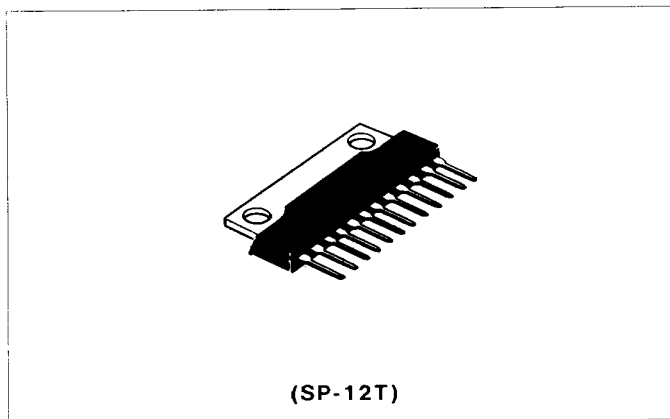# HA1398

Dual 5.8W Audio Power Amplifiers

● FEATURES

● Very low distortion in the wide range of frequency; Total harmonic distortion is lower than 0.5% (typ. 0.2%) when output power in from 0.1 W to 3 W and frequency range is from 100 Hz to 10 kHz.

● Easy to mount a chassis by heat-sink, due to the single-in-line package with no electrical isolation.

● Overvoltage handling capability up to 50 volts for 200 ms pulse duration.

● Thermal shut-down circuit included.

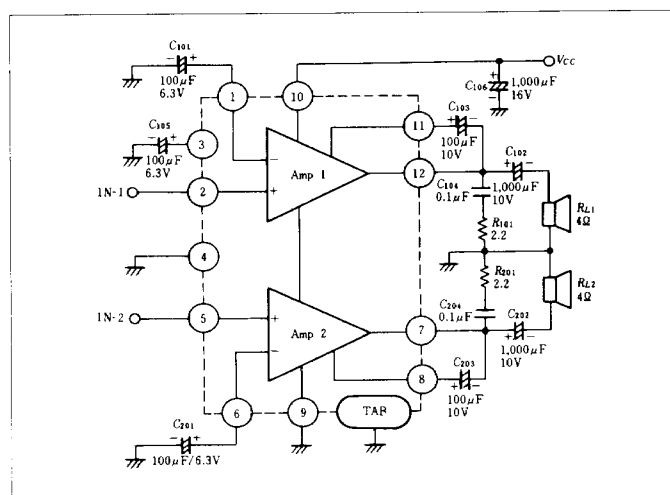● Less number of external components.

Absolute Maximum Ratings (Ta = 25°C)

Operating Supply Voltage . . . . 18 V
DC Supply Voltage (30 sec) . . . . 26 V
Peak Supply Voltage (Note) . . . . 50 V
Output Current . . . . 4A per channel
Power Dissipation . . . . 15W per package
Thermal Reisstance (Junction-Case) . . . . . 3°C/W
Junction Temperature . . . . 150°C
Operating Temperature Range . . . . −20°C to 70°C
Storage Temperature Range . . . . −55°C to 125°C

Note: Pulse width = 200 m sec, $T_{rise} \geqq 1$ m sec

(SP-12T)

■ TYPICAL APPLICATION

■ ELECTRICAL CHARACTERISTICS ($Ta=25°C$, $V_{CC}=13.2V$, $f=1kHz$, $R_L=4\Omega$, One-half Operation)

Item	Symbol	Test Condition		min.	typ.	max.	Unit
Quiescent Current	I_Q	$V_{in}=0$		40	80	160	mA
Input Bias Voltage	V_B	$V_{in}=0$		—	—	40	mV
Voltage Gain	G_V	$V_{in}=2.45mV$		45	47	49	dB
Difference of Voltage Gain	$\triangle G_V$	$V_{in}=2.45mV$		—	—	±1.5	dB
Output Power Per Channel	P_{out}	$R_L=4\Omega$ $THD=10\%$	$V_{CC}=13.2V$	5.0	5.8	—	W
			$V_{CC}=14.4V$	—	7.0	—	
Total Harmonic Distortion	THD	$P_{out}=1.5W$		—	0.08	0.5	%
Noise Output	WBN	$R_g=10k\Omega$, $BW=20Hz$ to $20kHz$		—	0.4	1.0	mV
Supply Voltage Rejection Ratio	SVR	$R_g=600\Omega$, $f=500Hz$		36	46	—	dB
Input Resistance	R_{in}	$f=1kHz$		—	30	—	kΩ
Rolloff Frequency	f_L	$G_V=-3dB$ from	Low	—	40	—	Hz
	f_H	$f=1kHz$ Ref.	High	—	60	—	kHz
Cross-talk	CT	$f=500Hz$, $R_g=600\Omega$		40	60	—	dB

◈ HITACHI

Bottom View

Top View

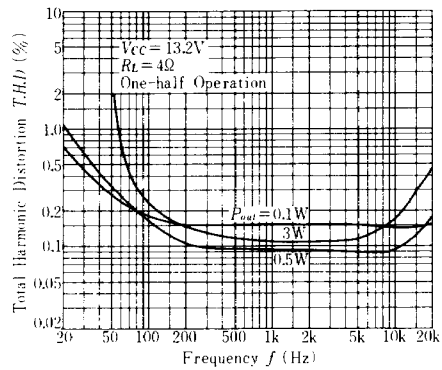## ■EXTERNAL COMPONENTS

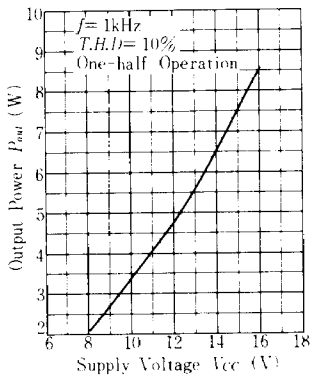| Parts No.	Recommended Value	Purpose	Larger than recommended value	Smaller than recommended value
C_{101}, C_{201}	100μF	Inverting DC decoupling		Higher low frequency rolloff
C_{102}, C_{202}	1000μF	Output coupling to load	Danger of burn-out	Higher low frequency rolloff
C_{103}, C_{203}	100μF	Boot strop	Danger of burn-out at load dump surge	Smaller power bandwidth
C_{104}, C_{204}	0.1μF	Frequency stability	Increse of drain current at high frequency	Danger of oscillation
C_{105}	100μF	Ripple rejection		Pop sound at switch-on
C_{106}	1000μF	Supply bypassing		Danger of oscillation
R_{101}, R_{201}	2.2Ω	Frequency stability	Danger of oscillation	Danger of oscillation

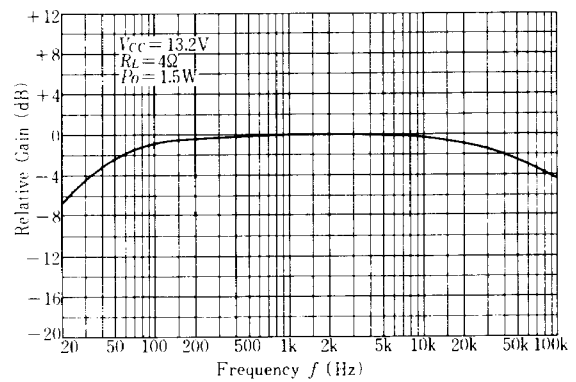## TOTAL HARMONIC DISTORTION VS. OUTPUT POWER

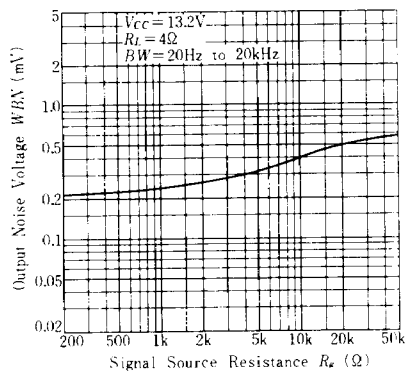## TOTAL HARMONIC DISTORTION VS. FREQUENCY
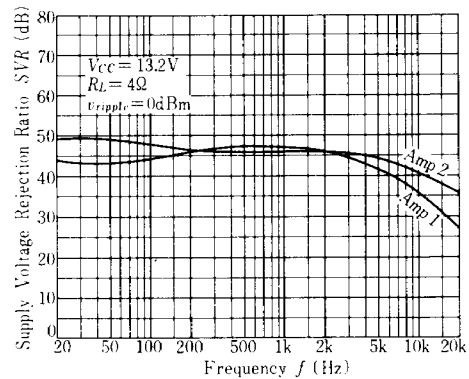

OUTPUT POWER VS. SUPPLY VOLTAGE

FREQUENCY RESPONSE OF VOLTAGE GAIN

OUTPUT NOISE VOLTAGE VS. SIGNAL SOURCE RESISTANCE

SUPPLY VOLTAGE REJECTION RATIO VS. FREQUENCY

@ HITACHI

CROSS-TALK VS. FREQUENCY