FUJITSU

18 W BTL AUDIO POWER AMPLIFIER

MB3731

September 1988
Edition 1.0

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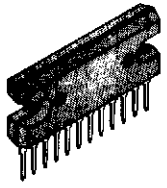
The Fujitsu MB3731 is designed for a low-frequency high-power amplifier with internal BTL (Balanced Transformer Less) circuitry. The MB3731 is packed in 12 pin Single in line plastic package and requires a few external components, this enables high density mounting. Design for heat radiation is easy because thermal resistance is low.

The MB3731 contains internal power-on pop noise protection circuit and various protection circuitry. The device is suitable best for car-stereo.

- High power output : 18W typ.
- Minimum external components
- On-chip power on pop noise protection circuit
- Audio mute function is provided
- Separated GND pins for Input/Output circuit
- Various protection circuits
  - Over voltage protection
  - Load short protection
  - Thermal protection
  - Output pin-to-DC short protection
- 12-lead Plastic single in-line Package (Suffix: -PS)



PLASTIC PACKAGE
SIP-12P-M01

ABSOLUTE MAXIMUM RATINGS (see NOTE) (Tc=25°C)

Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	18	V
Power Supply Voltage (Surge)	V_{CCS}	40 *	V
Output Current (Peak)	I_{OPEAK}	4.5	A
Power Dissipation	P_D	18	W
Operating Temperature (Case)	T_C	-20 to +75	°C
Storage Temperature	T_{STG}	-55 to +150	°C

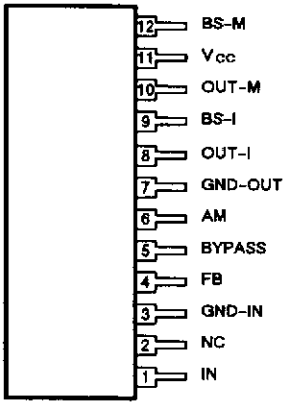
Note:

* $t_s \leq 0.2$ sec, $t_r \geq 1$ msec

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.

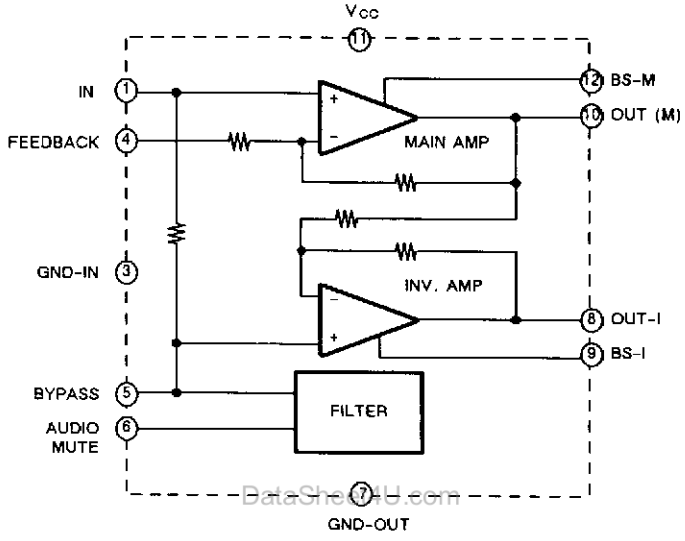
PIN ASSIGNMENT

(FRONT VIEW)



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.

Fig. 1 - MB3731 BLOCK DIAGRAM



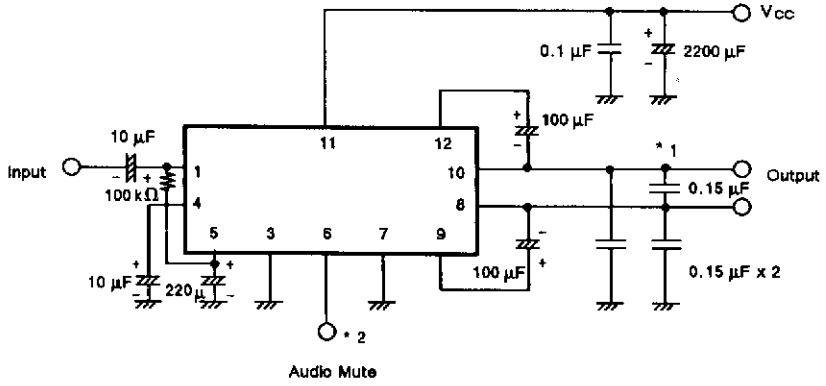
RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Value	Unit
Power Supply Voltage	Vcc	8 to 16	V
Operating Temperature (Case)	Tc	-20 to +75	°C

ELECTRICAL CHARACTERISTICS (T_A= 25°C, V_{CC}= 13.2V, RL=4Ω, f=1kHz)

Parameter	Symbol	Condition	Values			Unit
			Min	Typ	Max	
Quiescent Power Supply Current	I_Q	V_{IN}=0V,RL= ∞		80	200	mA
Voltage Gain	A_V	P_O=1W	44.5	47	49.5	dB
Output Power	P_O	THD=10%	15	18		W
Total Harmonic Distortion	THD	P_O=1W		0.1	0.5	%
Output Noise Voltage	V_{NO}	R_g=10kΩ,BW=20HZ to 20kHZ		0.5	1.0	mV
Input Resistance	R_{IN}		40	70		kΩ
Output Offset Voltage	V00	V_{IN}=0V		0.2	0.4	V
Audio Mute Attenuation	—	P_O=1W		43		dB

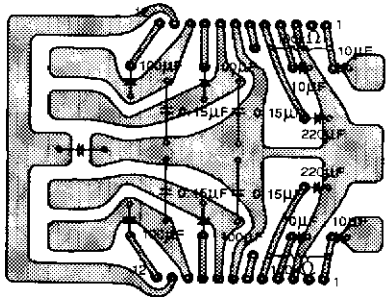
Fig. 2 – TYPICAL CONNECTION EXAMPLE



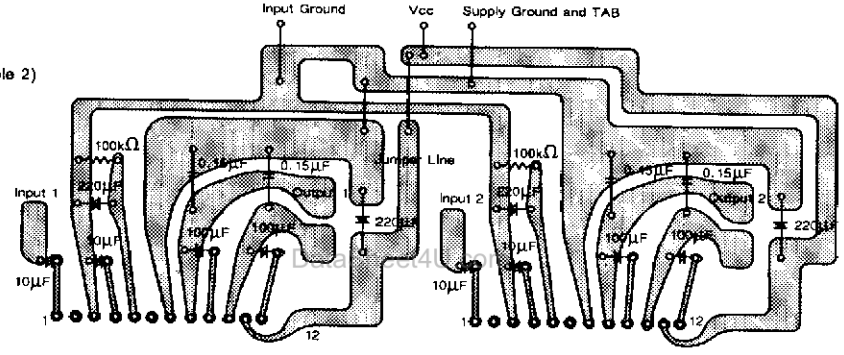
Notes: *1 Effective to prevent from the oscillation depending on printing pattern.
*2 The output can be cut off (Audio Mute) when pin 6 is connected with the GND.

Fig. 3 – RECOMMENDED CONNECTION PATTERN (BOTTOM VIEW)

Example 1)



Example 2)



TYPICAL CHARACTERISTICS CURVES

Fig. 4 – TOTAL HARMONIC DISTORTION vs. OUTPUT POWER

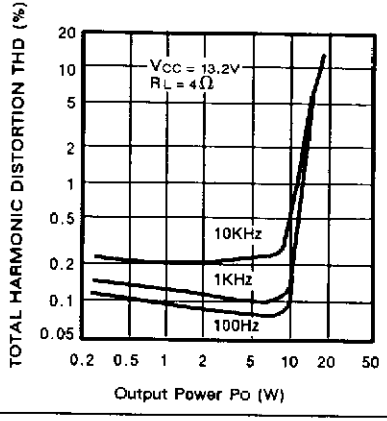
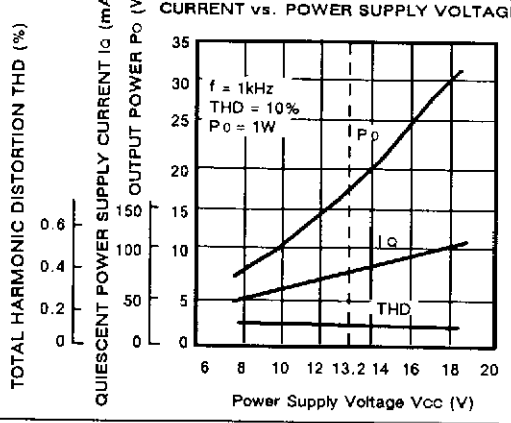


Fig. 5 – OUTPUT POWER/TOTAL HARMONIC DISTORTION/QUIESCENT POWER SUPPLY CURRENT vs. POWER SUPPLY VOLTAGE



TYPICAL CHARACTERISTICS CURVES (Continued)

Fig. 6 – VOLTAGE GAIN vs. FREQUENCY

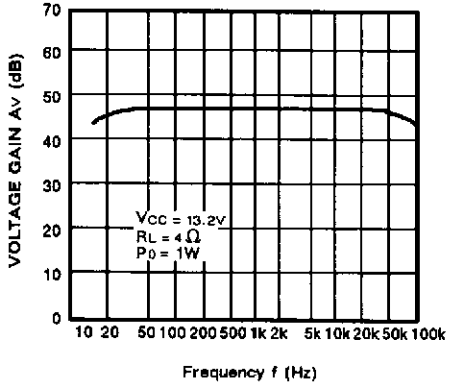


Fig. 7 – TOTAL HARMONIC DISTORTION vs. FREQUENCY

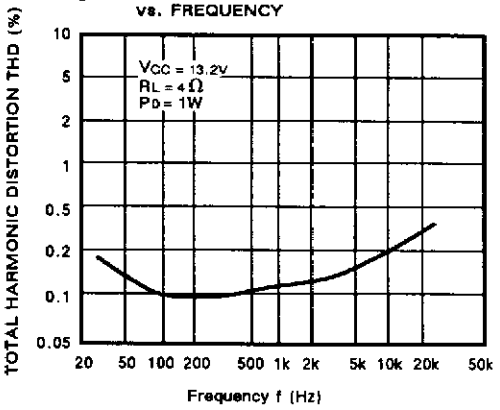


Fig. 8 – POWER DISSIPATION vs. TEMPERATURE

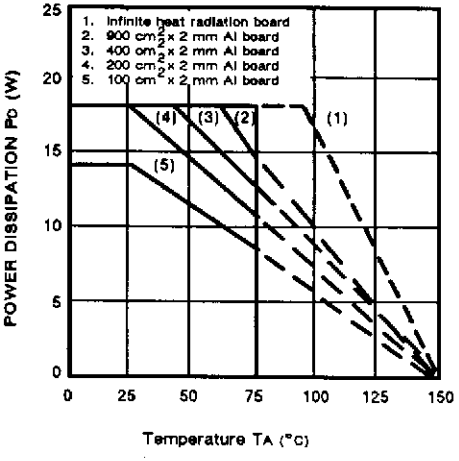
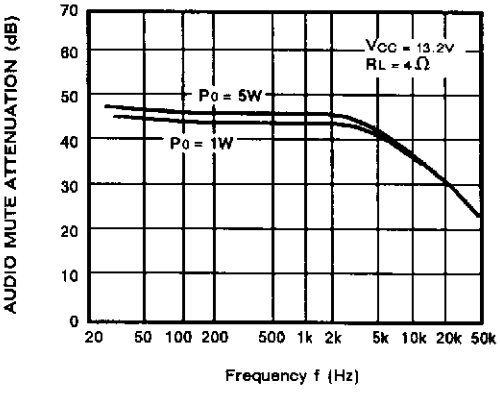
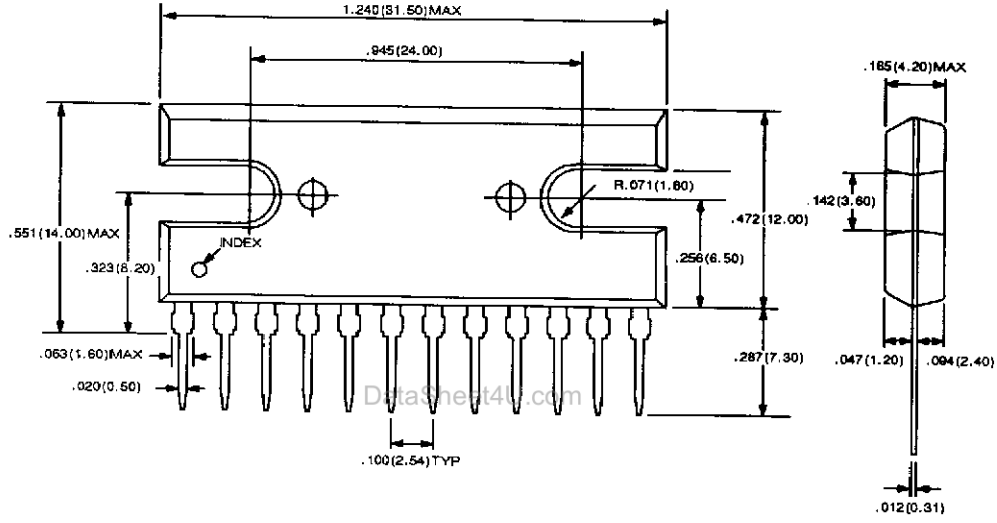


Fig. 9 – AUDIO METU ATTENUATION vs. FREQUENCY



PACKAGE DIMENSION

12-LEAD PLASTIC SINGLE IN-LINE PACKAGE
(CASE NO.: SIP-12P-M01)



Dimensions in inches (millimeters)

S12001S-3C