

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1225H

30-50 W POWER AMPLIFIER DRIVER

T-74-05-01

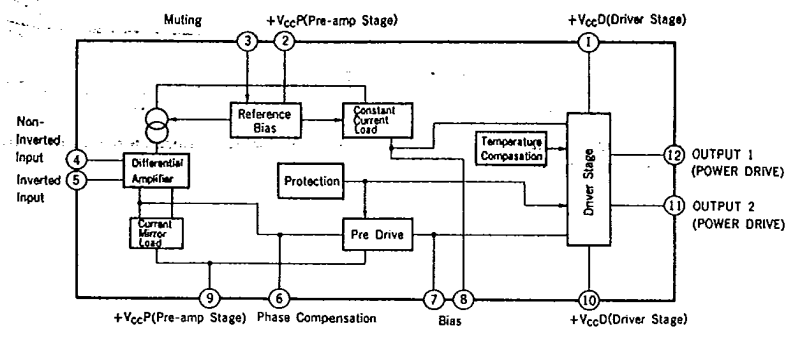
DESCRIPTION

μ PC1225H is designed for use with a HI-FI power amplifier driver. It is composed of a differential amplifier, a pre driver, a driver and protection circuit. It is in a 12 pin small power SIP. (Single In Line)

FEATURES

- Excellent Low Distortion
 0.002 % TYP. ($V_{CC} = \pm 36$ V, $f = 1$ kHz, $A_v = 30$ dB, $P_o = 30$ W, $R_L = 8$ Ohms)
 0.006 % TYP. ($V_{CC} = \pm 36$ V, $f = 20$ kHz, $A_v = 30$ dB, $P_o = 30$ W, $R_L = 8$ Ohms)
- Wide Frequency Band
 900 kHz TYP. (-3 dB)
- Wide Power Band Width
 90 kHz TYP. ($P_o = 25$ W, T.H.D. = 0.1 %)
- Excellent Low POP ON/OFF Noise

BLOCK DIAGRAM



NOTE: The protection circuit is for this IC and cannot protect external Power Transistors. Thus, design a P_o Tr protection circuit besides.

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ABSOLUTE MAXIMUM RATINGS (Ta = 25 °C)

Supply Voltage (Quiescent)	V _{CC1}	±50	V
Supply Voltage (Operational)	V _{CC2}	±45	V
Quiescent Circuit Current	I _{CC}	200	mA
Allowable Package Dissipation	I _{CC(PEAK)}	4.1	W
Operational Temperature	T _{opt}	-20 to +75	°C
Storage Temperature	T _{stg}	-40 to +150	°C

RECOMMENDED OPERATING CONDITION

Supply Voltage (Operational)	V _{CC} = ±18 to ±36 V at Max Power Output
Input Bias Resistance	R _{IN} = 1 to 50 to 100 kohms
Power Transistor h _{FE}	h _{FE} = 50 at Max Power Output
Closed Loop Voltage Gain	A _V = 26 to 30 dB

ELECTRICAL CHARACTERISTICS (V_{CC} = ±36 V, A_V = 30 dB, Use Standard Test Circuit, Ta = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITION
Output Offset Voltage	V _{OFF}		±5	±100	mV	SEE TEST CIRCUIT 1
Quiescent Circuit Current	I _{CC}		20	40	mA	V _{IN} = 0
Maximum Output Voltage	V _{OM}	20	23		V	T.H.D. = 0.05 % f = 20 to 20 kHz
Open Loop Voltage Gain	A _{VO}	80	95		dB	V _O = 1.5 V, f = 1 kHz
Output Noise Voltage	V _{NO}		0.07	0.14	mV	R _G = 10 kohms
Power Band Width	P.B.W.		900		kHz	V _O = 1.5 V, -3 dB
Supply Voltage Rejection Ratio	S.V.R.	55	70		dB	R _G = 2 kohms, f = 100 Hz

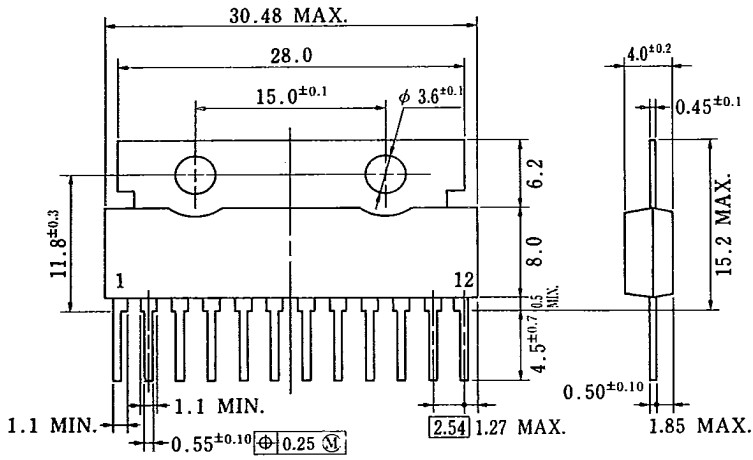
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PACKAGE DIMENSIONS (Unit: mm)



P12HP-254B1

PIN CONNECTION DIAGRAM

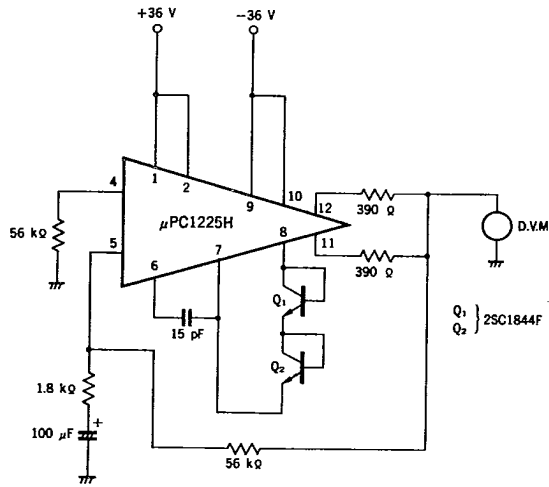
Pin No.	Pin connection
1	+V _{CCD} (for Driver)
2	+V _{CCP} (for Preamp)
3	MUTING
4	INPUT
5	NFB
6	PHASE COMP
7	BIAS
8	BIAS
9	-V _{CCP} (for Preamp)
10	-V _{CCD} (for Driver)
11	LOWER OUTPUT
12	UPPER OUTPUT

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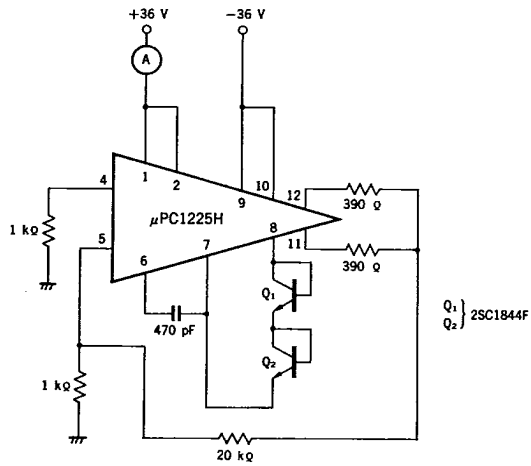
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TEST CIRCUIT 1 (V_{OFF})



TEST CIRCUIT 2 (I_{CC})



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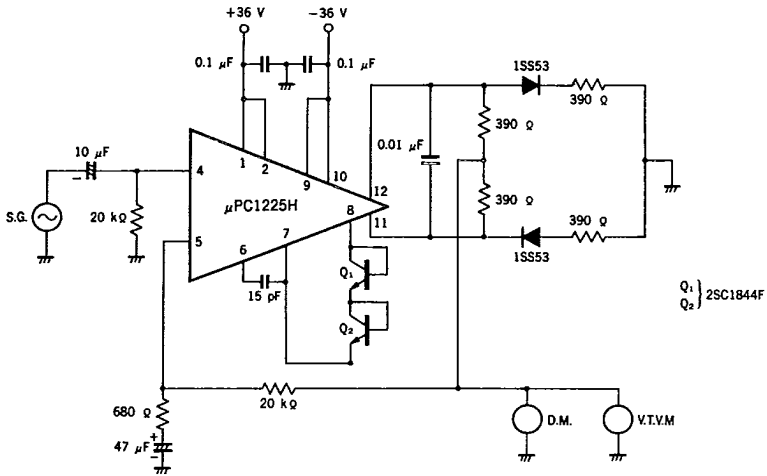
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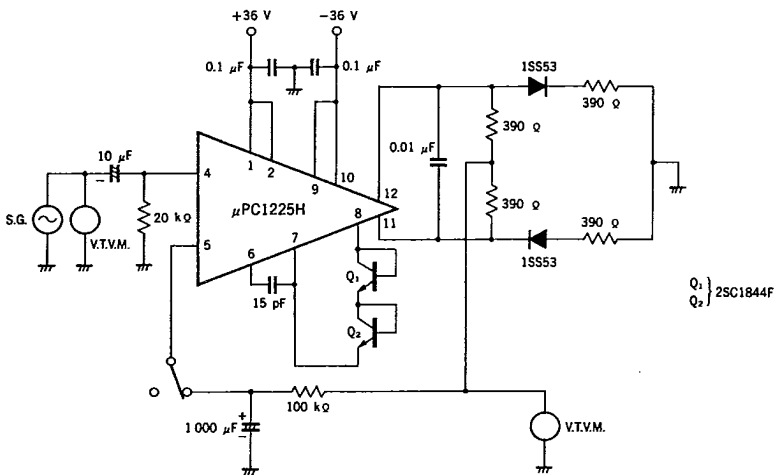
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TEST CIRCUIT 3 (V_{OM})

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TEST CIRCUIT 4 (A_{VO})

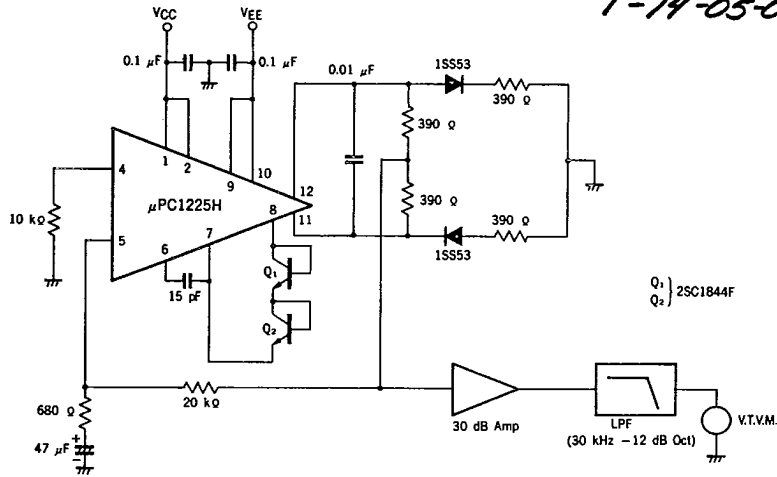


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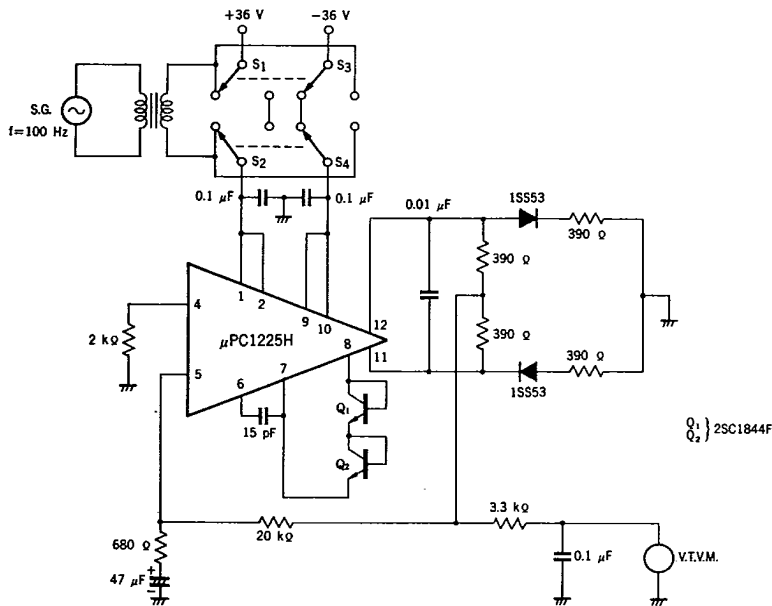
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TEST CIRCUIT 5 (V_{No})

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TEST CIRCUIT 6 (S.V.R.)



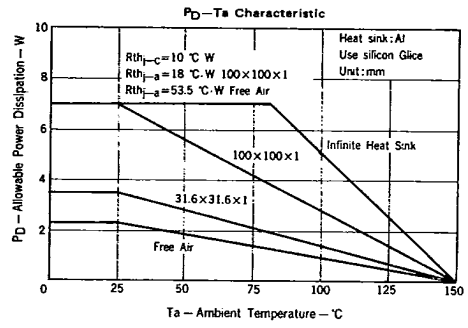
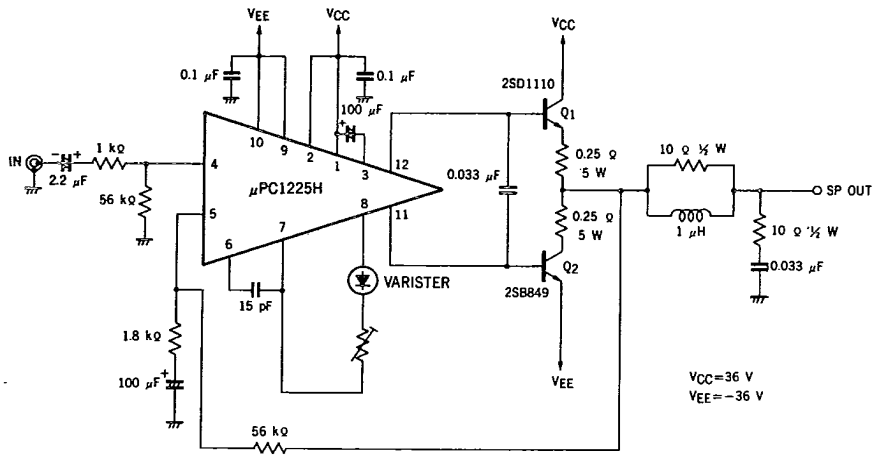
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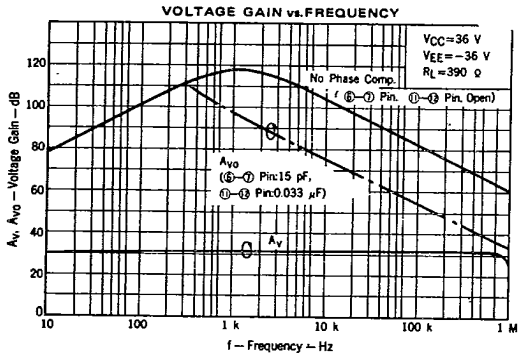
TYPICAL APPLICATION CIRCUIT



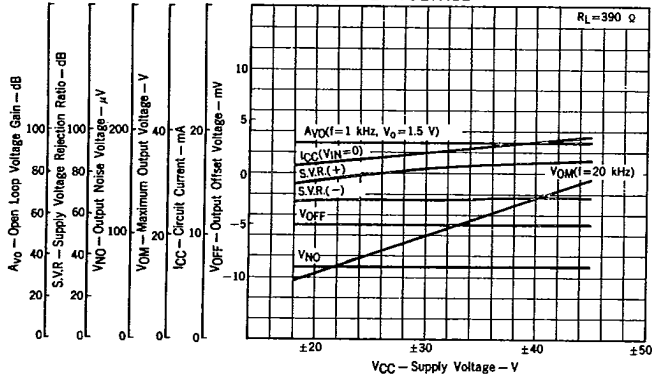
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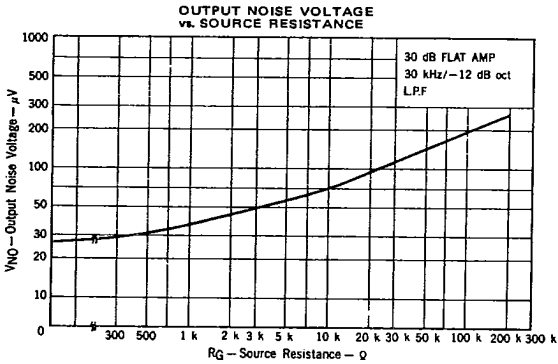
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OPEN LOOP VOLTAGE GAIN
 SUPPLY VOLTAGE REJECTION RATIO
 OUTPUT NOISE VOLTAGE
 CIRCUIT CURRENT
 OUTPUT OFFSET VOLTAGE
 vs. SUPPLY VOLTAGE



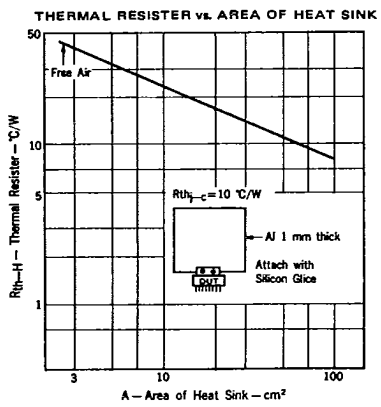
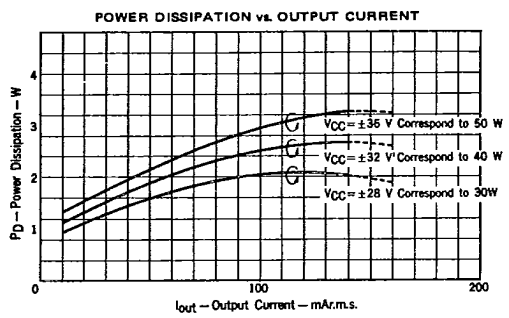
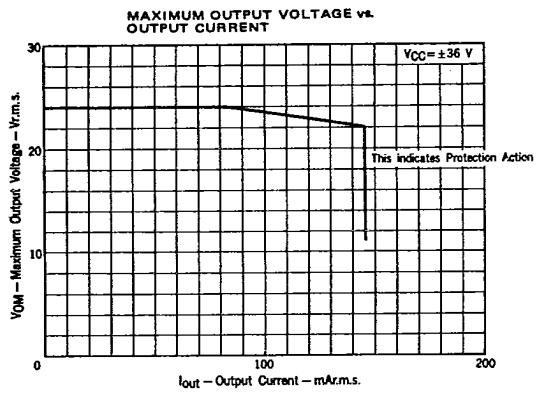
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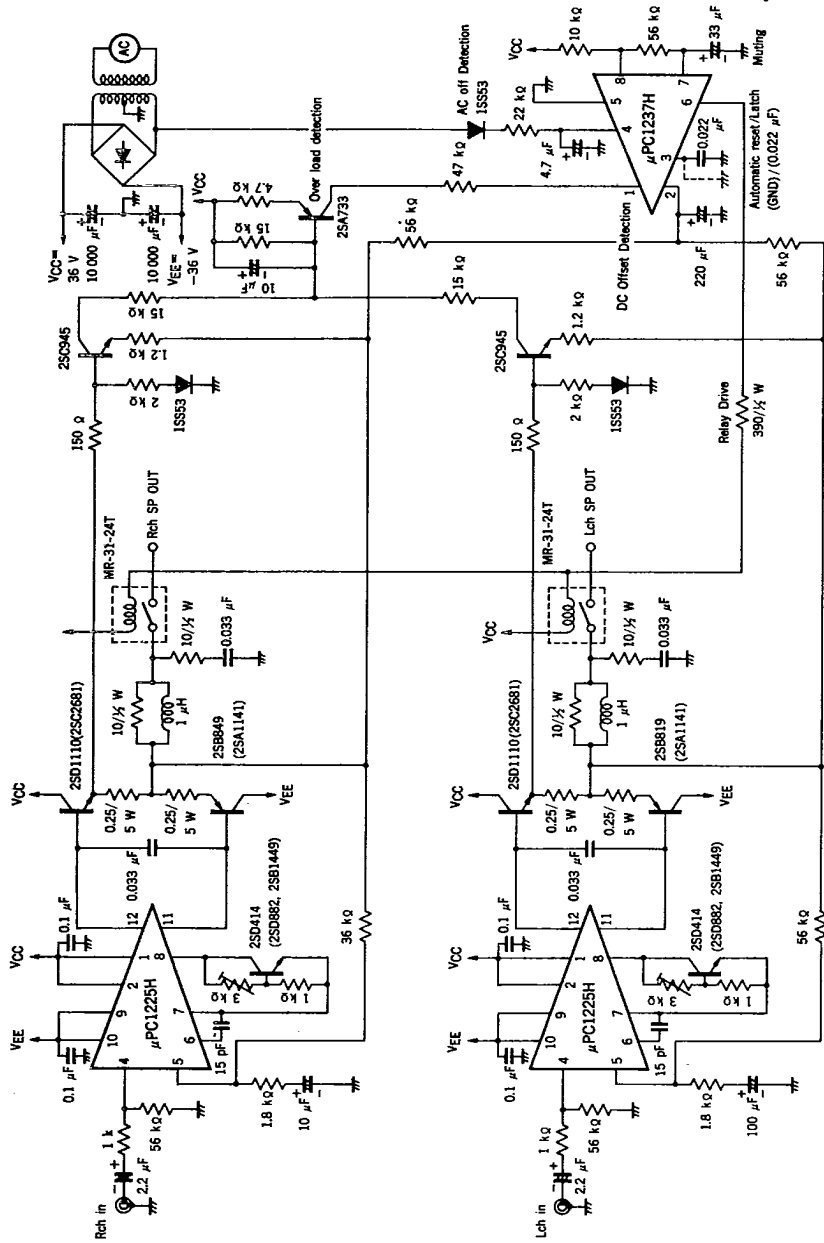
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μ PC1225H/ μ PC1237H/MP-80 EVALUATION CIRCUIT

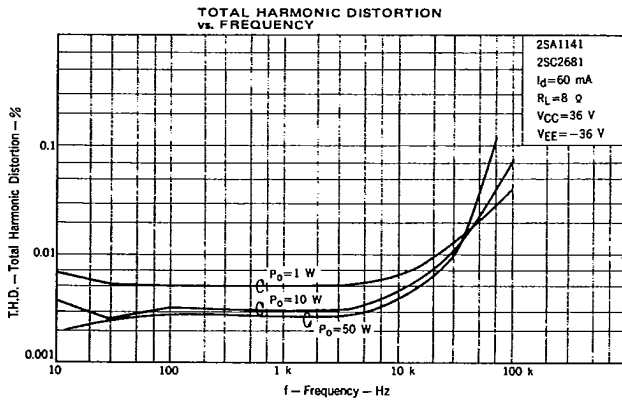
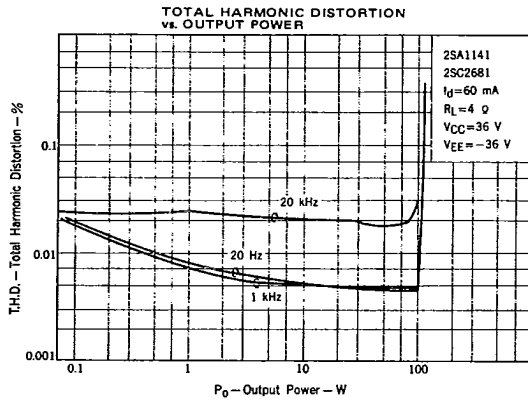
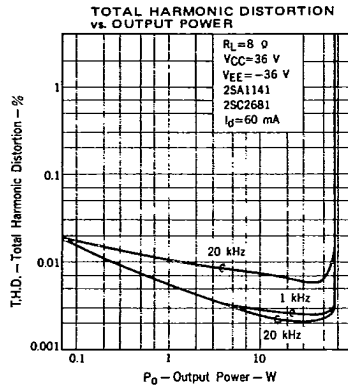


Note: Attach 2SD414 on P₀ Tr Heat Sink.
Attach A1 Heat Sink, which is larger than 80 mm X 60 mm X 1 mm, with μ PC1225H.

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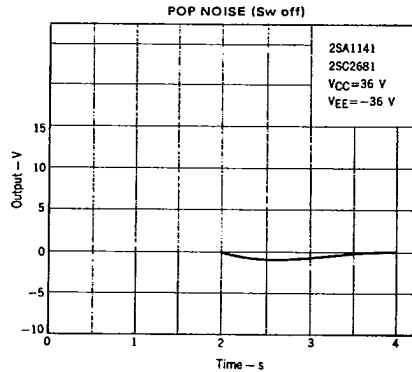
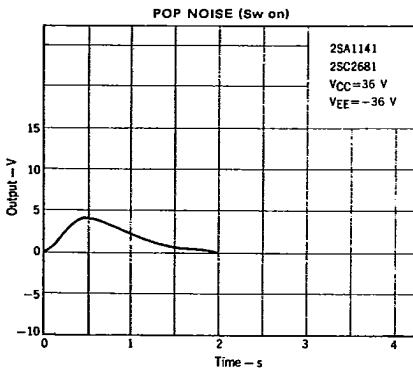
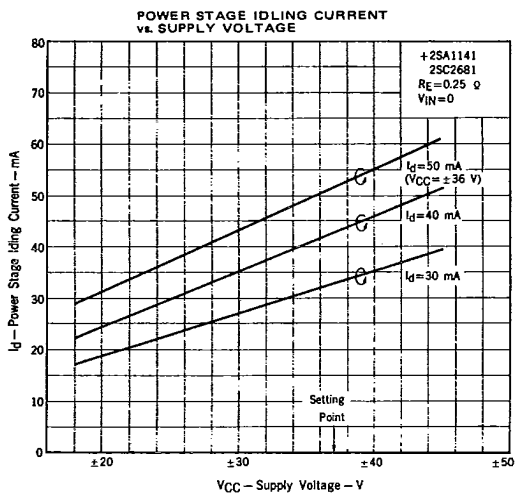
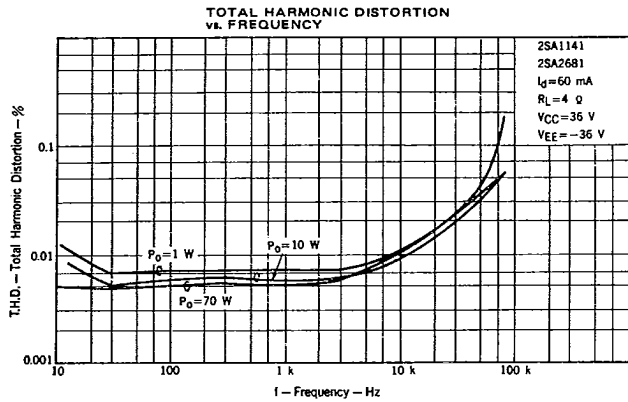


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APPLICATION CIRCUIT**(1) Design Specification****a. Pre amplifier stage (equalizer amplifier)**Supply Voltage $V_{cc} = \pm 22$ VInput equivalent Noise Voltage $V_{NL} = 0.815$ μ Vr.m.s. TYP.

Phono Allowable Input Level 222 mVr.m.s. TYP. (T.H.D.=0.1 %, f=1 kHz)

b. Power amplifier stageSupply Voltage $V_{cc} = \pm 36$ VLoad impedance $R_L = 8$ Ω Continuous Output Power $P_o = 50$ W (T.H.D.=0.1 %)Voltage Gain (at flat state) $A_v = 43$ dBInput Sensitivity $V_{in} = 142$ Vr.m.s.Range of Varying Voltage gain 100 Hz ± 10 dB
10 kHz ± 10 dB**(2) Description**

μ PC1224H is chosen as EQ amplifier. The internal circuit of this IC is composed of two differential amplifiers as voltage amplifier stage and SEPP output circuit. Thus, this IC is available for flat amplifier and tone control amplifier.

Power amplifier stage is composed of NFB tone control amplifier using μ PC1225H. This power driver IC is also available for flat amplifier. And μ PC1237H is chosen as a protector.

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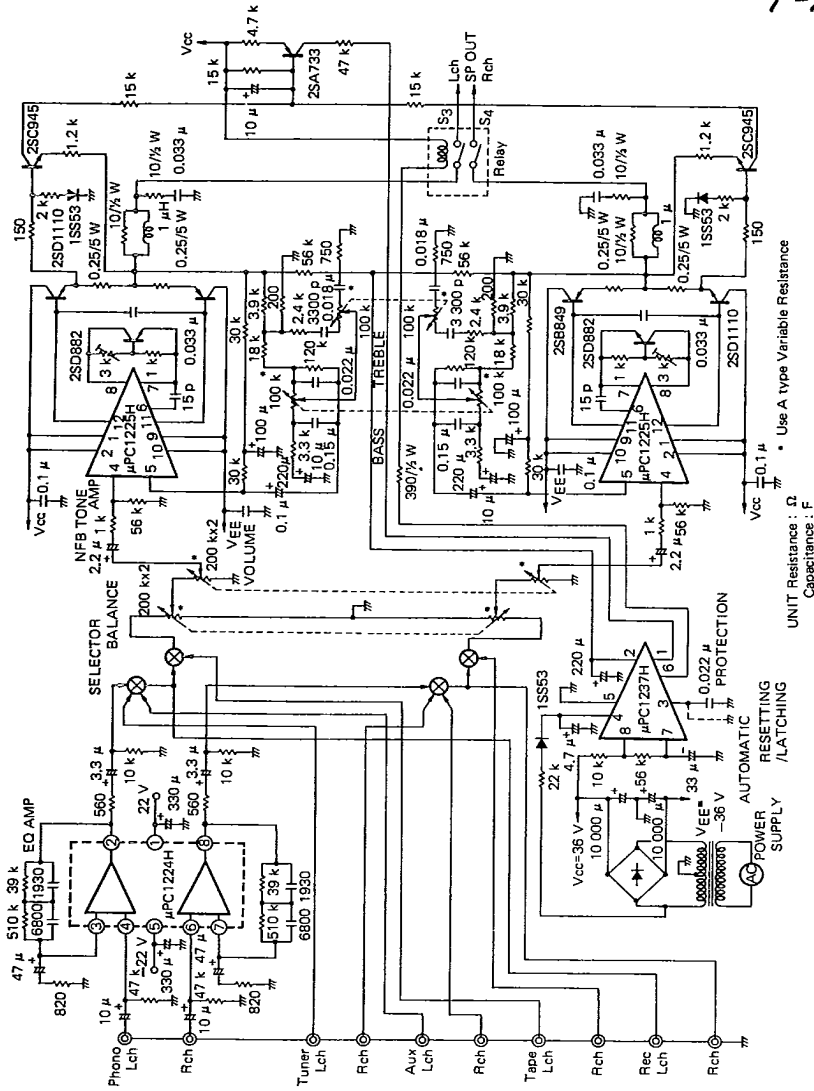


Fig. 1 50 W PRE-MAIN AMPLIFIER APPLICATION CIRCUIT

UNIT Resistance : Ω
 Capacitance : F
 • Use A type Variable Resistance

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(3) Characteristic of Power Amplifier Circuit

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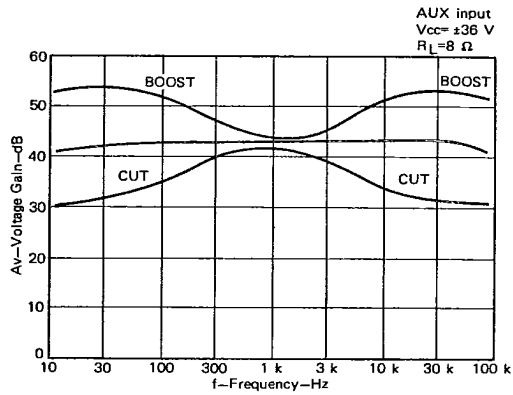


Fig. 2 VOLTAGE GAIN vs. FREQUENCY

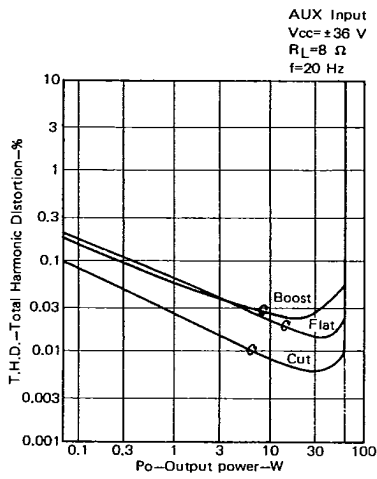


Fig. 3 TOTAL HARMONIC DISTORTION vs. OUTPUT POWER

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AUX Input
V_{cc}=±36 V
R_L=8 Ω
f=1 kHz

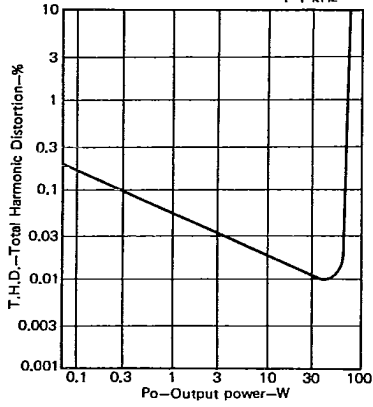


Fig. 4 TOTAL HARMONIC DISTORTION vs. OUTPUT POWER

AUX Input
V_{cc}=±36 V
R_L=8 Ω
f=20 kHz

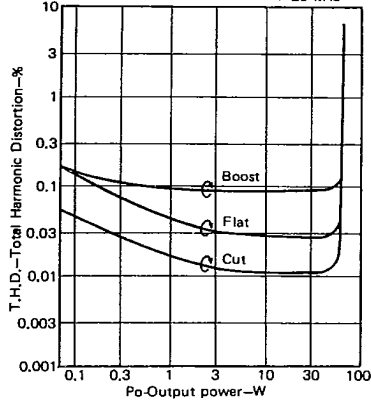


Fig. 5 TOTAL HARMONIC DISTORTION vs. OUTPUT POWER