



# LA7191N

## Global VHS-format VCR Video Signal Processor

### Overview

The LA7191N is a multi-format, single-chip video signal processing IC that supports TV systems around the world.

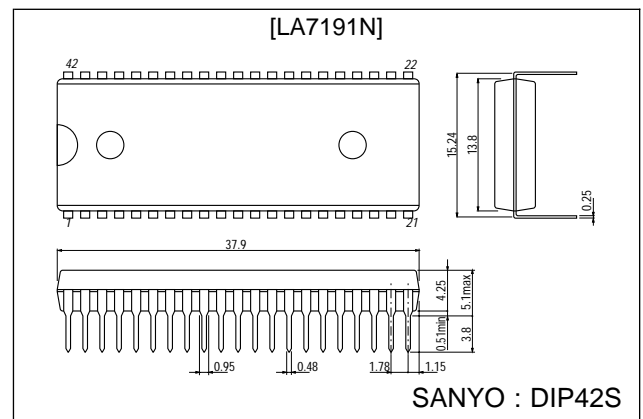
### Features

- Compatible with TV systems around the world (NTSC/PAL/MESECAM/4.43 -NTSC/PAL-M/PAL-N).
- All filters on chip, except for PB-LPF for chroma (cutoff frequency requires no adjustment).
- No adjustment of YNR and DOC levels.
- Double high-pass noise canceller on chip.
- Linear phase-type picture control on chip.
- fsc output can be used as clock for OSD IC.
- DCC circuit on chip.
- Pilot burst erasure circuit on chip.
- High-speed AFC circuit on chip.
- Switching noise canceller on chip.
- Smallest package in the industry.
- Few components needed.

### Package Dimensions

unit: mm

#### 3025B-DIP42S



- 2fsc output.
- I/O pin for CNR insertion added.
- YNR/LNC switching possible.

### Specifications

#### Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max		7.0	V
Allowable power dissipation	P <sub>d</sub> max	T <sub>a</sub> ≤ 65°C	1020	mW
Operating temperature	T <sub>opr</sub>		-10 to +65	°C
Storage temperature	T <sub>stg</sub>		-40 to +150	°C

#### Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V <sub>CC</sub>		5.0	V
Operating supply voltage range	V <sub>CC</sub> op		4.8 to 5.5	V

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

## LA7191N

### Operating Characteristics at Ta = 25°C, V<sub>CC</sub> = 5.0 V

Parameter	Symbol	Input	Output	Conditions	min	typ	max	Unit
[REC Mode Y]								
Current drain REC	I <sub>CCR</sub>			When V <sub>CC</sub> = 5 V (when there is no signal), measure sum of incoming current at pins 35 and 28	95	120	145	mA
AGC adjustment	C <sub>AGC</sub>	T37A		V <sub>IN</sub> = 1.0 Vp-p video signal, use VR39 to adjust T4 output to 0.5 Vp-p				
VCA control characteristics	VCA	T37A	T4	Measure T4 output level when S10 is set to 2	0.48	0.5	0.52	Vp-p
AGC adjustment voltage	V <sub>AGC</sub>	T37A	T39	Measure T39 DC voltage in above state	3.2	3.4	3.6	V
AGC detection voltage	V <sub>AD</sub>	T37A	T38	Measure T38 DC voltage in same manner	1.2	1.4	1.6	V
EE output level	V <sub>EE</sub>	T37A	T34A	Measure T34A output level in same manner	0.95	1.00	1.05	Vp-p
AGC Output 1	AGC 1	T37A	T4	V <sub>IN</sub> = 2.0 Vp-p video signal Measure T4 output level	500	540	560	mVp-p
AGC Output 2	AGC 2	T37A	T4	V <sub>IN</sub> = 0.5 Vp-p video signal Measure T4 output level	470	490	500	mVp-p
AGC Output 3	AGC 3	T37A	T4	V <sub>IN</sub> = 700 mVp-p LUMI, 600 mVp-p SYNC Measure T4 SYNC level	135	150	165	mVp-p
AGC Output 4	AGC 4	T37A	T4	V <sub>IN</sub> = 700 mVp-p LUMI, 150 mVp-p SYNC Measure T4 SYNC level	70	85	100	mVp-p
Sync separation output level	V <sub>SYR</sub>	T37A	T32	V <sub>IN</sub> = 1.0 Vp-p video signal, Measure T32 output pulse wave high value	4.0	4.2	4.4	Vp-p
Sync separation output pulse width	PW <sub>SYR</sub>	T37A	T32	V <sub>IN</sub> = 1.0 Vp-p video signal, Measure T32 output pulse width	4.4	4.7	5.0	μs
Sync separation output leading edge delay time	Δ T <sub>SYR</sub>	T37A	T32	V <sub>IN</sub> = 1.0 Vp-p video signal, measure delay time of output SYNC versus input SYNC	0.6	0.8	1.0	μs
Sync separation threshold level	TH <sub>SYR</sub>	T37A	T32	Gradually attenuate the input level, measure input level at point when output pulse width widens 1 μs or more beyond PWSYR		-18	-14	dB
Sync tip level, pedestal level, white level measurement (REC)	LVOR	T37A	T34	Measure electric potential for each of the T34 video output sync tip, pedestal, and white peak, and assign the measured values to L <sub>SYN</sub> , L <sub>PED</sub> , and L <sub>WHI</sub> , respectively				
Pseudo V insertion level (REC)	Δ VDR	T37A	T34	Measure T34 DC voltage when 5 V is applied to T33, and assign the measured value to L <sub>VDR</sub> and calculate the difference with L <sub>SYN</sub> ΔVDR = L <sub>SYN</sub> - L <sub>VDR</sub>	-80	0	+80	mV
Pseudo H insertion level (REC)	Δ HDR	T37A	T34	Measure T34 DC voltage when 2.7 V is applied to T33, and assign the measured value to L <sub>HDR</sub> and calculate the difference with L <sub>PED</sub> ΔHDR = L <sub>PED</sub> - L <sub>HDR</sub>	-200	-100	0	mV
White insertion level (REC)	Δ WHR	T37A	T34	Measure T34 DC voltage when 1.3 V is applied to T33, and assign the measured value to L <sub>WHR</sub> and calculate the difference with L <sub>WHI</sub> ΔWHR = L <sub>WHI</sub> - L <sub>WHR</sub>	150	250	350	mV
VCA detection voltage	V <sub>VCA</sub>	T37A	T9	Measure T9 DC voltage	3.1	3.4	3.7	V
REC YNR operation EP/LP	VR-YNR	T37A	T3	V <sub>IN</sub> = white 50% + CW (15.8 mVp-p) ratio between 32f <sub>H</sub> component and 32.5f <sub>H</sub> component	3.5	4.5	5.5	dB
Y-LPF frequency characteristics	YLPF 1	T37A	T3	V <sub>IN</sub> = standard multiburst signal 1 Vp-p, 2 MHz response to 500 kHz at T3	0.2	0.7	1.2	dB
	YLPF2	T37A	T3	V <sub>IN</sub> = standard multiburst signal 1 Vp-p, 4.8 MHz response to 500 kHz at T3	-4.5	-3.5	-2.5	dB
	YLPF3	T37A	T3	V <sub>IN</sub> = standard multiburst signal 1 Vp-p, 2 MHz response to 500 kHz at T3, T22A: 5 V	0.4	0.9	1.4	dB
	YLPF4	T37A	T3	V <sub>IN</sub> = standard multiburst signal 1 Vp-p, 4.8 MHz response to 500 kHz at T3, T22A: 5 V.	-5.0	-4.0	-3.0	dB
FM modulator output level	V <sub>FM</sub>		T40	No input, use VR42 to adjust output frequency to 4 MHz, measure output level	0.8	1.0	1.2	Vp-p
FM modulator secondary distortion	H <sub>MOD</sub>		T40	Ratio of 8 MHz component to 4 MHz in the above state		-40	-35	dB

Continued on next page.

## LA7191N

Continued from preceding page.

Parameter	Symbol	Input	Output	Conditions	min	typ	max	Unit
FM modulator modulation sensitivity	S <sub>MOD</sub>	T4	T40	Measure amplitude of change in output frequency when 2.6 V DC or 3.1 V DC is applied to T4, 2 x (f3.1 – f2.6)	1.6	2.0	2.4	MHz/V
FM modulator linearity	L <sub>MOD</sub>	T4	T40	Measure output frequency when 2.85 V DC applied to T4, $L_{MOD} = \frac{f_{2.85} - (f_{3.1} + f_{2.6})/2}{S_{MOD}} \times 100$	-2	0	+2	%
1/2 f <sub>H</sub> carrier shift	CS1		T40	Measure amplitude of change in output frequency when SW41B is off and SW41A is switched from on to off	6.8	7.8	9.5	kHz
	CS2		T40	Measure amplitude of change in output frequency when SW41B is on and SW41A is switched from on to off	6.8	7.8	9.5	kHz
Emphasis gain	G <sub>EMPH</sub>	T4A	T5	V <sub>IN</sub> = 0.5 Vp-p 10 kHz sine wave Measure ratio of levels of input and output amplitude at T5	-0.5	0	+0.5	dB
Detail enhancer characteristics	G <sub>ENH1</sub>	T4A	T5	V <sub>IN</sub> = 158 mVp-p 2 MHz sine wave Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	0.9	1.4	1.9	dB
	G <sub>ENH2</sub>	T4A	T5	V <sub>IN</sub> = 50 mVp-p 2 MHz sine wave Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	2.2	3.2	4.2	dB
	G <sub>ENH3</sub>	T4A	T5	V <sub>IN</sub> = 15.8 mVp-p 2 MHz sine wave Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	4.0	5.0	6.0	dB
	G <sub>ENH4</sub>	T4A	T5	V <sub>IN</sub> = 15.8 mVp-p 2 MHz sine wave Measure output amplitude at T5 in edit mode, difference with G <sub>EMPH</sub>	1.8	2.8	3.8	dB
Nonlinear emphasis characteristics	G <sub>NLEMP1</sub>	T4A	T5	V <sub>IN</sub> = 500 mVp-p 2 MHz Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	0.5	1.4	2.3	dB
	G <sub>NLEMP2</sub>	T4A	T5	V <sub>IN</sub> = 158 mVp-p 2 MHz Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	2.6	3.8	5.2	dB
	G <sub>NLEMP3</sub>	T4A	T5	V <sub>IN</sub> = 50 mVp-p 2 MHz Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	4.9	6.4	7.9	dB
Main linear emphasis characteristics	G <sub>ME1</sub>	T4A	T5	V <sub>IN</sub> = 50 mVp-p 200 kHz sine wave Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	4.9	5.2	5.5	dB
	G <sub>ME2</sub>	T4A	T5	V <sub>IN</sub> = 50 mVp-p 2 MHz Measure ratio of levels of T5 and T4, difference with G <sub>EMPH</sub>	13.1	13.6	14.1	dB
White clipping level	L <sub>WC</sub>	T4A	T5	V <sub>IN</sub> = 500 mVp-p white 100% video signal Measure white clipping level at T5	186	193	200	%
Dark clipping level	L <sub>DC</sub>	T4A	T5	V <sub>IN</sub> = 500 mVp-p white 100% video signal Measure dark clipping level at T5	-60	-55	-50	%
Non-linear emphasis characteristics SP	NLE-SP	T4A	T5	Same as G <sub>NLEMP3</sub>	3.0	4.0	5.0	dB
[PB Mode Y]								
Current drain PB	I <sub>CCP</sub>			Incoming current at pins 35 and 28 when V <sub>CC</sub> = 5.0 V	125	155	185	mA
Dropout compensation period	T <sub>DOC</sub>	T39A T4A	T34A	T39A: 4 MHz, 300 mVp-p sine wave T4A: 0.5Vp-p video signal T34A: time from when input went to 0 until T34A output returned, SW10 → 1	0.35	0.5	0.65	ms
DOC loop gain	G <sub>DOC</sub>	T39A T4A	T12	T39A: 4 MHz, 300 mVp-p sine wave T4A: 0.5Vp-p video signal T39A: Input/output response when 5H have elapsed after input went to 0, SW10 → 3	-1.0	0	+1.0	dB
FM demodulation voltage	V <sub>DEM4</sub>	T39A	T3	V <sub>IN</sub> =300 mVp-p, f = 4 MHz, Output DC voltage	1.5	2.0	2.5	V
FM demodulation sensitivity	S <sub>DEM</sub>	T39A	T3	V <sub>IN</sub> = 300 mVp-p, f = 2 MHz, V <sub>DEM2</sub> V <sub>IN</sub> = 300 mVp-p, f = 6 MHz, V <sub>DEM6</sub> Calculate S <sub>DEM</sub> = (V <sub>DEM6</sub> - V <sub>DEM2</sub> )/4	0.36	0.45	0.54	V/MHz

Continued on next page.

## LA7191N

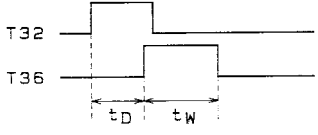
Continued from preceding page.

Parameter	Symbol	Input	Output	Conditions	min	typ	max	Unit
FM demodulation linearity	L <sub>DEM</sub>			$L_{DEM} = \frac{V_{DEM4} - (V_{DEM6} + V_{DEM2})/2}{V_{DEM6} - V_{DEM2}} \times 100$	-3.5	0	+3.5	%
Carrier leak	CL	T39A	T3	V <sub>IN</sub> = 300 mVp-p, f = 4 MHz Ratio between 4 MHz component of T3 and S <sub>DEM</sub>		-40	-35	dB
PB YNR characteristics LP/EP	GP-YNR	T4A	T28A	V <sub>IN</sub> = white 50% + CW (15.8 mVp-p) Ratio between 32f <sub>H</sub> component and 32.5f <sub>H</sub> component	-11	-9	-7	dB
PB LNC characteristics SP	GP-LNC	T4A	T28A	V <sub>IN</sub> = white 50% + CW (15.8 mVp-p) Ratio between 32f <sub>H</sub> component and 32.5f <sub>H</sub> component	-7.0	-5.5	-4.0	dB
Playback through gain	G <sub>PB</sub>	T4A	T34A	Apply V <sub>IN</sub> = 0.5 Vp-p video signal to pin 4, and determine ratio between T34A output level and input level	4.0	5.5	7.0	dB
Nonlinear de-emphasis characteristics	G <sub>NLDEEM1</sub>	T4A	T34A	V <sub>IN</sub> = white 50% + CW (f = 1 MHz, 158 mVp-p) measure input/output response, difference with GPB	-2.8	-1.8	-0.8	dB
	G <sub>NLDEEM2</sub>	T4A	T34A	f = 1 MHz, 50 mVp-p	-5.0	-4.0	-3.0	dB
Noise canceller characteristics	G <sub>WNC1</sub>	T4A	T34A	f = 1.5 MHz, 158 mVp-p	-1.3	-0.8	-0.3	dB
	G <sub>WNC2</sub>	T4A	T34A	f = 1.5 MHz, 50 mVp-p	-4.5	-3.5	-2.5	dB
	G <sub>WNC3</sub>	T4A	T34A	f = 1.5 MHz, 15.8 mVp-p	-10.5	-9.0	-7.5	dB
PIC-CTL center response characteristics	G <sub>PC</sub>	T4A	T34A	f = 2 MHz, 158 mVp-p	1.2	1.7	2.2	dB
PIC-CTL hard response characteristics	G <sub>PH</sub>	T4A	T34A	f = 2 MHz, 158 mVp-p	7.0	8.0	10.0	dB
PIC-CTL soft response characteristics	G <sub>PS</sub>	T4A	T34A	f = 2 MHz, 158 mVp-p	-10.0	-8.0	-7.0	dB
Nonlinear de-emphasis characteristics SP	NLDE-SP	T4A	T34A	Same as G <sub>NLDEEM2</sub>	-5.0	-4.0	-3.0	dB
Sync tip level, pedestal level, white level measurement (PB)	L <sub>VOR</sub>	T4A	T34	With V <sub>IN</sub> = white 100% and T34A at 1.0 Vp-p, measure electric potential for each of the pin 34 video output sync tip, pedestal, and white peak, and assign the measured values to L <sub>SYN</sub> , L <sub>PED</sub> , and L <sub>WHI</sub> , respectively				
Pseudo V insertion level (PB)	Δ VDP	T4A	T34	Measure pin 34 DC voltage when 5 V is applied to pin 33, and assign the measured value to L <sub>VDP</sub> , and calculate the difference with L <sub>SYN</sub> Δ VDP = L <sub>SYN</sub> - L <sub>VDP</sub>	-80	0	+80	mV
Pseudo H insertion level (PB)	Δ HDP	T4A	T34	Measure pin 34 DC voltage when 2.7 V is applied to pin 33, and assign the measured value to L <sub>HDP</sub> , and calculate the difference with L <sub>PED</sub> Δ HDP = L <sub>PED</sub> - L <sub>HDP</sub>	-300	-200	-100	mV
White insertion level (PB)	Δ WHP	T4A	T34	Measure pin 34 DC voltage when 1.3 V is applied to pin 33, and assign the measured value to L <sub>WHP</sub> , and calculate the difference with L <sub>WHI</sub> Δ WHP = L <sub>WHI</sub> - L <sub>WHP</sub>	20	120	220	mV
Sync separation output level	V <sub>SYP</sub>	T4A	T32	V <sub>IN</sub> = 0.5 Vp-p video signal, pin 32 output pulse wave high value	4.0	4.2	4.4	Vp-p
Sync separation output pulse width	PW <sub>SYP</sub>	T4A	T32	V <sub>IN</sub> = 0.5 Vp-p video signal, T32 output pulse width	4.4	4.7	5.0	μs
Sync separation output leading edge delay time	Δ T <sub>SYP</sub>	T4A	T32	V <sub>IN</sub> = 0.5 Vp-p video signal, measure delay time of output SYNC versus input SYNC	0.9	1.1	1.3	μs
4.2 V regulator operation check	V <sub>REG</sub>		T30	Measure DC level of T30 in REC mode	3.95	4.15	4.35	VDC
[REC Mode Chroma]								
REC chroma low-band conversion output level	V <sub>OR-15</sub>	T37A	T15A	V <sub>IN</sub> = standard color bar signal (1 Vp-p), measure burst level at T15A	120	160	200	mVp-p
Burst emphasis amount (NTSC mode)	GBE	T37A	T15A	V <sub>IN</sub> = standard color bar signal (1 Vp-p) Ratio of burst level at T15A when S41A is off (SP/EP) and on (LP)	5.5	6.0	6.5	dB

Continued on next page.

## LA7191N


Continued from preceding page.

Parameter	Symbol	Input	Output	Conditions	min	typ	max	Unit
VXO oscillation level	$V_{VXO-R}$	T37A	T19	$V_{IN}$ = standard color bar signal (1 Vp-p), measure T19 output amplitude (with a FET probe)	450	560	670	mVp-p
REC ACC characteristics	$ACC_{R1}$	T37A	T15A	$V_{IN}$ = standard color bar signal (1 Vp-p), input +6 dB chroma signal level only, measure T15A burst level, and calculate ratio with $V_{OR-15}$		0.2	0.5	dB
	$ACC_{R2}$	T37A	T15A	$V_{IN}$ = standard color bar signal (1 Vp-p), input -6 dB chroma signal level only, measure T15A burst level, and calculate ratio with $V_{OR-15}$	-0.5	-0.1		dB
REC ACC killer input level	$V_{ACCK-ON}$	T37A	T15A	$V_{IN}$ = standard color bar signal (1 Vp-p), lower the chroma signal, and measure the input burst level at the point where output at T15A ceases, and calculate the ratio with the standard input level		-26		dB
REC ACC killer output level	$V_{OACCK}$	T37A	T15A	Use a spectrum analyzer to measure the output level at T15A in the killer state described previously; ratio with $V_{OR-15}$		-60	-50	dB
Input level for REC ACC killer return	$V_{ACCK-OFF}$	T4A	T34A	Starting from the killer state described previously, gradually raise the input chroma level and measure the input burst level when output is generated at T15A and calculate the ratio with the standard input level		-20		dB
VXO control sensitivity	$S_{VXO}$	T37A	T17 T19A	Measure the pin 17 DC voltage when a standard color bar signal is input (1 Vp-p)... $V_0$ Measure the frequency at T19A when $V_0$ is applied to pin 17 from the external power supply... $f_1$ Measure the frequency at T19A when $V_0 + 10$ mV is applied to pin 17... $f_2$ $S_{VXO} = \frac{f_2 - f_1}{10}$ Hz/mV	3.8	5.7	7.6	Hz/mV
REC APC pull-in range	$\Delta f_{APC1}$	T37A	T15A	Input a 50% white signal overlapped with a 4.4336 MHz, 300 mVp-p continuous wave. After confirming that there is output at T15A, increase the frequency of the CW until the output at T15A stops, and then gradually reduce the frequency until output appears again at T15A; that CW frequency is $f_1$ . $\Delta f_{APC1} = f_1 - 4433619$ (Hz)	350	440		Hz
	$\Delta f_{APC2}$	T37A	T15A	In the same manner, reduce the frequency of the CW until the output at T15A stops, and then gradually increase the frequency until output appears again at T15A; that CW frequency is $f_2$ . $\Delta f_{APC2} = f_2 - 4433619$ (Hz)		-900	-350	Hz
BGP delay time	$t_D$	T37A	T32 T36	Measure waveforms at T32 and T36 when a standard color bar signal (1 Vp-p) is input.		4.3		$\mu$ s
BGP pulse width	$t_W$	T37A	T32 T36			4.8		$\mu$ s

Continued on next page.

## LA7191N



Continued from preceding page.

Parameter	Symbol	Input	Output	Conditions	min	typ	max	Unit
REC AFC pull-in range	$\Delta f_{AFC1}$	T37A	T24	<p>Input a string of pulses (negative polarity) at 300 mV, 15.6 kHz with a width of 5 <math>\mu</math>s. After increasing the frequency of the pulse string until the waveform at pin 24 is disrupted, then reduce the frequency until the waveform at pin 24 is normal again; that pulse string frequency is <math>f_1</math>.</p>  <p><math>\Delta f_{AFC1} = f_1 - 15.625</math> (kHz)</p>	1.0	7.0		kHz
	$\Delta f_{AFC2}$	T37A	T24	<p>In the same manner, after reducing the frequency of the pulse string until the waveform at pin 24 is disrupted, then increase the frequency until the waveform at pin 24 is normal again; that pulse string frequency is <math>f_2</math>.</p> <p><math>\Delta f_{AFC2} = f_2 - 15.625</math> (kHz)</p>		-3.7	-1.0	kHz
[PB Mode Chroma]								
PB chroma video output level	Vop-34	T39A T15A T4A	T34A	<p>In PB, SP mode, input a 4 MHz: 300 mVp-p continuous wave at T39A, and from T15A input a chroma signal (SP mode, burst 50 mVp-p) that underwent low-band conversion from a chroma noise test signal. Input a 50% white signal from T4A and measure the T34A burst level</p>	240	300	360	mVp-p
PB chroma pin 31 output level	Vop-31	T39A T15A T4A	T31	<p>Measure the T31 burst level under the same conditions as for Vop-34.</p>	220	270	320	mVp-p
PB ACC characteristics	$ACC_{P1}$	T39A T15A T4A	T31	<p>Input the input chroma level at +6 dB under the same conditions as for Vop-34 and measure the T31 burst level, and calculate the ratio with Vop-31.</p>		0.5	0.8	dB
	$ACC_{P2}$	T39A T15A T4A	T31	<p>Input the input chroma level at -6 dB under the same conditions as for Vop-34 and measure the T31 burst level, and calculate the ratio with Vop-31.</p>	-0.5	-0.2		dB
PB killer input level	$V_{ACK-P}$	T39A T15A T4A	T31	<p>Lower the input chroma level under the same conditions as for Vop-34 and measure the input burst level at the point where T31 chroma output ceases. (Calculate ratio with standard input of 50 mVp-p)</p>	-40	-32	-25	dB
PB killer chroma output level	$V_{OACK-P}$	T39A T15A T4A	T34A	<p>Use a spectrum analyzer to measure the T34 chroma output level in the killer state described previously. Calculate ratio with Vop-34.</p>		-44	-40	dB
PB main converter carrier leak	$C_{LP}$	T39A T14A T4A	T34A	<p>Monitor T34A with a spectrum analyzer under the same conditions as for Vop-34 and calculate the ratio between the 4.43 MHz component and the 5.06 MHz carrier leak component.</p>		-40	-33	dB
Burst de-emphasis amount (NTSC mode)	GBD	T39A T4A T27A	T31	<p>From T39A, input a 4 MHz 300 mVp-p continuous wave; from T4A, input a 50% white signal, and calculate the ratio between the output level during the T31 burst interval and the output level during other intervals.</p>	-4.40	-4.65	-4.90	dB
PB XO output level	$V_{XO-P}$		T19	<p>Measure the PB mode T19 output level with an FET probe</p>	480	610	750	mVp-p
PB XO oscillation frequency variation	$\Delta f_{XO}$		T19A	<p>Measure the frequency at T19A during PB mode...f</p> <p><math>\Delta f_{XO} = f - 4433619</math> (Hz)</p>	-9	0	+9	Hz

Continued on next page.

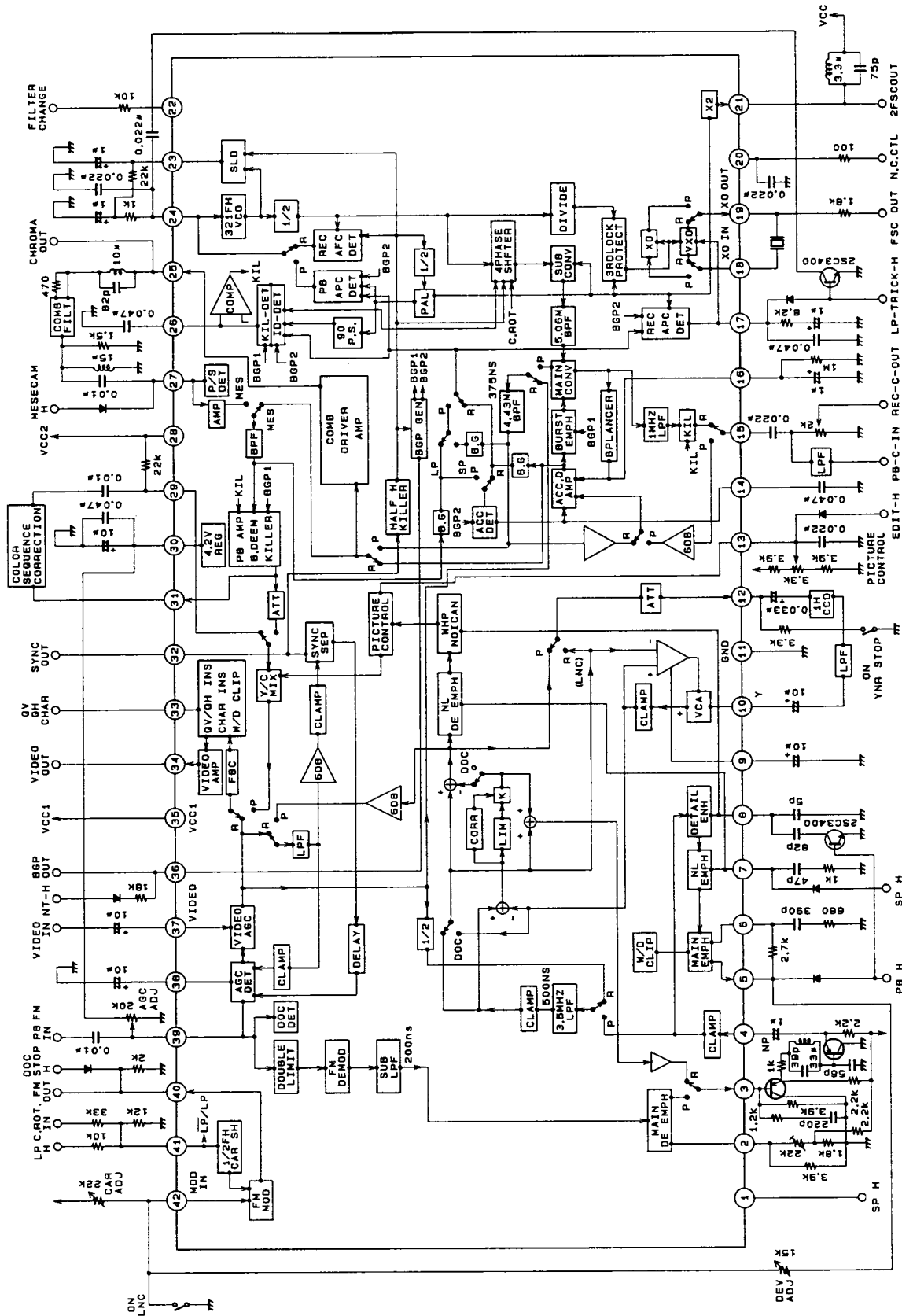
## LA7191N

Continued from preceding page.

Parameter	Symbol	Input	Output	Conditions	min	typ	max	Unit
SLD detection current	$I_{SLD1}$	T39A T4A	T23A	In PB mode, with S24: 3 and S23: off, input a 4 MHz 300 mVp-p continuous wave from T39A, input a 50% white signal from T4A, and measure the wave peak at T23A   $I_{SLD1} = V_{OS1}/1 \text{ k}\Omega$		135		$\mu\text{A}$
	$I_{SLD2}$	T39A T4A	T23A	Same as above (however, S24 = 1)   $I_{SLD2} = V_{OS2}/1 \text{ k}\Omega$		135		$\mu\text{A}$
2fsc output level	V2fsc		T21	In PB mode, measure the T21 output level with an FET probe	480	640	800	mVp-p

Note) A trap (4.84 MHz for NTSC systems and 5.69 MHz for PAL systems) is required in the chroma playback system (between pins 25 and 27 or between pins 31 and 29) in order to suppress unnecessary components in converter output.

Equivalent Circuit Block Diagram and Sample Application Circuit



Unit (resistance: Ω, capacitance: F)

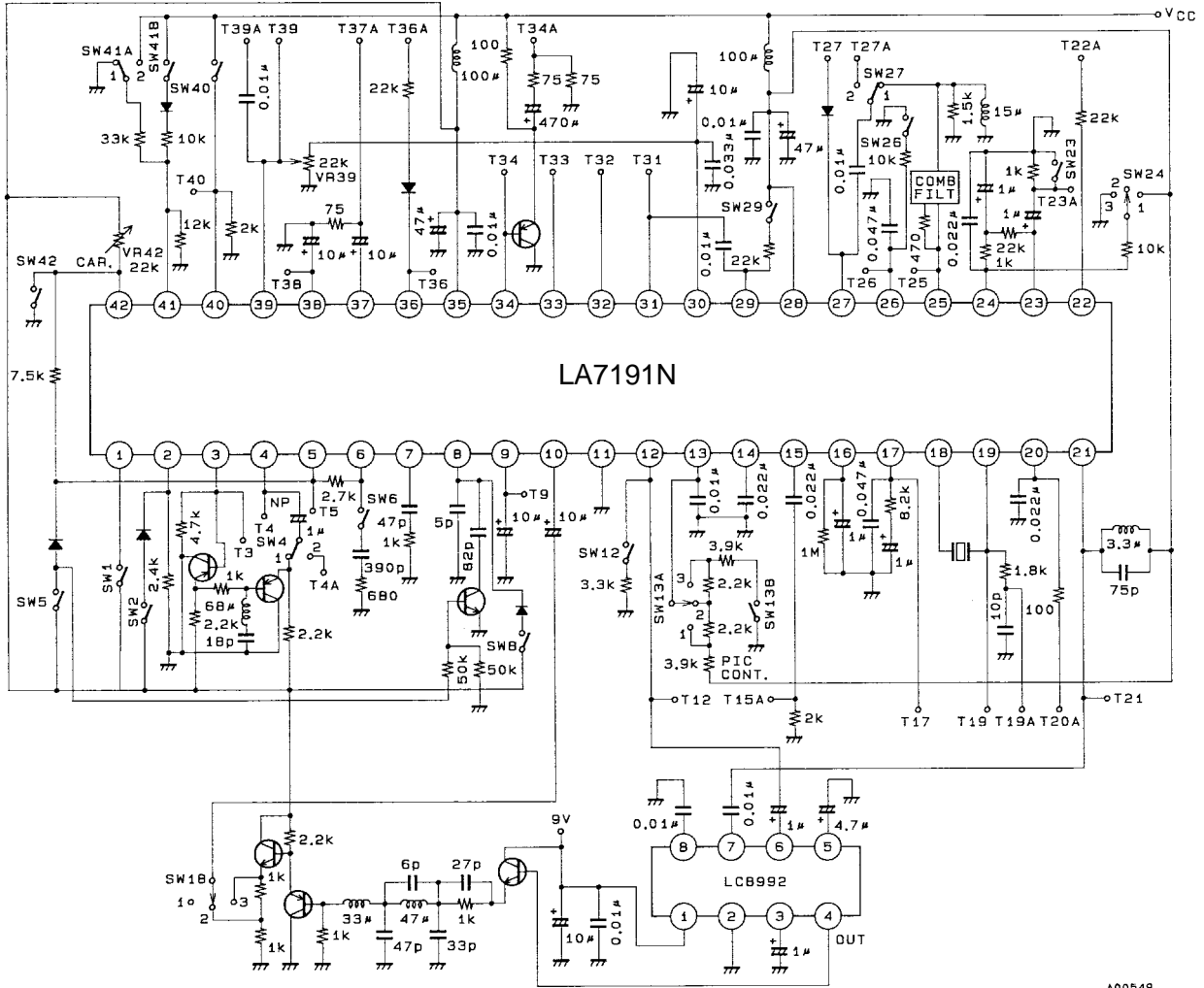


# LA7191N

## LA7191N Control Pins

Pin No.	Function	Control	Contents
20	N.C control	Linear	When → high, N.C → Strong
22	Filter switching	H	3.58 MHz system
		L or OPEN	4.43 MHz system
42	YNR/LNC selection	OPEN	YNR
		L	LNC (line noise canceller)

## Test Circuit Diagram



A00549

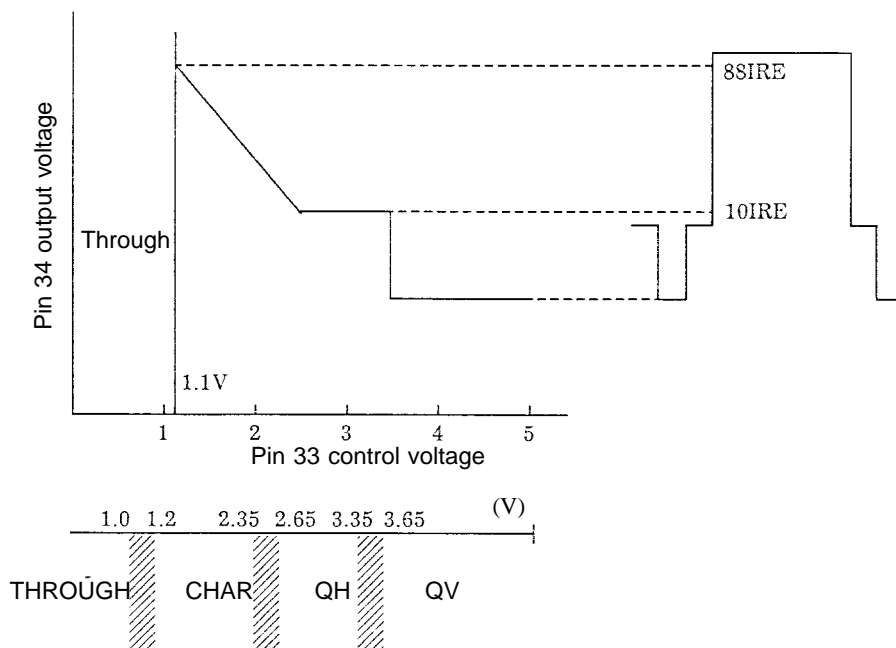
Unit (resistance: Ω, capacitance: F)

# LA7191N

## Control Pin Function Chart

Pin No.	L	M	H
Pin 5 R/P switching	Open REC mode		Over 3.8V PB mode
Pin 1 SP changeover	Open		Over 3.9 V SP mode
Pin13 EDIT2 PIC-CTL	2 V to 2.5 V PIC-CTL SOFT	2.5 V to 3 V PIC-CTL HARD	Over 3.6 V EDIT ON
Pin 14 SECAM CTL			Over 4.0 V SECAM mode
Pin 17 Special playback switching		Open Before comb in SP	Over 3.5 V (over 200 $\mu$ A) After comb in SP
Pin 27 MESECAM CTL		Open	Over 3.0 V MESECAM mode
Pin 33 QV, QH, CHAR		Refer to Pin 33, QV, QH, CHAR, insertion diagram	
Pin 36 NTSC-CTL			NTSC mode if current is 150 $\mu$ A or more
Pin 40 DOC STOP control	Open Normal mode		Over 3.9 V DOC STOP
Pin 41 ROTARY pulse LP switch			
Pin 42 YNR/LNC switch	Line NC when under 1 V in PB	Open SP: LNC, LP/EP: YNR	

Pin 33  
QV, QH, CHAR, insertion



- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of February, 1996. Specifications and information herein are subject to change without notice.