No.1794B

LA7520N

Monolithic Linear IC

(VIF+SIF) Circuit for TV, VTR Applications

The LA7520N is an IC containing the VIF section and SIF section on a single chip in the DIP30S package (equivalent to the DIP22 heretofore in use) of shrink type. Since the LA7520N is capable of performing video detection and sound detection independently or simultaneously, it can be applied to various sets from popular type to high-grade type according to the designer's policy. As compared with the LA7520, the LA7520N is more improved in differential gain, noise canceler characteristic. The LA7520 and LA7520N are compatible with each other.

Functions

VIF section: VIF amp, video detector, peak IF AGC, B/W noise canceler, RF AGC, AFT, SIF detector
SIF section: SIF limiter amp, FM detector, DC attenuator, AF driver

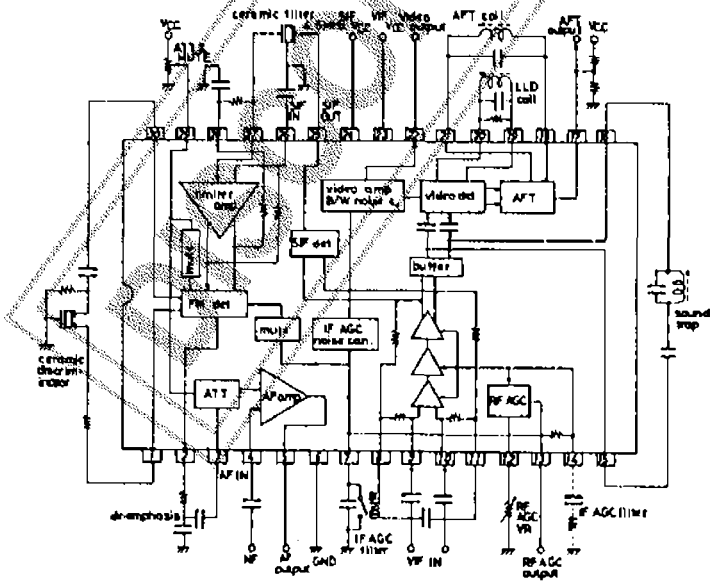
Features

- High-gain VIF amp requiring no preamp
- High AGC speed
- Provides wide-band detection characteristic and meets sound MPX demodulation requirements because of FM detection being quadrature detection.
- Possible to use sound REC pin (pin 2), AUX pin (pin 3)
- Possible to mute video, sound for VTR:
  Pin 7 GND: Muting of both video and sound
  Pin 29 GND: Muting of sound only

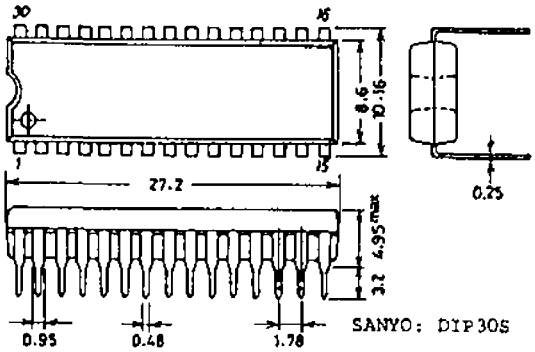
Maximum Ratings at Ta = 25°C

				unit
Maximum Supply Voltage	V_{CC} max		14	V
Flow-out Current	I_{22} max		5	mA
	I_5 max		3	mA
Allowable Power Dissipation	Pd max	Ta ≦ 45°C	1.5	W
Operating Temperature	Topg		−20 to +70	°C
Storage Temperature	Tstg		−55 to +125	°C

Equivalent Circuit Block Diagram



Case Outline 3061-D30SIC
(unit : mm)



Specifications and information herein are subject to change without notice.

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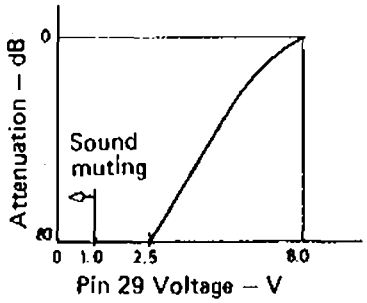
Operating Characteristics/T_a = 25°C, Vcc = 12V, fp = 58.75MHz, fs = 54.25MHz (VIF), fo = 4.5MHz (SIF), * : mVrms

[VIF Section]			min	typ	max	unit
Total circuit current	$I_{23} + I_{24}$	dc	59	74	98	mA
Maximum RF AGC voltage	V_{13H}	dc	8.5	8.9	9.2	V
Minimum RF AGC voltage	V_{13L}	dc		0	0.5	V
Quiescent video output voltage	V_{22}	dc	5.6	6.1	6.6	V
Quiescent AFT output voltage	V_{17}	dc	4.5	6.5	7.5	V
Input sensitivity	vi	fm = 400Hz – 40%AM, vo = 0.8vpp	30	36	42	dBμ
AGC voltage	GR	fm = 15kHz – 78%AM, vo = ±1dB	60	74		dB
Maximum allowable input voltage	vi max	fm = 15kHz – 78%AM, vo = ±1dB	100	500		mVrms
Video output amplitude	vo22	vi = 10*, fm = 15kHz – 78%AM	1.9	2.2	2.5	Vpp
Output S/N	S/N	vi = 10*, CW	48	54		dB
Carrier leak	CL	vi = 100*, fm = 15kHz – 78%AM	50	57		dB
Maximum AFT voltage	V_{17H}	vi = 10*, SWEEP	11.0	11.5	12.0	V
Minimum AFT voltage	V_{17L}	vi = 10*, SWEEP	0	0.4	1.0	V
AFT detection sensitivity	sf	vi = 10*, SWEEP	70	100	140	mV/kHz
White noise threshold voltage	V_{WTH}	vi = 10*, SWEEP	6.4	6.8	7.2	V
White noise clamp level	V_{WCL}	vi = 10*, SWEEP	4.2	4.6	5.0	V
Black noise threshold voltage	V_{BTH}	vi = 10*, SWEEP	2.1	2.4	2.7	V
Black noise clamp level	V_{BCL}	vi = 10*, SWEEP	3.8	4.2	4.6	V
SI output signal voltage	Vo25	P/S = 20dB	40	60	100	mVrms
Frequency characteristic	fc	–3dB	6	8		MHz
Differential gain	DG	vi = 10* – 87.5% video-mode		3	6	%
Differential phase	DP	vi = 10* – 87.5% video-mode		3	6	deg
Input resistance	ri		1.0	1.6	2.0	kΩ
Input capacitance	ci			3.0	6.0	pF
[SIF Section]			min	typ	max	unit
SIF limiting sensitivity	ViLim	–3dB		200	400	μVrms
Detection output voltage	Vo2	vi = 100*, fm = 400Hz, Δf = ±25kHz	450	680	850	mVrms
Total harmonic distortion	THD	vi = 100*, fm = 400Hz, Δf = ±25kHz		0.5	1.0	%
AM rejection	AMR	vi = 100*, fm = 400Hz, Δf = ±25kHz, –30%AM	50	60		dB
DCVR maximum attenuation	ATT	vi = 200*, f = 400Hz	70	80		dB
AF amp gain	VGAF	vi = 100*, f = 400Hz	18	20	22	dB
AF amp output voltage	vo5	THD = 10%, f = 400Hz	3	4		Vrms

Electronic volume control characteristic



Sample Application Circuit (Japan)