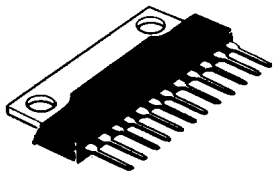
HA1398

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.



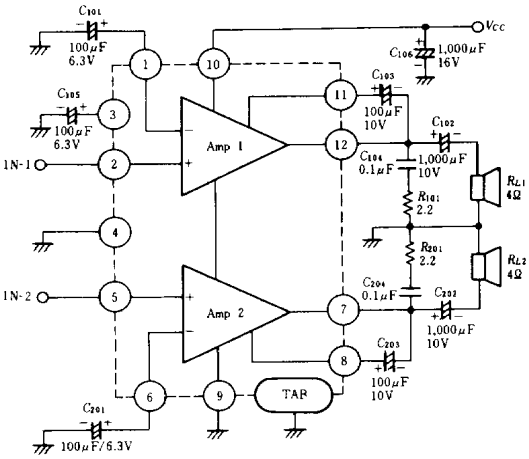
(SP-12T)

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

■ TYPICAL APPLICATION



■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V_{CC}=13.2V, f=1kHz, R_L=4Ω, 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=4Ω	V_{CC}=13.2V	5.0	5.8	—	W
		THD=10%	V_{CC}=14.4V	—	7.0	—	
Total Harmonic Distortion	THD	P_{out}=1.5W		—	0.08	0.5	%
Noise Output	WBN	R_g=10kΩ, BW=20Hz to 20kHz		—	0.4	1.0	mV
Supply Voltage Rejection Ratio	SVR	R_g=600Ω, f=500Hz		36	46	—	dB
Input Resistance	R_{in}	f=1kHz		—	30	—	kΩ
Rolloff Frequcncy	f_L	G_V=−3dB from	Low	—	40	—	Hz
	f_H	f=1kHz Ref.	High	—	60	—	kHz
Cross-talk	CT	f=500Hz, R_g=600Ω		40	60	—	dB

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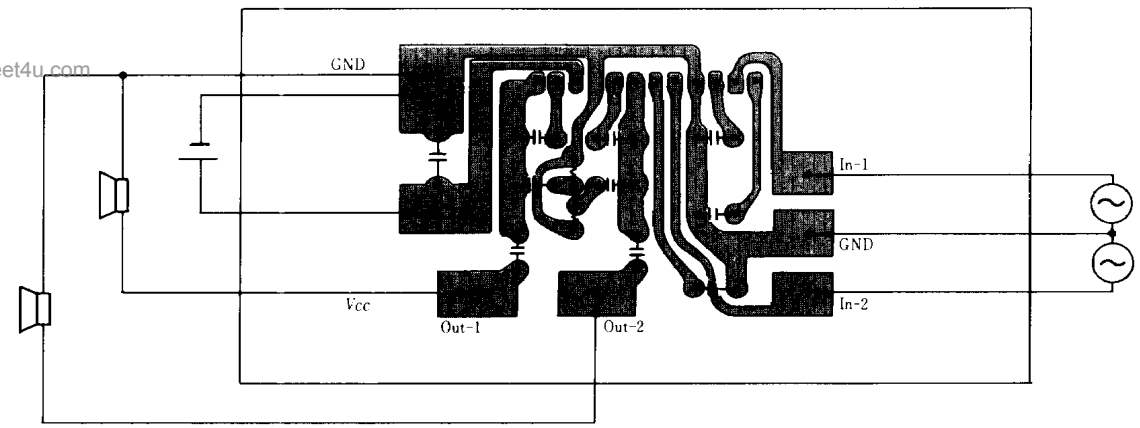
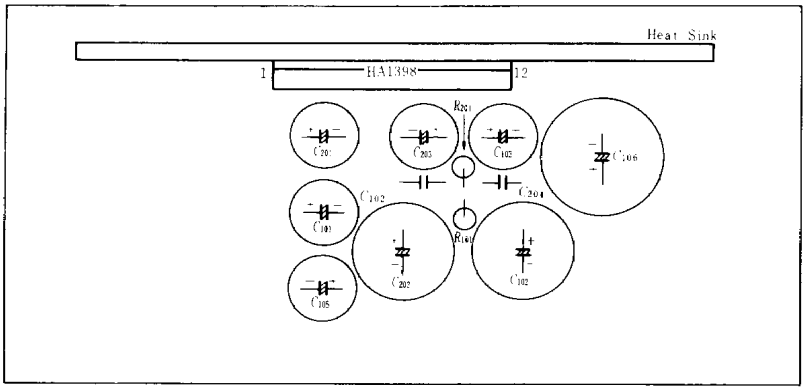


Bottom View

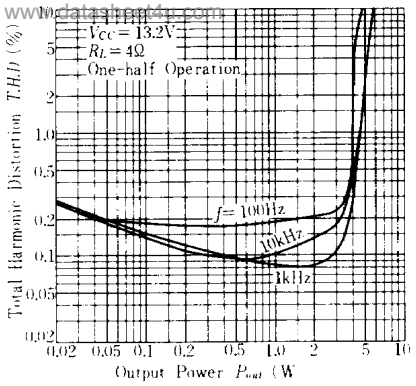


Top View

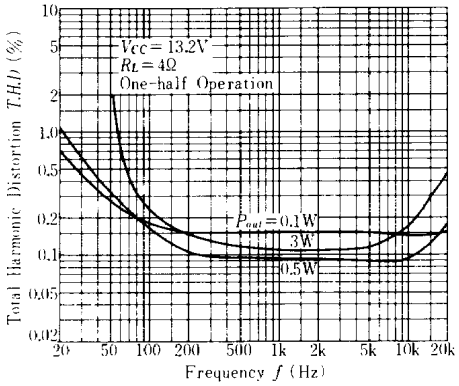
■ EXTERNAL COMPONENTS

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

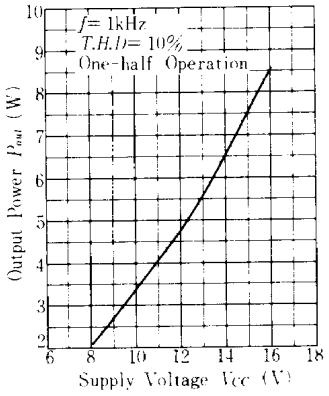
TOTAL HARMONIC DISTORTION VS. OUTPUT POWER



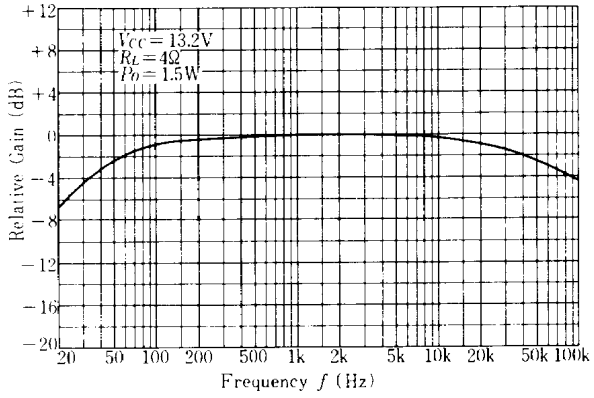
TOTAL HARMONIC DISTORTION VS. FREQUENCY



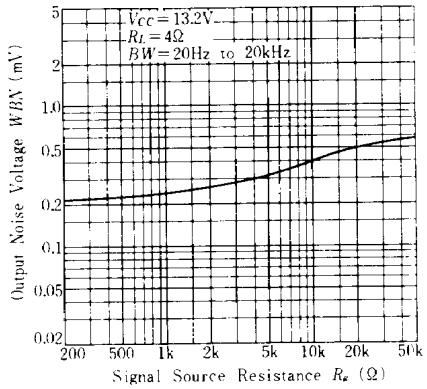
OUTPUT POWER VS. SUPPLY VOLTAGE



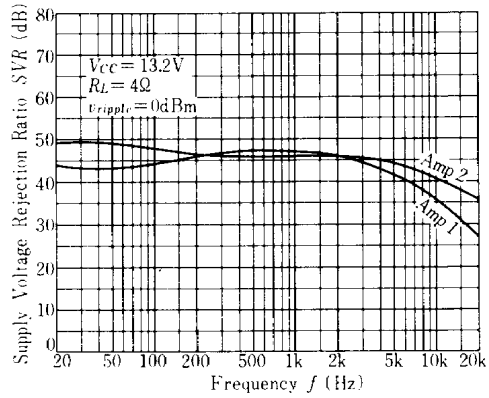
FREQUENCY RESPONSE OF VOLTAGE GAIN



OUTPUT NOISE VOLTAGE VS. SIGNAL SOURCE RESISTANCE



SUPPLY VOLTAGE REJECTION RATIO VS. FREQUENCY



CROSS-TALK VS. FREQUENCY