

6427525 NEC ELECTRONICS INC 05E 23064 D

BIPOLAR ANALOG INTEGRATED CIRCUIT

μ PC1342V

T-74-05-01

50 to 110 W POWER AMPLIFIER DRIVER

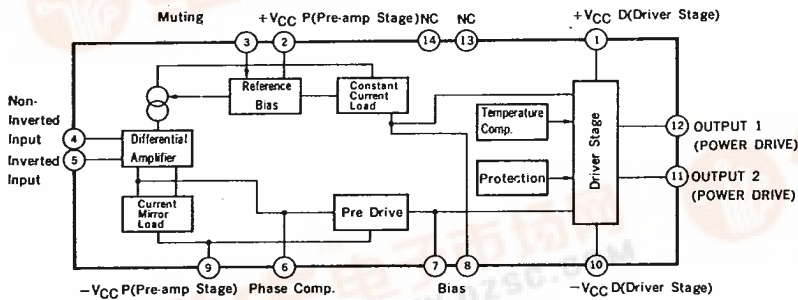
DESCRIPTION

μ PC1342V is a integrated monolithic circuit designed for 50 W to 110 W class HiFi audio power amplifier and consists of a input differential amplifier, a predriver circuit, a driver circuit and a over current protection circuit.

FEATURES

- Low Distortion.
0.002 % TYP. ($V_{CC} = \pm 46$ V, $f = 1$ kHz, $A_v = 30$ dB, $P_O = 80$ W, $R_L = 8 \Omega$ with Power Transistor)
0.006 % TYP. ($V_{CC} = \pm 46$ V, $f = 20$ kHz, $A_v = 30$ dB, $P_O = 80$ W, $R_L = 8 \Omega$ with Power Transistor)
- Wide Frequency Band.
900 kHz TYP. (-3 dB)
- Wide Power Band Width.
90 kHz TYP. ($P_O = 40$ W, THD = 0.1 %)

BLOCK DIAGRAM



NOTE: The built-in over current circuit protects μ PC1342V and cannot protect external power transistors.



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

| | | | |
|-------------------------------|-----------------------|-------------|------------------|
| Supply Voltage (Quiescent) | V_{CC1} | ± 75 | V |
| Supply Voltage (Operational) | V_{CC2} | ± 70 | V |
| Circuit Current | $I_{CC(\text{peak})}$ | 250 | mA |
| Allowable Package Dissipation | P_D | 7.5* | W |
| Operational Temperature | T_{opt} | -20 to +75 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to +150 | $^\circ\text{C}$ |

* 100 x 100 x 2 mm Al heat sink

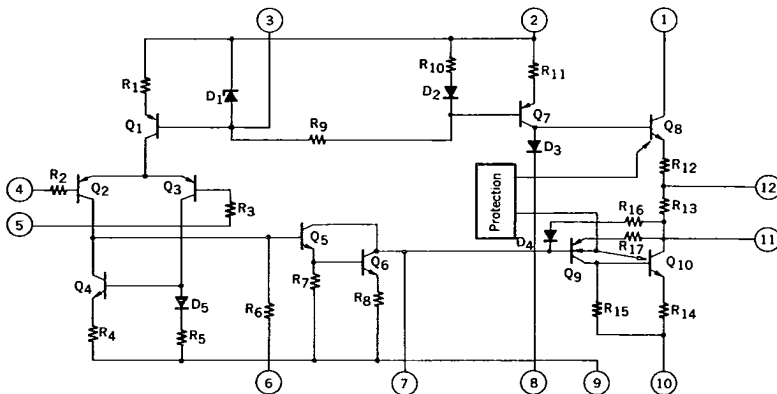
RECOMMENDED OPERATING CONDITIONS

| | |
|------------------------------|--|
| Supply Voltage (Operational) | $V_{CC} = \pm 20$ to ± 52 V |
| Input Bias Resistance | $R_{IN} = 1$ to 50 to 100 k Ω |
| Power Transistor h_{FE} | $h_{FE} \geq 50$ at $P_O = 80$ W, $R_L = 8 \Omega$, $T_j < 125^\circ\text{C}$ |
| Closed Loop Voltage Gain | $A_v = 26$ to 30 dB |
| Junction Temperature | $T_j = -20$ to 125°C |

ELECTRICAL CHARACTERISTICS ($V_{CC} = \pm 46$ V, $A_v = 30$ dB, Use Standard Test Circuit, $T_a = 25^\circ\text{C}$)

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|--------------------------------|---------------------|------|---------|----------|------|--|
| Output Offset Voltage | V_{offset} | | ± 5 | ± 50 | mV | $V_{IN} = 0$ |
| Quiescent Circuit Current | I_{CC} | 20 | 40 | | mA | $V_{IN} = 0$ |
| Maximum Output Voltage | V_{OM} | 25 | 28 | | V | THD = 0.05%, $f = 20$ Hz to 20 kHz |
| Open Loop Voltage Gain | A_{VO} | 80 | 95 | | dB | $V_O = 1.5$ V, $f = 1$ kHz |
| Output Noise Voltage | V_n | | 0.07 | 0.14 | mV | $R_G = 10$ k Ω |
| Rolloff Frequency | f_H | | 900 | | kHz | $V_O = 1.5$ V, -3 dB |
| Supply Voltage Rejection Ratio | SVR | 55 | 70 | | dB | $R_G = 2.2$ k Ω , $f_{\text{ripple}} = 100$ Hz, $v_{\text{ripple}} = 1$ V _{r.m.s.} |

EQUIVALENT CIRCUIT



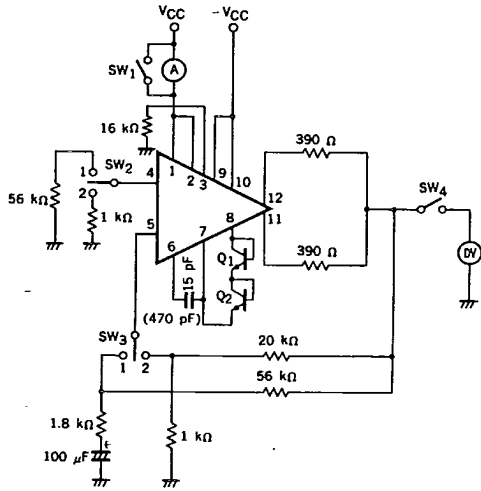
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TEST CIRCUIT 1 (I_{CC}, V_{OFF})

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Q1 } 2SC1844F
 Q2 }

SWITCH POSITION

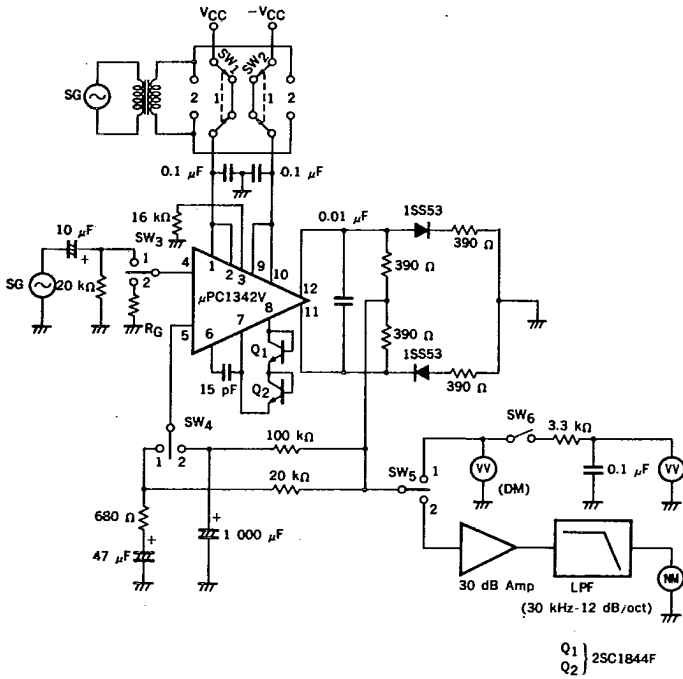
| | SW ₁ | SW ₂ | SW ₃ | SW ₄ |
|------------------|-----------------|-----------------|-----------------|-----------------|
| I _{CC} | OFF | 2 | 2 | OFF |
| V _{OFF} | ON | 1 | 1 | ON |

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TEST CIRCUIT 2 (V_{OM} , A_u , A_{uO} , V_{NO} , SVR, PBW)

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SWITCH POSITION

| | SW ₁ | SW ₂ | SW ₃ | SW ₄ | SW ₅ | SW ₆ |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| V_{OM} | 1 | 1 | 1 | 1 | 1 | OFF |
| A_u | 1 | 1 | 1 | 1 | 1 | OFF |
| A_{uO} | 1 | 1 | 1 | 2 | 1 | OFF |
| V_{NO} | 1 | 1 | 2 | 1 | 2 | OFF |
| SVR | 2/1 | 1/2 | 2 | 1 | 1 | ON |
| PBW | 1 | 1 | 1 | 1 | 1 | OFF |

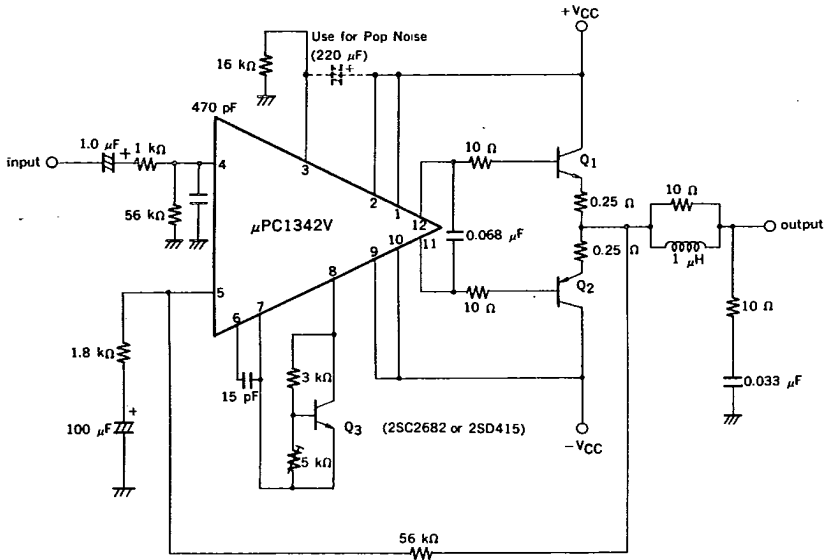
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APPLICATION CIRCUIT

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RECOMMENDED POWER TRANSISTOR

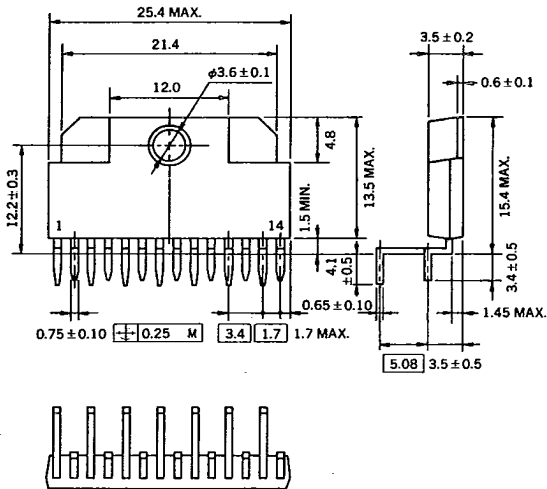
| P _O | 25 to 40 W | 45 to 55 W | 50 to 70 W | 70 to 80 W | 80 to 110 W |
|----------------|--------------------|--------------------|--------------------|--------------------------------|----------------------------|
| Q ₁ | 2SD1288 2SD2013 | 2SD1289 2SD1977 | 2SC3012 2SC4267 | 2SC2987 2SC2987A 2SC4268 | 2SC2987A 2SC4268 x 2 |
| Q ₂ | 2SB965 2SB1336 | 2SB966 2SB1315 | 2SA1232 2SA1631 | 2SA1227 2SA1227A 2SA1632 | 2SA1227A 2SA1632 x 2 |

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14 PIN V-DIP PACKAGE DIMENSIONS (Unit : mm)



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 |
| 13 | NC |
| 14 | NC |

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