

# HA1389/R

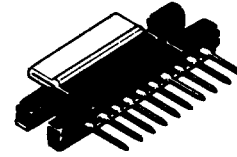
## 4 to 7W Audio Power Amplifier

Hitachi HA1389/HA1389R is a class-B power amplifier designed especially for home type stereo amplifiers encapsulated in a 10-lead single-in-line plastic package.

The HA1389/HA1389R provides an output power of 5 watts at 19 volts, and also 7 watts at 22 volts to 8 ohm load with 10 percent distortion.

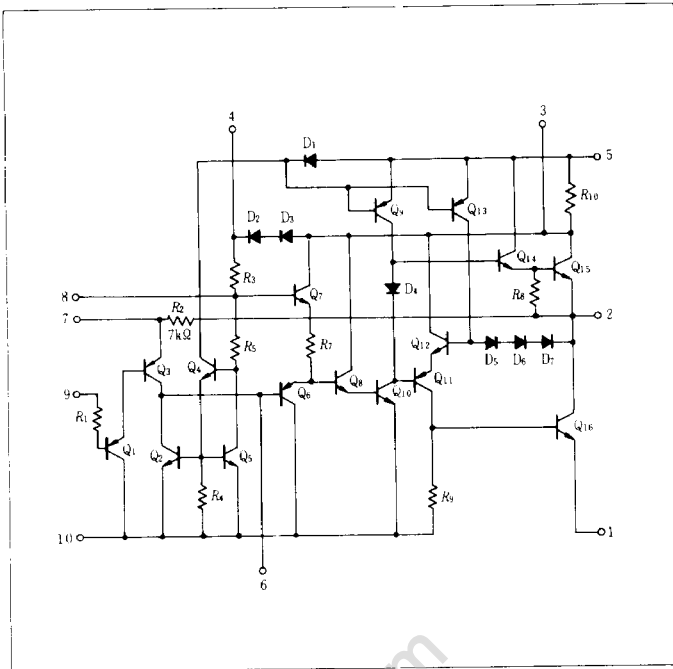
### ■ FEATURES

- Two kinds of pin configuration are available: normal (HA1389) and reverse (HA1389R) for easier layout design of pc-board when used in stereo application.
- Easy to mount a chassis by heat-sink, due to the single-in-line package with no electrical isolation
- High Output power:  
7W typ. ( $V_{CC}=22V$ ,  $R_L=8\Omega$ , THD = 10%)
- Wide Range of Supply Voltage: from 5 to 30V
- Very Low Harmonic and Crossover Distortion.
- Thermal shut-down circuit provided.

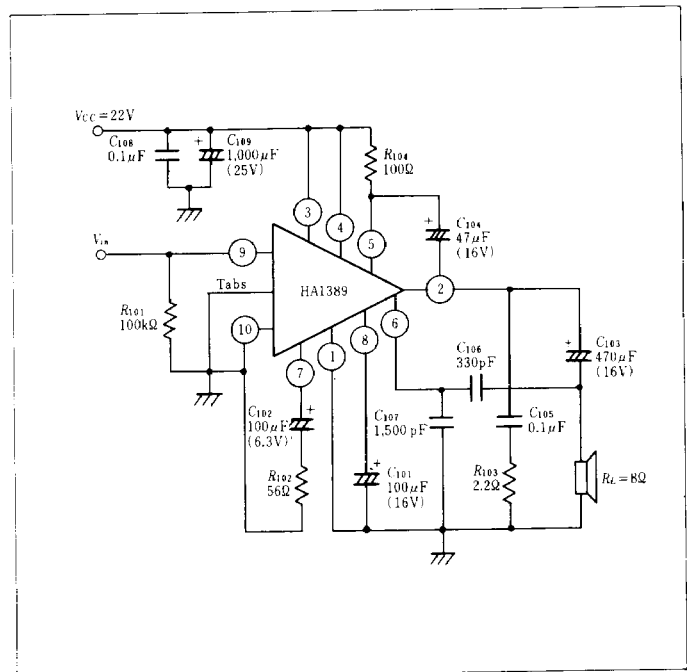


(SP-10TA)

### ■ CIRCUIT SCHEMATIC



### ■ TYPICAL APPLICATION CIRCUIT



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

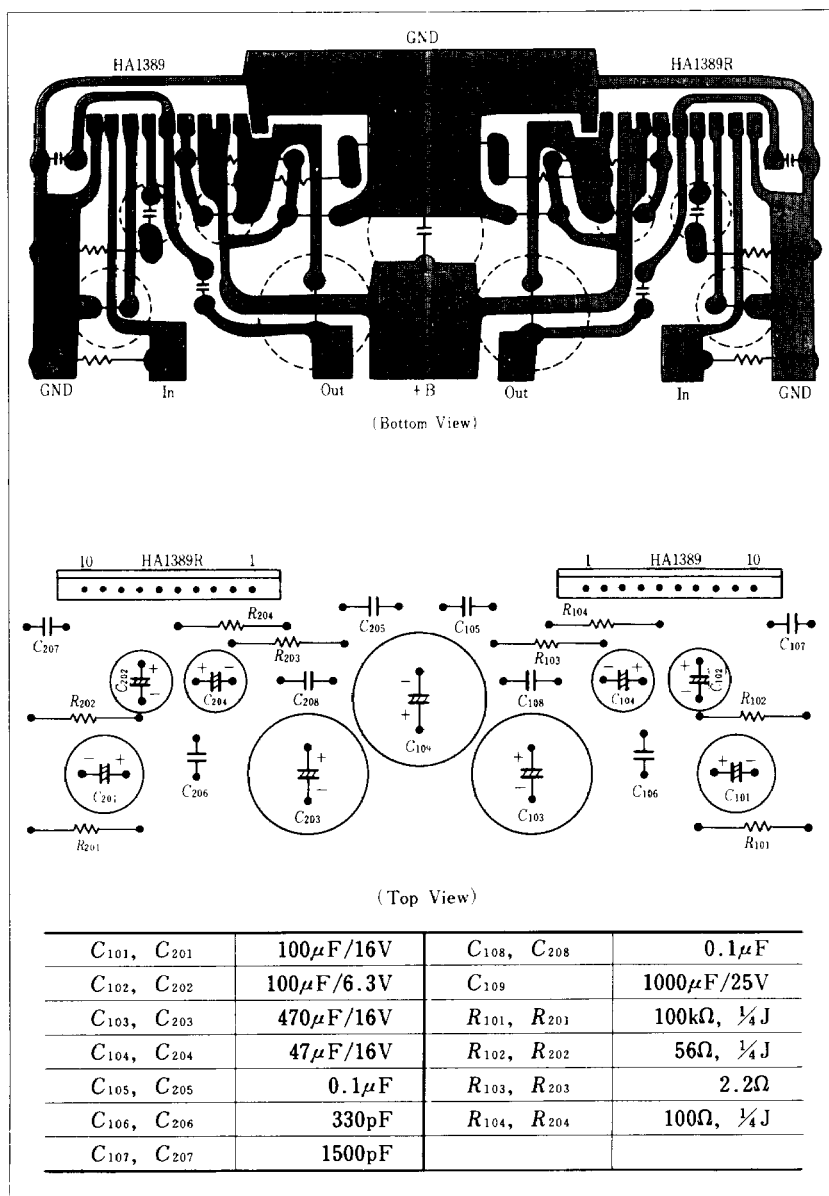
Item	Symbol	Ratings	Unit
Supply Voltage	$V_{CC}$	30	V
Output Current	$I_o$	3.75	A
Power Dissipation	$P_T^*$	7.2	W
Thermal Resistance (Junction-Case)	$\theta_{j-c}$	10	$^\circ\text{C}/\text{W}$
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Operating Temperature	$T_{opr}$	-20 to +70	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$

\* Value at  $T_c=78^\circ\text{C}$

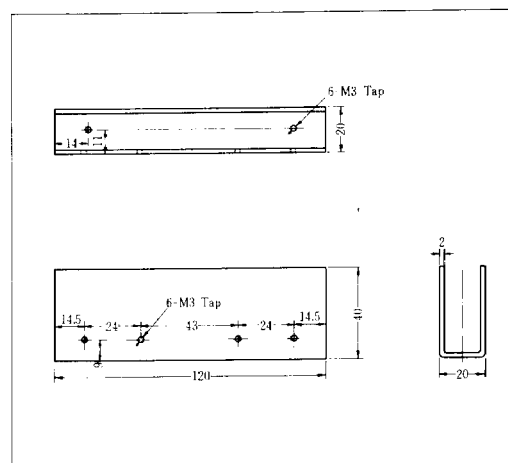
■ ELECTRICAL CHARACTERISTICS ( $V_{CC}=22V, R_L=8\Omega, T_a=25^\circ C$ )

Item	Symbol	Test Condition	min.	typ.	max.	Unit
Quiescent Output Voltage	$V_Q$		10	11	12	V
Quiescent Current Drain	$I_Q$		—	9	20	mA
Input Bias Current	$I_b$		—	1	—	$\mu A$
Output Power	$P_o$	$THD=10\%, f=1kHz$	5.8	7	—	W
Total Harmonic Distortion	$T.H.D$	$P_{out}=0.5W, f=1kHz$	—	0.06	0.8	%
Voltage Gain (open loop)	$G_{V(OL)}$	$f=1kHz$	—	75	—	dB
Voltage Gain (closed loop)	$G_V$	$f=1kHz$	39	42	45	dB
Noise Output	$WBN$	$R_s=10k\Omega, B=20Hz \text{ to } 20kHz$	—	0.3	1.5	mV
Input Resistance	$R_{in}$	$f=1kHz$	—	100	—	k $\Omega$
Frequency Response (-3dB)	$B.W$	$C_{106}=330pF, \Delta G_V=-3dB$	—	60 to 30k	—	Hz
Supply Voltage Rejection Ratio	$SVR$	$f_{ripple}=100Hz, R_s=600\Omega$	38	45	—	dB
Power Band Width (-3dB)	$P.B.W$	$C_{106}=330pF$	—	40 to 70k	—	Hz

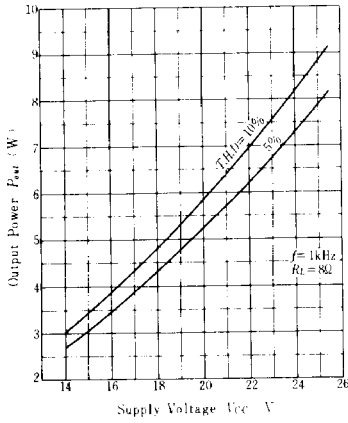
■ PC. BOARD LAYOUT PATTERN (FOR STEREO USE)



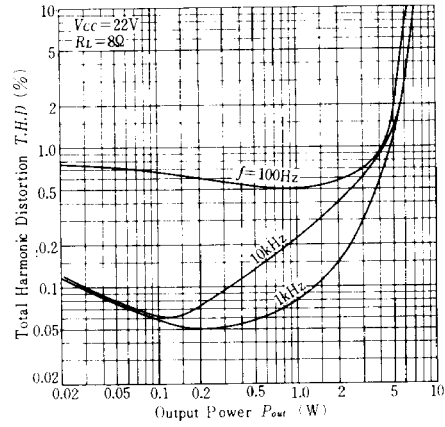
■ EXAMPLE OF HEAT SINK (FOR STEREO USE)



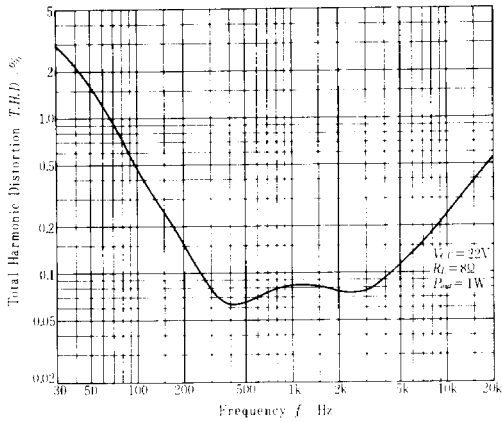
OUTPUT POWER VS. SUPPLY VOLTAGE



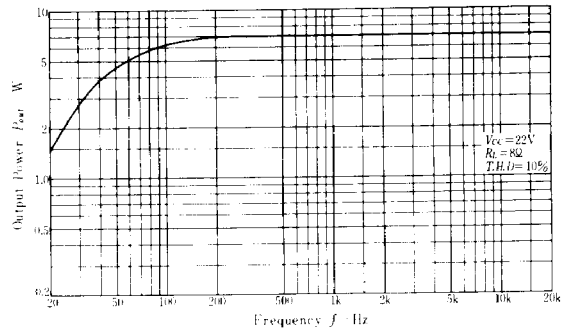
TOTAL HARMONIC DISTORTION VS. OUTPUT POWER



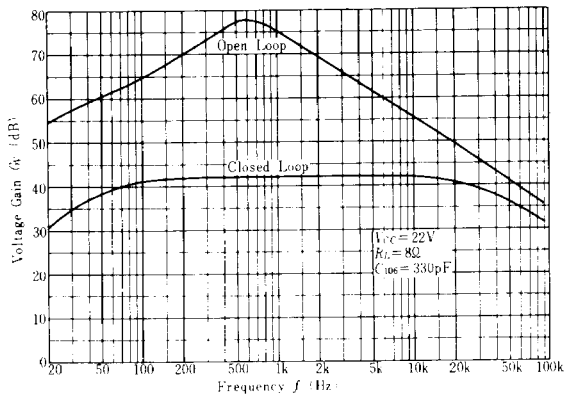
TOTAL HARMONIC DISTORTION VS. FREQUENCY



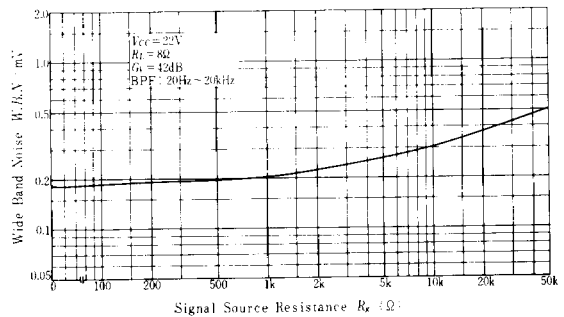
OUTPUT POWER VS. FREQUENCY



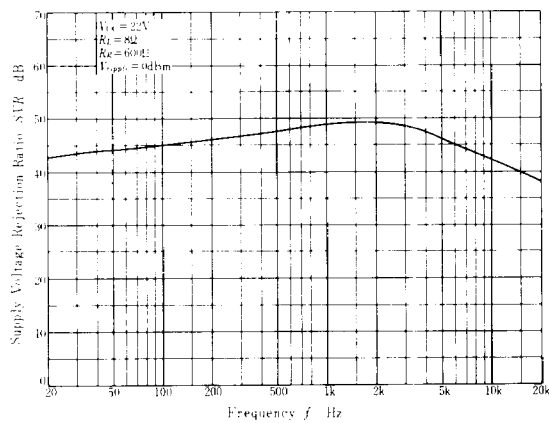
VOLTAGE GAIN VS. FREQUENCY



WIDE BAND NOISE VS. SIGNAL SOURCE RESISTANCE



**SUPPLY VOLTAGE REJECTION RATIO VS. FREQUENCY**



**QUIESCENT OUTPUT VOLTAGE AND QUIESCENT CURRENT DRAIN VS. SUPPLY VOLTAGE**

