No.2734

LA7320, 7320M

Monolithic Linear IC

VHS VTR Playback Head Amplifier Recording Amplifier

Functions and Features

(Functions) · 2-channel playback head amp
· 1-channel recording amp
· PB : 1 head select switch
· REC : 3 head select switches

(Features) · Designed for 2 heads
· On-chip driver transistor permitting direct recording (current type)
· On-chip head select switches (2 types) facilitating printed circuit pattern design of a set
· Load variations cause less recording current variations because of recording amp of constant-current type.
(Maximum recording current : 40mAp-p)

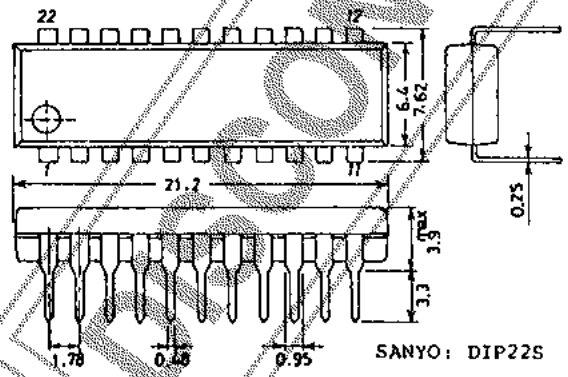
Maximum Ratings at Ta = 25°C

				unit
Maximum Supply Voltage	V_{CC} max		(PB) 7.0	V
			(REC) 14.0	V
Allowable Power Dissipation	Pd max	Ta = 65°C	(DIP) 750	mW
Operating Temperature	Topg		−10 to +65	°C
Storage Temperature	Tstg		−40 to +125	°C

Operating Conditions at Ta = 25°C

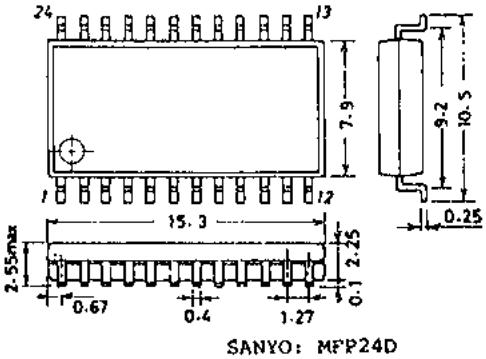
			unit
Recommended Supply Voltage	V_{CC}	(PB) 5.0	V
		(REC) 12.0	V
Operating Voltage Range	V_{CC} op	(PB) 4.75 to 5.5	V
		(REC) 10 to 13	V

Case Outline 3059-D22SIC
(unit : mm) [LA7320]



SANYO : DIP22S

Case Outline 3108-M24IC
(unit : mm) [LA7320M]



SANYO : MFP24D

Specifications and information herein are subject to change without notice.

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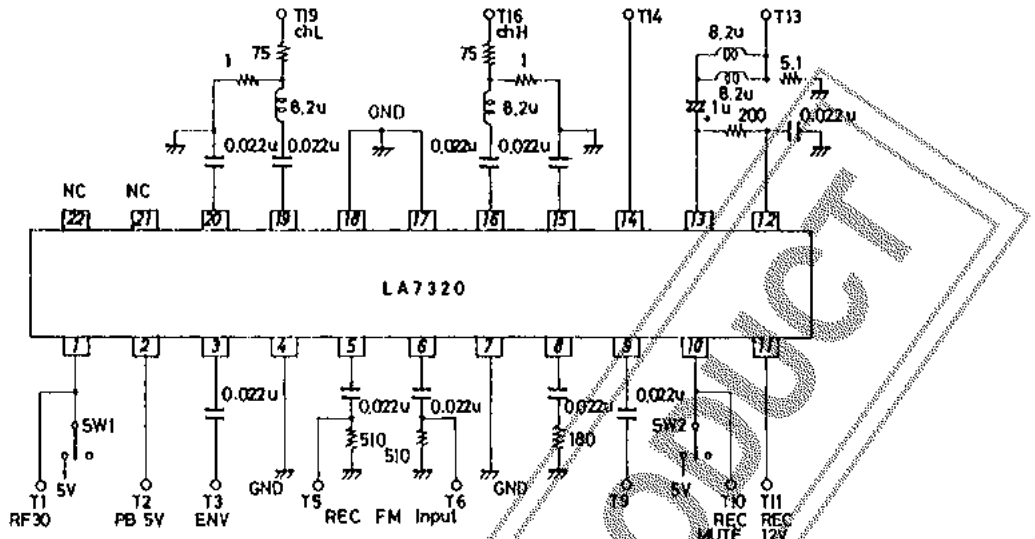
LA7320 Test Circuit



Operating Characteristics at Ta = 25°C

Characteristic		Symbol	Input	Output	Test Conditions	SW1	SW2	min	typ	max	unit
(PB Mode)			T2		PB+5V	RF	REC MUTE				
Current Dissipation		Iccp	T2		Pin 2 flow-in current	1		9	12	15	mA
Voltage Gain	CH1	$G_{VP}(1)$	T19	T3	Vi = 38mVpp f = 1MHz	1		66.5	69.5	62.5	dB
	CH2	$G_{VP}(2)$	T16	T3		1					
Voltage Gain Difference		ΔG_{VP}			$G_{VP}(1) - (2)$			−1.0	0	1.0	dB
Equivalent Input Noise Voltage	CH1	$V_{NI}(1)$		T3	$\frac{Vout}{G_{VP}(1),(2)}$ after 1.1MHz L.P.F.	2			1.1	1.5	μV rms
	CH2	$V_{NI}(2)$		T3		1					
Frequency Characteristic	CH1	$\Delta Vfp(1)$	T19	T3	Vi = 30mVpp f = 100k, 7MHz $\frac{7MHz}{100kHz}$ output ratio	2		−2.5	0		dB
	CH2	$\Delta Vfp(2)$	T16	T3		1					
2nd Harmonic Distortion	CH1	$V_{HDP}(1)$	T19	T3	Vi = 38mVpp f = 4MHz $\frac{8M\ component}{4M\ component}$ output ratio	2			−40	−35	dB
	CH2	$V_{HDP}(2)$	T16	T3		1					
Maximum Output Level	CH1	$V_{OMP}(1)$	T19	T3	Vi = 1MHz Output level when 3rd distortion is −30dB.	2		0.8	1.0		Vpp
	CH2	$V_{OMP}(2)$	T16	T3		1					
Crosstalk	CH1	$V_{CR}(1)$	T16	T3	Vi = 38mVpp f = 4MHz $\frac{Vout}{G_{VP}(1),(2)}$ output ratio	2			−40	−35	dB
	CH2	$V_{CR}(2)$	T19	T3		1					
Output DC Offset		ΔV_{ODC}		Pin 3	Output pin DC voltage difference	2→1		−100	0	100	mV

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Characteristic		Symbol	Input	Output	Test Conditions	SW1	SW2	min	typ	max	unit
(REC Mode)			T11		REC+12V	RF	REC MUTE				
Current Dissipation		IccR	T11		Pin 11 flow-in current		2		46.0	57.0	mA
Voltage Gain	C	G_{VR}(C)	T5	T13	Vi=300mVpp f=1MHz		2	−8.0	−6.0	−4.0	dB
	Y	G_{VR}(Y)	T6	T13	Vi=300mVpp f=4MHz		2	−8.0	−6.0	−4.0	
Frequency Characteristic	C	ΔV_m(C)	T5	T13	Vi=300mVpp f=1MHz,7MHz 7M/1M output ratio		2	−2.0	−0.5	1.0	dB
	Y	ΔV_m(Y)	T6	T13			2				
2nd Harmonic Distortion	C	V_{HDR}(C)	T5	T13	Vout=30mApp f=4MHz 8M component/4M component output ratio		2		−45	−40	dB
	Y	V_{HDR}(Y)	T6	T13			2				
Maximum Output Level	C	V_{OMP}(C)	T5	T13	f=4MHz Output level when 2rd distortion is −40dB.		2	30	40		mApp
	Y	V_{OMP}(Y)	T6	T13			2				
Muting Attenuation	C	V_{MR}(C)	T5	T13	Vi=300mVpp f=1MHz,4MHz Vout/G_{VR}(1),(2) output ratio		1		−50	−45	dB
	Y	V_{MR}(Y)	T6	T13			1				
Cross Modulation Relative Level		VCY	T6 T6	T13	Input T6, Vout=40mVpp,f=629kHz Input T6,Vout=150mVpp,f=4MHz 4M±629k/4MHz output ratio		2		−45	−40	dB
Y/C MIX Amp Voltage Gain	C	G(C)	T5	T9	Vi=300mVpp f=1MHz			8.0	10.5	13.0	dB
	Y	G(Y)	T6	T9	Vi=300mVpp f=4MHz						
(Switch Tr) ON Resistance											
ON Resistance of SW turned ON at PB		RP_{ON}(14)		Pin 14	PB mode ※1 Difference between DC voltage at 1mA flow-in and DC voltage at 2mA flow-in				6	10	Ω
ON Resistance of SW turned ON at REC	CH1	RR_{ON}(19)		Pin 19	REC mode ※1 Difference between DC voltage at 1mA flow-in and DC voltage at 2mA flow-in				7	10	Ω
	CH2	RR_{ON}(16)		Pin 19							
Switch Tr Leakage Current											
Leakage Current of SW Tr turned ON at PB		I_L(14)		Pin 14	REC mode Flow-in current when ±6V is applied			−2	0	2	μA

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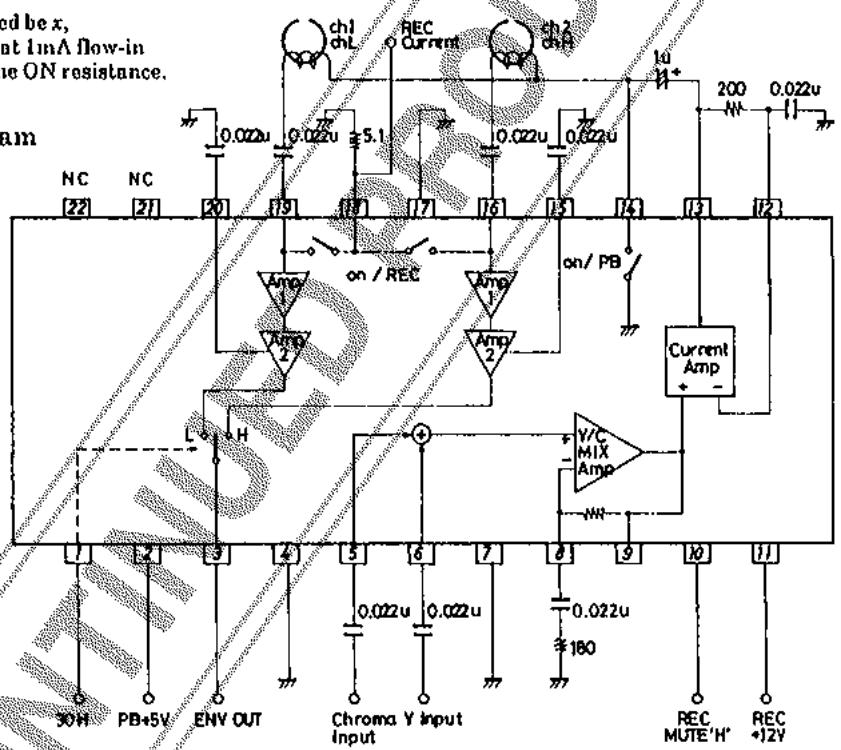
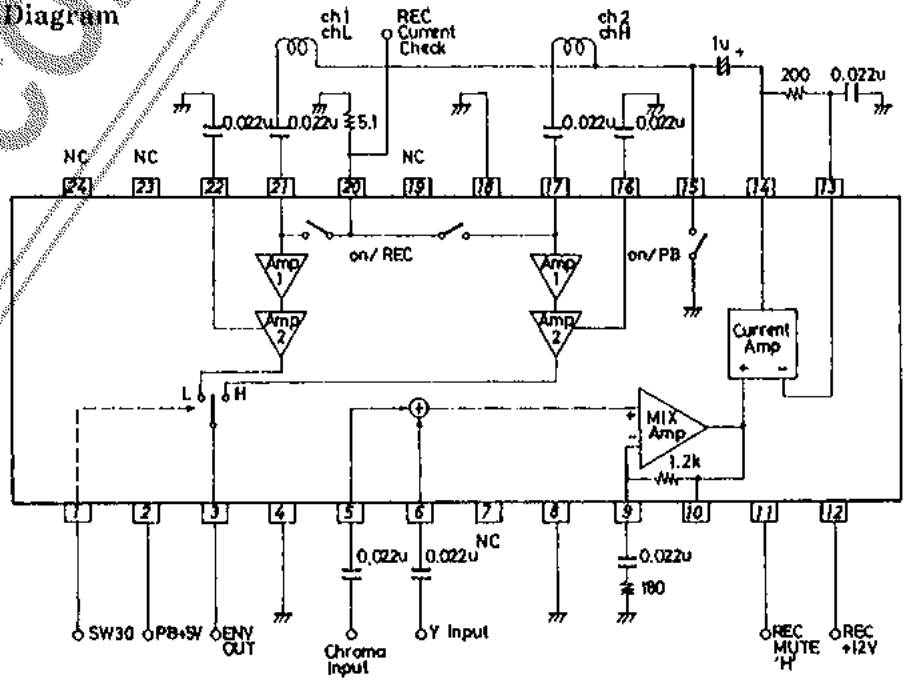
Characteristic	Symbol	Input	Output	Test Conditions	SW1	SW2	min	typ	max	unit
Control Pin (Threshold Level)										
RF Switch (Threshold Level)	SW RF(1)	T1		CH1→CH2 changeover voltage			2.6		5.0	V
	SW RF(2)			CH2→CH1 changeover voltage			0		0.8	
REC Muting Switch Threshold Level	SW MUTE(1)	T10		T10 voltage when T13 output waveform disappears			2.6		5.0	V
	SW MUTE(2)			T10 voltage when T13 output waveform appears			0		0.8	

※1 Let the ON resistance to be obtained be x,
$2x$(mV) at 2mA flow-in x(mV) at 1mA flow-in
Therefore, difference $2x-x=x$ is the ON resistance.

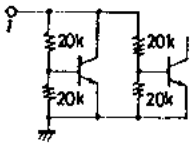
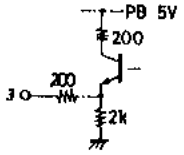
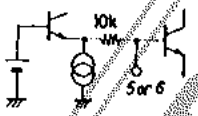
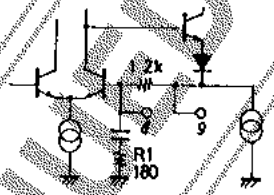
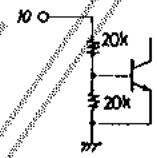
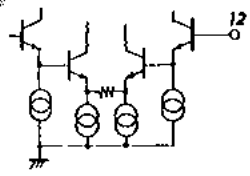
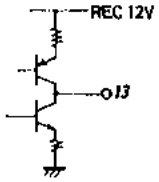
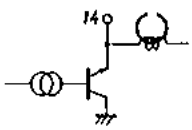
LA7320 (DIP22S) Block Diagram



LA7320M (MFP24) Block Diagram



Pin Description

Pin No.	Function	Standard Potential	Input/Output Configuration	Remarks
1	RF 30Hz control pin			"L" : CH1 at open state or 0.8V or less "H": CH2 at 2.5 to 5.0V
2	PB+5V	5.0 (V)		12mA typ.
3	Preamp output	2.3 (V)		Connect R=2kΩ externally when the output line is routed around.
4	Preamp GND	0 (V)		
5 6	REC amp input	6.7 (V)		
7	REC amp GND	0 (V)		
8	REC Y/C MIX amp feedback pin	5.9 (V)		The gain of Y/C MIX amp depends on R1. (Example) R1 : 180Ω=10.5dB
9	REC Y/C MIX amp output			
10	REC muting control pin			"L" : Muting OFF at open state or 0.8V or less "H": Muting ON at 2.5V to 5.0V
11	REC+12V	12.0 (V)		Typ.
12	REC current amp feedback pin	5.9 (V)		
13	REC current amp output pin	5.9 (V)		Max. REC current : 40mAp-p (2ch)
14	Pin for switch Tr turned ON at PB			ON resistance : 6 to 10kΩ

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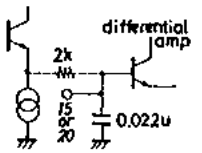
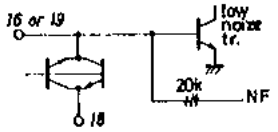
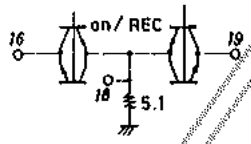
Pin No.	Function	Standard Potential	Input/Output Configuration	Remarks
15 22	Preamp bypass capacitor	1.9 (V)		
16 19	Preamp input	0.65 (V)		Rin≒400Ω Cin≒25 to 35p
17	Pre GND	0 (V)		
18				Switch Tr ON resistance : 7 to 10Ω
21 22	N·C			