

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_{p-p})**Maximum Ratings at Ta = 25°C**Maximum Supply Voltage V_{CC} max (PB) 7.0 V unit

(REC) 14.0 V

Allowable Power Dissipation P_d max $T_a = 65^\circ\text{C}$ (DIP) 750 mWOperating Temperature T_{opg} - 10 to + 65 °CStorage Temperature T_{stg} - 40 to + 125 °C**Operating Conditions at Ta = 25°C**Recommended Supply Voltage V_{CC} (PB) 5.0 V unit

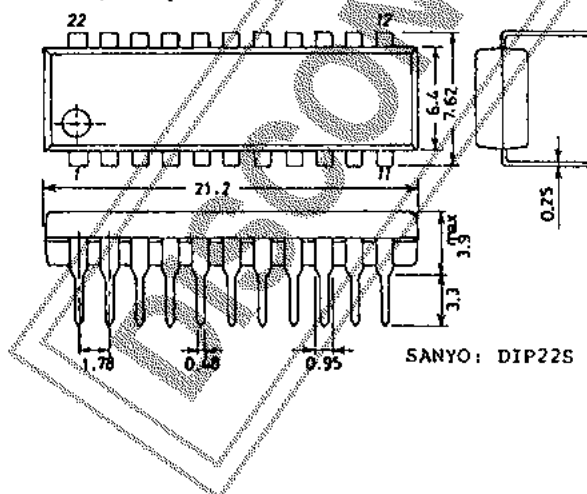
(REC) 12.0 V

Operating Voltage Range $V_{CC\text{op}}$ (PB) 4.75 to 5.5 V

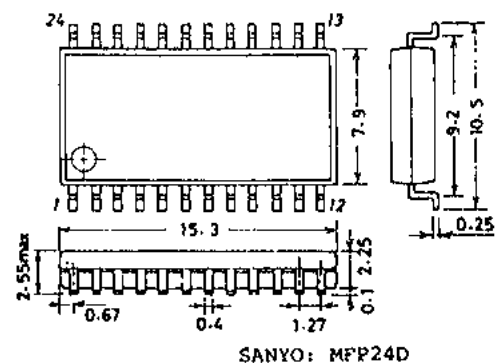
(REC) 10 to 13 V

Case Outline 3059-D22SIC

(unit : mm) [LA7320]

**Case Outline 3108-M24IC**

(unit : mm) [LA7320M]



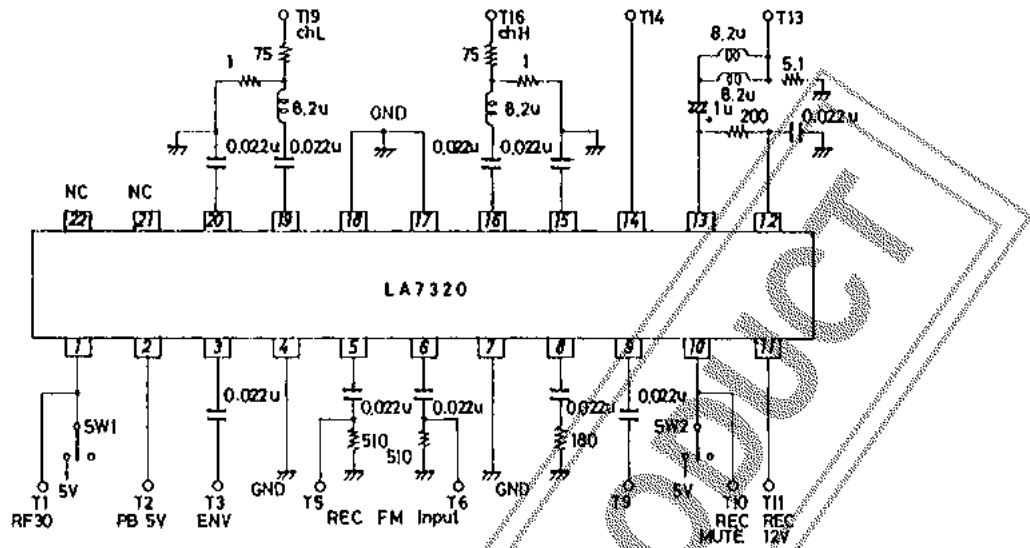
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N228TA, TS No.2734-1/6

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LA7320 Test Circuit



Operating Characteristics at T_a = 25°C

Characteristic	Symbol	Test Conditions		min	typ	max	unit	
		Input	Output					
(PB Mode)		T2	PB + 5V					
Current Dissipation	I _{ccp}	T2	Pin 2 flow-in current	9	12	15	mA	
Voltage Gain	CH1 G _{VP} (1)	T19	T3	V _i = 38mV _{pp} f = 1MHz	66.5	69.5	62.5	dB
	CH2 G _{VP} (2)	T16	T3					
Voltage Gain Difference	ΔG _{VP}		G _{VP} (1) - (2)	-1.0	0	1.0	dB	
Equivalent Input Noise Voltage	CH1 V _{NI} (1)	T3	T3	V _{out} G _{VP} (1),(2) after f 1MHz L.P.F.	1.1	1.5	μV _{rms}	
	CH2 V _{NI} (2)	T3	T3					
Frequency Characteristic	CH1 ΔV _{FP} (1)	T19	T3	V _i = 30mV _{pp} f = 100k, 7MHz 7MHz 100kHz output ratio	-2.5	0	dB	
	CH2 ΔV _{FP} (2)	T16	T3					
2nd Harmonic Distortion	CH1 V _{HDP} (1)	T19	T3	V _i = 38mV _{pp} f = 4MHz 8M component 4M component output ratio	-40	-35	dB	
	CH2 V _{HDP} (2)	T16	T3					
Maximum Output Level	CH1 V _{OMP} (1)	T19	T3	V _i = 1MHz Output level when 3rd distortion is -30dB.	0.8	1.0	V _{pp}	
	CH2 V _{OMP} (2)	T16	T3					
Crosstalk	CH1 V _{CR} (1)	T16	T3	V _i = 38mV _{pp} f = 4MHz V _{out} G _{VP} (1),(2) output ratio	-40	-35	dB	
	CH2 V _{CR} (2)	T19	T3					
Output DC Offset	ΔV _{ONC}		Pin 3	Output pin DC voltage difference	-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 _{ccR}	T11		Pin 11 flow-in current		2	46.0	57.0	mA
Voltage Gain	C	G _{VR} (C)	T5	T13	V _i = 300mVpp f = 1MHz		2	-8.0	6.0	-4.0
	Y	G _{VR} (Y)	T6	T13	V _i = 300mVpp f = 4MHz		2	-8.0	6.0	-4.0
Frequency Characteristic	C	ΔV _m (C)	T5	T13	V _i = 300mVpp f = 1MHz, 7MHz		2			
	Y	ΔV _m (Y)	T6	T13	$\frac{7M}{1M}$ output ratio		2	-2.0	-0.5	1.0
2nd Harmonic Distortion	C	V _{HDR} (C)	T5	T13	V _{out} = 30mApp f = 4MHz		2			
	Y	V _{HDR} (Y)	T6	T13	$\frac{8M \text{ component}}{4M \text{ component}}$ output ratio		2	-45	-40	dB
Maximum Output Level	C	V _{OMP} (C)	T5	T13	f = 4MHz Output level when 2nd distortion is -40dB.		2	30	40	mApp
	Y	V _{OMP} (Y)	T6	T13			2			
Muting Attenuation	C	V _{MR} (C)	T5	T13	V _i = 300mVpp f = 1MHz, 4MHz		1			
	Y	V _{MR} (Y)	T6	T13	$\frac{V_{out}}{G_{m(1)(2)}}$ output ratio		1	-50	-45	dB
Cross Modulation Relative Level		V _{CY}	T5 T6	T13	Input T5, V _{out} = 40mVpp, f = 629kHz Input T6, V _{out} = 150mVpp, f = 4MHz 4M ± 629k / 4MHz output ratio		2	-45	-40	dB
Y/C MIX Amp Voltage Gain	C	G(C)	T5	T9	V _i = 300mVpp f = 1MHz			8.0	10.5	13.0
	Y	G(Y)	T6	T9	V _i = 300mVpp f = 4MHz					
(Switch Tr) ON Resistance										
ON Resistance of SW turned ON at PB		R _{PON} (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 _{RON} (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 _{RON} (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 ±5V is applied			-2	0	2

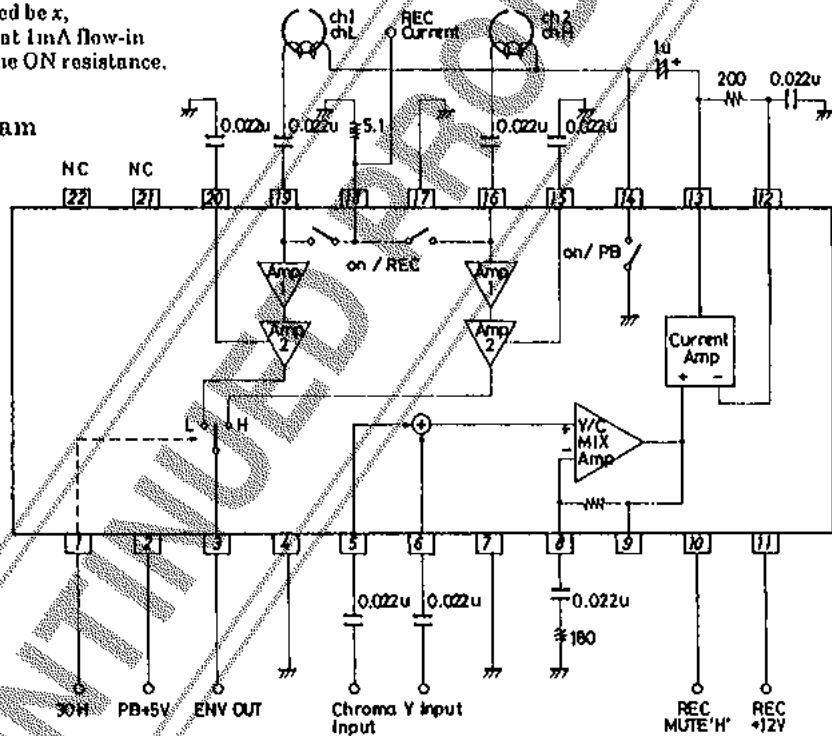
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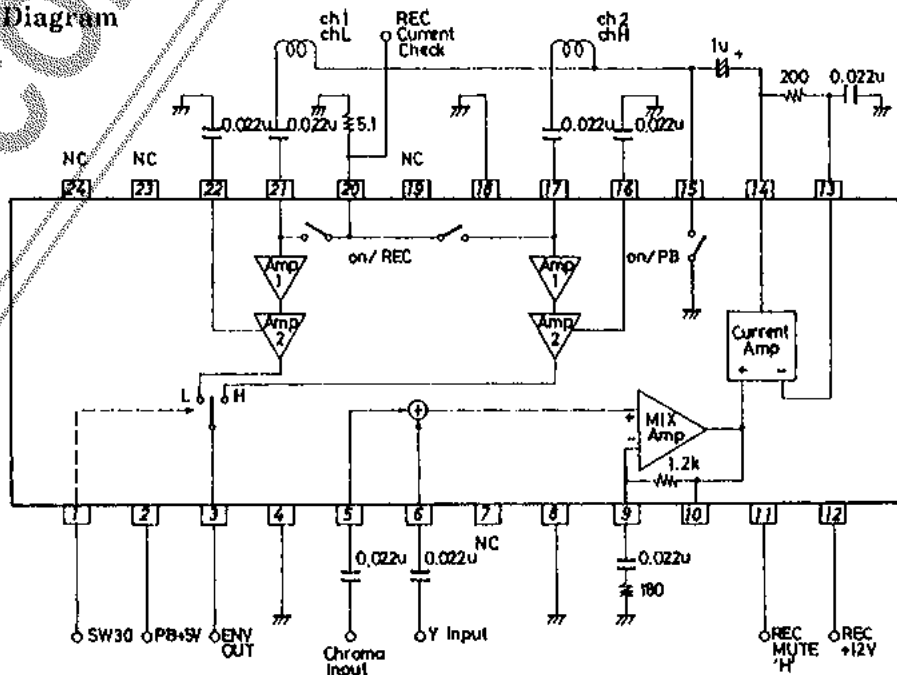
Characteristic	Symbol	Test Conditions		min	typ	max	unit
		Input	Output				
Control Pin (Threshold Level)							
RF Switch (Threshold Level)	SW RF(1)	T1	CH1→CH2 changeover voltage	2.5		5.0	V
	SW RF(2)		CH2→CH1 changeover voltage	0		0.8	
REC Muting Switch Threshold Level	SW MUTE(1)	T10	T10 voltage when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

LA7320 (DIP22S) Block Diagram



LA7320M (MFP24) Block Diagram



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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 10Ω
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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