

SANYO**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

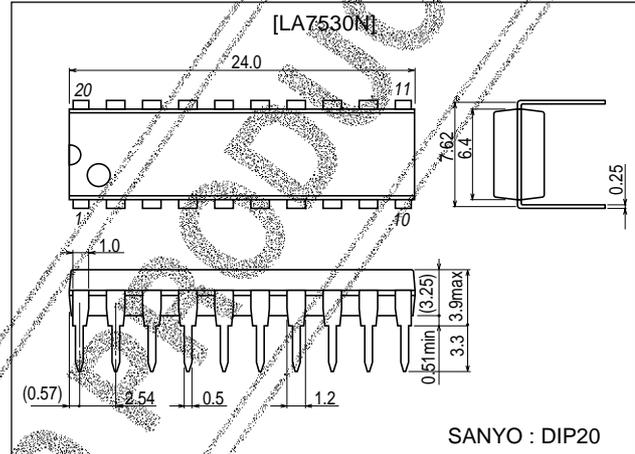
Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC\text{ max}}$		14	V
Flow-out current	$I_{16\text{ max}}$		5	mA
Maximum applied voltage	$V_{20\text{ max}}$		V_{CC}	V
Allowable power dissipation	$P_{d\text{ max}}$	$T_a \leq 40^\circ\text{C}$	1.1	W
Operating temperature	T_{opr}		-20 to +70	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

Package Dimensions

unit:mm

3021C-DIP20



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LA7530N

Operating Conditions at Ta = 25°C

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

Operating Characteristics at Ta = 25°C, V_{CC}=12V, f_p=58.75MHz, f_s=54.25MHz (VIF), f_o=4.5MHz (SIF)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
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 =400Hz, 40%AM, V _O =0.8Vp-p	30	36	42	dBμ
AGC range	GR	f _m =400Hz, 40%AM, V _O =0.8Vp-p	57	65		dB
Maximum allowable input	V _{i max}	f _m =15kHz, 78%AM, V _O =±1dB	100	200		mVrms
Video output amplitude	V _O (VIDEO)	V _i =10mVrms, f _m =15kHz, 78%AM	1.9	2.2	2.5	Vp-p
Output S/N	S/N	V _i =10mVrms CW	48	54		dB
Carrier leakage	CL	V _i =100mVrms, f _m =15kHz, 78%AM	50	55		dB
Maximum AFT voltage	V _{11H}	V _i =10mVrms CW SWEEP	11	11.4		V
Minimum AFT voltage	V _{11L}	V _i =10mVrms CW SWEEP		0.5	1.0	V
AFT detection sensitivity	S _f	V _i =10mVrms CW SWEEP	80	110	150	mV/kHz
White noise threshold level	V _{WTH}	V _i =10mVrms SWEEP	6.4	6.8	7.2	V
White noise clamp level	V _{WCL}	V _i =10mVrms SWEEP	4.2	4.6	5.0	V
Black noise threshold level	V _{BTH}	V _i =10mVrms SWEEP	2.1	2.4	2.7	V
Black noise clamp level	V _{BCL}	V _i =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	V _i =-27dBm (peak) 87.5% VIDEOMOD		3		%
Differential phase	DP	V _i =-27dBm (peak) 87.5% VIDEOMOD		3		deg
Input resistance	R _i		1.0	1.5	2.0	kΩ
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 =100mVrms, f _m =400Hz, Δf=±25kHz	450	680	850	mVrms
Total harmonic distortion	THD(DET)	V _i =100mVrms, f _m =400Hz, Δf=±25kHz		0.5	1.3	%
AM rejection	AMR	V _i =100mVrms, f _m =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.)
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

