

TV APPLICATIONS

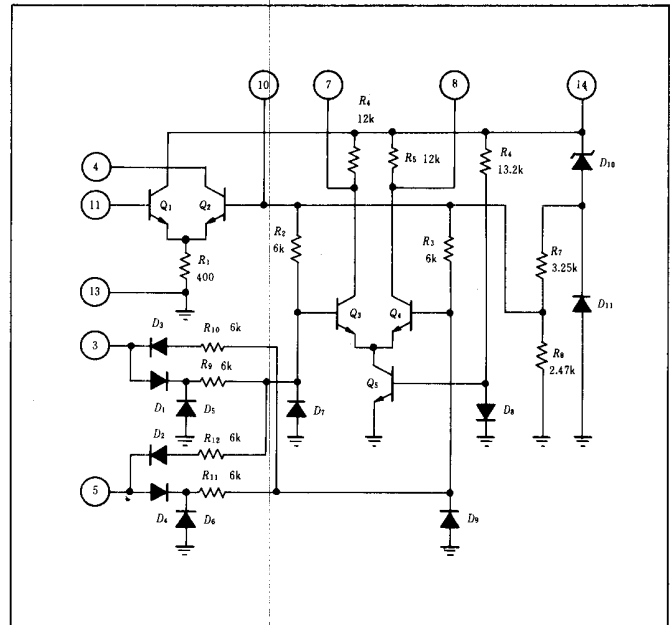
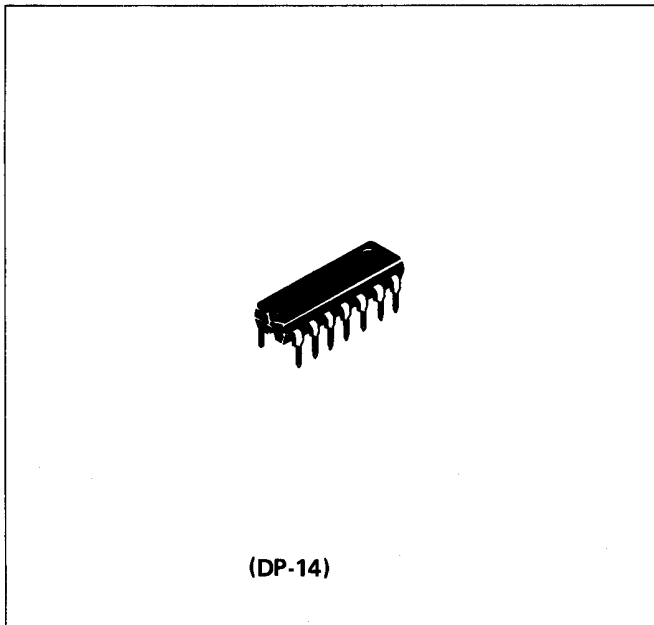
TV APPLICATION

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HA1108

TV AUTOMATIC FINE TUNING CIRCUIT

■ CIRCUIT SCHEMATIC



■ ABSOLUTE MAXIMUM RATINGS

| Item | Symbol | HA1108 | Unit |
|-----------------------|-----------|------------|------|
| Power Dissipation | P_T | 300 | mW |
| Operating Temperature | T_{opr} | -20 to +85 | °C |
| Storage Temperature | T_{stg} | -55 to +85 | °C |

■ ABSOLUTE MAXIMUM RATINGS (2)

The following chart gives the range of voltages which can be applied to the terminals listed vertically with respect to the terminals listed horizontally. For example, the voltage range between vertical terminal 4 and horizontal terminal 10 is +20 to 0 volts.

VOLTAGE CONDITIONS AT OTHER TERMINALS

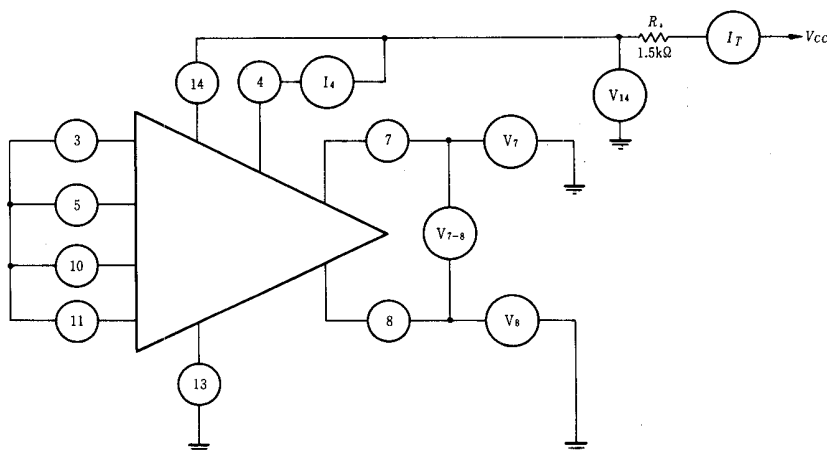
| Terminal No. | 14 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | 13 | I_{in} (mA) | I_{out} (mA) |
|--------------|----|----------|------------|------------|----------|----------|----------|----------|---------------|------------------|-------------------|
| 14 | | +20 0 | +20 -10 | +20 0 | +20 0 | +20 0 | +20 0 | +20 0 | △ | 50 | 50 |
| 3 | | | ○ | +12 -12 | ○ | ○ | +6 -6 | ○ | +6 0 | 5 | 5 |
| 4 | | | | ○ | ○ | ○ | +20 0 | ○ | +20 0 | 20 | 20 |
| 5 | | | | | ○ | ○ | +6 -6 | ○ | +6 0 | 5 | 5 |
| 7 | | | | | | ○ | ○ | ○ | +12 0 | 5 | 5 |
| 8 | | | | | | | ○ | ○ | +12 0 | 5 | 5 |
| 10 | | | | | | | | +5 -5 | +5 0 | 5 | 5 |
| 11 | | | | | | | | | +8 -5 | 5 | 5 |
| 13 | | | | | | | | | RFF-SUBSTRATE | 50 | 50 |

■ ELECTRICAL CHARACTERISTICS (T_a=25°C)

| Item | | Symbol | Test Circuit | Test Conditions | min | typ | max | Unit |
|-------------------------------------|--|---------------------|--------------|---|------|------|------|----------------------|
| Static Characteristics | Device Dissipation | P _T | 1 | V _{CC} =30V R _S =1.5kΩ | 110 | 140 | 170 | mW |
| | 9V Current Drain | I _T | 1 | V _{I4} =9V | 2.5 | 4.0 | 5.5 | mA |
| | Zener Regulating Voltage | V _{I4} | 1 | V _{CC} =30V R _S =1.5kΩ | 10.5 | 11.2 | 11.9 | V |
| | Quiescent Operating Current | I ₄ | | | 1 | 2 | 4 | mA |
| | Quiescent Operating Voltage | V ₇ | | | 5.0 | 6.5 | 8.0 | V |
| | Quiescent Operating Voltage | V ₈ | | | 5.0 | 6.5 | 8.0 | V |
| | Output Offset Voltage between Terminal 7 and 8 | V ₇₋₈ | | | -1.5 | 0 | 1.5 | V |
| RF Amp. | Input Limiting Voltage (Knee) | V _{I(lim)} | 2 | f=58.75MHz V _{CC} =30V R _S =1.5kΩ | — | 120 | — | mV. rms |
| *Output vs. Frequency Deviation-AFC | Correction-Control Voltage at Terminal 7 | V _{corr7} | 3 | f=58.75-0.075MHz | 80 | — | — | % of V _{I4} |
| | | | | f=58.75+0.075MHz | — | — | 38 | |
| | | | | f=58.75-0.900MHz | 75 | — | — | |
| | | | | f=58.75+0.900MHz | — | — | 43 | |
| | | | | f=58.75-1.500MHz | — | — | 85 | |
| | | | | f=58.75+1.500MHz | 33 | — | — | |
| | Correction-Control Voltage at Terminal 8 | V _{corr8} | 3 | f=58.75-0.075MHz | — | — | 38 | % of V _{I4} |
| | | | | f=58.75+0.075MHz | 80 | — | — | |
| | | | | f=58.75-0.900MHz | — | — | 43 | |
| | | | | f=58.75+0.900MHz | 75 | — | — | |
| | | | | f=58.75-1.500MHz | 33 | — | — | |
| | | | | f=58.75+1.500MHz | — | — | 85 | |

* Test Conditions; V_{CC} = +30V, R_S = 1.5kΩ, V_{I4} = 550mVrms

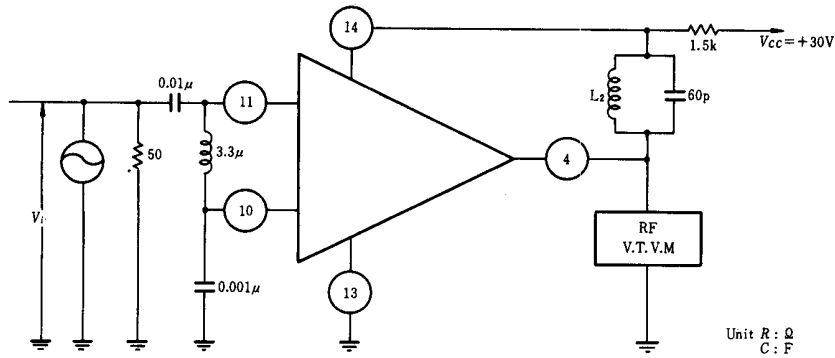
■ TEST CIRCUIT



$$P_T = \frac{V_{CC} - V_{I4}}{R_S} \cdot V_{I4}$$

- Test the P_T, V_{I4}, I₄, V₇, V₈ and V₇₋₈ using the V_{CC} = 30V.
- When test I_T, V_{CC} adjust V_{I4} = 9V.

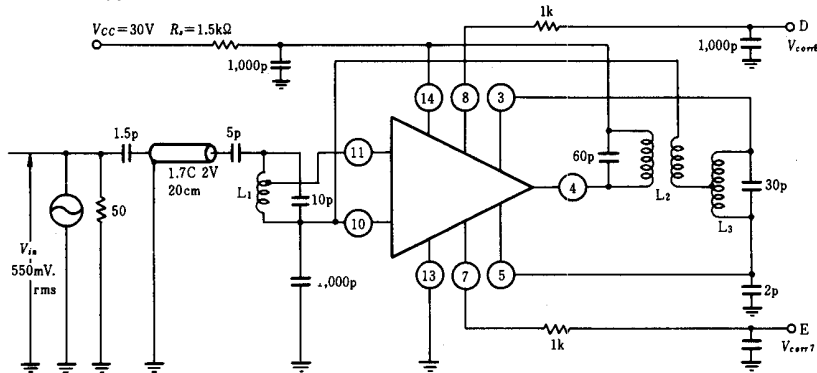
2.



Coil Spec.
 L₂: 0.1φ Polyuretan Wire, Turns 2T
Coil Outline
 Coil Dia.: 5mmφ
 Screw Core: 4mmφ × 8mmφ
 Sleeve Core: Outside Dia. 9.5mmφ,
 Inside Dia.: 7.5mmφ,
 Height 6mm

3. Calculate the V_{corr7} and V_{corr8} using the following

$$\text{equation. } V_{\text{corr7}}, V_{\text{corr8}} = \frac{V_{14}}{100} (\%)$$



Coil Spec.
 L₁: 0.1mmφ Polyuretan Wire, Turns 5T, 2T at Center Tap.
 L₂: 0.1mmφ Polyuretan Wire, Turns: Primary 2T, Secondary 2T.
 L₃: 0.1mmφ Polyuretan Wire, Turns 3T, With Center Tap.
Coil Outline
 Coil Dia: 5mmφ
 Screw Core: 4mmφ × 8mmφ
 Sleeve Core: Outside Dia, 9.5mmφ, Inside Dia. 7.5mmφ,
 Height 6mm