

6427525 N E C ELECTRONICS INC

05E 22829 D

BIPOLAR ANALOG INTEGRATED CIRCUIT

 μ PC1270H

T-74-05-01

30-50 W POWER AMPLIFIER DRIVER

DESCRIPTION

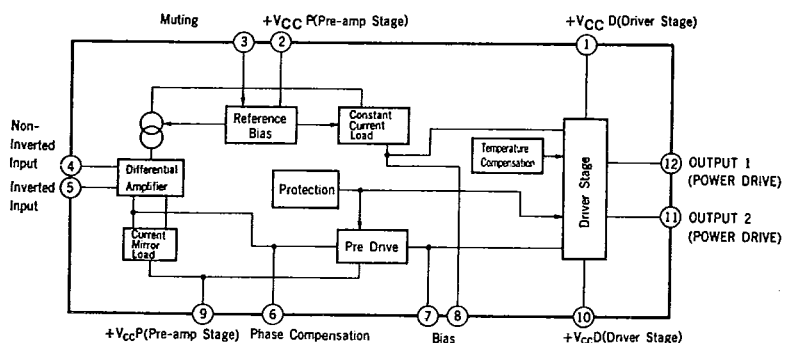
μ PC1270H is designed for use with a Hi-Fi power amplifier driver. It is composed of a differential amplifier, a predriver, a driver and protection circuit.

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



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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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*T-74-05-01***ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)**

Supply Voltage (Quiescent)	V_{CC1}	± 50	V
Supply Voltage (Operational)	V_{CC2}	± 45	V
Quiescent Circuit Current	$I_{CC}(\text{peak})$	200	mA
Allowable Package Dissipation	P_D	4.1	W
Operational Temperature	T_{opt}	-20 to $+75$	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to $+150$	$^\circ\text{C}$

RECOMMENDED OPERATING CONDITION

Supply Voltage (Operational)	$V_{CC} = \pm 18$ 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 ($V_{CC} = \pm 36$ V, $A_v = 30$ dB, Use Standard Test Circuit, $T_a = 25^\circ\text{C}$)

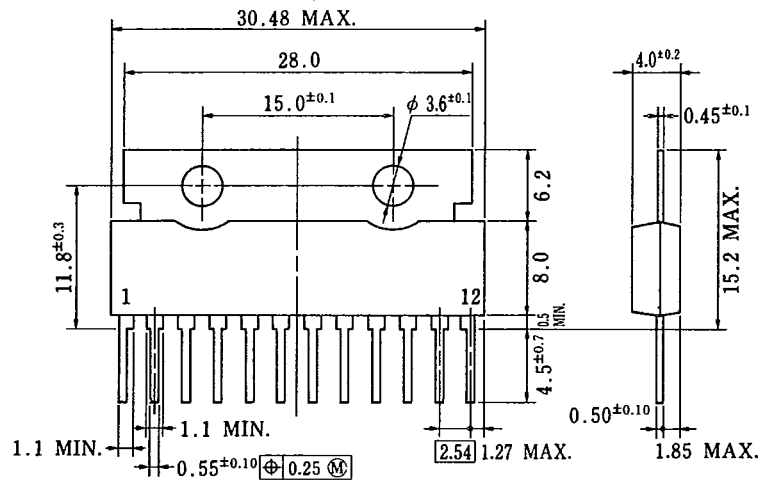
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITION
Output Offset Voltage	V_{OFF}		± 5	± 100	mV	SEE TEST CIRCUIT 1
Quiescent Circuit Current	I_{CC}		20	40	mA	$V_{IN} = 0$
Maximum Output Voltage	V_{OM}	20	23		V	T.H.D. = 0.05 % $f = 20$ to 20 kHz
Open Loop Voltage Gain	A_{vo}	80	95		dB	$V_O = 1.5$ V, $f = 1$ 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
Output Offset Voltage (Mute)	$V_{OFF}(\text{Mute})$			± 50	mV	$V_{CC} = \pm 50$ V, TEST CIRCUIT 7

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12 PIN SIP (Unit : mm)

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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

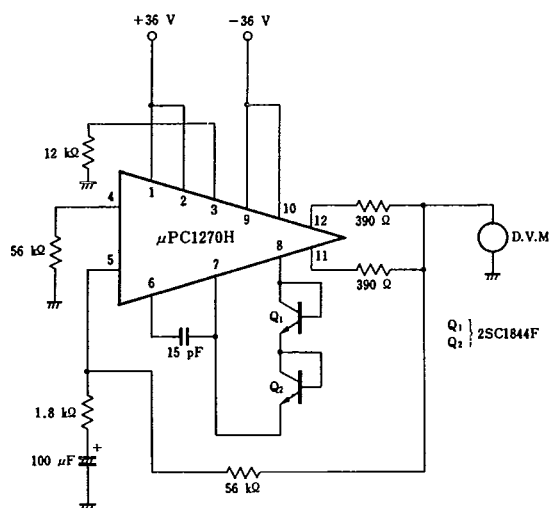
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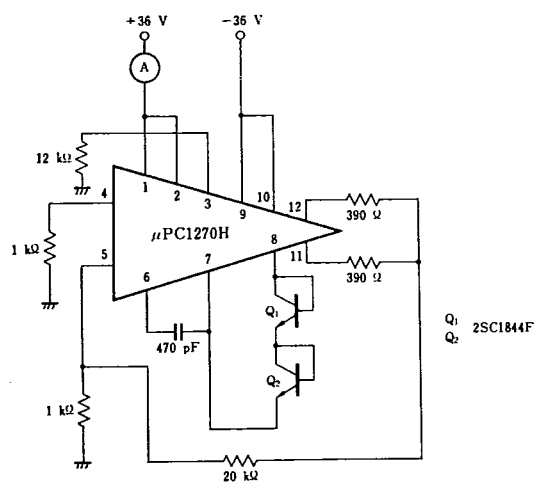
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TEST CIRCUIT 1 (V_{OFF})



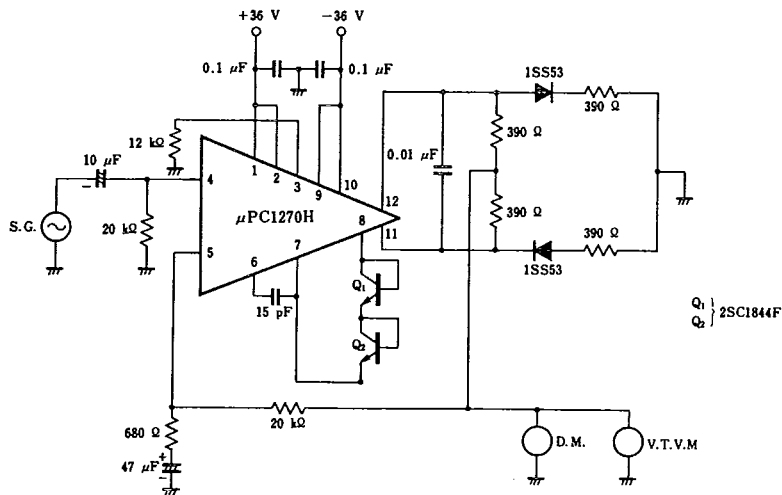
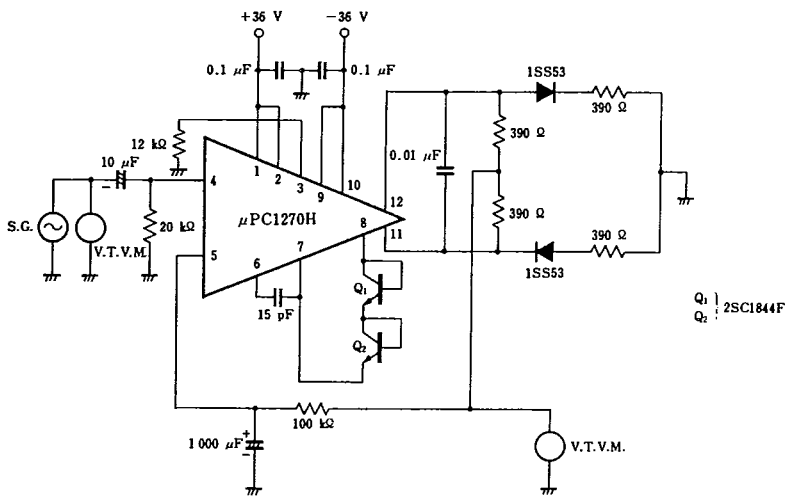
TEST CIRCUIT 2 (I_{CC})



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TEST CIRCUIT 4 (A_{VO})

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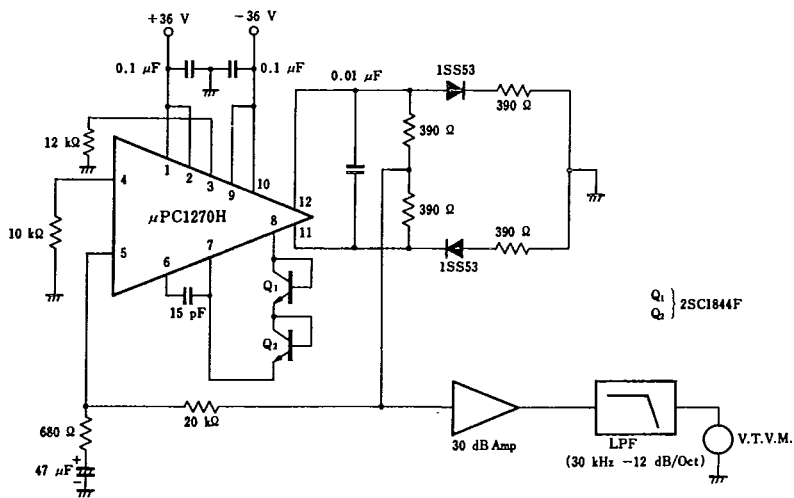
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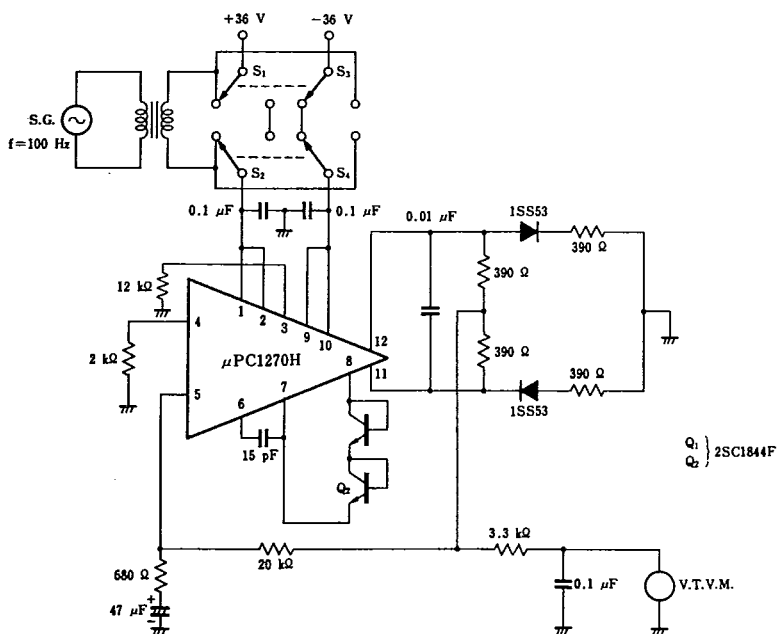
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TEST CIRCUIT 5 (V_{NO})

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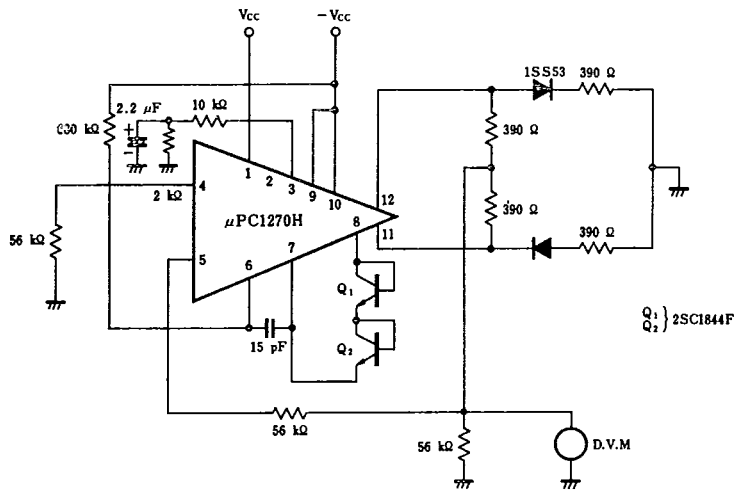
TEST CIRCUIT 6 (S.V.R.)



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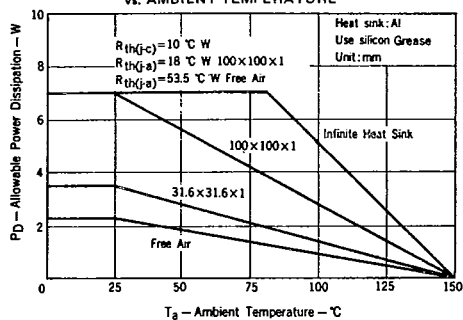


μ PC1270H

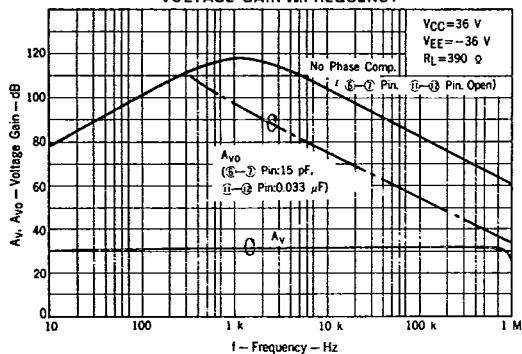
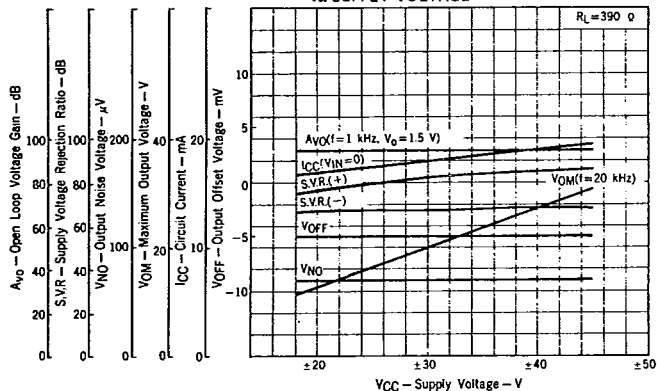
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TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)ALLOWABLE POWER DISSIPATION
vs. AMBIENT TEMPERATURE

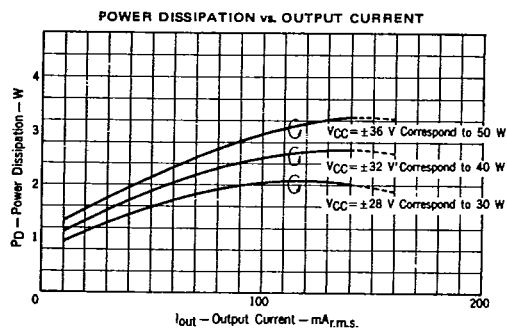
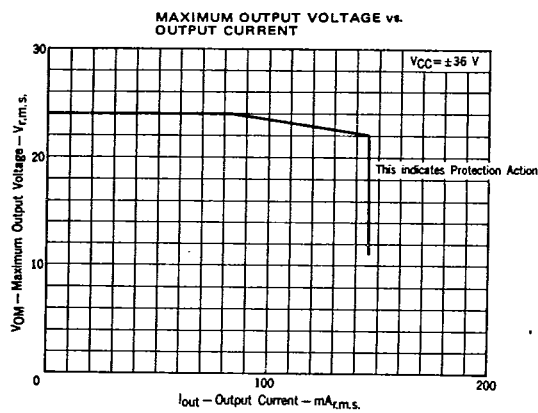
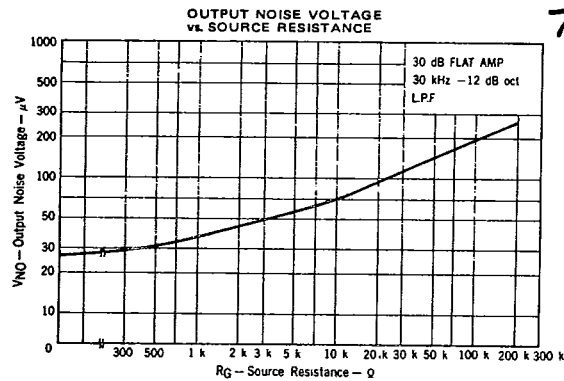
VOLTAGE GAIN vs. FREQUENCY

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

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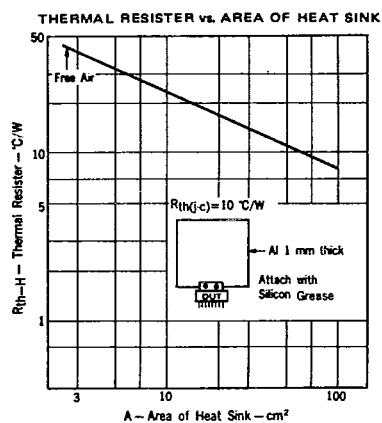
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μ PC1270H

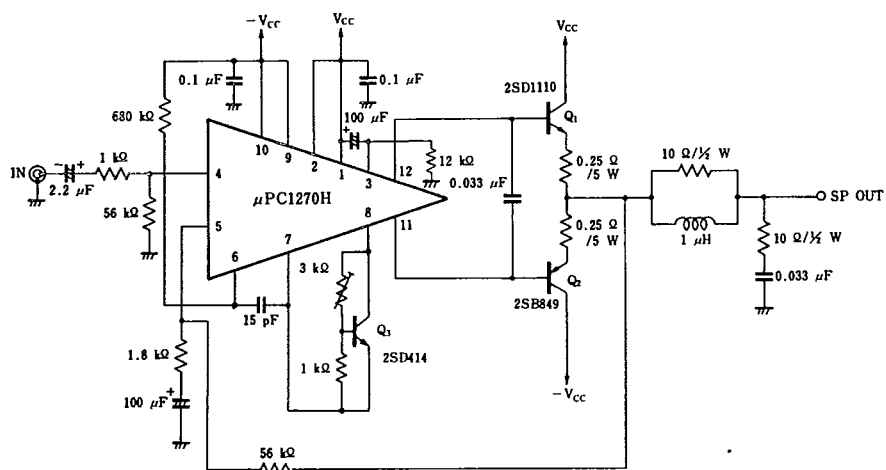
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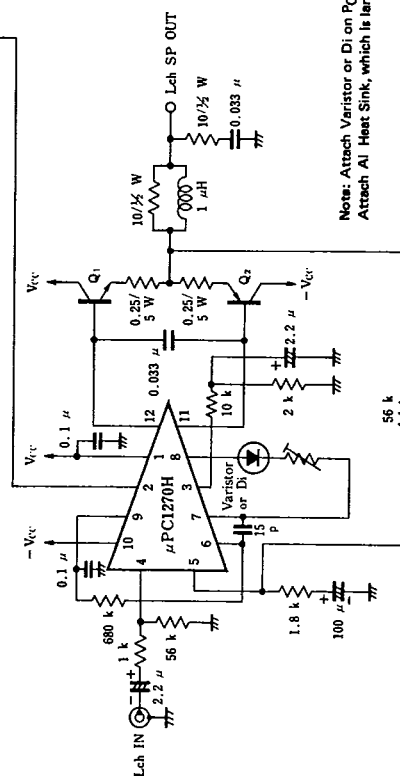
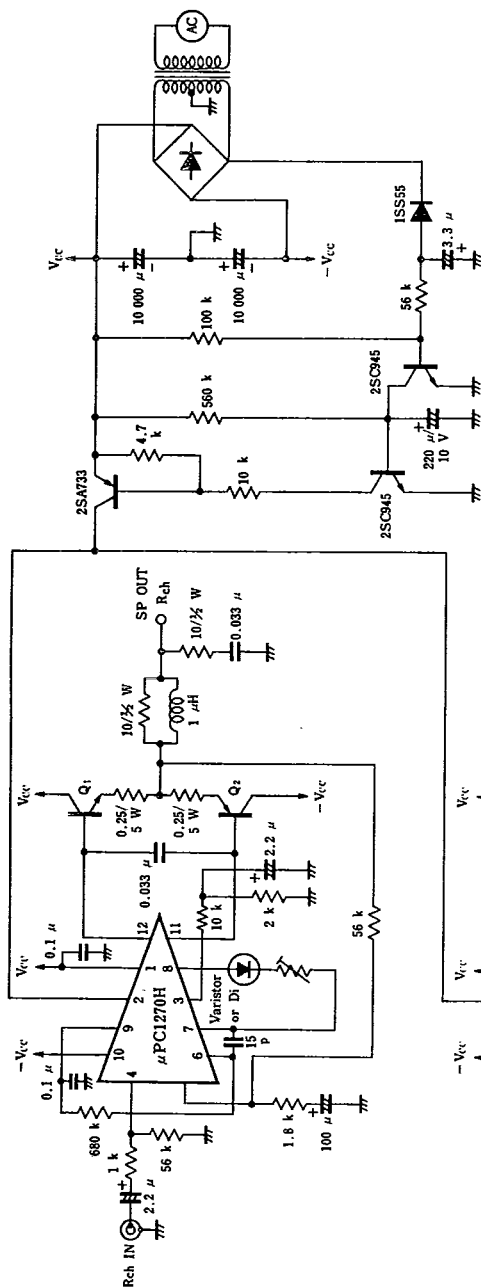


APPLICATION CIRCUIT-1



05E μ PC1270H 22839 D

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Stage of P ₀ Transistor		
P ₀	25~40 W	45~55 W
Q ₁	2SD1288	2SD1289
Q ₂	2SB965	2SB966

Note: Attach Varistor or Di on P_O Tr Heat Sink.
Attach Al Heat Sink, which is larger than 60 mm X 60 mm X 1 mm, with μ PC1225-H.

μPC1270H

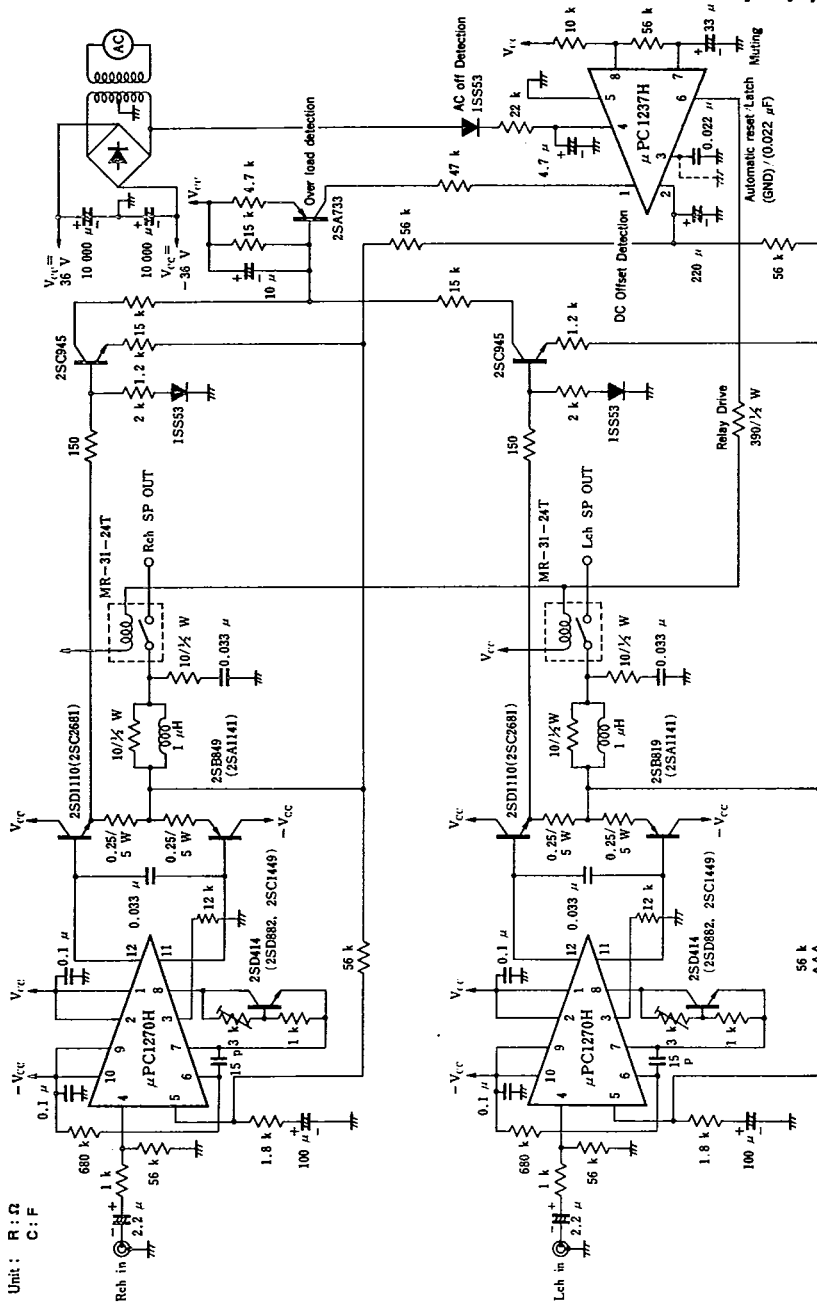
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Unit: R:Ω C:F



Note: Attach 2SD414 on PQ Tr Heat Sink.

Attach Al Heat Sink, which is larger than 60 mm X 60 mm X 1 mm, with μ PC1270H.

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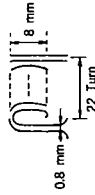
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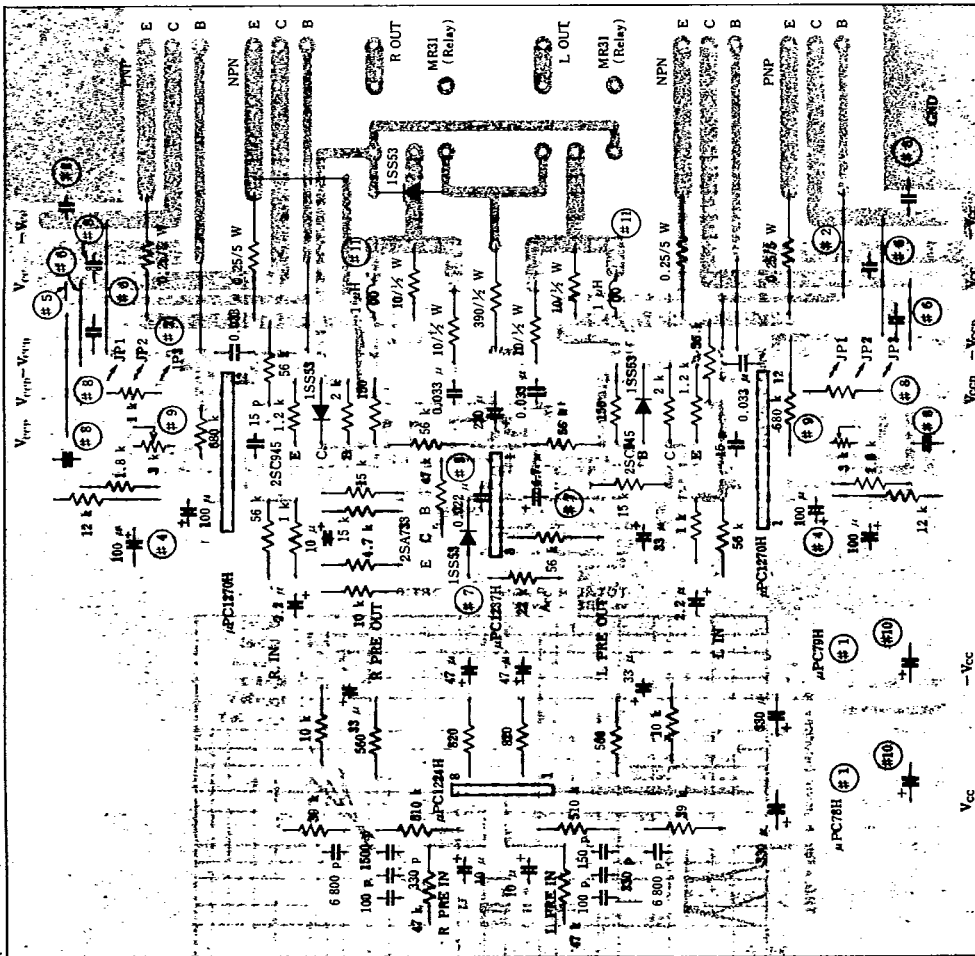
Note:

- #1 These terminals are for 3-terminals regulators (μ PC7818H, μ PC7918H) as a μ PC1224H power supply.
- #2 These terminals are for JP—lines to a temperature Compensation transistor (2SD414 or others).
- #3 Use $0.02 \mu\text{F}$ capacitance in case of using μ PC1237H at latching function, while connect each other at automatic resetting.
- #4 This capacitance is for preventing POP ON/OFF noise.
- #5 Thus, neglect it in case of using a relay.
- #6 These terminals are for JP—lines in case of using the same power supply (μ PC1237H and Power Amplifier).
- #7 These terminals are for JP—lines in case of using the same power supply (μ PC1270H and Power Tr).
- #8 This terminal is for AC-OFF Detection. Thus, use 8.2 k ohms instead of 22 k ohms , neglect 1SS53 and connect these 1SS53's terminals and neglect $4.7 \mu\text{F}$ in case of using DC power supply.
- #9 These capacitances are for preventing a parasitic oscillation. Use a $0.1 \mu\text{F}$.
- #10 These trimmers are for adjusting an idling current. Recommend Neo-Pot PSS1 Series.
- #11 These capacitances are for the 3-terminals regulator input.
- #12 Design of $1 \mu\text{H}$ (example)



This indicates a copper board pattern

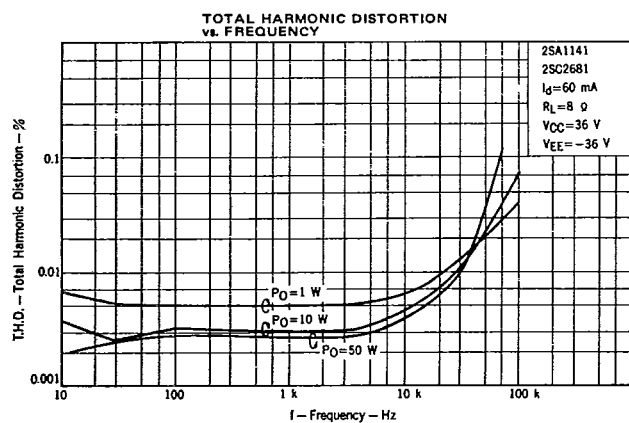
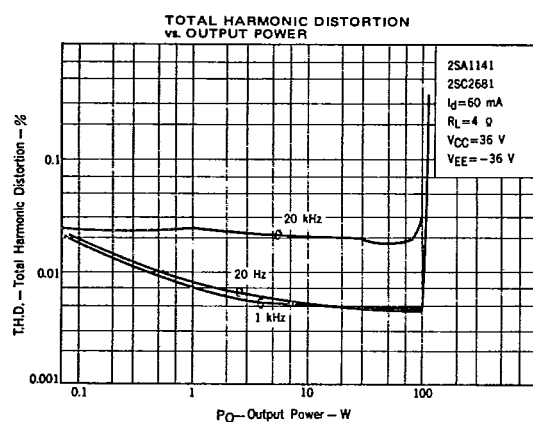
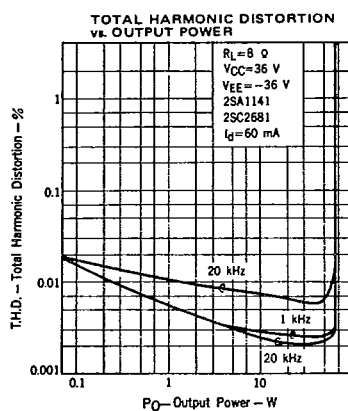
This is the evaluation circuit. Thus, it is not for a mass production considered about component deviation and the temperature characteristic.

 μ PC1270H/ μ PC1224H/MF-80 (2SC849, 2SD1110 or 2SA2681, 2SC1141) Evaluation Circuit Board Component Arrangement

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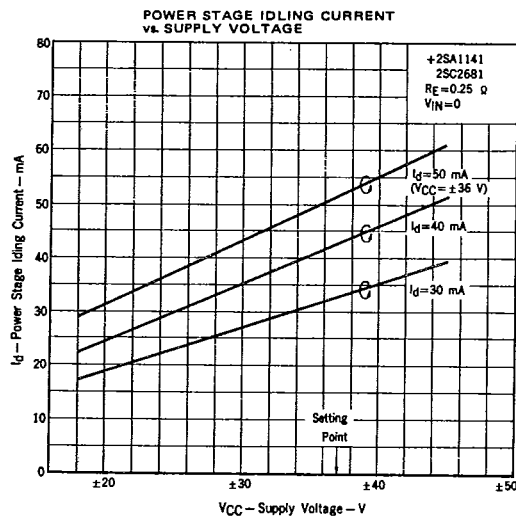
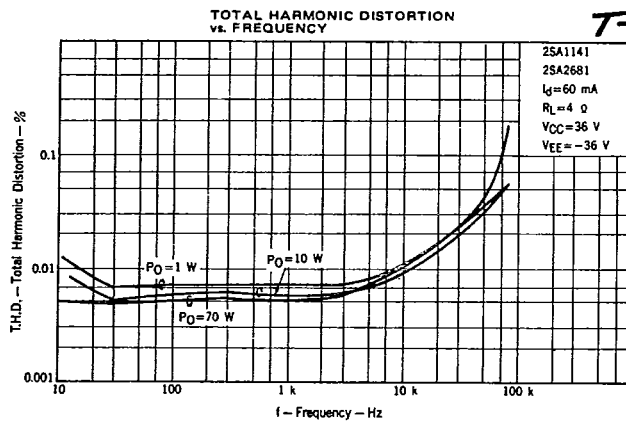
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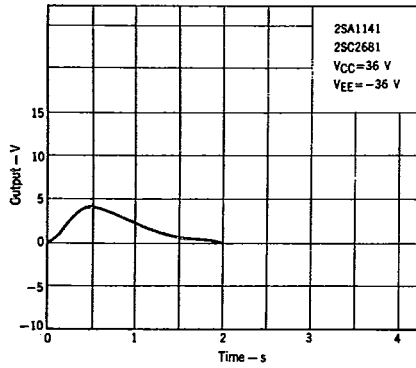
μ PC1270H

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POP NOISE (Sw on)



POP NOISE (Sw off)

