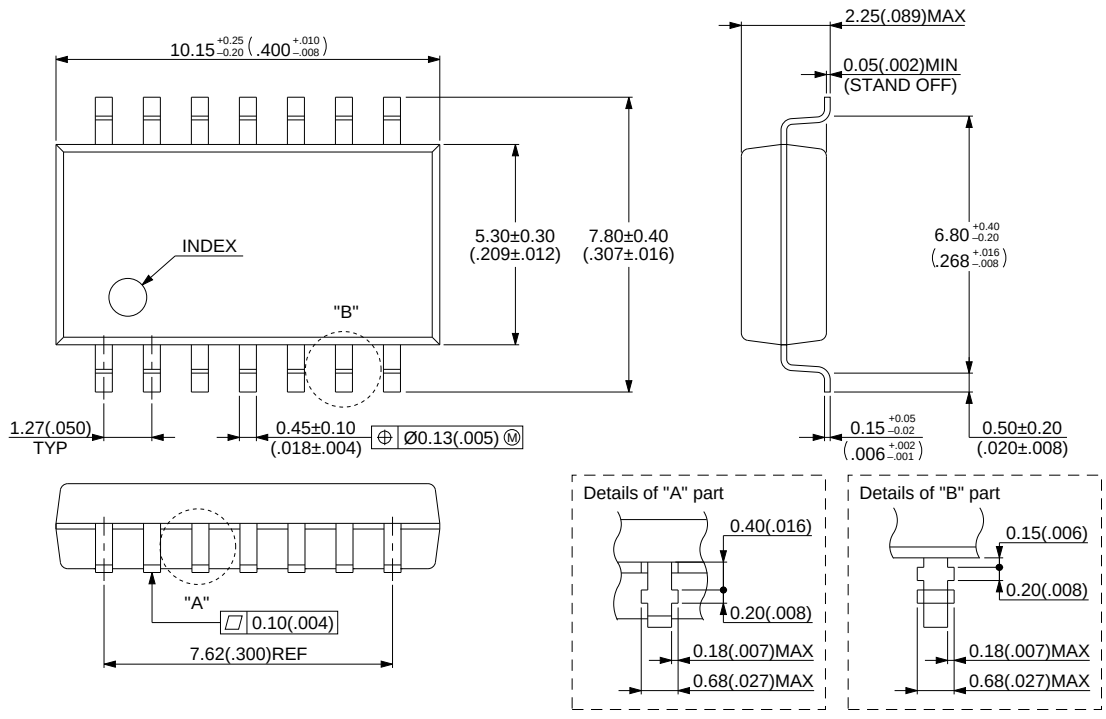
14 pin, Ceramic DIP
(DIP-14C-C04)



Dimensions in mm(inches).

■ PACKAGE DIMENSIONS (Continued)

14 pin, Plastic SOP
(FPT-14P-M04)



Dimensions in mm(inches).

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