

March 1990
Edition 3.0



DATA SHEET

MB3735

BTL AUDIO POWER AMPLIFIER

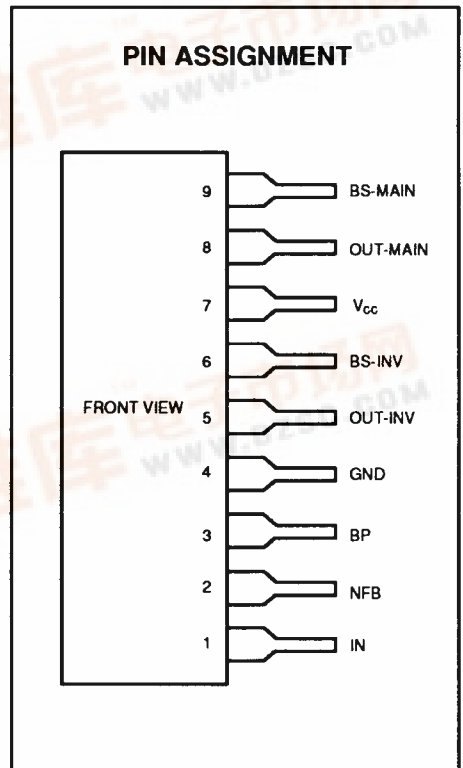
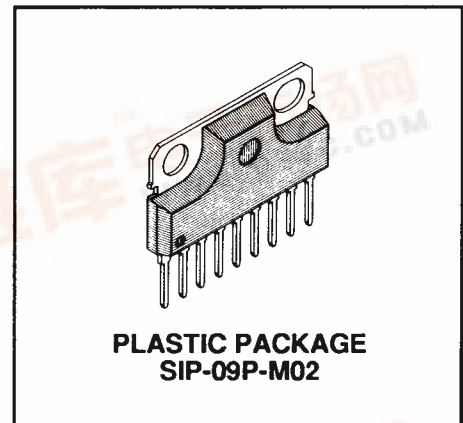
20 WATT BTL AUDIO POWER AMPLIFIER WITH FILTERING CIRCUITRY FOR POWER-ON POP NOISE

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. ($P_o = 1\text{ W}$, $R_L = 4\Omega$)
- Designed against breakdown by load short and Supply Voltage Surge.



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

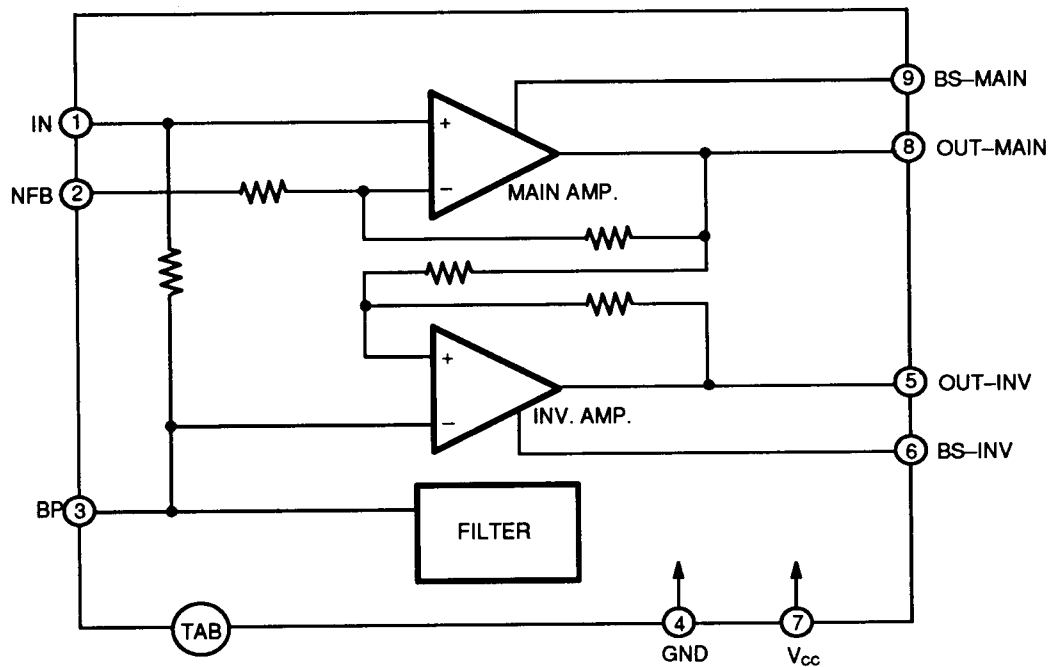
NOTE: $t_s \leq 0.2$ (s), $t_r \geq 1$ (ms)

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.

MB3735

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

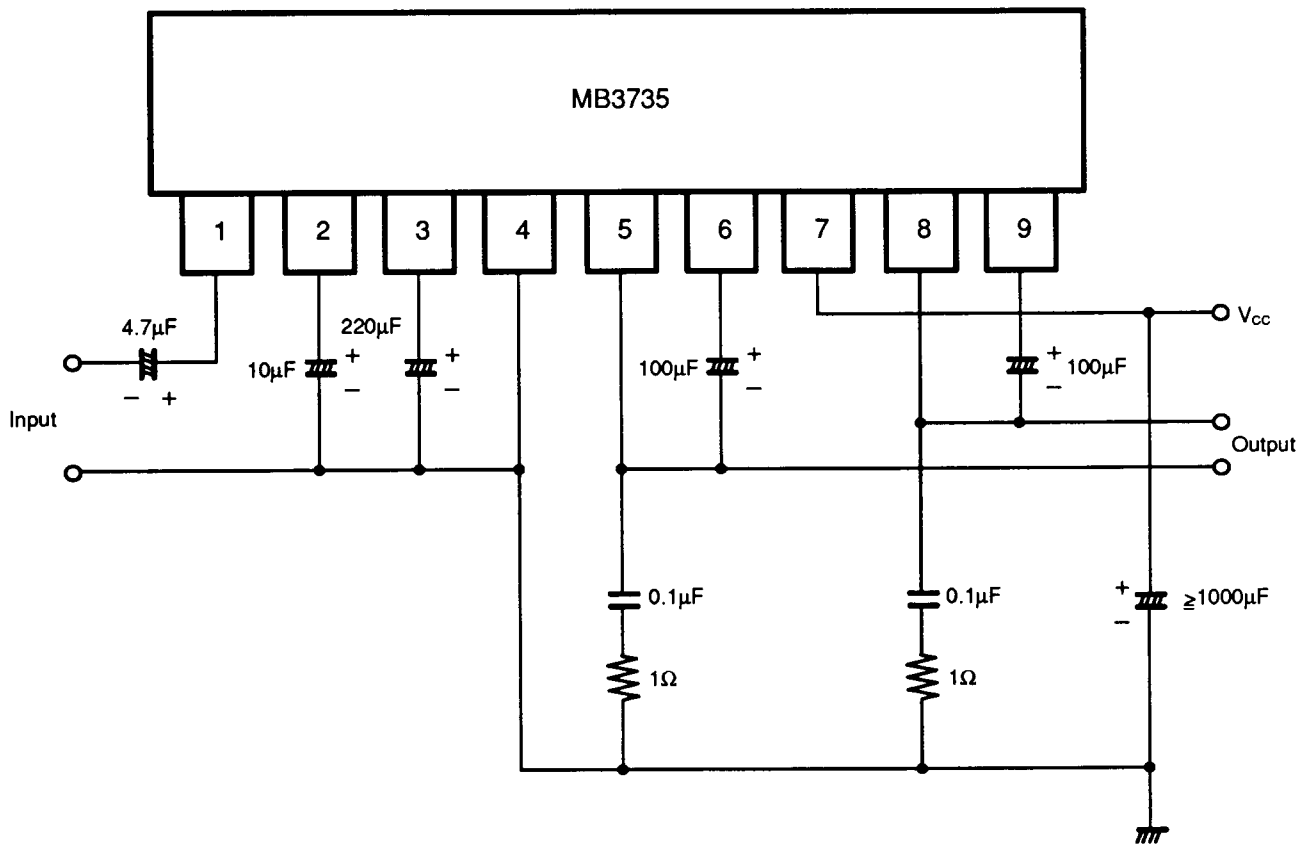
ELECTRICAL CHARACTERISTICS

($T_C = 25^\circ\text{C}$, $V_{CC} = 13.2\text{V}$, $R_L = 4\Omega$, $f = 1\text{kHz}$)

Parameter	Condition	Symbol	Value			Unit
			Min	Typ	Max	
Quiescent Power Supply Current	$V_{IN} = 0\text{V}$, $R_L = \infty$	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	$P_O = 1\text{W}$	THD		0.07	0.5	%
Output Noise Voltage	$R_g = 0\Omega$ BW = 20 Hz to 20 kHz	V_{NO1}		0.3		mV
	$R_g = 10\text{k}\Omega$ BW = 20 Hz to 20 kHz	V_{NO2}		0.5	1.0	mV
Input Resistance		R_{IN}	20	30		$\text{k}\Omega$
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

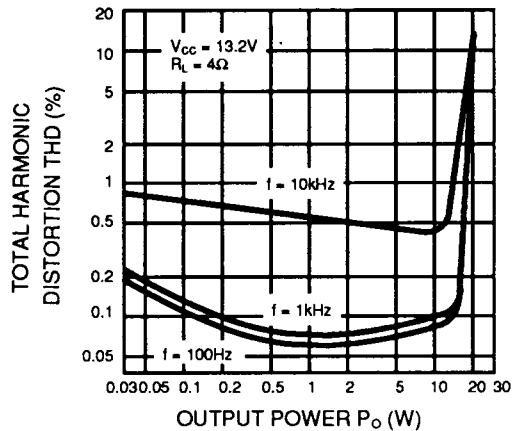


Fig. 4 – TOTAL HARMONIC DISTORTION vs. FREQUENCY

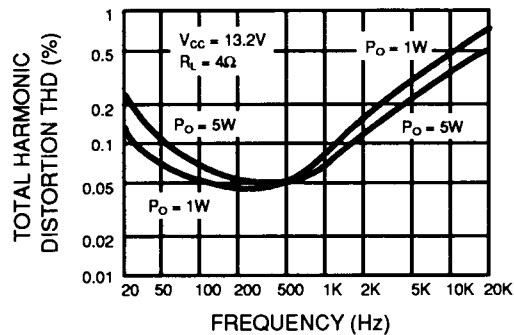


Fig. 5 – GAIN vs. FREQUENCY

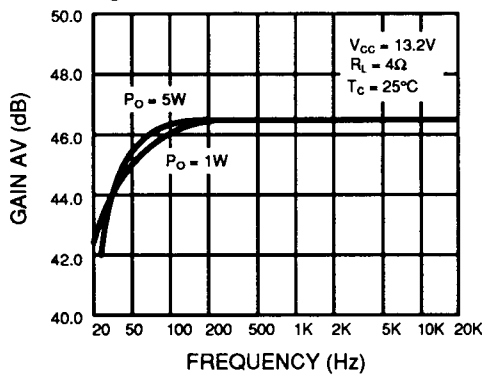


Fig. 6 – POWER BAND WIDTH vs. FREQUENCY

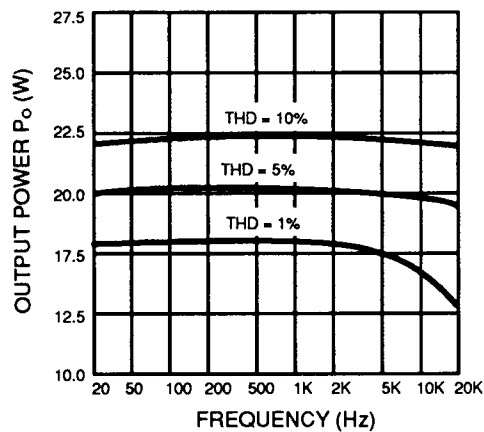
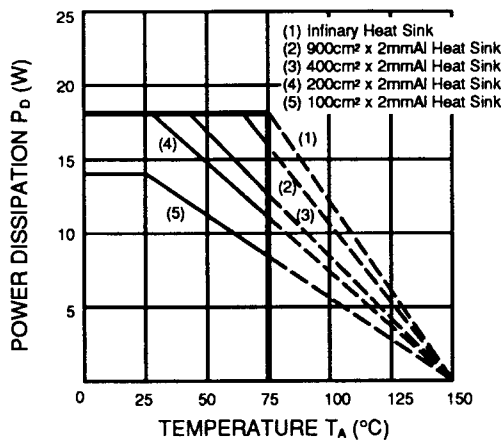
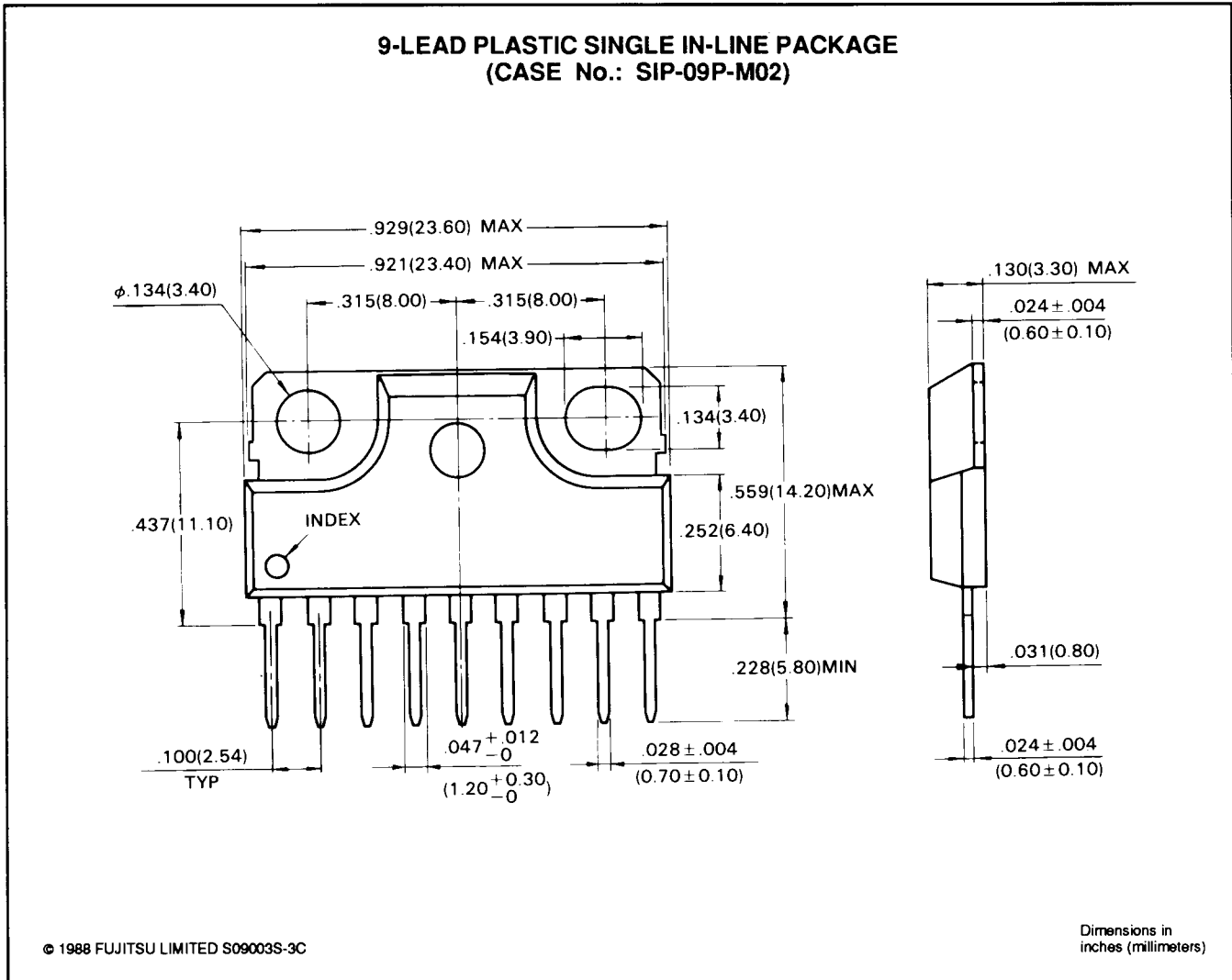


Fig. 7 – POWER DISSIPATION vs. TEMPERATURE



MB3735

PACKAGE DIMENSIONS



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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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NOTE

MB3735

FUJITSU LIMITED

For further information please contact:

Japan

FUJITSU LIMITED

Integrated Circuits and Semiconductor Marketing
Furukawa Sogo Bldg., 6-1, Marunouchi 2-chome
Chiyoda-ku, Tokyo 100, Japan

Tel: (03) 216-3211

Telex: 781-2224361

FAX: (03) 216-9771

North and South America

FUJITSU MICROELECTRONICS, INC.

Integrated Circuits Division

3545 North First Street

San Jose, CA 95134-1804 USA

Tel: 408-922-9000

Telex: 910-338-0190

FAX: 408-432-9044

Europe

FUJITSU MIKROELEKTRONIK GmbH

Arabella Centre 9.OG

Lyoner Strasse 44-48

D-6000 Frankfurt 71

F.R. Germany

Tel: (069) 66320

Telex: 411963

FAX: (069) 6632122

Asia

FUJITSU MICROELECTRONICS ASIA PTE LIMITED

#06-04 to #06-07

Plaza By The Park

No. 51 Bras Basah Road

Singapore 0719

Tel: 336-1600

Telex: 55573

FAX: 336-1609

OCT 17 1990