

LA7530N

IF Signal Processing (VIF+SIF) Circuit for TV / VCR Use

Overview

The LA7530N is an IC containing the VIF section and SIF section on a single chip in the DIP20 package. The use of the small-sized package serves to make VCR 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 amplifier requiring no preamplifier.
- Higher AGC speed.
- Adjustment-free FM detector because of ceramic discriminator-used quadrature detection.
- Possible to mute video, sound for VCR.
- Small-sized package.
- Minimum number of external parts required.

Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	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	Pd max	Ta≤40°C	1.1	W
Operating temperature	Topr		-20 to +70	°C
Storage temperature	Tstg		-55 to +125	°C

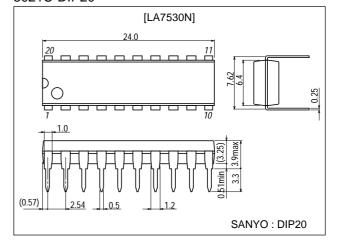
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Package Dimensions

unit:mm

3021C-DIP20



LA7530N

Operating Conditions at $Ta = 25^{\circ}C$

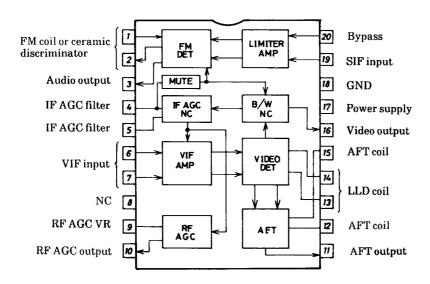
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	Vcc		12	V
Operating voltage range	V _{CC} op		9 to 13.2	V

Operating Characteristics at Ta = 25°C, $V_{CC}=12$ V, $f_P=58.75$ MHz, $f_S=54.25$ MHz (VIF), $f_O=4.5$ MHz (SIF)

		Conditions	Ratings			
Parameter	Symbol		min	typ	max	Unit
Total circuit current	I ₁₇	DC	47	58	74	mA
Maximum RF AGC voltage	V ₁₀ H	DC	8.5	8.9	9.2	V
Minimum RF AGC voltage	V ₁₀ L	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	Vi	fm=400Hz, 40%AM, V _O =0.8Vp-p	30	36	42	dΒμ
AGC range	GR	fm=400Hz, 40%AM, V _O =0.8Vp-p	57	65		dB
Maximum allowable input	Vi max	fm=15kHz, 78%AM, V _O =±1dB	100	200		mVrms
Video output amplitude	V _O (VIDEO)	Vi=10mVrms, fm=15kHz, 78%AM	1.9	2.2	2.5	Vp-p
Output S/N	S/N	Vi=10mVrms CW	48	54		dB
Carrier leakage	CL	Vi=100mVrms, fm=15kHz, 78%AM	50	55		dB
Maximum AFT voltage	V _{11H}	Vi=10mVrms CW SWEEP	11	11.4		V
Mimimum AFT voltage	V ₁₁ L	Vi=10mVrms CW SWEEP		0.5	1.0	V
AFT detection sensitivity	Sf	Vi=10mVrms CW SWEEP	80	110	150	mV/kHz
White noise threshold level	V _{WTH}	Vi=10mVrms SWEEP	6.4	6.8	7.2	V
White noise clamp level	VWCL	Vi=10mVrms SWEEP	4.2	4.6	5.0	V
Black noise threshold level	V _{BTH}	Vi=10mVrms SWEEP	2.1	2.4	2.7	V
Black noise clamp level	V _{BCL}	Vi=10mVrms 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	Vi=-27dBm (peak) 87.5% VIDEOMOD		3		%
Differential phase	DP	Vi=-27dBm (peak) 87.5% VIDEOMOD		3		deg
Input resistance	Ri		1.0	1.5	2.0	kΩ
Input capacitance	Ci			3.0	6.0	pF
SIF limiting voltage	Vi(lim)	-3dB		200	500	μVrms
Detection output voltage	V _O (DET)	Vi=100mVrms, fm=400Hz, Δf=±25kHz	450	680	850	mVrms
Total harmonic distortion	THD(DET)	Vi=100mVrms, fm=400Hz, Δf=±25kHz		0.5	1.3	%
AM rejection	AMR	Vi=100mVrms, fm=400Hz, Δf=±25kHz, 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.)

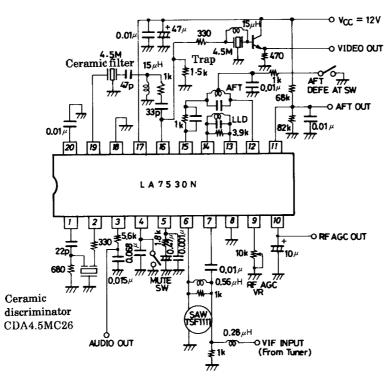
Equivalent Circuit Block Diagram



^{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.

Sample Application Circuit (Japan)

* The LA7530N differs from the LA7530 in the circuit externaly connected to pins 5, 8.



Unit (resistance: Ω , capacitance: F)

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