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FUJITSU

DATA SHEET

MB3735
BTL AUDIO POWER AMPLIFIER

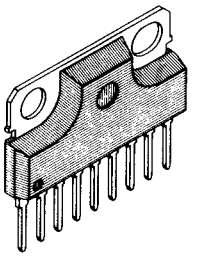
20 WATT BTL AUDIO POWER AMPLIFIER WITH FILTERING CIRCUITRY FOR POWER-ON POP NOISE

The Fujitsu MB3735 is designed for a low-frequency high-power amplifier with internal BTL (Balanced Transformer less) circuitry. The MB3735 is packed in a small plastic 9-pin Single In-Line Package (SIP) which has low thermal resistance, so that a design for heat radiation can be performed with low cost.

Also, the MB3735 requires such a few external components and, the MB3735 can be mounted on printed circuit board with high density.

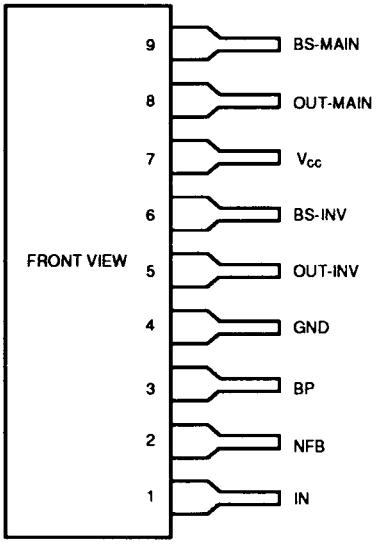
The MB3735 contains a filtering circuitry for power-on pop noise and various protection circuits. The MB3735 is suitable for car stereo applications.

- High Power Output: 20W typ. with $R_L = 4\Omega$
- Minimum External Components (OCL, 8 capacitors)
- Small Plastic 9-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
  Thermal Protection
- Low Power-on Pop Noise
- THD = 0.07% Typ. (P_O = 1 W, $R_L = 4\Omega$)
- Designed against breakdown by load short and Supply Voltage Surge.



PLASTIC PACKAGE
SIP-09P-M02

PIN ASSIGNMENT



ABSOLUTE MAXIMUM RATINGS (see NOTE)

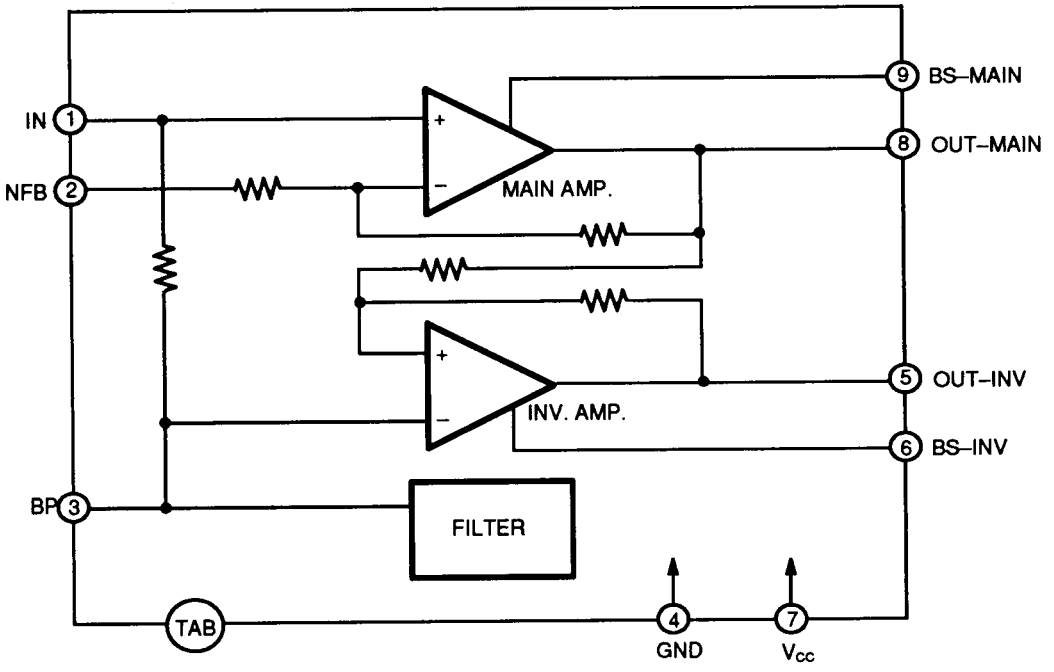
Rating	Symbol	Value	Unit
Power Supply Voltage	V_{CC}	18	V
Power Supply Voltage (Surge Voltage)	V_{CCS}	50*	V
Peak Output Current	$I_{O\,(Peak)}$	4.5	A
Power Dissipation	P_D	18	W
Operating Temperature	T_C	–20 to +75	°C
Storage Temperature	T_{STG}	–55 to +150	°C

NOTE: $t_e \leq 0.2$ (s), $t_r \geq 1$ (ms)

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.

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 — BLOCK DIAGRAM OF MB3735



RECOMMENDED OPERATING CONDITIONS

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

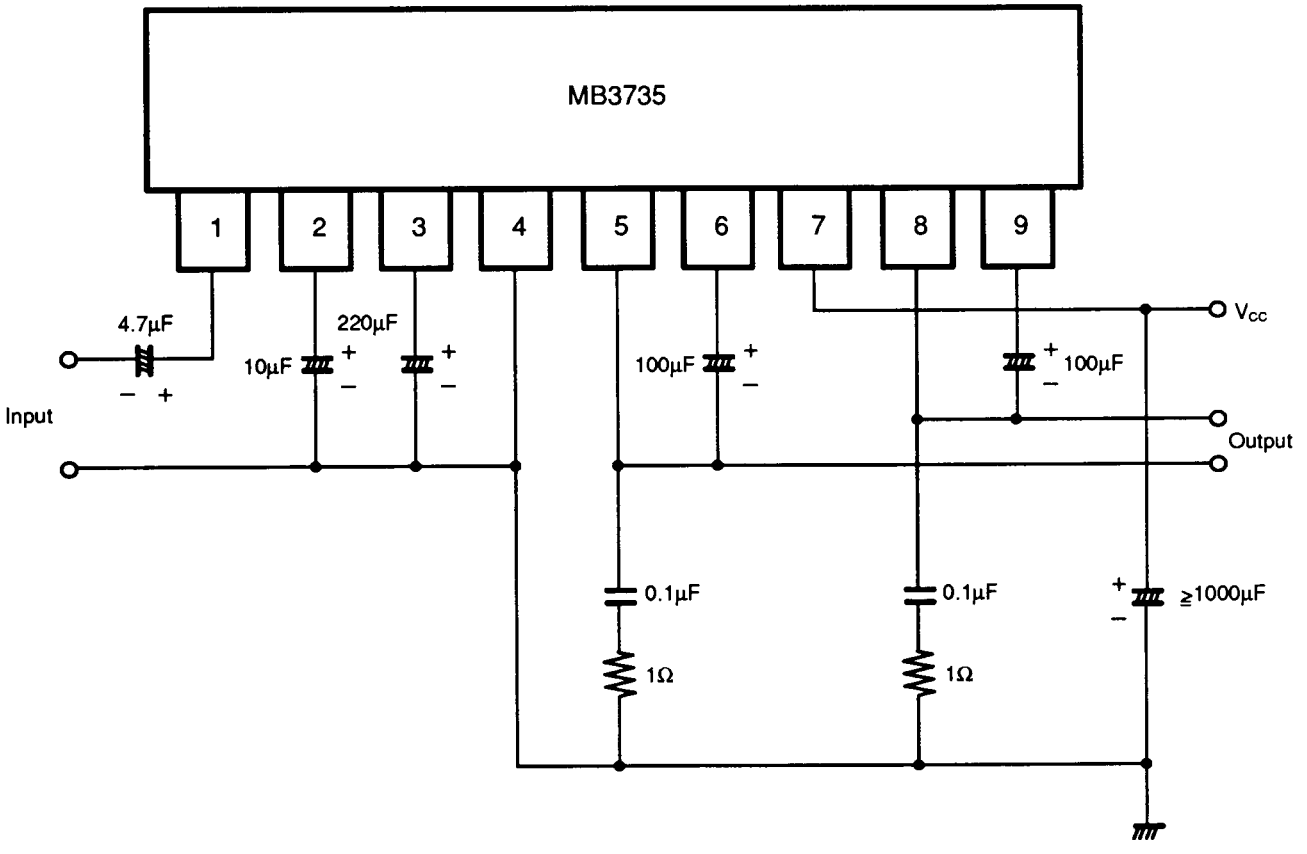
ELECTRICAL CHARACTERISTICS

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

Parameter	Condition	Symbol	Value			Unit
			Min	Typ	Max	
Quescent Power Supply Current	V_{IN} = 0V, RL = ∞	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 = 1 W	THD		0.07	0.5	%
Output Noise Voltage	R_g = 0Ω BW = 20 Hz to 20 kHz	V_{NO1}		0.3		mV
	R_g = 10 kΩ BW = 20 Hz to 20 kHz	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_{CCO}		15		mA

ELECTRICAL CHARACTERISTICS (Continued)

Fig. 2 – MEASUREMENT CIRCUIT



Note: When BP (Pin 3) is grounded, DC Muting can be used.
The capacitor (0.1 μF) between V_{CC} and GND can be controlled the unstable operating conditions of board level.

TYPICAL CHARACTERISTICS CURVES

Fig. 3 – TOTAL HARMONIC DISTORTION vs. OUTPUT POWER

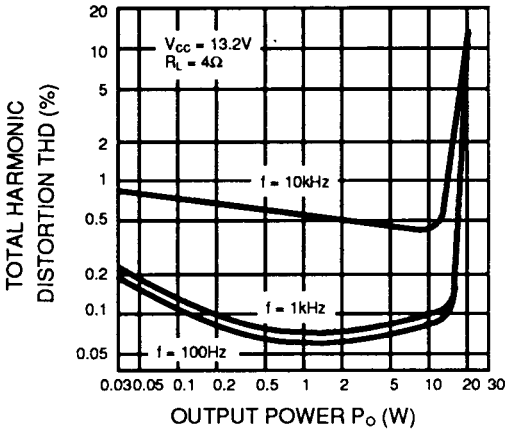


Fig. 4 – TOTAL HARMONIC DISTORTION vs. FREQUENCY

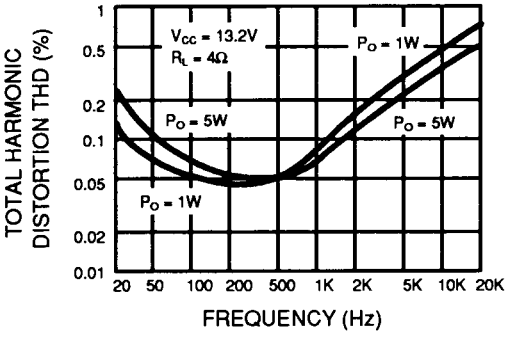


Fig. 5 – GAIN vs. FREQUENCY

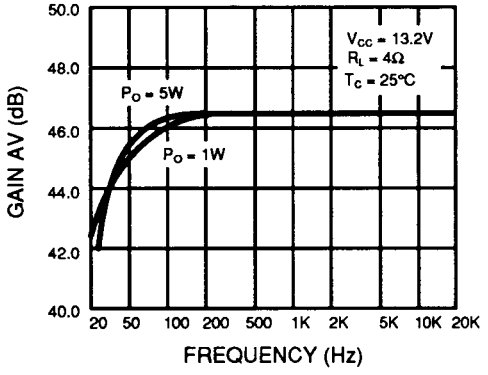


Fig. 6 – POWER BAND WIDTH vs. FREQUENCY

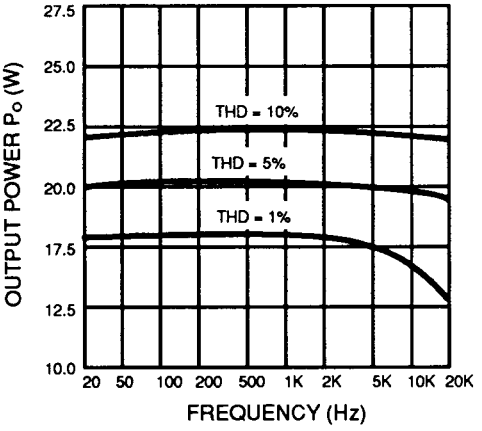
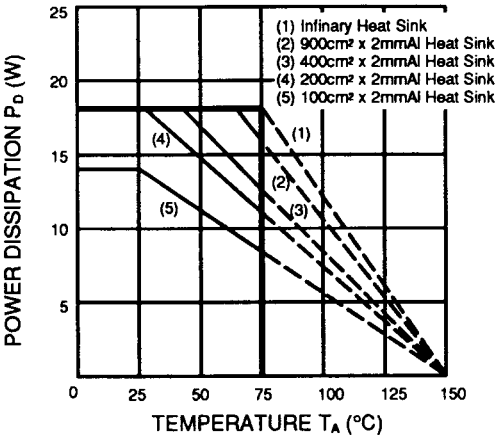
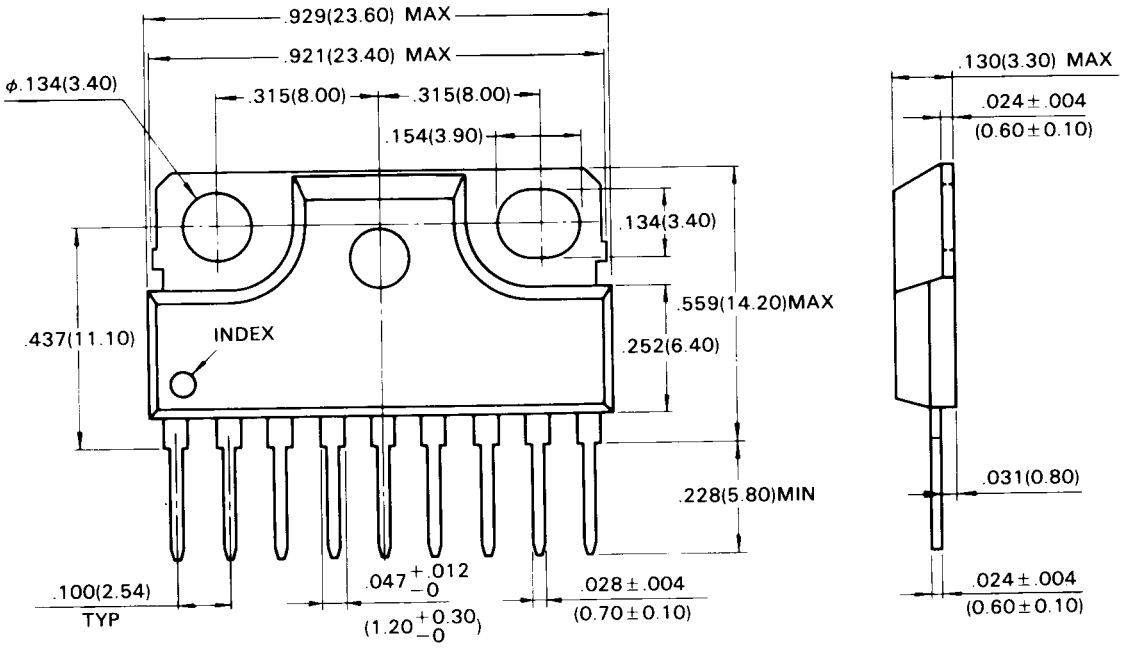


Fig. 7 – POWER DISSIPATION vs.TEMPERATURE



PACKAGE DIMENSIONS

9-LEAD PLASTIC SINGLE IN-LINE PACKAGE
(CASE No.: SIP-09P-M02)



Dimensions in
inches (millimeters)

Circuit diagrams utilizing Fujitsu products are included as a means of illustrating typical semiconductor applications. Complete Information sufficient for construction purposes is not necessarily given.

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