

AN5031

TV Tuning Control Circuit

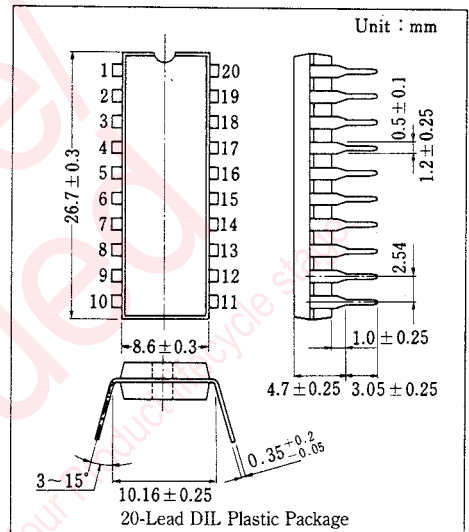
Outline

The AN5031 is an integrated circuit designed for tuner control circuit of TV electronic tuning system using a semiconductor memory.

Features

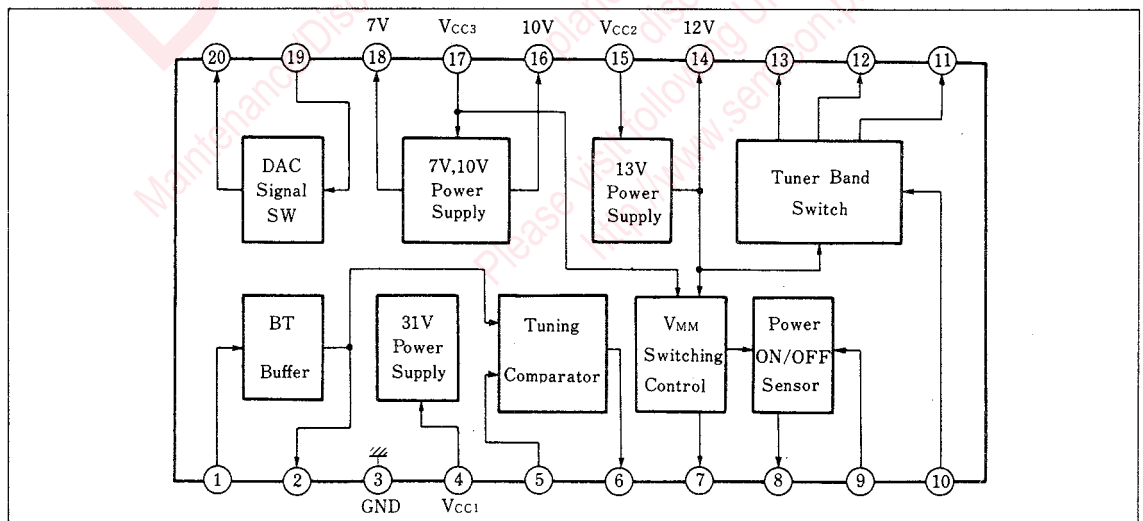
- Consists of peripheral part of electronic tuning system with semiconductor memories
- Electronic tuner power supply circuit incorporated
- Reference voltage stabilizer for electronic tuning incorporated

Pin



| Pin No. | Pin Name | Pin No. | Pin Name |
|---------|-----------------------------------|---------|-------------------------|
| 1 | BT Voltage Input | 11 | BU Output |
| 2 | BT Voltage Output | 12 | BV Output |
| 3 | GND | 13 | BS Output |
| 4 | 31V Regulator (V _{cc1}) | 14 | 13V Power Supply Output |
| 5 | Pre-set Voltage Input | 15 | V _{cc2} |
| 6 | Tuning Control Output | 16 | 10V Power Supply Output |
| 7 | Switching Output | 17 | V _{cc3} |
| 8 | Power CLR Output | 18 | 7V Power Supply Output |
| 9 | Power ON-OFF Sensor Input | 19 | DAC Signal Input |
| 10 | Band SW Input | 20 | DAC Signal Output |

Block Diagram



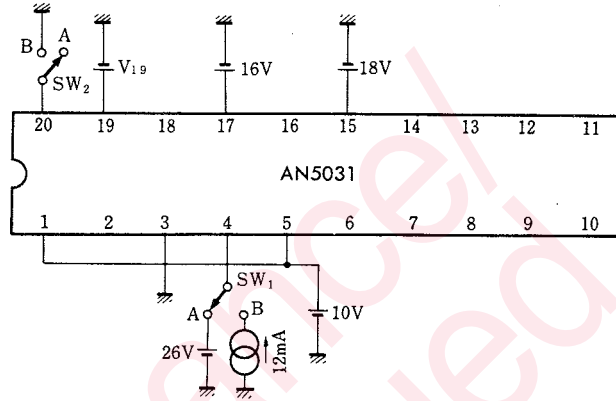
■ Absolute Maximum Ratings (Ta=25°C)

| Item | | Symbol | Rating | | Unit | |
|-------------------|-------------------------------|------------------|-----------------------------------|--------|------|----|
| Voltage | Supply Voltage | V _{CC2} | V ₁₅₋₃ | 24 | V | |
| | | V _{CC3} | V ₁₇₋₃ | 24 | V | |
| | Circuit Voltage | | V ₁₃₋₃ | 0 +27 | V | |
| | | | V ₁₈₋₃ | 0 + 8 | V | |
| Current | Supply Current | I ₄ | 0 | +15 | mA | |
| | Circuit Current | | I ₁₁ , I ₁₂ | - 25 0 | mA | |
| | | | I ₁₅ | 0 | +22 | mA |
| | | | I ₁₄ | -20 | +50 | mA |
| | | | I ₁₆ | -20 | + 7 | mA |
| | | | I ₁₈ | -50 | +0.5 | mA |
| Power Dissipation | | P _D | 1050 | | mW | |
| Temperature | Operating Ambient Temperature | T _{opr} | -20~+70 | | °C | |
| | Storage Temperature | T _{stg} | -55~+150 | | °C | |

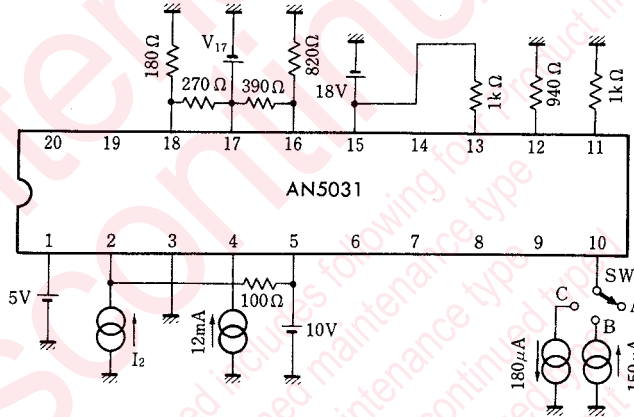
■ Electrical Characteristics (Ta=25°C)

| Item | Symbol | Test Circuit | Condition | min. | typ. | max. | Unit |
|---------------------------------------|-------------------|----------------------|------------------------------------------------------------------|------|------|------|------|
| V _{CC1} Circuit Current | I ₄ | 1 | S ₁ =A, V ₁₆ =0, S ₂ =A | 3.9 | 5.1 | 6.3 | mA |
| V _{CC2} Circuit Current | I ₁₅ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | 8.0 | 11.5 | 14.5 | mA |
| V _{CC3} Circuit Current | I ₁₇ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | 5.9 | 8.4 | 10.9 | mA |
| DAI Input Current | I ₁₉ | 1 | S ₁ =B, V ₁₆ =4V, S ₂ =A | 1.4 | 2.1 | 2.8 | mA |
| LFO Output Current | -I ₂₀ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =B | 0.7 | 1.1 | 1.8 | mA |
| BTI Input Current | I ₁ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | -1.0 | -0.1 | 0 | μA |
| BTI-BTO Voltage Difference | V ₁₋₂ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | 0 | 0.18 | 0.36 | V |
| VRI Input Current | I ₅ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | -20 | - 5 | 0 | μA |
| TUD Output Voltage | "L" | V _{6-3(L)} | I ₂ =150 μA, S ₃ =A, V ₁₇ =16V | 0 | 0.23 | 0.5 | V |
| | "M" | V _{6-3(M)} | I ₂ =-420 μA, S ₃ =A, V ₁₇ =16V | 4.5 | 5.0 | 5.5 | V |
| | "H" | V _{6-16(H)} | I ₂ =-1.1mA, S ₃ =A, V ₁₇ =16V | -0.5 | -0.2 | 0 | V |
| BSI Terminal Voltage | V ₁₀₋₃ | 2 | I ₂ =0, S ₃ =A, V ₁₇ =10.7V | 4.6 | 5.2 | 5.8 | V |
| BUO Output Voltage | V ₁₁₋₃ | 2 | I ₂ =0, S ₃ =B, V ₁₇ =10.7V | 11.5 | 12.3 | 13.1 | V |
| BVO Output Voltage | V ₁₂₋₃ | 2 | I ₂ =0, S ₃ =A, V ₁₇ =10.7V | 11.5 | 12.3 | 13.1 | V |
| BSO Output Voltage | V ₁₃₋₃ | 2 | I ₂ =0, S ₃ =A, V ₁₇ =10.7V | 0 | 0.5 | 1.2 | V |
| BSO Output Current | I ₁₃ | 2 | I ₂ =0, S ₃ =C, V ₁₇ =10.7V | 0 | | 1 | μA |
| 13V Power Output Voltage | V ₁₄₋₃ | 2 | I ₂ =0, S ₃ =A, V ₁₇ =10.7V | 12.6 | 13.5 | 14.3 | V |
| 10V Power Output Voltage | V ₁₆₋₃ | 2 | I ₂ =0, S ₃ =A, V ₁₇ =10.7V | 9.1 | 9.9 | 10.7 | V |
| 7V Power Output Voltage | V ₁₈₋₃ | 2 | I ₂ =0, S ₃ =A, V ₁₇ =16V | 6.8 | 7.4 | 8.0 | V |
| V _{CC1} Voltage Regulator | V ₄₋₃ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | 29.5 | 31.5 | 33.5 | V |
| V _{CC1} Operating Resistance | r ₄ | 1 | S ₁ =B, V ₁₆ =0, S ₂ =A | | 10 | 25 | Ω |

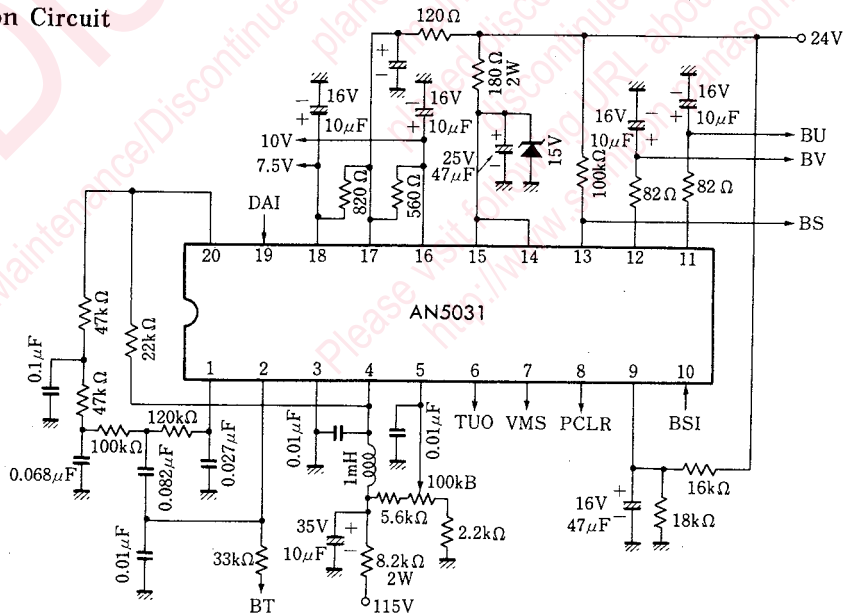
Test Circuit 1 ($I_{1,4,5,15,17,19}$, $-I_{20}$, V_{1-2} , V_{4-3} , r_4)



Test Circuit 2 ($V_{6-3(L)}$, $V_{6-3(M)}$, $V_{6-16(H)}$, $V_{10,11,12,13,14,16,18-3}$, I_{13})



■ Application Circuit



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