

续表

参 数	测 试 条 件	最小值	典型值	最大值
输入电阻 R_{IN} (k Ω)		40	70	
输出失调电压 V_{offset} (V)	$V_{IN}=0$		200	400
静噪衰减 A_{TT} (dB)	$P_D=1W$		43	

MB3732 14W BTL 音频功率放大电路

MB3732 集成电路适用于汽车立体声音响或汽车收音机,内部设有多种保护电路(浪涌电压、输出短路、过压、负载短路、热切断)及电源接通时有噪声抑制功能。工作电源电压范围为 8~16V。在 $V_{CC}=13.2V$, $R_L=4\Omega$, THD=10% 时,输出功率 $P_O=14W$ 。

极限参数 ($T_A=25^\circ C$)

参 数	额 定 值
电源电压 V_{CC} (V)	18
峰值电源电压 $V_{CC(s)}$ (V)	50
输出电流(瞬时值) $I_{O(peak)}$ (A)	4.5
功 耗 P_D (W)	18
工作温度 T_{opr} ($^\circ C$)	-20~75
贮存温度 T_{stg} ($^\circ C$)	-55~150

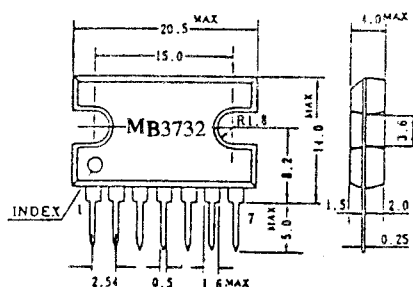


图 1 MB3732 的外形图

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

参 数	测 试 条 件	最小值	典型值	最大值
静态电流 I_Q (mA)	$V_{IN}=0, R_L=\infty$		80	160
电压增益 G_V (dB)		45	47	49
输出功率 P_D (W)	THD=10%	10	14	
	THD=1%		10	
谐波失真 THD(%)	$P_D=1W$		0.07	0.5
输出噪声 V_{NO} (mV)	$R_g=0\Omega, BW=20Hz\sim 20kHz$		0.3	
	$R_g=10k\Omega, BW=20Hz\sim 20kHz$		0.5	1.0
输入电阻 R_{IN} (k Ω)		20	30	
输出失调电压 V_{offset} (V)			± 0.1	± 0.3
静噪电流 I_{MUTE} (mA)	$V_{T3}=0V$ (DC 静噪时)		15	

电路方框图及应用电路

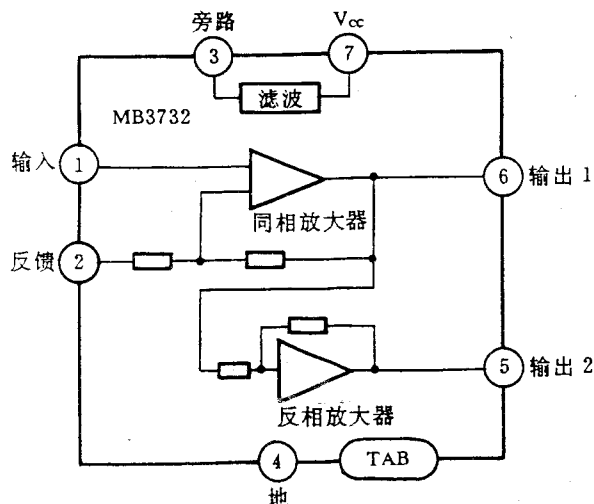


图 2 MB3732 的电路方框图

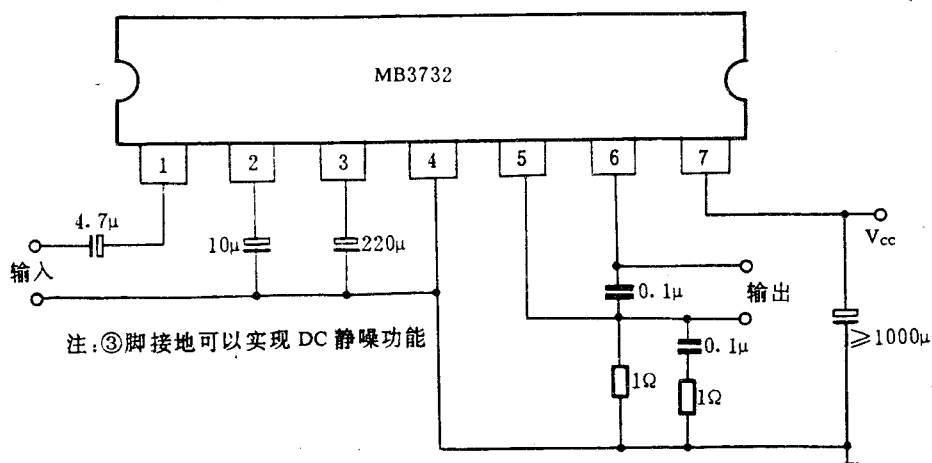
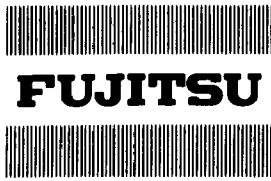


图 3 MB3732 的应用电路

MB3733 20W BTL 音频功率放大电路

MB3733 集成电路适用于汽车立体声音响或汽车收音机,内部设有浪涌电压、过热、过压、输出端 DC 短路、负载短路、负载电源接触等保护及电源接通时噪声抑制功能。工作电源电压范围为 8~16V,在 $V_{CC}=13.2V$, $R_L=4\Omega$, $THD=10\%$ 时,输出功率 $P_o=20W$ 。



14W BTL AUDIO POWER AMPLIFIER

MB3732
MB3734

July 1988
Edition 2.0

14W BTL AUDIO POWER AMPLIFIER

The Fujitsu MB3732 and MB3734 are low-frequency high-power amplifiers with internal BTL (Bridged Output Trans Former-less) circuitry. Suitable for car stereos, the MB3732 and the MB3734 are packed in small plastic packages which have low thermal resistance. Designing for heat radiation can be executed at a low cost. The devices require few external components, so high density mounting is optimized.

The MB3732 and MB3734 comprise various protection functions, including an internal power-on pop noise reduction circuit.

- High power output : 14W typical
- Small plastic package : 7-pin SIP for the MB3732
9-pin SIP for the MB3734
- Minimum external components
- Low thermal resistance : 3°C/W in the MB3732
4°C/W in the MB3734
- On-chip power-on pop noise reduction circuit
- No breakdown : between pins is shorted or insertion is inverted
- Low distortion : THD = 0.07% typical
- Various protection circuits :
Power supply surge protection, Thermal protection
Load short protection, Over voltage protection
Output pin-to-DC short protection

ABSOLUTE MAXIMUM RATINGS (see NOTE)

(T_C = 25°C)

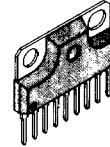
Rating	Symbol	Value	Unit
Supply Voltage	V _{CC}	18	V
Supply Voltage (Surge)	V _{CCS}	50*	V
Output Current (Peak)	I _{OPEAK}	4.5	A
Power Dissipation	P _D	18	W
Operating Temperature (Case)	T _C	-20 to +75	°C
Storage Temperature	T _{STG}	-55 to +150	°C

Note: t_r ≤ 0.2 sec, t_r ≥ 1 msec

NOTE: 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.

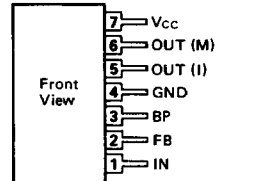


PLASTIC PACKAGE
SIP-07P-M01

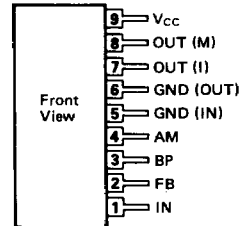


PLASTIC PACKAGE
SIP-09P-M02

PIN ASSIGNMENT



MB3732



MB3734

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.



MB3732
MB3734

3

Fig. 1 – MB3732 BLOCK DIAGRAM

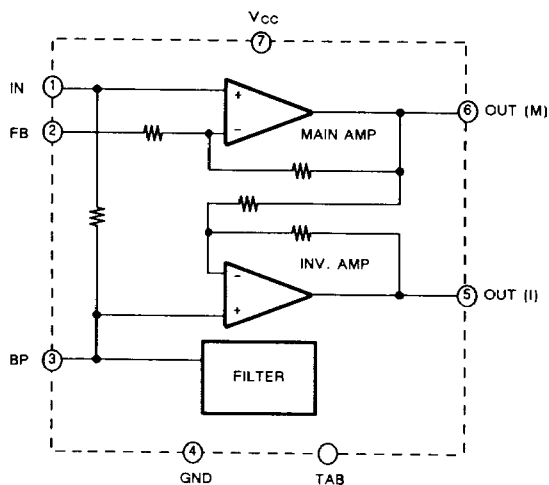
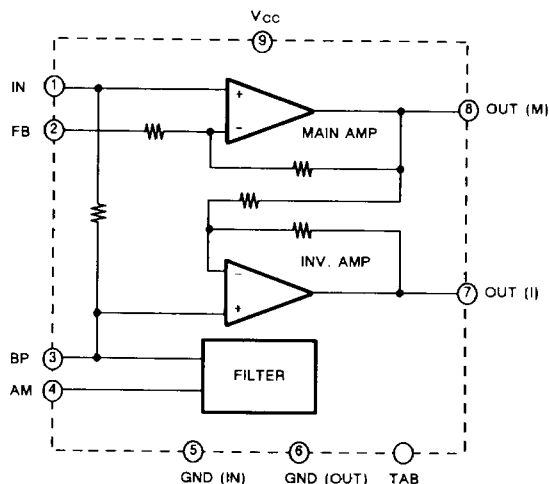


Fig. 2 – MB3734 BLOCK DIAGRAM



RECOMMENDED OPERATING CONDITIONS

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

3

ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Condition	Values			Unit
			Min	Typ	Max	
Quiescent Power Supply Current	I_Q	$V_{IN} = 0\text{V}$ $R_L = \infty$	—	80	160	mA
Voltage Gain	A_V	—	45	47	49	dB
Output Power	P_O	THD = 10%	10	14	—	W
		THD = 1%	—	10	—	
Total Harmonic Distortion	THD	$P_O = 1\text{W}$	—	0.07	0.5	%
Output Noise Voltage	V_{NO}	$R_g = 0\Omega$ BW = 20Hz to 20KHz	—	0.3	—	mV
		$R_g = 10\text{K}\Omega$ BW = 20Hz to 20KHz	—	0.5	1.0	
Input Resistance	R_{IN}	—	20	30	—	k Ω
Output Offset Voltage	V_{OFF}	—	—	± 0.1	± 0.3	V
DC Mute Supply Current	I_{CCQ}	$V_{3pin} = 0\text{V}$	—	15	—	mA
Audio Mute Attenuation	—	MB3734 Only	—	60	—	dB

Fig. 3 – MB3732 TEST CIRCUIT

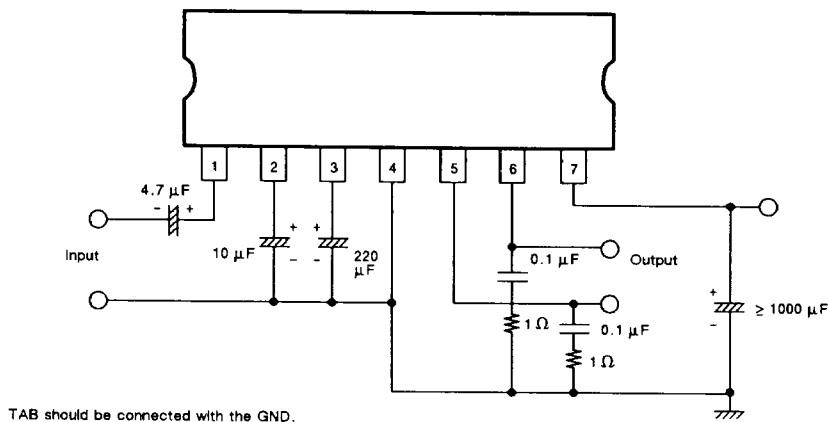
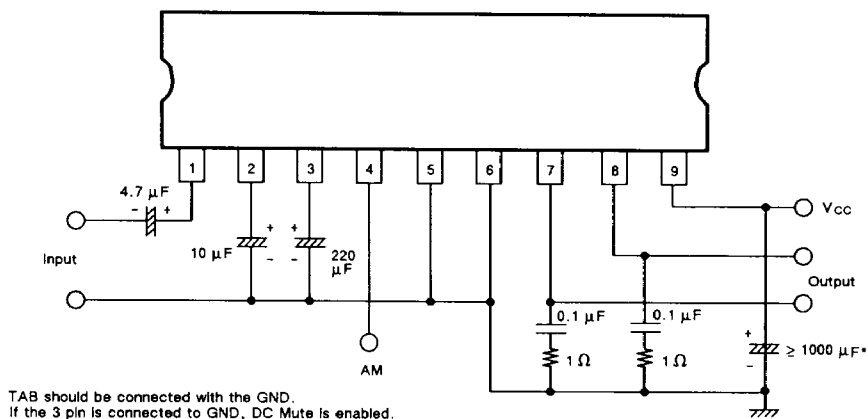


Fig. 4 – MB3734 TEST CIRCUIT



NOTE: *When operation is unstable due to board design, insert 0.1 F condenser between V_{CC} and GND and between both outputs respectively, so that the unstable operation will be restrained.

TYPICAL PERFORMANCE CHARACTERISTICS

Fig. 5 – TOTAL HARMONIC DISTORTION vs. OUTPUT POWER

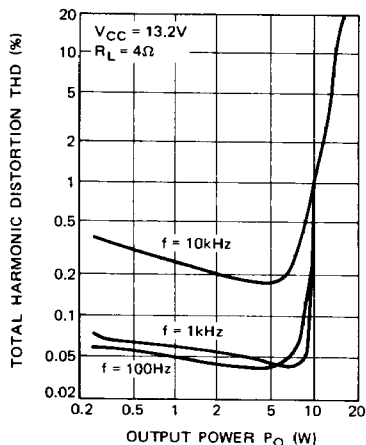


Fig. 6 – TOTAL HARMONIC DISTORTION vs. FREQUENCY

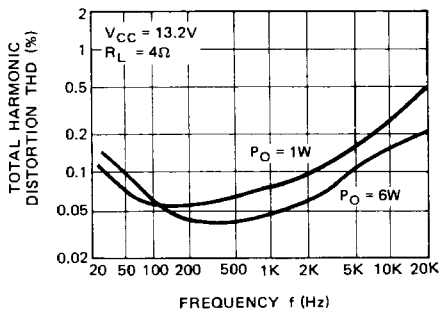


Fig. 7 – OUTPUT POWER vs. FREQUENCY

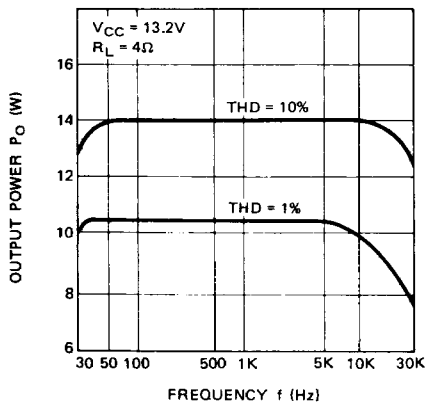
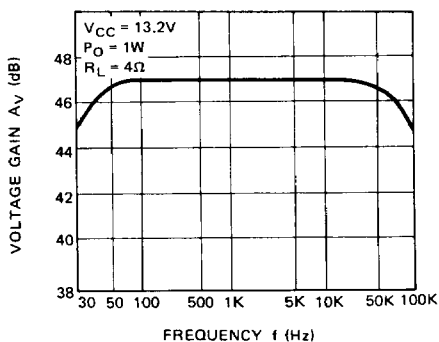


Fig. 8 – VOLTAGE GAIN vs. FREQUENCY





MB3732
MB3734

TYPICAL PERFORMANCE CHARACTERISTICS (continued)

3

Fig. 9 – POWER DERATING CURVE
(MB3732)

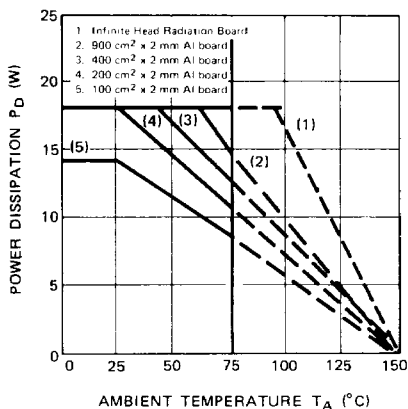
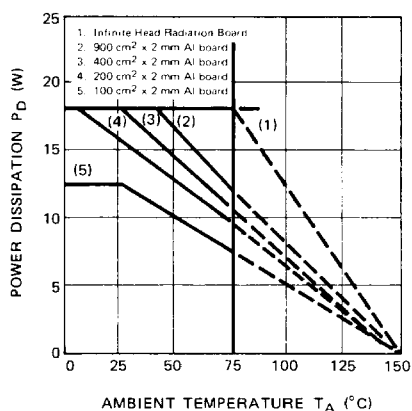
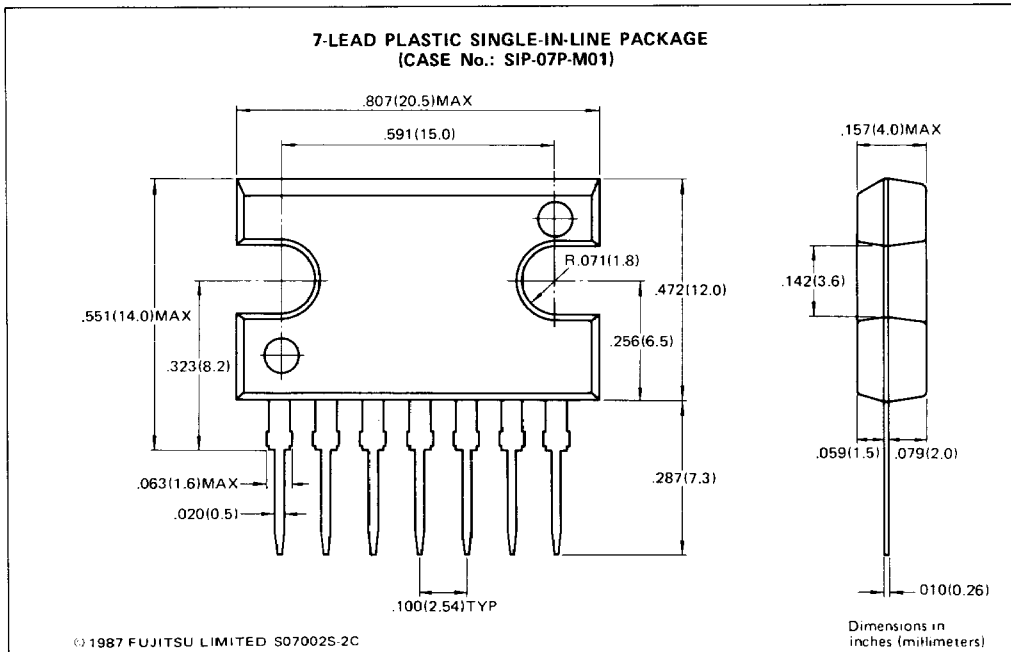


Fig. 10 – POWER DERATING CURVE
(MB3734)

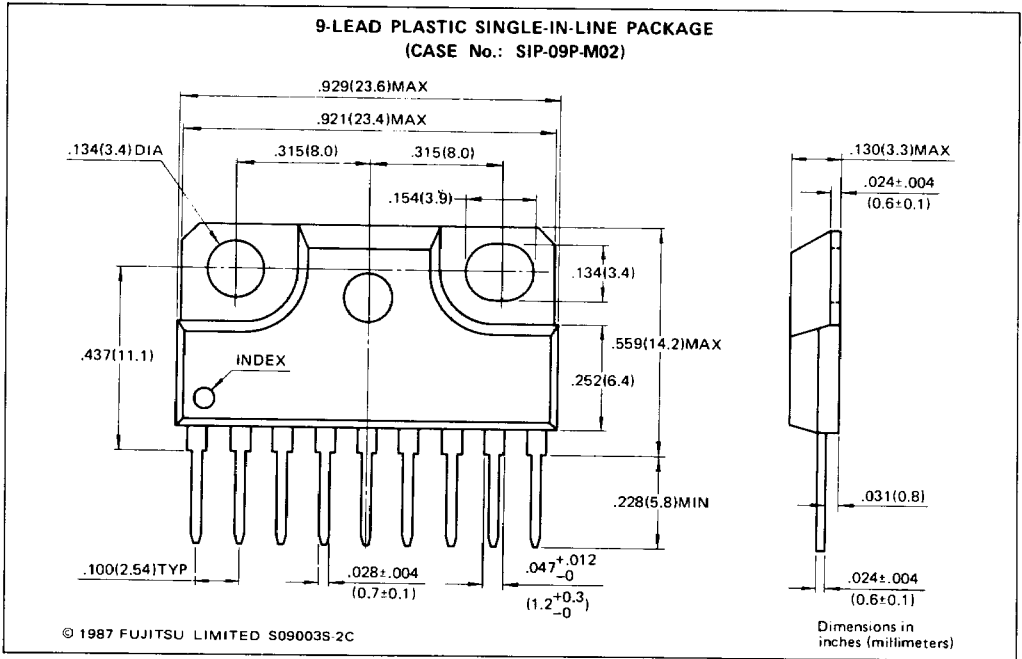


PACKAGE DIMENSIONS





PACKAGE DIMENSIONS (continued)



低周波電力増幅器 (デュアル, BTL)

MB 3 7 3 1 (18W, BTL)

動作電源電圧: 8~16V (13.2V)

標準負荷: 4Ω

■特徴

- 電源投入時過渡音防止
- ミュート機能内蔵
- 入出力グラウンドの分離
- 各種保護回路内蔵

電源サージ, 過電圧

熱遮断, 負荷短絡

出力端子DC短絡

■最大定格 ($T_c = 25^\circ\text{C}$)

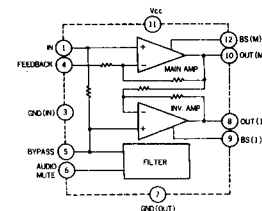
記号	最大定格	単位
V_{CCSU}	40	V
V_{CCOP}	18	V
I_{OPK}	4.5	A
P_D	18	W
T_{OP1}	-20/75	$^\circ\text{C}$
T_{stg}	-55/150	$^\circ\text{C}$

■電気的特性 ($V_{CC} = 13.2\text{V}$, $R_L = 4\Omega$, $T_c = 25^\circ\text{C}$)

記号	測定条件	最小	標準	最大	単位
I_q			80	200	mA
ΔV_q	$V_{IN} = 0$		200	400	mV
G_V	$P_{OUT} = 1\text{W}$	44.5	47	49.5	dB
P_{OUT}		15	18		W
THD	$P_{OUT} = 1\text{W}$		0.1	0.5	%
N_{OUT}	$R_G = 10\text{k}\Omega$, 条件A		0.5	1.0	mV
R_{IN}		40	70		$\text{k}\Omega$
MUT			43		dB

■パッケージ: 12ピン プラスチック SIL

■ブロック図



MB 3 7 3 2 (14W, BTL)

動作電源電圧: 8~16V (13.2V)

標準負荷: 4Ω

■特徴

- 電源投入時過渡音防止
- 各種保護回路内蔵

電源サージ, 過電圧

熱遮断, 負荷短絡

出力端子DC短絡

負荷-電源接触

■最大定格 ($T_c = 25^\circ\text{C}$)

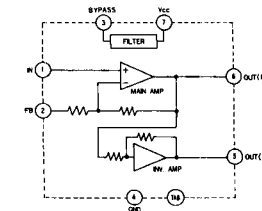
記号	最大定格	単位
V_{CCSU}	50	V
V_{CCOP}	18	V
I_{OPK}	4.5	A
P_D	18	W
T_{OP1}	-20/75	$^\circ\text{C}$
T_{stg}	-55/150	$^\circ\text{C}$

■電気的特性 ($V_{CC} = 13.2\text{V}$, $R_L = 4\Omega$, $T_c = 25^\circ\text{C}$)

記号	測定条件	最小	標準	最大	単位
I_q			80	160	mA
ΔV_q	$V_{IN} = 0$		± 100	± 300	mV
G_V	$P_{OUT} = 1\text{W}$	45	47	49	dB
P_{OUT}		10	14		W
THD	$P_{OUT} = 1\text{W}$		0.07	0.5	%
N_{OUT}	$R_G = 10\text{k}\Omega$, 条件A		0.5	1.0	mV
R_{IN}		20	30		$\text{k}\Omega$
I_{CCMT}	$V_{TS} = 0$		15		mA

■パッケージ: 7ピン プラスチック SIL (熱抵抗: 3°C/W)

■ブロック図



MB 3 7 3 3 (20W, BTL)

動作電源電圧: 8~16V (13.2V)

標準負荷: 4Ω

■特徴

- 電源投入時過渡音防止
- 入出力グラウンドの分離
- 各種保護回路内蔵

電源サージ, 過電圧

熱遮断, 負荷短絡

出力端子DC短絡

負荷-電源接触

■最大定格 ($T_c = 25^\circ\text{C}$)

記号	最大定格	単位
V_{CCSU}	40	V
V_{CC}	18	V
I_{OPK}	4.5	A
P_D	18	W
T_{OP1}	-20/75	$^\circ\text{C}$
T_{stg}	-55/150	$^\circ\text{C}$

■電気的特性 ($V_{CC} = 13.2\text{V}$, $R_L = 4\Omega$, $T_c = 25^\circ\text{C}$)

記号	測定条件	最小	標準	最大	単位
I_q			80	160	mA
ΔV_q	$V_{IN} = 0$		± 100	± 300	V
G_V		45	47	49	dB
P_{OUT}		16	20		W
THD	$P_{OUT} = 1\text{W}$		0.07		%
N_{OUT}	$R_G = 10\text{k}\Omega$, 条件A		0.5	1.0	mV
R_{IN}		20	30		$\text{k}\Omega$
I_{CCMT}	$V_{TS} = 0\text{V}$		15		mA
MUT			50		dB

■パッケージ: 12ピン プラスチック SIL

■ブロック図

