

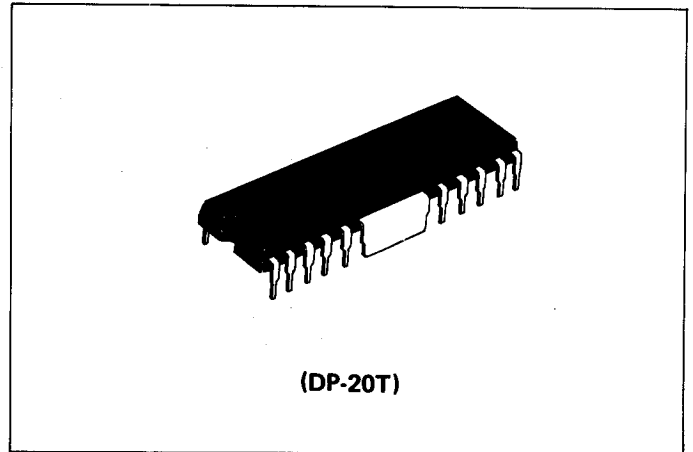
# HA1367

## AMPLIFIER SYSTEM FOR CASSETTE TAPE RECORDER WITH 2.2W POWER AMPLIFIER

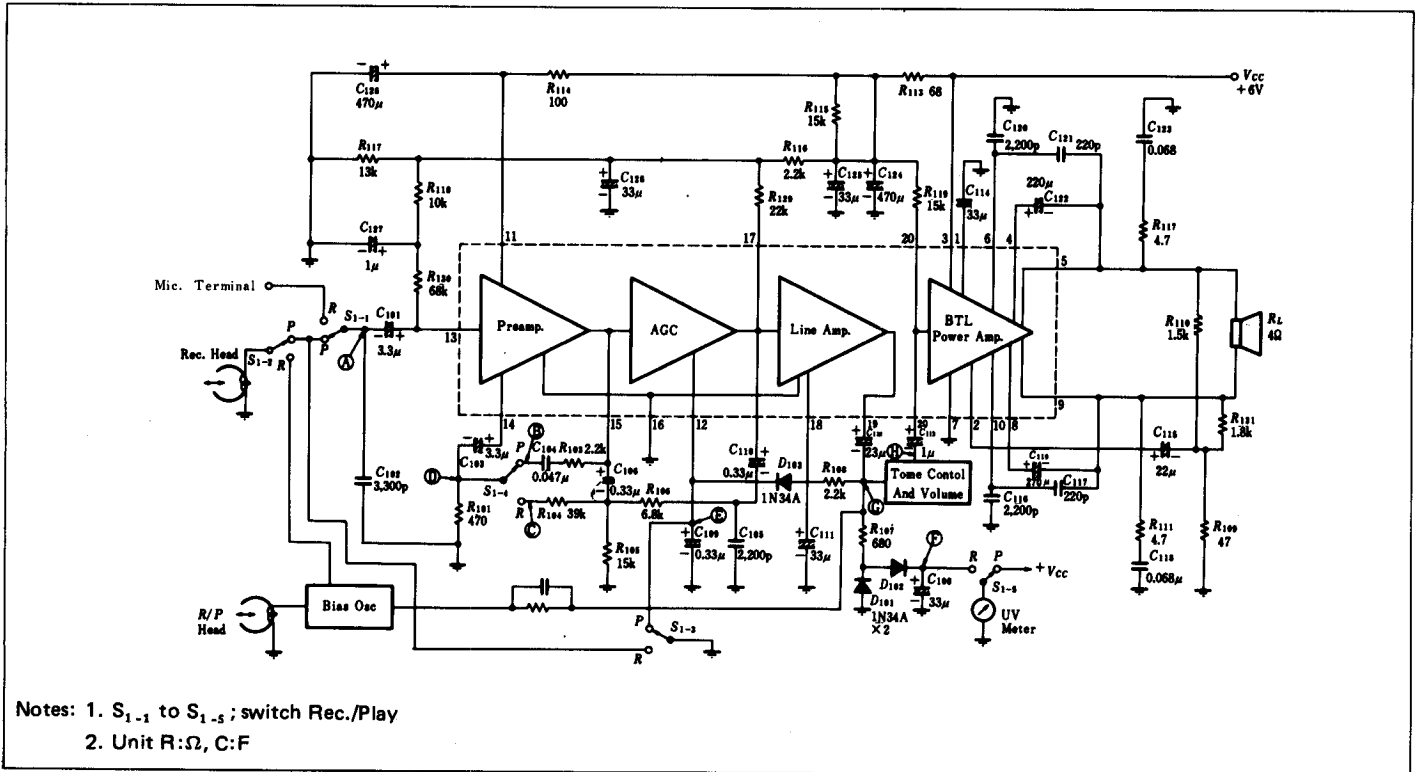
HA1367 is an IC for tape recorders with radio which consist of a pre-amplifier, AGC circuit, a line amplifier and a BTL power amplifier. It is possible to make the audio frequency of the cassette tape recorder that turns out 2.2W output at 6V power source to operate as an IC by use of one IC of this type.

### ■ FEATURES

1. It is possible to turn out 2W output by 6V supply voltage using BTL circuit. (When load resistance is  $4\Omega$ )
2. The pre-amplifier, AGC circuit, line amplifier and BTL are inputted to 1 chip and thus bring about this high integrated IC.
3. Since it does not use an output transformer, the low distortion can be made even at the low and high frequencies.



### ■ BLOCK DIAGRAM AND TYPICAL EXTERNAL COMPONENTS



### ■ ABSOLUTE MAXIMUM RATINGS

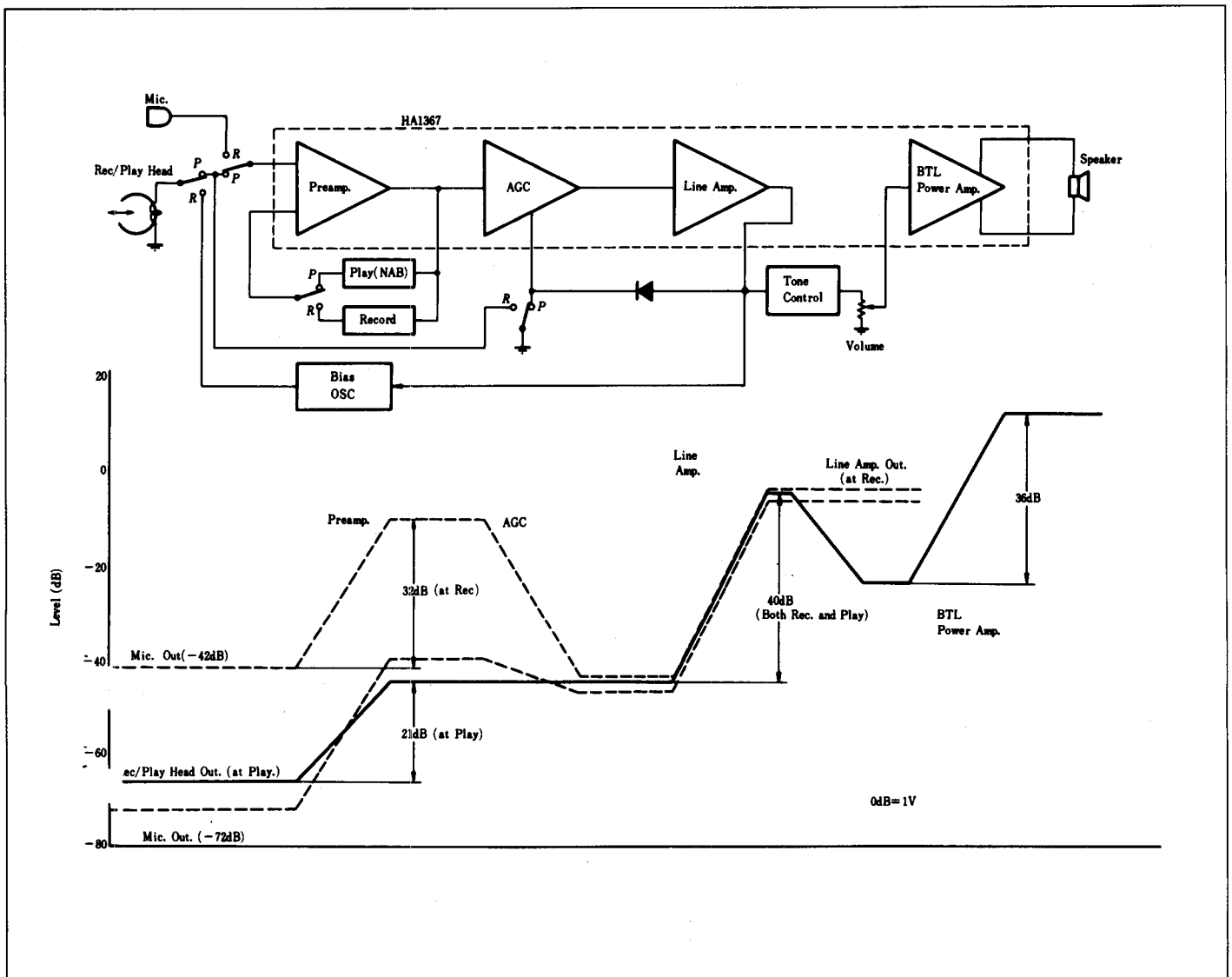
Item	Symbol	Rating	Unit
Supply Voltage	$V_{CC}$	9	V
Output Current	$I_o$ (peak)	2.25	A
Power Dissipation*	$P_T$	3.1	W
Junction Temperature	$T_j$	150	$^{\circ}C$
Operating Temperature	$T_{opr}$	-20 to +70	$^{\circ}C$
Storage Temperature	$T_{stg}$	-55 to +125	$^{\circ}C$

\* Value at  $T_a = 25^{\circ}C$  ( $\theta_{j-c} \leq 15^{\circ}C/W$ )

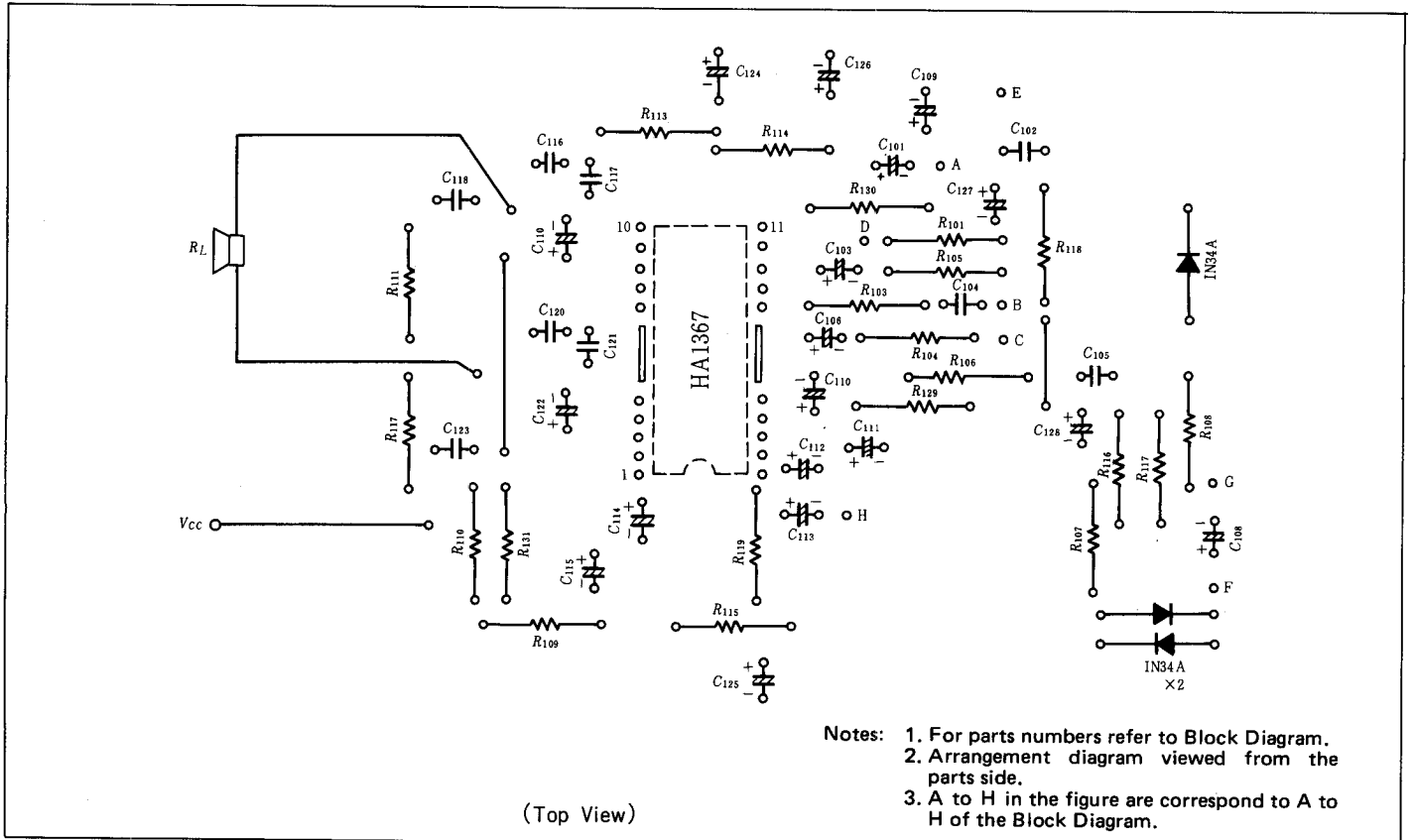
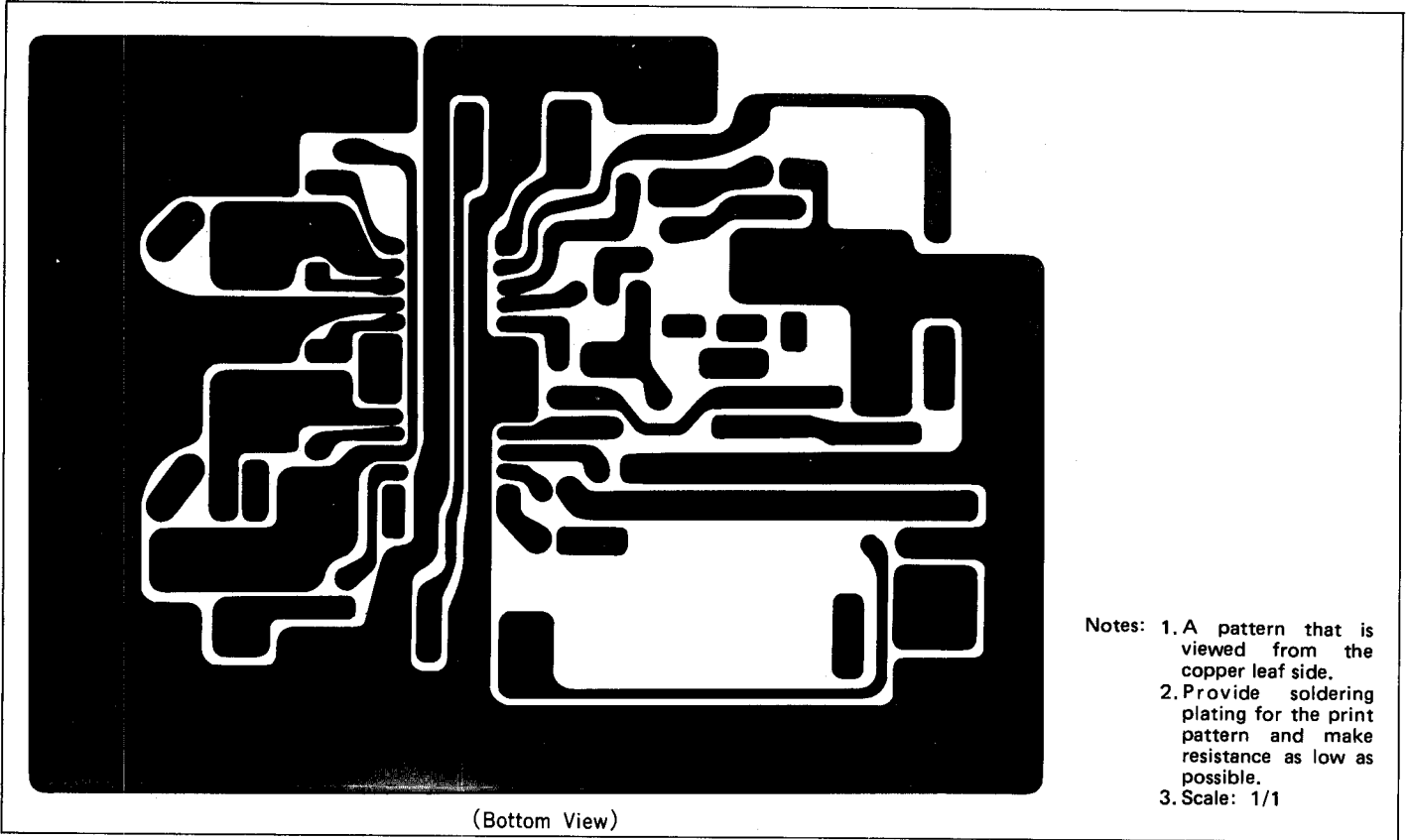
■ ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ ,  $V_{cc}=6\text{V}$ ,  $f=1\text{kHz}$ ,  $R_L=4\Omega$ )

	Item	Symbol	Test Condition	min	typ	max	Unit
Pre amp	Voltage Gain	$G_{V1}$	$V_{in} = -50\text{dBm (Rec)}$	—	32	—	dB
	Output Voltage	$V_{out1}$	$T.H.D = 1\%$	0.7	—	—	V
	Total Harmonic Distortion	$THD_1$	$V_{out1} = 0.5\text{V}$	—	—	1.0	%
Line amp	Voltage Gain	$G_{V2}$	$V_{in} = -50\text{dBm}$	—	40	—	dB
	Output Voltage	$V_{out2}$	$T.H.D = 1\%$	0.7	—	—	V
	Total Harmonic Distortion	$THD_2$	$V_{out2} = 0.5\text{V}$	—	—	1.0	%
AGC	Distortion at AGC	$AGC, THD$	$V_{in} = -40\text{dBm}$	—	—	3.0	%
Power amp	Voltage Gain	$G_{V3}$	$V_{in} = -40\text{dBm}$	—	36	—	dB
	Output Power	$P_{out3}$	$T.H.D_3 = 10\%$	1.9	2.2	—	W
	Total Harmonic Distortion	$THD_3$	$P_{out3} = 1\text{W}$	—	—	1.0	%
	Offset Voltage	$V_{offset}$	Pin 11 to 12	—	—	$\pm 40$	mV
Total	Output Noise Voltage	$V_n$		—	10	20	mV
	Quiescent Current	$I_Q$	$V_{in} = 0$	—	50	80	mA

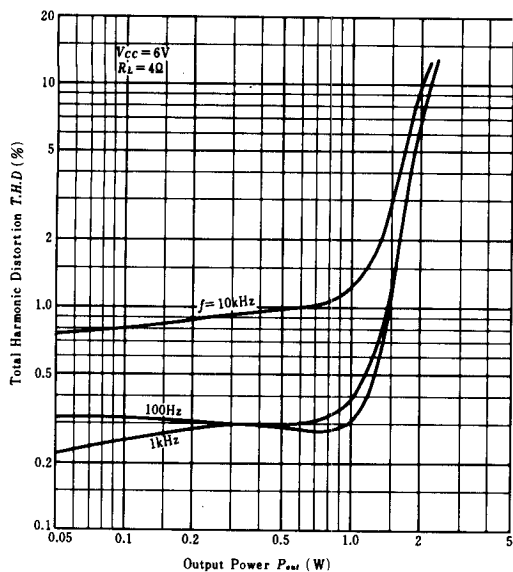
■ BLOCK DIAGRAM AND LEVEL DIAGRAM OF CASSETTE TAPE RECORDER



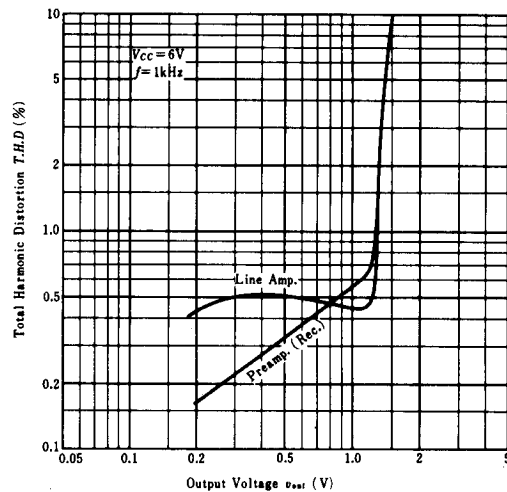
■ PC-BOARD LAYOUT PATTERN



**TOTAL HARMONIC DISTORTION VS. OUTPUT POWER**



**TOTAL HARMONIC DISTORTION VS. OUTPUT VOLTAGE**



**VOLTAGE GAIN VS. FREQUENCY**

