Monolithic Linear IC No.3090 LA7316A-N,7316AM VCR VHS Chroma Signal Processor

The LA7316A-N,7316AM are VHS chroma signal processor ICs that have the following features.

- 1. Adjustment-free 3.58MHz VXO free-running OSC frequency, 160f_H VCO free-running OSC frequency, carrier leak, PB chroma level, except REC chroma level
- 2. The chip size is greatly reduced by using our most advanced process technology for fine structure. Since the LA7316A-N, 7316AM are designed for NTSC system, the package can be made so small as the DIP-24S and a minimum number of external parts is required and it occupies much less space on the board, thereby facilitating VCR set design.
- 3. Multifunction

2f_{SC} generator for CCD drive, PB chroma (629k) level compensation amp, function to select APC loop input signal passed/not passed through comb filter, BGP output, 3rd lock protector of 3.58MHz OSC

4. LPF usable for REC/PB

5. Capable of being operated from 5V supply

6. Current dissipation: 48mA at REC mode

50mA at PB mode

Maximum Ratings at Ta = 25°C Maximum Supply Voltage Allowable Power Dissipation Operating Temperature Storage Temperature	V _{CC} max	Ta≦65°C	LA7316A-N LA7316AM	7.0 400 330 - 10 to + 65 - 40 to + 125	unit V mW mW °C °C	
Operating Conditions at Ta = 25° CRecommended Supply VoltageV _{CC} Operating Voltage RangeV _{CC} op				5.2 4.8 to 5.5	unit V V	



[LA7316A-N]







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[LA7316AM]

LA7316A-N,LA7316AM

Operating Characteristics at Ta=	= 25°C, V _C	c=5.0V	min	typ	max	unit
REC Current Dissipation	I _{CC(R)}	-	38	48	58	mA
REC Output Level	V _{O(R)}		210	300	390	mVpp
REC ACC Characteristics	$\Delta V_{O(R)}$	Input ± 6 dB	-0.5	0	+0.5	dB
ACC Killer Input Level	VACK	-	28	- 25	- 22	dB
VXO Control Sensitivity	Svxo		2.5	3.7	5.5	Hz/mV
VXO OSC Level	V _{VXO(R)}		0.65	0.85	1.00	Vpp
Subconverter Output Level	V _{SUB}		200	250	300	mVpp
BGP Delay Time	tD			3.2		μs
BGP Width	tw			4.8		μs
REC APC Pull-in Range	Δf_{APC}		± 350			Hz
REC AFC Pull-in Range	Δf_{AFC}		±1.0			kHz
160f _H VCO Control Sensitivity	S_{VCO}		0.42	0.60	0.78	kHz/mV
PB Current Dissipation	I _{CC(P)}		40	50	60	mA
PB Output Level	V _{O(P)}		575	660	760	mVpp
PB ACC Characteristic	$\Delta V_{O(P)}$	Input ±6dB	-0.5		+ 0.5	dB
PB Main Converter Carrier Leak	CL(P)	4.21MHz component		- 40	- 33	dB
PB XO Output Level	V _{XO(P)}	•	520	650	800	mVpp
PB XO Free-running Frequency	f _{XO(f)}	Difference from 3579545H	z -7	0	+7	Hz
2f _{SC} Output Amplitude	V _{2fsc}		420	600	780	mVpp
Burst Emphasis Amount	G _{BE}		5.5	6.0	6.5	dB
Burst De-emphasis Amount	G _{BD}		-4.75	-4.5	-4.25	dB
Comb Amp Gain	G _{COMB}		11	13	15	dB
					- 0	

Equivalent Circuit Block Diagram and Sample Peripheral Circuit

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No.3090-2/5

Pin No.	Function	Input/Output State	Remarks
1	COMB AMP OUT	E.F	Comb filter driver output
2	ACC FILTER	Output 1kΩ	······································
3	3.58MHz IN	Input 10kΩ	3.58MHz BPF output is connected.
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4	BYPASS		Setting of DC bias of burst emphasis circuit
5	3.58MHz OUT	E.F	REC mode : Video signal PB mode : Main converter output
6	GND		
7	PB 629kHz IN	Input 10kΩ	Signal is applied through LPF from PB pream output at PB mode.
8	SLD OUT		Compensation output is delivered when 1604 VCO frequency deviates from specified freq ency.
9	REC 629kHz OUT	E.F	Main converter output at REC mode. When p 9 voltage is raised to 2.2V or greater, PB mod is entered.
10	160f _H VCO FILTER		REC mode : AFC referenced to horizontal syn signal PB mode : APC filter referenced to 3.58MF OSC
11	4.21MHz IN	Input 1kΩ	Pin for inputting 4.21MHz for main converte No matching resistor required 4.21MHz
12	KIL FILTER		Color killer phase detector filter pin
13	4.21MHz OUT	Output 1kΩ	Subconverter output pin. Low spurious outp because of operational type. No filter matchin resistor required
14	SYNC IN/BGP OUT	· @	Used for COMP, SYNC input/BGP output Horizontal sync signal

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Pin No.	Function	Input/Output State	Remarks
15	REC APC FILTER		REC mode : REC APC detector filter pin
	SP·EP/LP (PB)		PB mode : When the current flows in, LP
			mode is entered.
16	VCOTANK		Pin for external tank circuit for 160f _H VCC
			OSC
17	2fsc OUT		CCD drive clock 2fsc output pin. LC are
			connected for spurious output and stray
			capacitance compensation. If no 2fsc output is
			required, this pin is left open or connected to
			V _{CC} .
18	XOOUT	E.F	Crystal OSC crystal drive output pin. Supplies
			fsc to servo circuit through resistor.
			0.0.0.0.0.0
			000000
19	XOIN	Input	Simple history 14th 1 4 11 11
13	X0 III	$1.5k\Omega$ at REC mode	Signal which passed through crystal is applied. OSC is provided separately for REC/PB mode.
		500Ω at PB mode	No free-running frequency adjustment
		00032 at 1 D mode	required at PB mode.
20	V _{CC}	· · · · · · · · · · · · · · · · · · ·	Power supply pin
21	VIDEO IN	Input/Output 15kΩ	Video signal is applied at REC mode.
			By pulling up to V_{CC} using 4.7k Ω and diode,
			APC loop at PB mode can be supplied to phase
			detector from before comb filter.
22	SW30 IN	Base input	SW30 input. Threshold is set to 1/2V _{CC} . When
	SP·EP/LP (REC)	-	lowest voltage of pulse drops to 0.7V or less
			SEP mode is entered; and when raised to 1.3V
			or greater, LP mode is entered.
			2.6Vmin
			(LP mode)
			L.3Vmin
			2.6Vmin
			(SEP mode)
23	PB 3.58MHz OUT	E.F	PB chroma output to be applied to YC-MIX
			circuit
		· ·	
24	PB AMP IN	Input $1.5k\Omega$	Signal which passed through comb filter is
ļ			applied.

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