

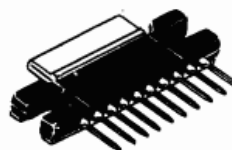
HA1366W/WR

5.5W AUDIO POWER AMPLIFIER

Hitachi HA1366W/HA1366WR is a class-B power amplifier designed especially for car radios and car stereo amplifiers encapsulated in a plastic single-in-line package, and is capable of driving low impedance loads down to 2 ohms.

The HA1366W/HA1366WR provides an output power of 5.5 watts to 4 ohm load with 10 percent distortion at 13.2 volts, and also 6.6 watts to 4 ohm load with 10 percent distortion at 14.4 volts.

It exhibits high output current capability up to 4.5 amperes, very low harmonic distortion and cross-over distortion.



(SP-10TA)

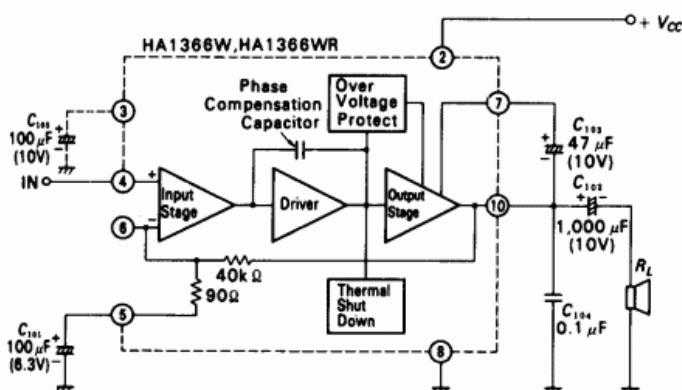
■ FEATURES

- Two kinds of pin configuration are available: normal (HA1366W) and reverse (HA1366WR) for easier layout design of pc-board when used in stereo applications
- Only a few number of external components:
 - three electrolytic capacitors
 - one polyester film capacitor
- Easy to mount a chassis by heat-sink, due to the single-in-line package with no electrical isolation
- Thermal shut-down circuit provided:

If the chip temperature reaches 150°C, the output power and current drain are automatically reduced to maintain the device safely.

- Overvoltage handling capability up to 40 volts for 200 msec pulse duration
- No damage for reverse insertion on the pc-board
- Using BTL connection, output power of 13 watts at 10 percent distortion is obtained with 4 ohm load at 13.2 volts.

■ BLOCK DIAGRAM AND TYPICAL APPLICATION CIRCUIT



- Notes: 1. Terminals 1 and 9 have no connection.
 2. Recommended capacitor for C_{104} is a non-inductive polyester film type or the equivalent.
 3. When the shock noise occurring on supplying the power is to be reduced, the addition of C_{105} (100µF) is desirable. However, C_{101} is changed to 47µF when the C_{105} is used.

4. The terminal 6 is for gain adjustment. When a resistor is connected between pin 6 and 5, G_V comes higher. When a resistor and a capacitor are series connected between pin 6 and 10, G_V is reduced. Lower G_V than 40 dB is not recommended.

■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$)

Item	Symbol	Rating	Unit	Notes
DC Supply Voltage	V_{CC}	18	V	1
Peak Supply Voltage ($t=200\text{ms}$)	V_{surge}	40	V	
Output Current	$I_{O(\text{peak})}$	4.5	A	2
Power Dissipation ($T_c=78^{\circ}\text{C}$)	P_T	7.2	W	
Junction Temperature	T_j	150	$^{\circ}\text{C}$	
Thermal Resistance	θ_{j-c}	10	$^{\circ}\text{C/W}$	
Operating Temperature Range	T_{opr}	-20 to +70	$^{\circ}\text{C}$	3
Storage Temperature Range	T_{stg}	-55 to +125	$^{\circ}\text{C}$	

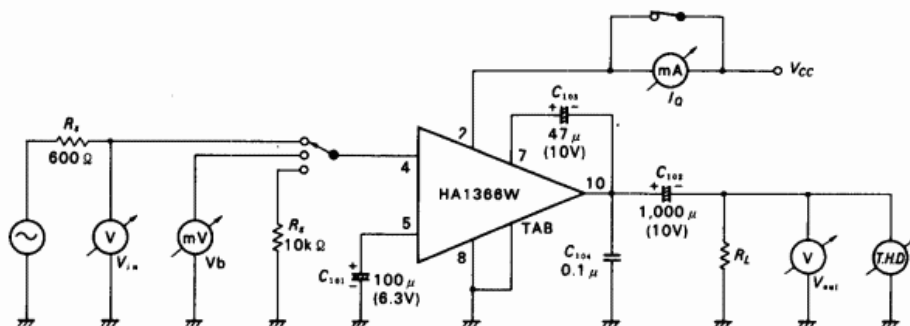
Notes: 1. Standard operating voltage is 13.2V
 2. $I_{O(\text{peak})}$ is determined from the ratio of V_{CC} to R_L
 3. The value when 2.8 watts are dissipated mounted on an aluminium plate ($20\text{cm}^2 \times 1.5\text{mm}$), 2.8 watts is a maximum dissipation at $V_{CC}=13.2\text{V}$

■ ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$)

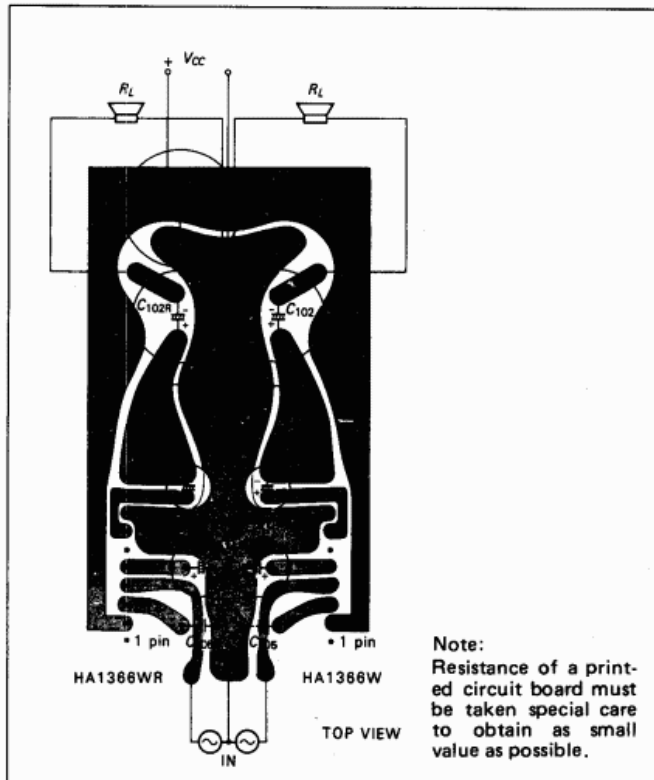
Item	Symbol	Test Conditions	min	typ	max	Unit
Quiescent Current	I_Q	$V_{in}=0$	—	30	60	mA
Input Bias Voltage	V_b	DC Biasing Point between 4 and GND	—	—	20	mV
Voltage Gain	G_V	$f=1\text{kHz}$	50	52.5	55	dB
Output Power	P_O	$f=1\text{kHz}$, $T.H.D=10\%$	4.5	5.5	—	W
Total Harmonic Distortion	$T.H.D$	$f=1\text{kHz}$, $P_O=0.5\text{W}$	—	—	1.5	%
Noise Output	V_N	$R_g=10\text{k}\Omega$, $8\text{W}=20$ to 20kHz	—	—	2.0	mV
Input Resistance	R_{in}	$f=1\text{kHz}$	—	24	—	$\text{k}\Omega$

Note: Standard test conditions are: $V_{CC}=13.2\text{V}$, $R_L=4\Omega$, $R_g=600\Omega$

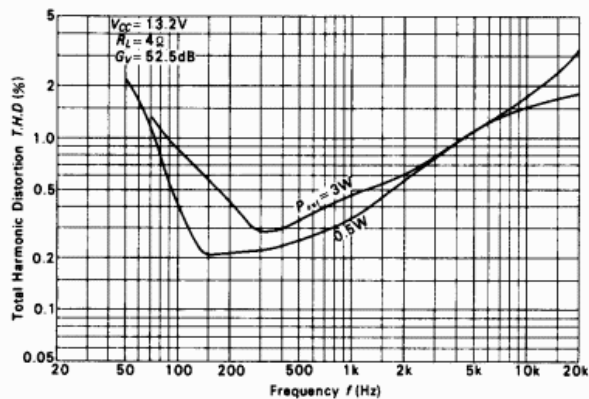
■ TEST CIRCUIT



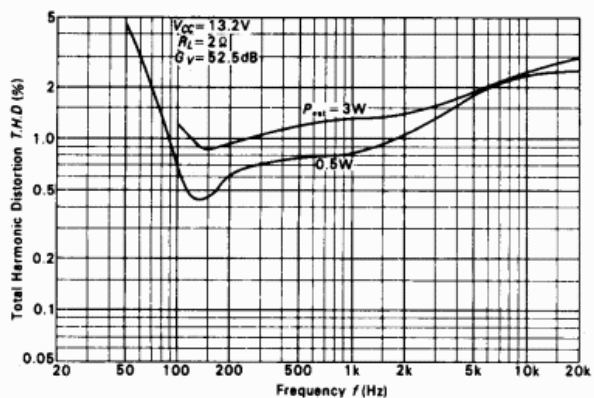
PC-BOARD LAYOUT RATTERN



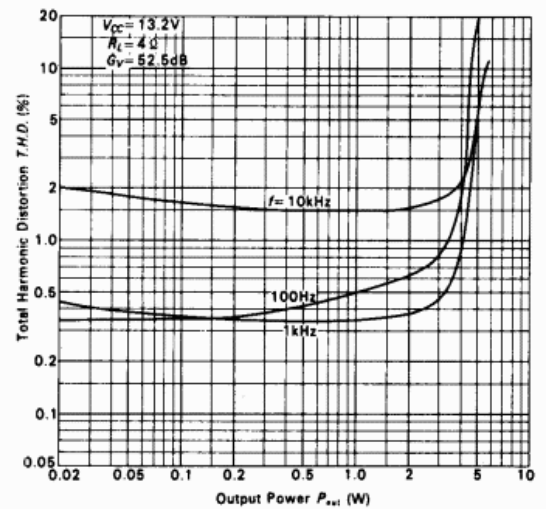
TOTAL-HARMONIC DISTORTION VS. FREQUENCY (1)



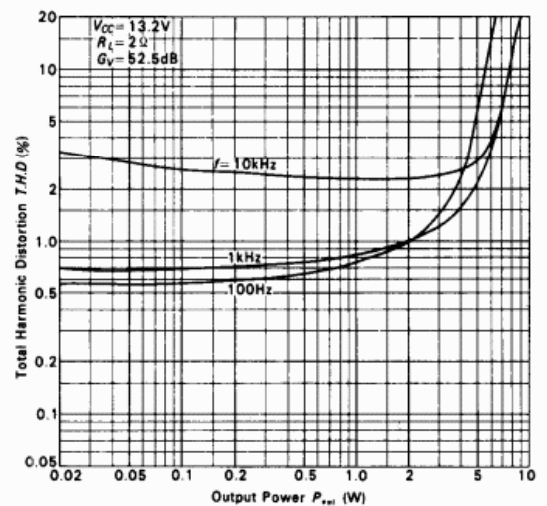
TOTAL HARMONIC DISTORTION VS. FREQUENCY (2)



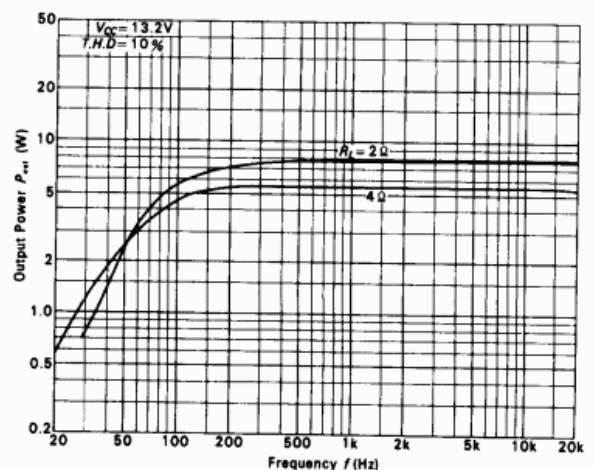
TOTAL HARMONIC DISTORTION VS. OUTPUT POWER (1)



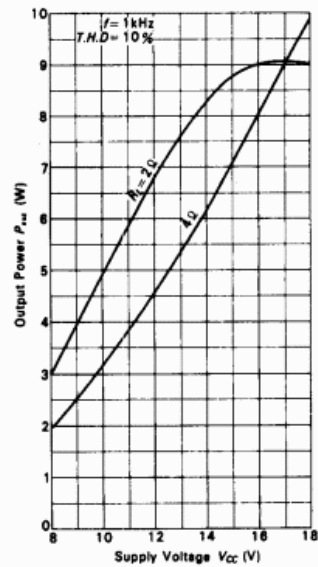
TOTAL HARMONIC DISTORTION VS. OUTPUT POWER (2)



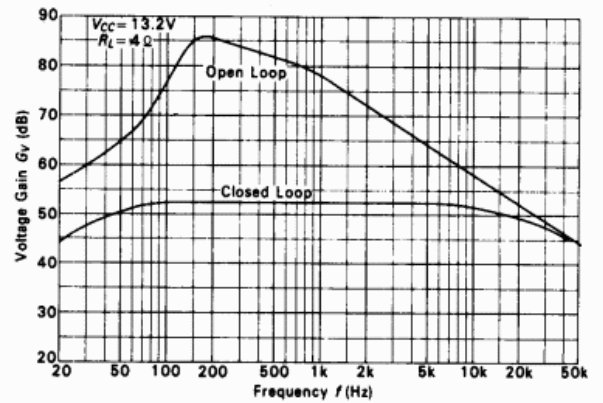
OUTPUT POWER VS. FREQUENCY



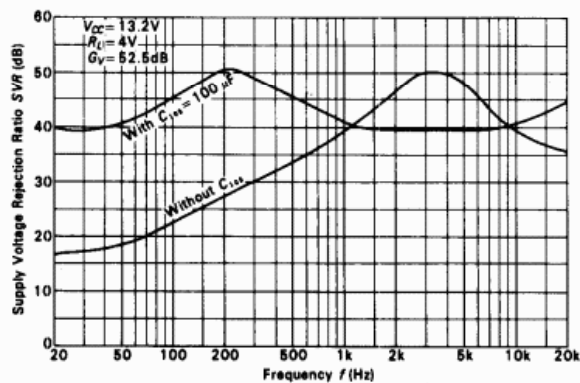
OUTPUT POWER VS. SUPPLY VOLTAGE



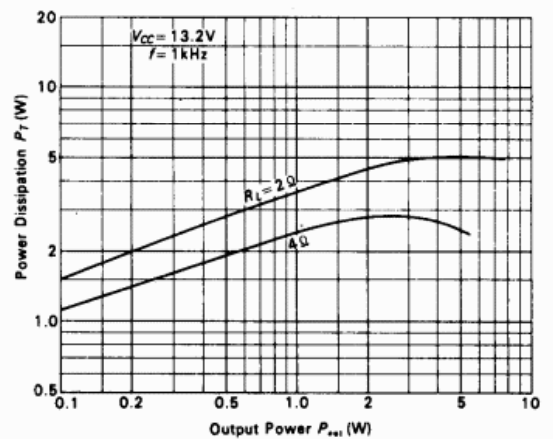
VOLTAGE GAIN VS. FREQUENCY



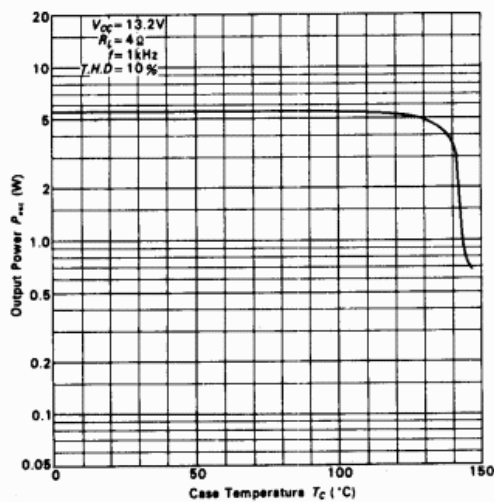
SUPPLY VOLTAGE REJECTION RATIO VS. FREQUENCY



POWER DISSIPATION VS. OUTPUT POWER



OUTPUT POWER VS. CASE TEMPERATURE



QUIESCENT CURRENT VS. SUPPLY VOLTAGE

