HA1406

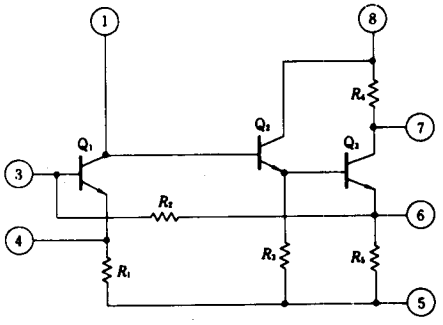
AUDIO PREAMPLIFIER

■ FEATURES

- Single-in-Line Package
  There is no need to consume a wide space on the print board.
- Prevention of Reverse Mounting
  Pin 2 is cut down to prevent reverse mounting.
- High Open-loop Voltage Gain: 80dB typ.
- High Input Impedance: 200kΩ typ.
- Low Noise: 0.9μV typ.
  (Rg=2.4kΩ, converted into input voltage)

(SP-8A)

■ CIRCUIT SCHEMATIC



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V_{CC}	15	V
Power Dissipation	P_T	200	mW
Operating Temperature	T_{opr}	−30 to +80	°C
Storage Temperature	T_{stg}	−55 to +125	°C

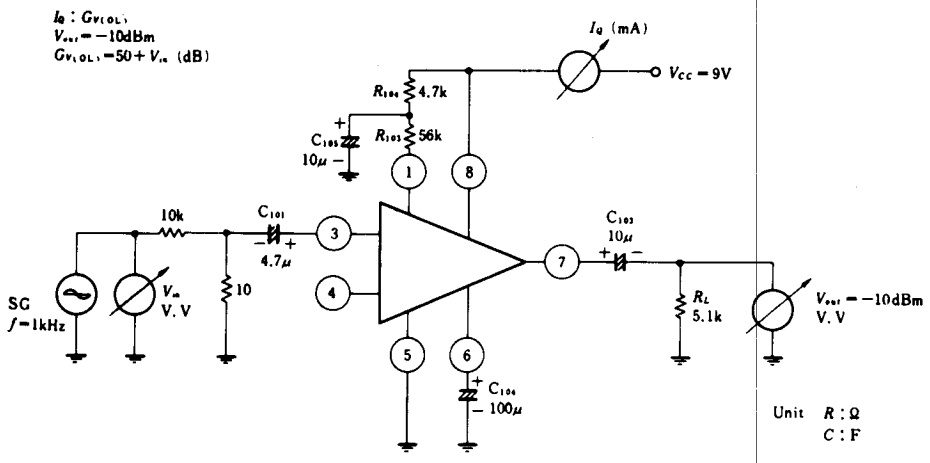
■ ELECTRICAL CHARACTERISTICS (V_{CC}=9V, f=1kHz, R_L=5.1kΩ, Ta=25°C)

Item	Symbol	Test Circuit	Test Condition	min	typ	max	Unit
Quiescent Current	I_Q	1		0.8	1.3	1.7	mA
Open-loop Voltage Gain	$G_{V(OL)}$	1	V_{out}=−10dBm	75	80	—	dB
Voltage Gain	G_V	2		—	53.5	—	dB
Output Voltage	V_{out}	3	T.H.D=1%	0.7	—	—	V
Total Harmonic Distortion	T.H.D	3	V_{out}=0.3%, f=1kHz	—	0.25	—	%
Input Impedance	Z_{in}		f=1kHz	70	—	—	kΩ
Noise Voltage Converted into Input	V_n*	4	R_g=2.4kΩ	—	0.9	2.2	μV

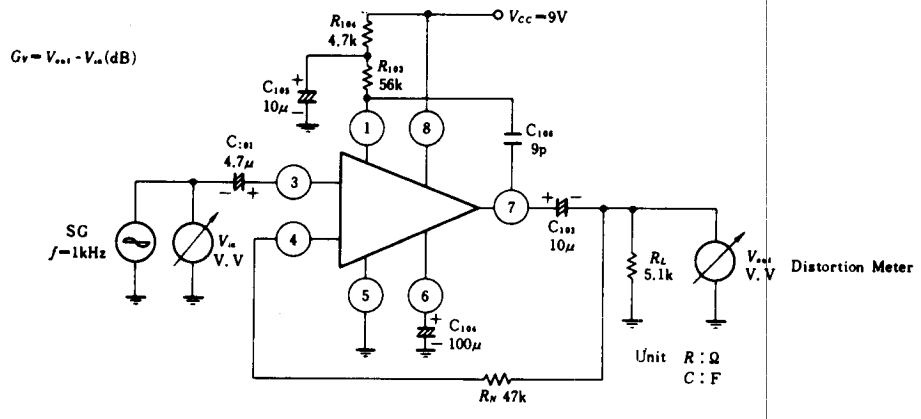
*Value converted into output noise voltage in Test Circuit 4 is 43mV typ and 106mV max.

■ TEST CIRCUITS

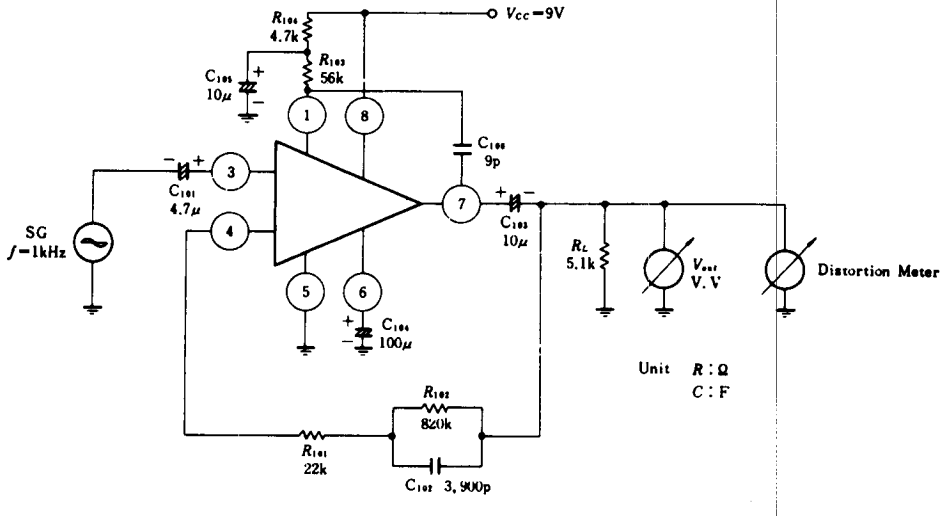
1. I_Q, $G_{V(OL)}$



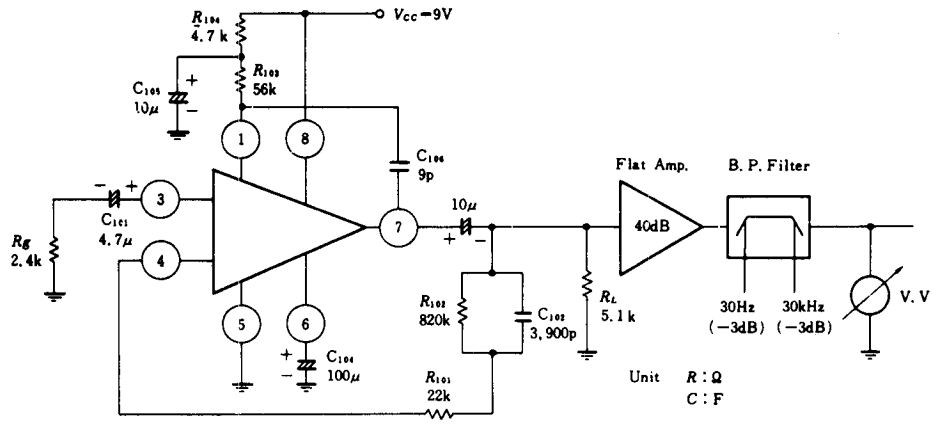
2. G_V



3. Vout, T.H.D.

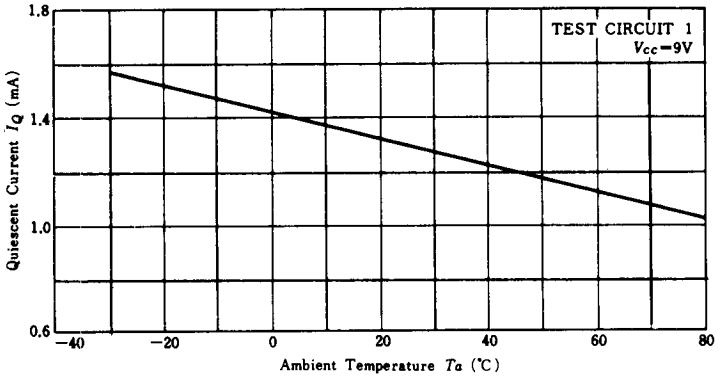


4. Vn

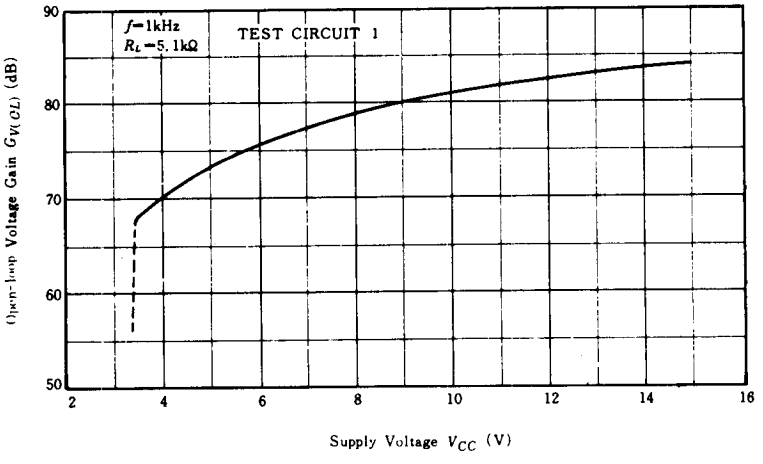


Overall voltage gain of this circuit is set at 93.5dB by adjusting the voltage gain of the flat amp.

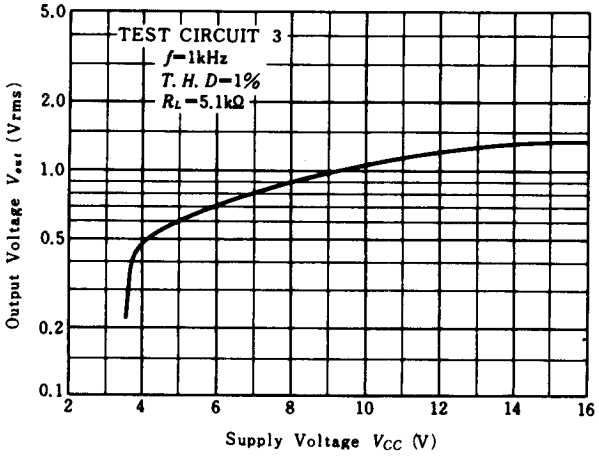
QUIESCENT CURRENT VS. AMBIENT TEMPERATURE



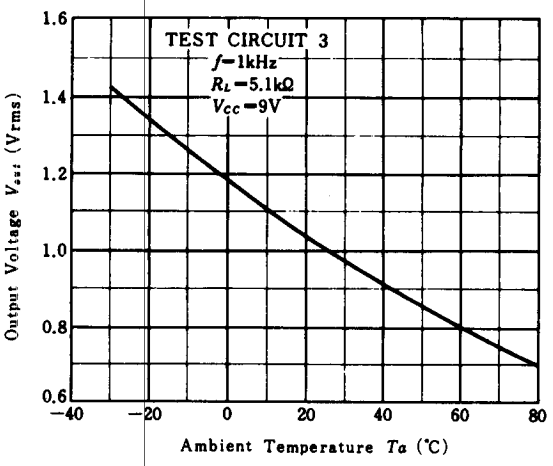
OPEN-LOOP VOLTAGE GAIN VS. SUPPLY VOLTAGE



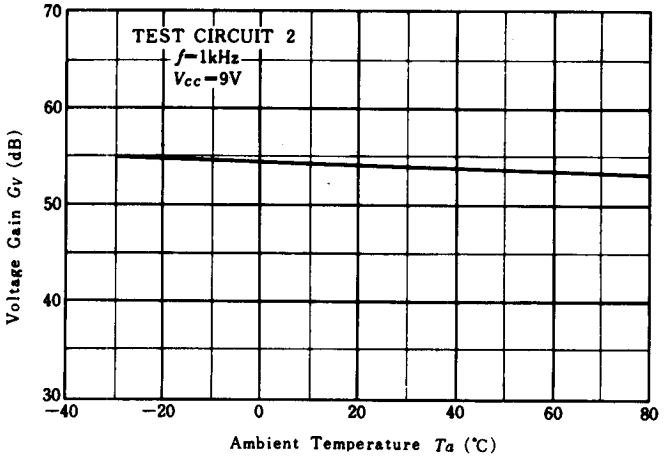
OUTPUT VOLTAGE VS. SUPPLY VOLTAGE



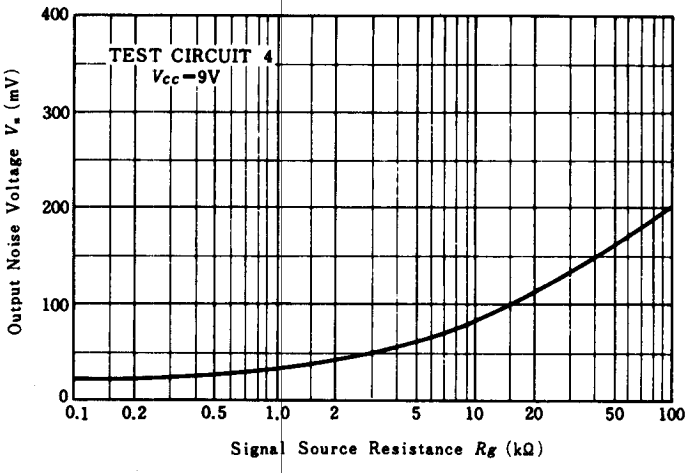
OUTPUT VOLTAGE VS. AMBIENT TEMPERATURE



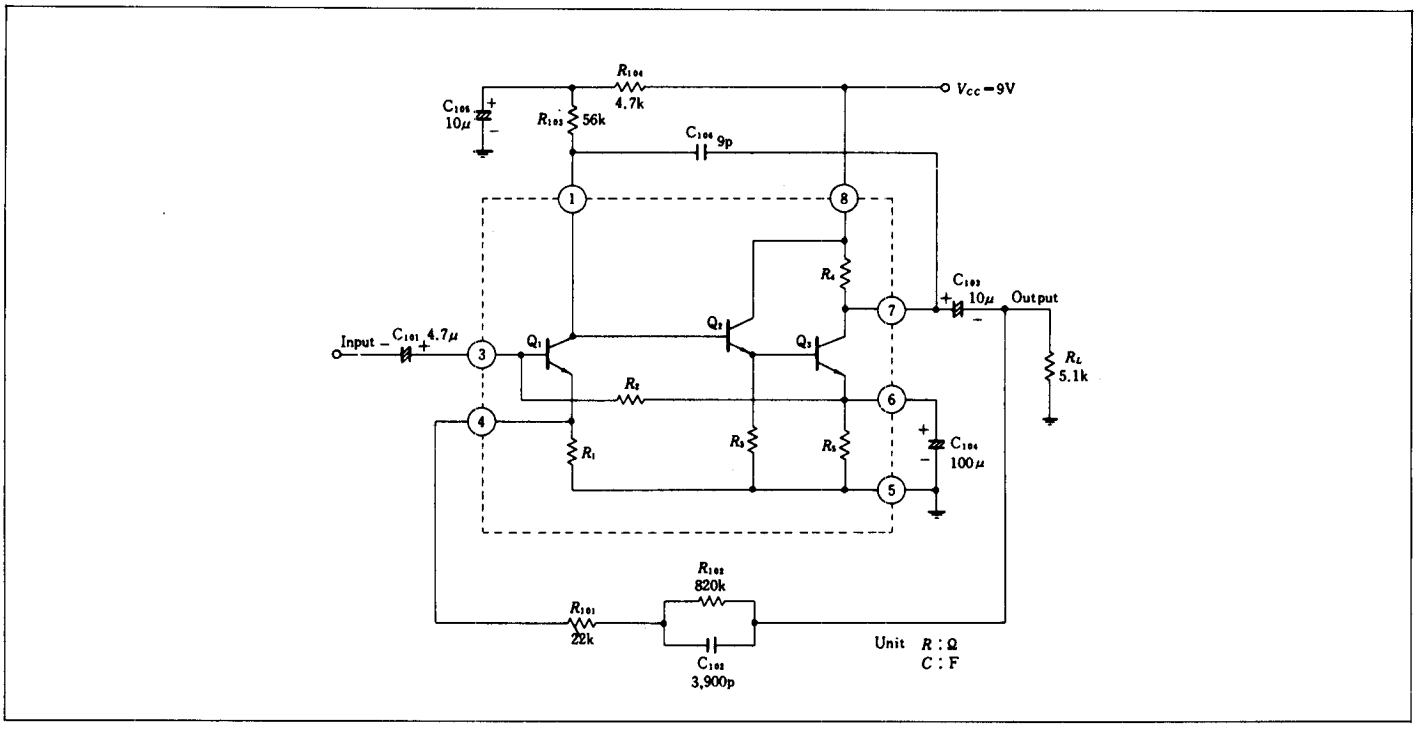
VOLTAGE GAIN VS. AMBIENT TEMPERATURE



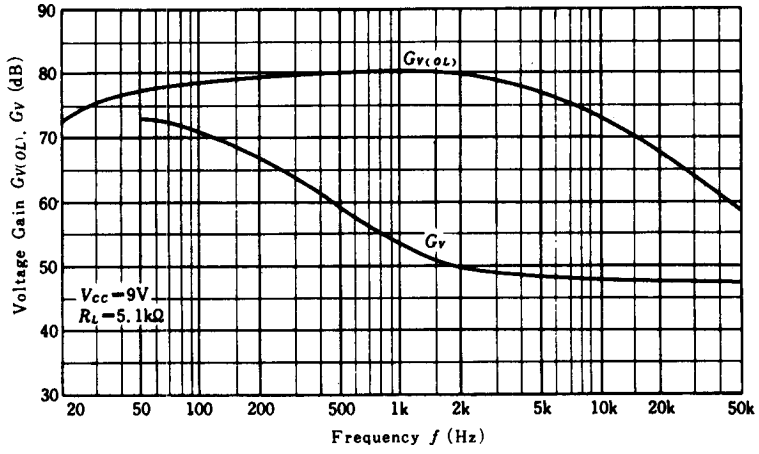
OUTPUT NOISE VOLTAGE VS. SIGNAL SOURCE RESISTANCE



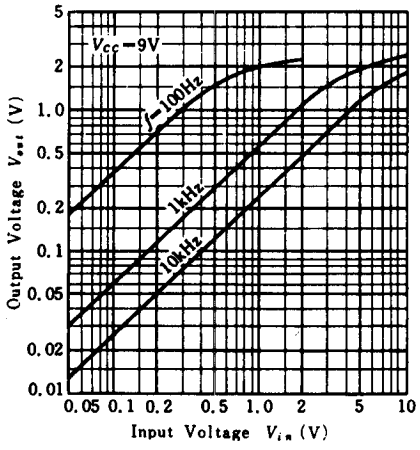
APPLICATION CIRCUIT EXAMPLE 1 (NAB: 9.5 cm/sec, G_V = 53.5 dB, f = 1 kHz)



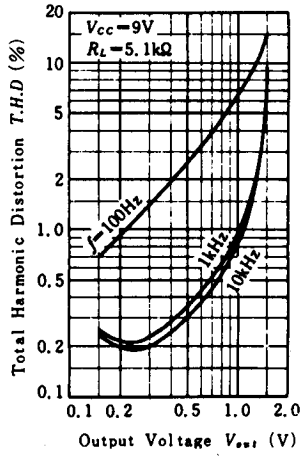
VOLTAGE GAIN VS. FREQUENCY



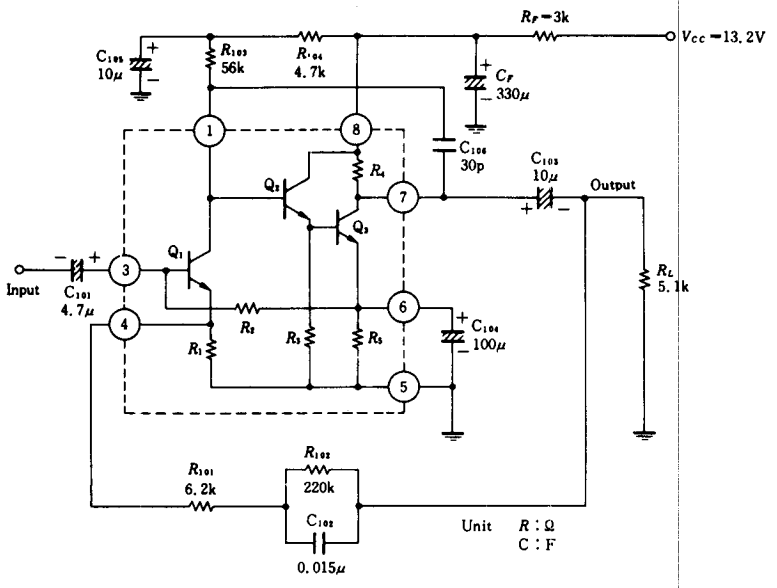
OUTPUT VOLTAGE VS. INPUT VOLTAGE



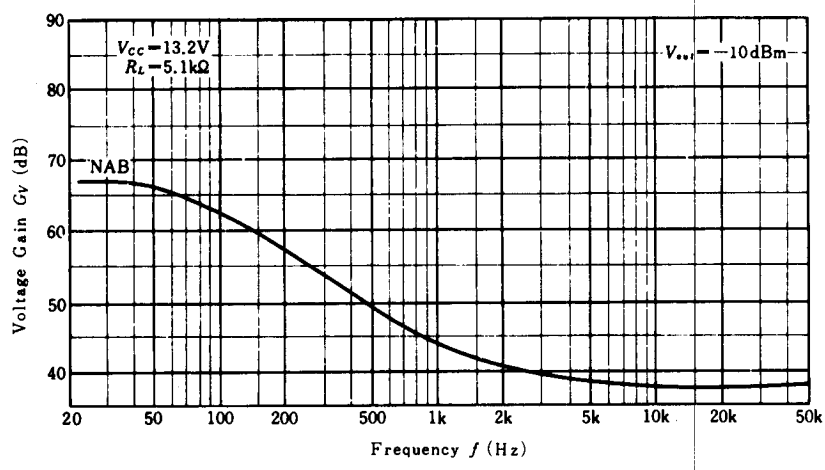
TOTAL HARMONIC DISTORTION VS. OUTPUT VOLTAGE



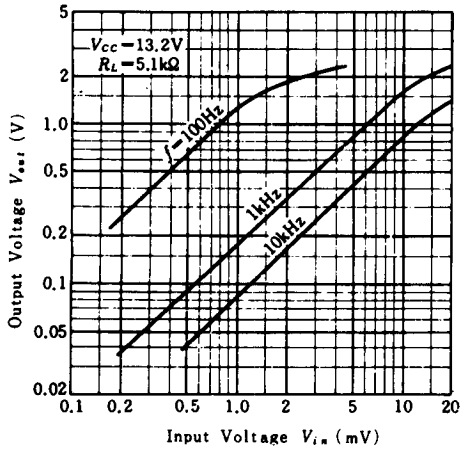
APPLICATION CIRCUIT EXAMPLE 2 (NAB: 9.5cm/sec, G_V=44dB, f=1kHz)



VOLTAGE GAIN VS. FREQUENCY



OUTPUT VOLTAGE VS. INPUT VOLTAGE



TOTAL HARMONIC DISTORTION VS. OUTPUT VOLTAGE