FUJITSU SEMICONDUCTOR
DATA SHEET

DS04-11104-3E

LINEAR IC

DUAL OPERATIONAL AMPLIFIER

MB47358

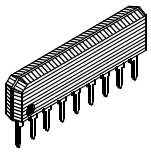
DUAL OPERATIONAL AMPLIFIER
OPERATES A SINGLE OR DUAL POWER SUPPLY

The Fujitsu MB47358 is designed for a general purpose dual operational amplifier with internal frequency compensation and to operate from a single power supply or dual power supplies. The MB47358 is suitable for audio with the fast slew rate and with the reduction of cross-over distortion. The MB47358 fits an application of microcomputer because of its wide output voltage range. The MB47358 is compatible with LM358.

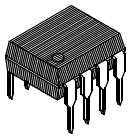
■ FEATURES

- Not required compensation
- Wide power supply voltage range
  Single power supply: 3 V to 30 V
  Dual power supplies: ±1.5 V to ±15 V
- Wide output voltage range
- No cross-over distortion
- Fast slew rate –2 V/µs typ.

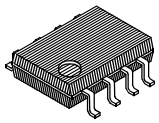
■ PACKAGES



PLASTIC PACKAGE
SIP-9P-M01



PLASTIC PACKAGE
DIP-8P-M01



PLASTIC PACKAGE
FPT-8P-M01

This device contains cirduitry 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.

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■ ABSOLUTE MAXIMUM RATINGS (see NOTE)

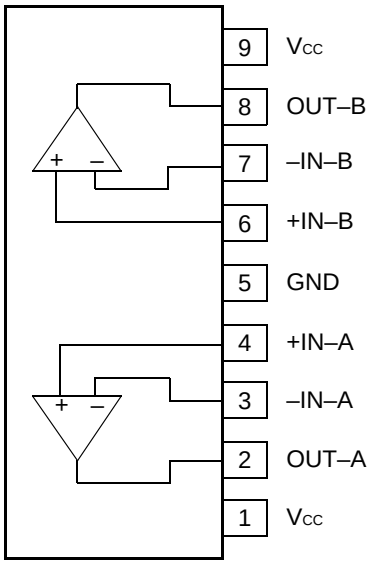
(T_A = 25°C)

Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	36	V
Differential Input Voltage	V_{ID}	36	V
Common-mode Input Voltage	V_{ICM}	–0.3 to +36	V
Power Dissipation	P_D	350 ($T_A \leq 55°C$)	mW
Operating Temperature	T_A	–20 to +75	°C
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.

■ PIN ASSIGNMENT

(FRONT VIEW: SIP)



(TOP VIEW: DIP, FPT)

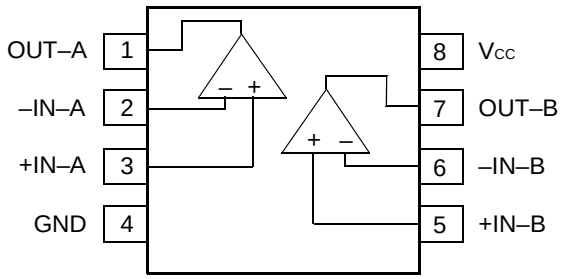
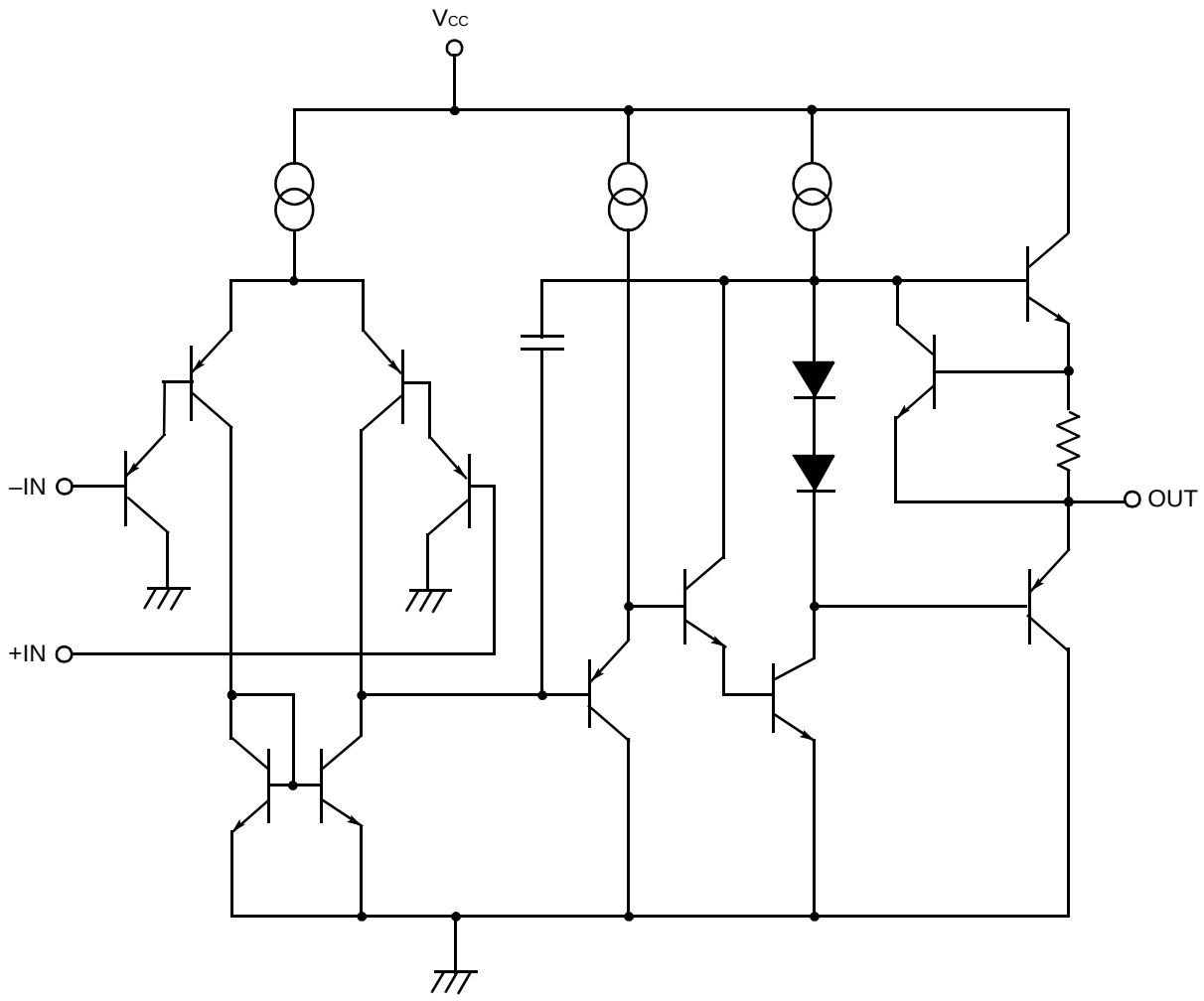


Fig. 1 — MB47358 EQUIVALENT CIRCUIT



■ RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	3 to 30	V
		±1.5 to ±15	
Operating Temperature	T_A	–20 to +75	°C

■ RECOMMENDED OPERATING CONDITIONS

(T_A = 25°C, V_{CC} = +5 V)

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 = ×, V_{CC} = 5 V	—	2.0	3.0	mA
Common-mode Input Voltage	V_{ICM}	—	0	—	V_{CC} – 1.5	V
Voltage Gain	A_V	R_L ≥ K 2 kΩ	25	100	—	V/mV
Common-mode Rejection Ratio	CMRR	—	65	85	—	dB
Power Supply Voltage Rejection Ratio	SVRR	—	65	100	—	dB
Output Voltage	V_{OH}	R_L = 2 kΩ	3.5	4.1	—	V
		R_L = 10 kΩ	4.0	4.2	0	V
	V_{OL}	I_{SINK} ≤ 60 µA	—	0.2	0.4	V
		I_{SINK} ≤ 2 mA	—	0.8	1.5	V
Maximum Output Voltage	V_{OM}	R_L ≥ 10 kΩ, V_{CC} = ±15 V	±12	±14	—	V
		R_L = 2 kΩ, V_{CC} = ±15 V	±10	—	—	V
Output Current	I_{SOURCE}	V_{IN+} = 1 V, $V_{IN–}$ = 0 V, V_{CC} = 15 V	20	40	—	mA
	I_{SINK}	V_{IN+} = 0 V, $V_{IN–}$ = 1 V, V_{CC} = 15 V	10	20	—	mA
		V_{IN+} = 0 V, $V_{IN–}$ = 1 V, V_O = 0.4 V	60	150	—	µA
Channel Separation	CS	f = 1 kHz	—	120	—	dB
Slew Rate	SR	R_L = 2 kΩ	—	2	—	V/µs

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 VOLTAGE vs. POWER SUPPLY CURRENT

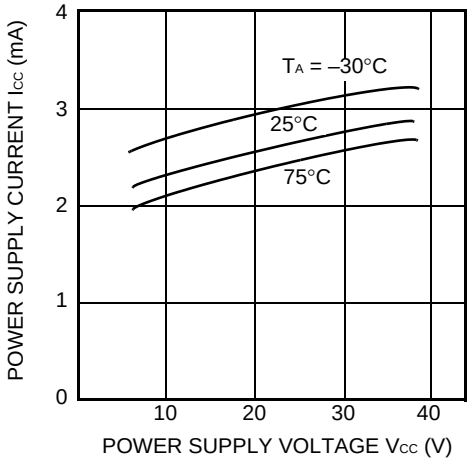


Fig. 3 – OUTPUT CURRENT vs. OUTPUT VOLTAGE

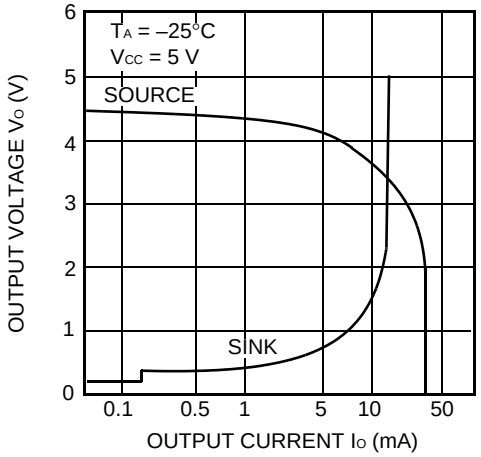


Fig. 4 – TEMPERATURE vs. INPUT BIAS CURRENT

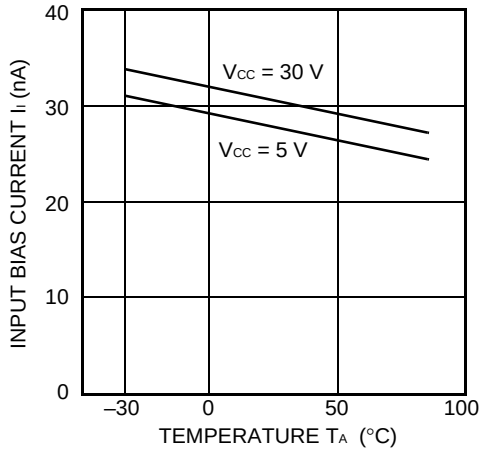


Fig. 5 – FREQUENCY vs. OUTPUT VOLTAGE

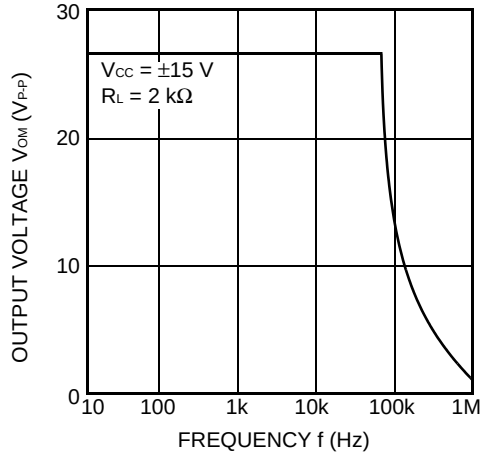
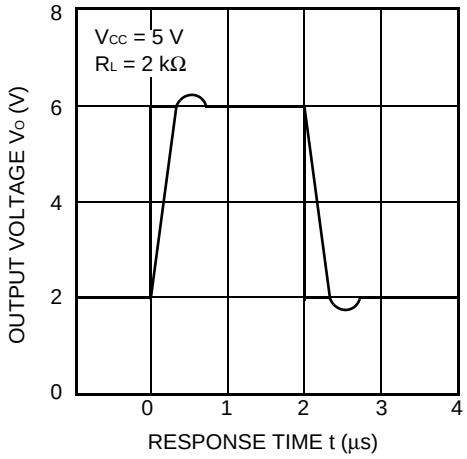


Fig. 6 – PULSE RESPONSE



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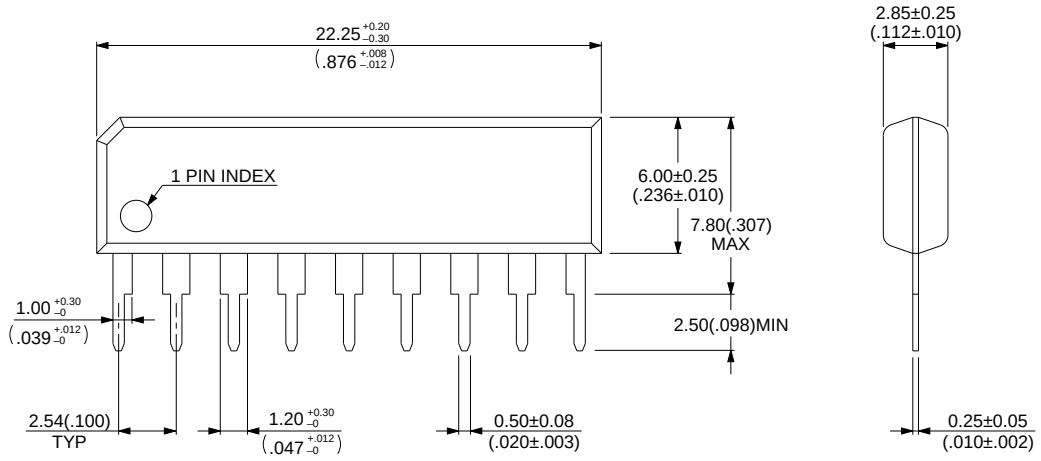
■ PACKAGE DIMENSIONS

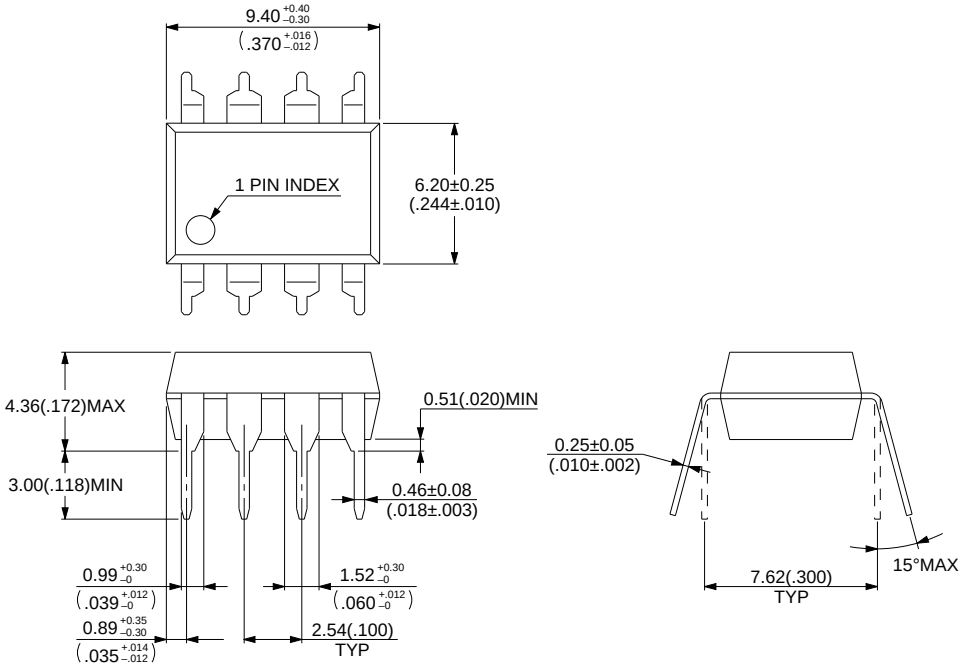
9 pin, Plastic SIP
(SIP-9P-M01)



Dimensions in mm(inches).

■ PACKAGE DIMENSIONS (Continued)

8 pin, Plastic DIP
(DIP-8P-M01)

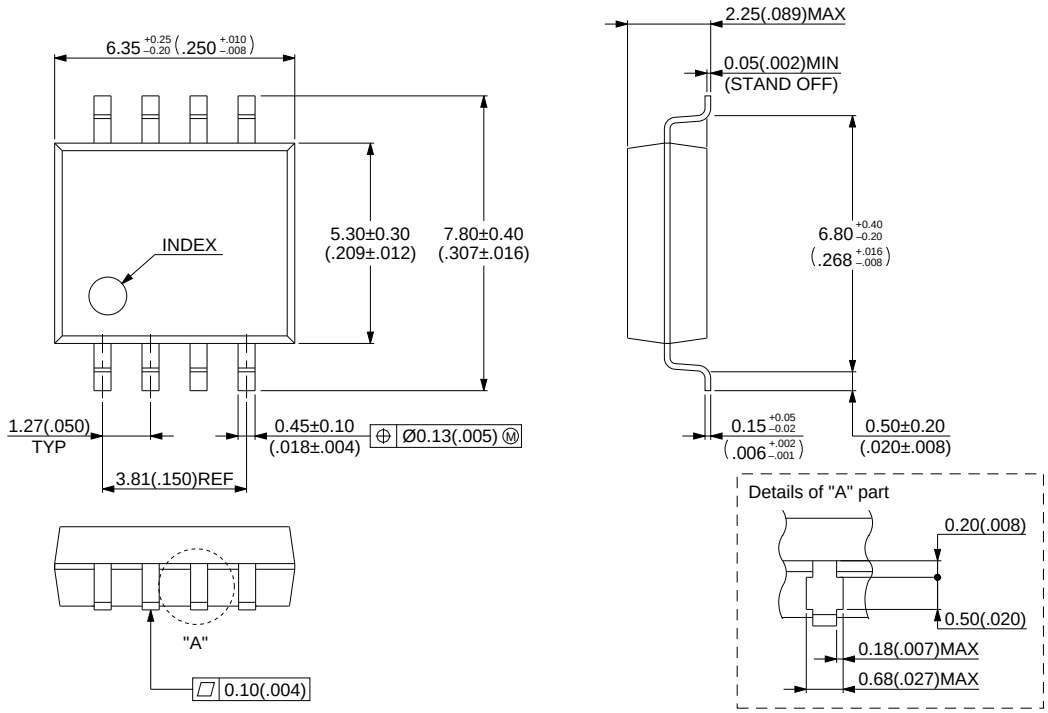


Dimensions in mm(inches).

MB47358

■ PACKAGE DIMENSIONS (Continued)

8 pin, Plastic SOP
(FPT-8P-M01)



Dimensions in mm(inches).

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