FUJITSU

20 WATT BTL AUDIO POWER AMPLIFIER

MB3733

April 1988
Edition 2.0

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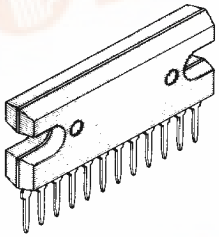
The Fujitsu MB3733 is designed for a low-frequency high power amplifier with internal BTL (Balanced Transformer less) circuitry. Suitable for care stereos, the MB3733 is packed in a small plastic 12-pin Single In-Line Package (SIP) which has low thermal resistance. Designing for heat radiation can be executed easily.

The device requires few external components, so high density mounting is optimized.

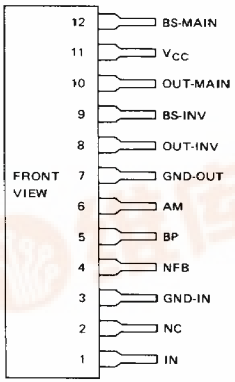
The MB3733 contains a filtering circuitry for power-on pop noise and various protection circuits.

- High Power Output: 20W with $R_L = 4\Omega$
- Minimum External Components
- Samll Plastic 12-pin Single In-Line Package
- Low Thermal Resistance
- Various Protection Circuitries:
  - Power Supply Surge Protection
  - Excess Voltage Protection
  - Load Short Protection
  - DC Short Protection for Outputs, Power Supply pin, and Ground pin
- Low Power-on Pop Noise
- Separated Ground pins for Input/Output
- Audio Mute Function
- Low Total Harmonic Distortion: 0.07% typ.



PLASTIC PACKAGE
SIP-12P-M01

PIN ASSIGNMENT



ABSOLUTE MAXIMUM RATINGS (See NOTE)

Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	18	V
Power Supply Voltage (Surge Voltage)	V_{CCS}	50*	V
Peak Output Current	I_O (Peak)	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: * $t_s \leq 0.2$ (s), $t_r \geq 1$ (ms)

Permanent device damage may occur if 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.

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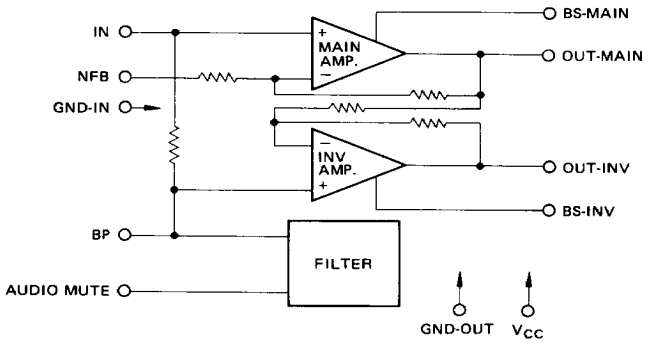
Fig. 1 – MB3733 BLOCK DIAGRAM



RECOMMENDED OPERATING CONDITIONS

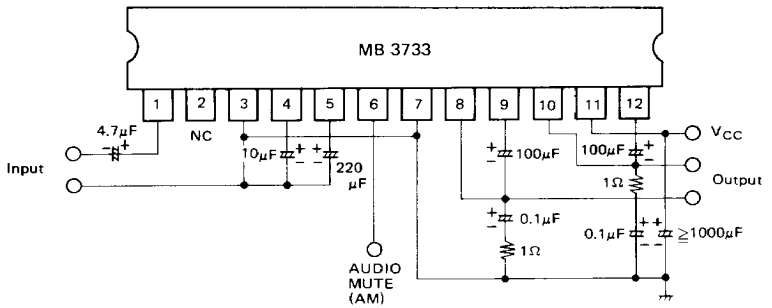
Parameter	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	8 to 16	V
Operating Temperature (Case)	T_C	−20 to +75	°C

ELECTRICAL CHARACTERISTICS

(T_C = 25°C, V_{CC} = 13.2V, R_L = 4Ω, f = 1kHz)

Parameter	Condition	Symbol	Value			Unit
			Min	Typ	Max	
Quiescent Power Supply Current	V_{IN} = 0V, R_L = ∞	I_Q		80	160	mA
Voltage Gain		A_V	45	47	49	dB
Output Power	THD = 10%	P_{O1}	16	20		W
	THD = 1%	P_{O2}		14		W
Total Harmonic Distortion	P_O = 1W	THD		0.07	0.5	%
Output Noise Voltage	R_g = 0Ω, BW = 20 to 20kHz	V_{NO1}		0.3		mV
	R_g = 10kΩ, BW = 20 to 20kHz	V_{NO2}		0.5	1.0	mV
Input Resistance		R_{IN}	20	30		kΩ
Output Offset Voltage		V_{OFFSET}		±0.1	±0.3	V
Supply Current in DC MUTE mode	BP = 0V	I_{CCQ}		15		mA
AUDIO MUTE Attenuation	AM = 0V			50		dB

Fig. 2 – MEASUREMENT CIRCUIT



Note: When BP is grounded, DC Muting can be used. When AM is grounded, AUDIO Muting can be used.

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TYPICAL CHARACTERISTICS CURVES

Fig. 3 – TOTAL HARMONIC DISTORTION vs. OUTPUT POWER

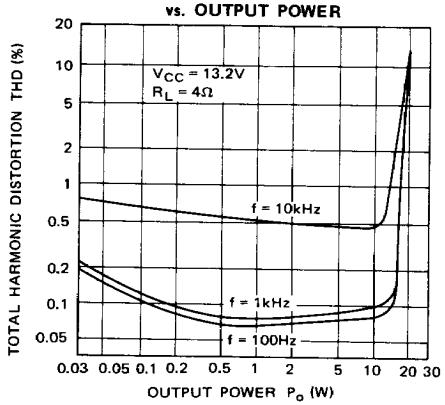


Fig. 4 – TOTAL HARMONIC DISTORTION vs. FREQUENCY

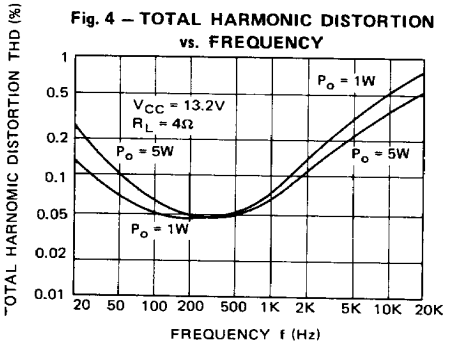


Fig. 5 – VOLTAGE GAIN vs. FREQUENCY

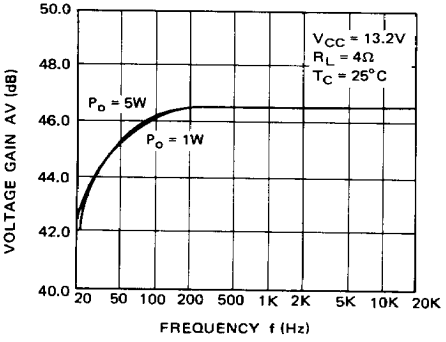


Fig. 6 – OUTPUT POWER vs. FREQUENCY

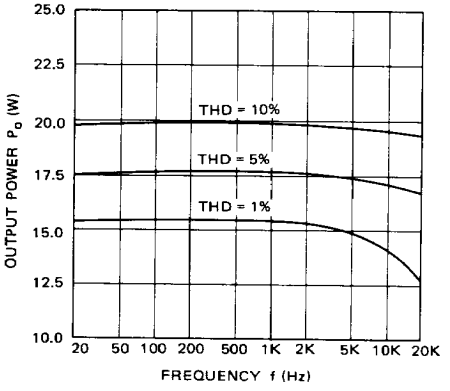


Fig. 7 – POWER DISSIPATION/POWER SUPPLY CURRENT vs. OUTPUT POWER

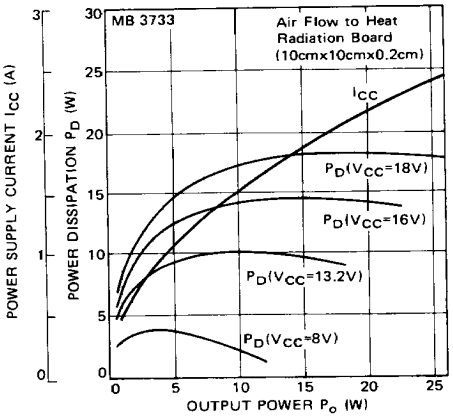
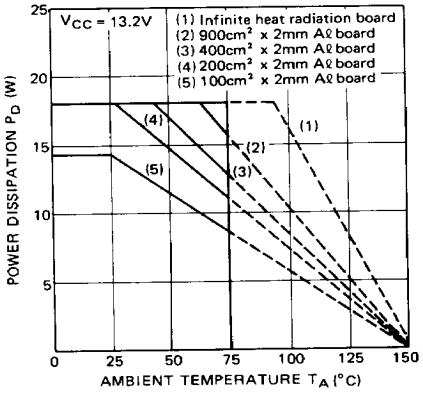


Fig. 8 – POWER DERATING CURVES



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PACKAGE DIMENSIONS

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