

**SANYO**

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 : 40mA<sub>p-p</sub>)**Maximum Ratings at Ta = 25°C**

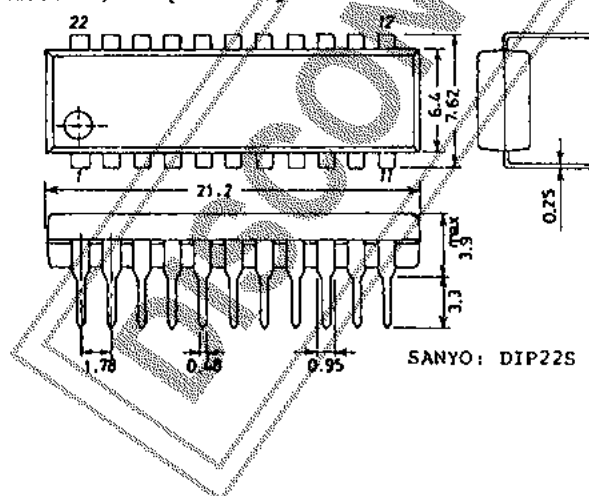
			unit
Maximum Supply Voltage	V <sub>CC</sub> max	(PB) 7.0	V
		(REC) 14.0	V
Allowable Power Dissipation	P <sub>d</sub> max	(DIP) 750	mW
Operating Temperature	T <sub>opg</sub>	-10 to +65	°C
Storage Temperature	T <sub>stg</sub>	-40 to +125	°C

**Operating Conditions at Ta = 25°C**

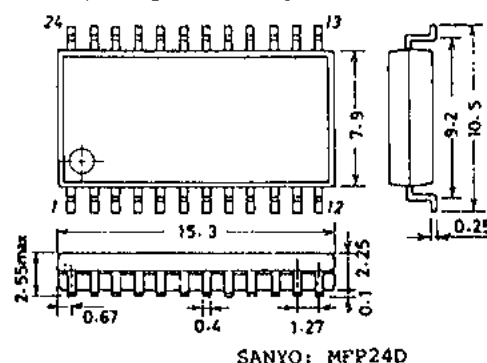
			unit
Recommended Supply Voltage	V <sub>CC</sub>	(PB) 5.0	V
		(REC) 12.0	V
Operating Voltage Range	V <sub>CC op</sub>	(PB) 4.75 to 5.5	V
		(REC) 10 to 13	V

**Case Outline 3059-D22SIC**

(unit : mm) [LA7320]

**Case Outline 3108-M24IC**

(unit : mm) [LA7320M]

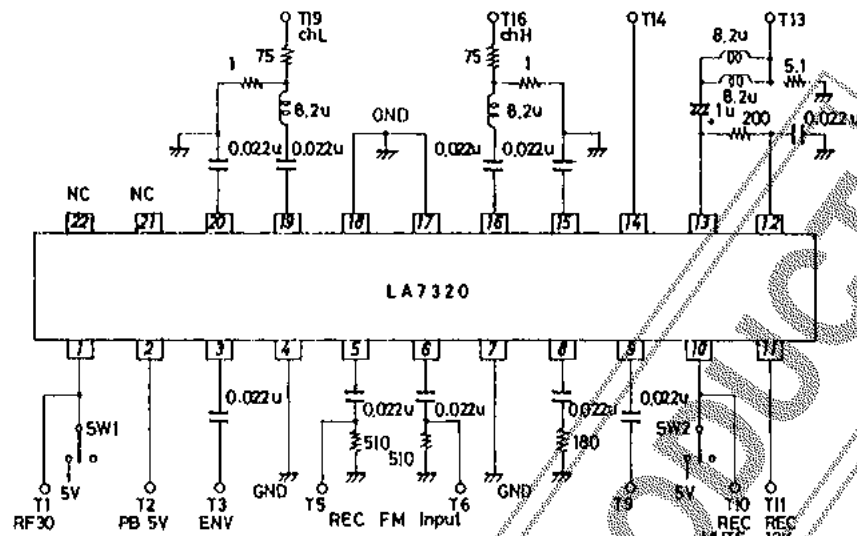


Specifications and information herein are subject to change without notice.

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N228TA, TS No.2734-1/6

### LA7320 Test Circuit



### Operating Characteristics at $T_a = 25^\circ\text{C}$

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

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Characteristic		Symbol	Test Conditions		SW1	SW2	min	typ	max	unit
			Input	Output						
(REC Mode)			T11		REC + 12V	RF	REC MUTE			
Current Dissipation		I <sub>ccR</sub>	T11		Pin 11 flow-in current		2	46.0	57.0	mA
Voltage Gain	C	G <sub>VR</sub> (C)	T5	T13	V <sub>i</sub> = 300mVpp f = 1MHz		2	-8.0	-6.0	-4.0
	Y	G <sub>VR</sub> (Y)	T6	T13	V <sub>i</sub> = 300mVpp f = 4MHz		2	-8.0	-6.0	-4.0
Frequency Characteristic	C	ΔV <sub>m</sub> (C)	T5	T13	V <sub>i</sub> = 300mVpp f = 1MHz, 7MHz		2			
	Y	ΔV <sub>m</sub> (Y)	T6	T13	$\frac{7M}{1M}$ output ratio		2	-2.0	-0.6	1.0
2nd Harmonic Distortion	C	V <sub>HDR</sub> (C)	T5	T13	V <sub>out</sub> = 30mApp f = 4MHz		2			
	Y	V <sub>HDR</sub> (Y)	T6	T13	$\frac{8M \text{ component}}{4M \text{ component}}$ output ratio		2	-46	-40	dB
Maximum Output Level	C	V <sub>OMP</sub> (C)	T5	T13	f = 4MHz		2	30	40	mApp
	Y	V <sub>OMP</sub> (Y)	T6	T13	Output level when 2nd distortion is -40dB.		2			
Muting Attenuation	C	V <sub>MR</sub> (C)	T5	T13	V <sub>i</sub> = 300mVpp f = 1MHz, 4MHz		1			
	Y	V <sub>MR</sub> (Y)	T6	T13	$\frac{V_{out}}{G_{MR}(1),(2)}$ output ratio		1	-50	-45	dB
Cross Modulation Relative Level		VCY	T5 T6	T13	Input T5, V <sub>out</sub> = 40mVpp, f = 629kHz Input T6, V <sub>out</sub> = 150mVpp, f = 4MHz 4M ± 629k / 4MHz output ratio		2	-45	-40	dB
Y/C MIX Amp Voltage Gain	C	G(C)	T5	T9	V <sub>i</sub> = 300mVpp f = 1MHz			8.0	10.5	13.0
	Y	G(Y)	T6	T9	V <sub>i</sub> = 300mVpp f = 4MHz					dB
(Switch Tr) ON Resistance										
ON Resistance of SW turned ON at PB		R <sub>PON</sub> (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	R <sub>RON</sub> (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	R <sub>RON</sub> (16)		Pin 19						
Switch Tr Leakage Current										
Leakage Current of SW Tr turned ON at PB		I <sub>L</sub> (14)		Pin 14	REC mode Flow-in current when ±5V is applied			-2	0	2

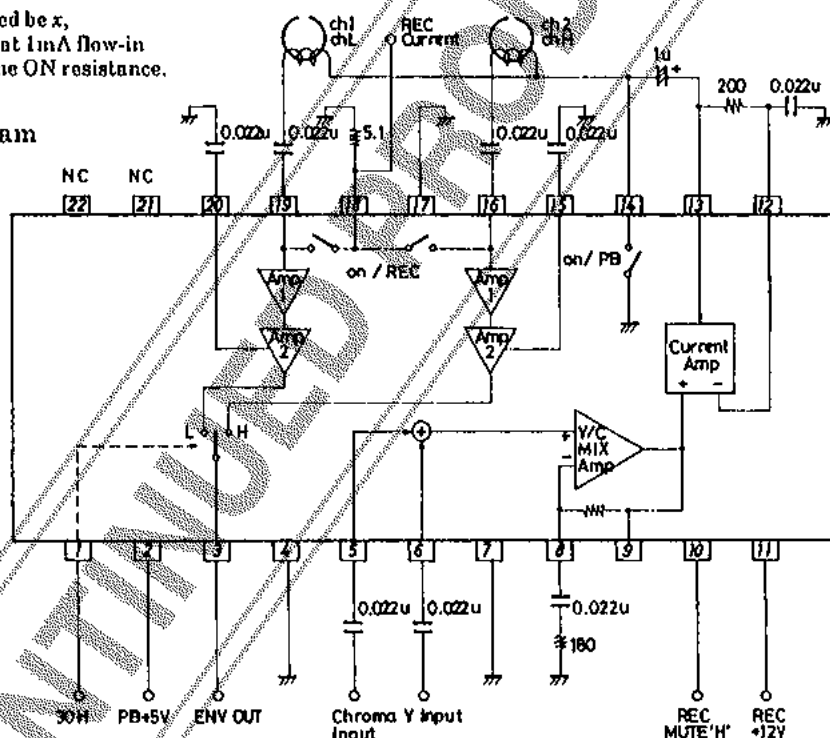
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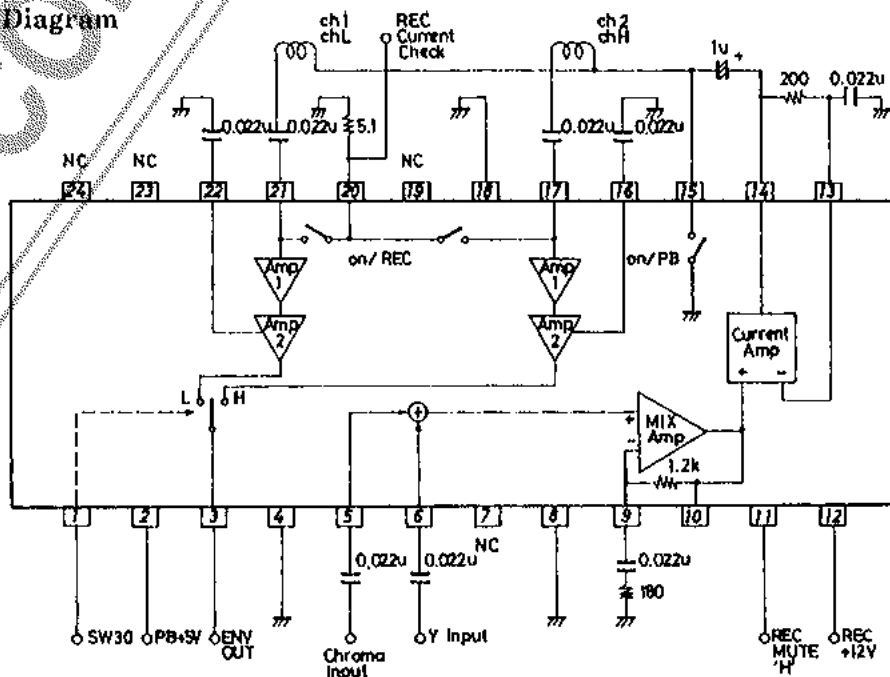
Characteristic	Symbol						min	typ	max	unit	
		Input	Output	Test Conditions		SW1					SW2
Control Pin (Threshold Level)											
RF Switch (Threshold Level)	SW RF(1)	T1		CH1→CH2 changeover voltage			2.5		5.0	V	
	SW RF(2)			CH2→CH1 changeover voltage			0		0.8		
REC Muting Switch Threshold Level	SW MUTE(1)	T10		T10 voltage when T13 output waveform dis- appears			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  $x$ ,  
 $2x(\text{mV})$  at  $2\text{mA}$  flow-in  $x(\text{mV})$  at  $1\text{mA}$  flow-in  
 Therefore, difference  $2x - x = x$  is the ON resistance.

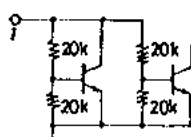
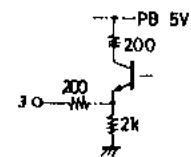
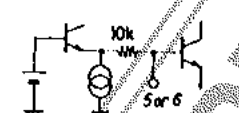
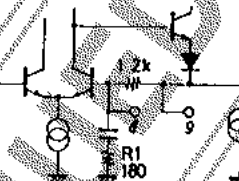
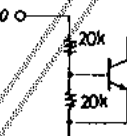
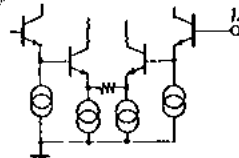
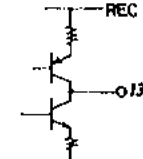
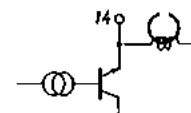
LA7320 (DIP22S) Block Diagram



LA7320M (MFP24) Block Diagram

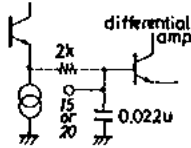
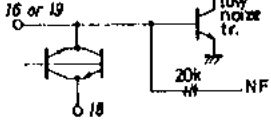
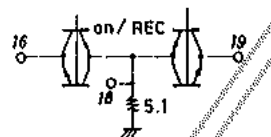


## Pin Description

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	REC amp input	6.7 (V)		
6				
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 : 40mA p-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)		$R_{in} \approx 400\Omega$ $C_{in} \approx 25$ to $35p$
17	Pre GND	0 (V)		
18				Switch Tr ON resistance : 7 to $10\Omega$
21 22	N·C			

The application circuit diagrams and circuit constants herein are included as an example and provide no guarantee for designing equipment to be mass-produced.

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