

The LA7530N is an IC containing the VIF section and SIF section on a single chip in the DIP20S package. The use of the small-sized package serves to make VTR tuner units smaller.

As compared with the LA7530, the LA7530N is provided with 2 pins for IF AGC, permitting higher AGC speed. The LA7530N can substitute for the LA7530, but the LA7530 cannot substitute for the LA7530N. For 9V supply, use the LA7533.

Functions

- VIF section: VIF AMP, VIDEO DET, PEAK IF AGC, B/W NOISE CANCELLER, RF AGC, AFT, VIDEO MUTE.
- SIF section: SIF LIMITER AMP, FM DET, SND MUTE.

Features

- High-gain VIF amp requiring no preamp.
- Higher AGC speed.
- Adjustment-free FM detector because of ceramic discriminator-used quadrature detection.
- Possible to mute video, sound for VTR.
- Small-sized package.
- Minimum number of external parts required.

Maximum Ratings at Ta = 25°C

| | | | unit |
|-----------------------------|---------------------|-----------------|------|
| Maximum Supply Voltage | V _{CC} max | 14 | V |
| Flow-out Current | I ₁₆ max | 5 | mA |
| Maximum Applied Voltage | V ₂₀ max | V _{CC} | V |
| Allowable Power Dissipation | P _d max | 1.1 | W |
| Operating Temperature | T _{opr} | -20 to +70 | °C |
| Storage Temperature | T _{stg} | -55 to +125 | °C |

Ta ≤ 40°C

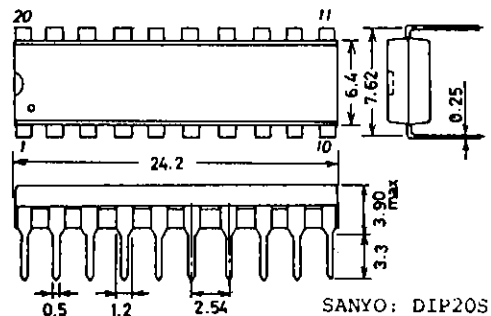
Operating Conditions at Ta = 25°C

| | | | unit |
|----------------------------|--------------------|-----------|------|
| Recommended Supply Voltage | V _{CC} | 12 | V |
| Operating Voltage Range | V _{CC op} | 9 to 13.2 | V |

Package Dimensions

(unit : mm)

3021B



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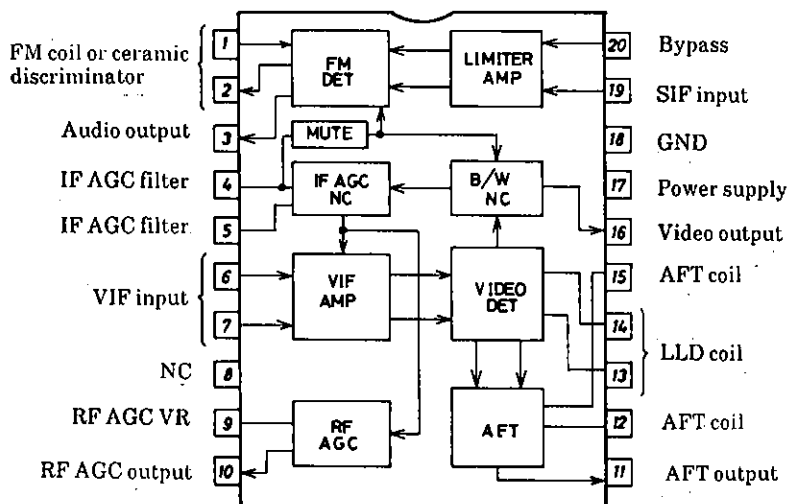
LA7530N

Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 12\text{V}$, $f_p = 58.75\text{MHz}$, $f_s = 54.25\text{MHz}$ (VIF),
 $f_o = 4.5\text{MHz}$ (SIF)

| | | | min | typ | max | unit |
|--------------------------------|-------------------|---|-----|------|-----|------------------|
| Total Circuit Current | I_{17} | DC | 47 | 58 | 74 | mA |
| Maximum RF AGC Voltage | V_{10H} | DC | 8.5 | 8.9 | 9.2 | V |
| Minimum RF AGC Voltage | V_{10L} | DC | | | 0.5 | V |
| Quiescent Video Output Voltage | V_{16} | DC | 5.7 | 6.1 | 6.5 | V |
| Quiescent AFT Output Voltage | V_{11} | DC | 4.5 | 6.5 | 7.5 | V |
| Input Sensitivity | V_i | $f_m = 400\text{Hz}$, 40%AM, $V_o = 0.8\text{Vp-p}$ | 30 | 36 | 42 | dB μ |
| AGC Range | GR | $f_m = 400\text{Hz}$, 40%AM, $V_o = 0.8\text{Vp-p}$ | 57 | 65 | | dB |
| Maximum Allowable Input | $V_i \text{ max}$ | $f_m = 15\text{kHz}$, 78%AM, $V_o = \pm 1\text{dB}$ | 100 | 200 | | mVrms |
| Video Output Amplitude | V_o (VIDEO) | $V_i = 10\text{mVrms}$, $f_m = 15\text{kHz}$, 78%AM | 1.9 | 2.2 | 2.5 | Vp-p |
| Output S/N | S/N | $V_i = 10\text{mVrms}$ CW | 48 | 54 | | dB |
| Carrier Leak | CL | $V_i = 100\text{mVrms}$, $f_m = 15\text{kHz}$, 78%AM | 50 | 55 | | dB |
| Maximum AFT Voltage | V_{11H} | $V_i = 10\text{mVrms}$ CW SWEEP | 11 | 11.4 | | V |
| Minimum AFT Voltage | V_{11L} | $V_i = 10\text{mVrms}$ CW SWEEP | | 0.5 | 1.0 | V |
| AFT Detection Sensitivity | S_f | $V_i = 10\text{mVrms}$ CW SWEEP | 80 | 110 | 150 | mV/kHz |
| White Noise Threshold Level | V_{WTH} | $V_i = 10\text{mVrms}$ SWEEP | 6.4 | 6.8 | 7.2 | V |
| White Noise Clamp Level | V_{WCL} | $V_i = 10\text{mVrms}$ SWEEP | 4.2 | 4.6 | 5.0 | V |
| Black Noise Threshold Level | V_{BTH} | $V_i = 10\text{mVrms}$ SWEEP | 2.1 | 2.4 | 2.7 | V |
| Black Noise Clamp Level | V_{BCL} | $V_i = 10\text{mVrms}$ SWEEP | 3.8 | 4.2 | 4.6 | V |
| SIF Output Signal Voltage | V_o (SIF) | P/S = 20dB | 80 | 140 | 210 | mVrms |
| Frequency Characteristic | f_c | -3dB | 5 | 7 | | MHz |
| Differential Gain | DG | $V_i = -27\text{dBm}$ (peak) 87.5% VIDEOMOD | | 3 | | % |
| Differential Phase | DP | $V_i = -27\text{dBm}$ (peak) 87.5% VIDEOMOD | | 3 | | deg |
| Input Resistance | R_i | | 1.0 | 1.5 | 2.0 | k Ω |
| Input Capacitance | C_i | | | 3.0 | 6.0 | pF |
| SIF Limiting Voltage | V_i (lim) | -3dB | | 200 | 500 | μVrms |
| Detection Output Voltage | V_o (DET) | $V_i = 100\text{mVrms}$, $f_m = 400\text{Hz}$, $\Delta f = \pm 25\text{kHz}$ | 450 | 680 | 850 | mVrms |
| Total Harmonic Distortion | THD (DET) | $V_i = 100\text{mVrms}$, $f_m = 400\text{Hz}$, $\Delta f = \pm 25\text{kHz}$ | | 0.5 | 1.3 | % |
| AM Rejection | AMR | $V_i = 100\text{mVrms}$, $f_m = 400\text{Hz}$, $\Delta f = \pm 25\text{kHz}$, 30%AM | 50 | 60 | | dB |

- Usage Note : 1. Protective circuits must be inserted when using this IC with lines directly connecting the IC pins to external circuits.
 (For example, this applies to pins 12 and 15.)
2. A 1000pF capacitor must be connected between either pin 5 and ground or between pin 5 and pin 8 to prevent VIF amplifier oscillation.

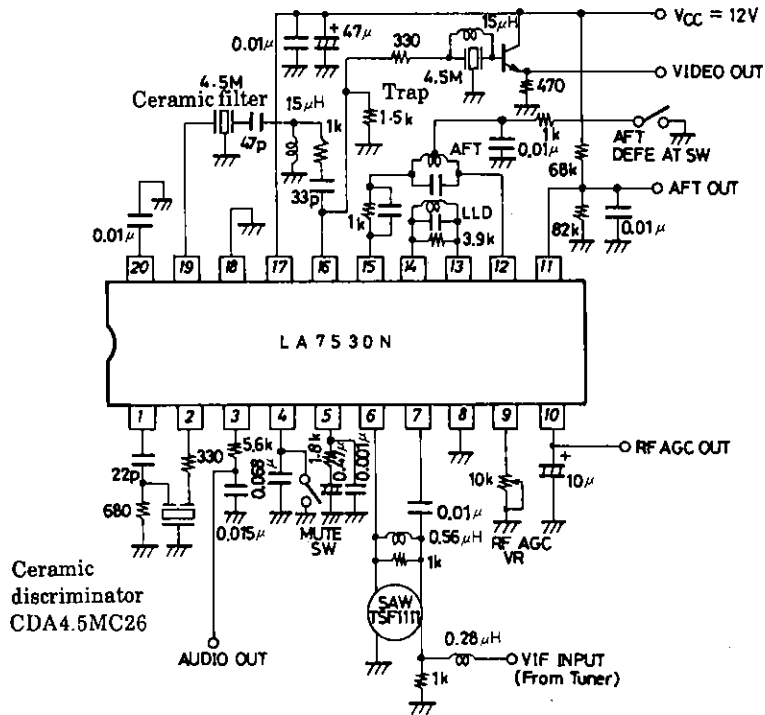
Equivalent Circuit Block Diagram



LA7530N

Sample Application Circuit (Japan)

- * The LA7530N differs from the LA7530 in the circuit externally connected to pins 5, 8



Unit (resistance:Ω, capacitance:F)

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