

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**

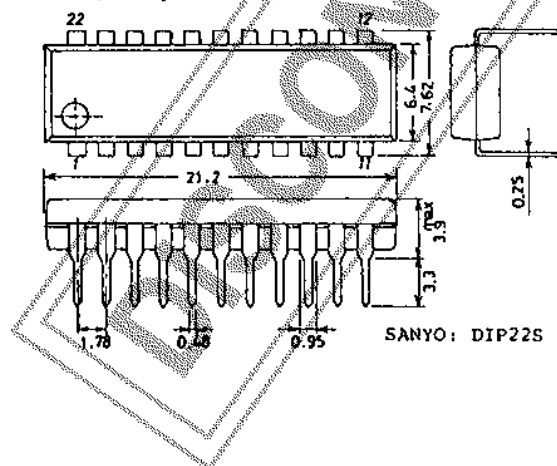
Maximum Supply Voltage	V _{CC} max		unit
		(PB) 7.0	V
		(REC) 14.0	V
Allowable Power Dissipation	P _d max	(DIP) 750	mW
Operating Temperature	T _{opg}	-10 to +65	°C
Storage Temperature	T _{stg}	-40 to +125	°C

Operating Conditions at Ta = 25°C

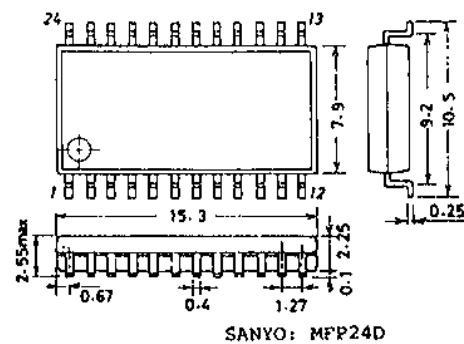
Recommended Supply Voltage	V _{CC}		unit
		(PB) 5.0	V
		(REC) 12.0	V
Operating Voltage Range	V _{CC op}	(PB) 4.75 to 5.5	V
		(REC) 10 to 13	V

Case Outline 3059-D22SIC

(unit: mm) [LA7320]

**Case Outline 3108-M24IC**

(unit: mm) [LA7320M]

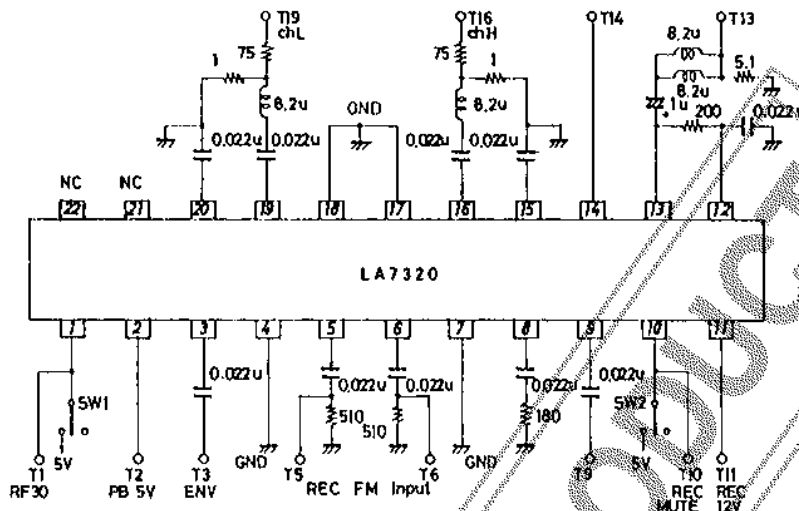


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SANYO Electric Co., Ltd. Semiconductor Overseas Marketing Div.
Natsume Bldg., 18-6, 2-chome, Yushima, Bunkyo ku, TOKYO 113 JAPAN

N228TA, TS No.2734-1/6

LA7320 Test Circuit



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

Characteristic	Symbol			Test Conditions	SW1	SW2	min	typ	max	unit
		Input	Output							
(PB Mode)		T2		PB + 5V	RF	REC MUTE				
Current Dissipation	I_{ccp}	T2		Pin 2 flow-in current	1		9	12	15	mA
Voltage Gain	CH1 $G_{VP(1)}$	T19	T3	$V_i = 38\text{mVpp}$ $f = 1\text{MHz}$	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	V_{out} $G_{VP(1),(2)}$ after 1.1MHz L.P.F.	2			1.1	1.5	$\mu\text{V rms}$
	CH2 $V_{NI(2)}$		T3		1					
Frequency Characteristic	CH1 $\Delta V_{fp(1)}$	T19	T3	$V_i = 30\text{mVpp}$ $f = 100\text{k}, 7\text{MHz}$ 7MHz 100kHz output ratio	2		-2.5	0		dB
	CH2 $\Delta V_{fp(2)}$	T16	T3		1					
2nd Harmonic Distortion	CH1 $V_{HDP(1)}$	T19	T3	$V_i = 38\text{mVpp}$ $f = 4\text{MHz}$ 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	$V_i = 1\text{MHz}$ Output level when 3rd distortion is -30dB.	2		0.8	1.0		V_{pp}
	CH2 $V_{OMP(2)}$	T16	T3		1					
Crosstalk	CH1 $V_{CR(1)}$	T16	T3	$V_i = 38\text{mVpp}$ $f = 4\text{MHz}$ V_{out} $G_{VP(1),(2)}$ 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	Test Conditions		min	typ	max	unit
		Input	Output				
(REC Mode)		T11		REC + 12V	RF	REC MUTE	
Current Dissipation	IccR	T11		Pin 11 flow-in current		2	46.9 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 dB
Frequency Characteristic	C	ΔV _{m(C)}	T5	T13	Vi = 300mVpp f = 1MHz, 7MHz	2	-2.0 -0.5 1.0 dB
	Y	ΔV _{m(Y)}	T6	T13	7M 1M output ratio	2	
2nd Harmonic Distortion	C	V _{HDR(C)}	T5	T13	Vout = 30mApp f = 4MHz	2	-45 -40 dB
	Y	V _{HDR(Y)}	T6	T13	8M component 4M component output ratio	2	
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	Vi = 300mVpp f = 1MHz, 4MHz	1	-50 -45 dB
	Y	V _{MR(Y)}	T6	T13	Vout G _{VR(1)(2)} output ratio	1	
Cross Modulation Relative Level	VCY	T5 T6	T13	Input T5, 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	GH1	RR _{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	GH1	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
	GH2	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 ±5V is applied		-2 0 2 μA

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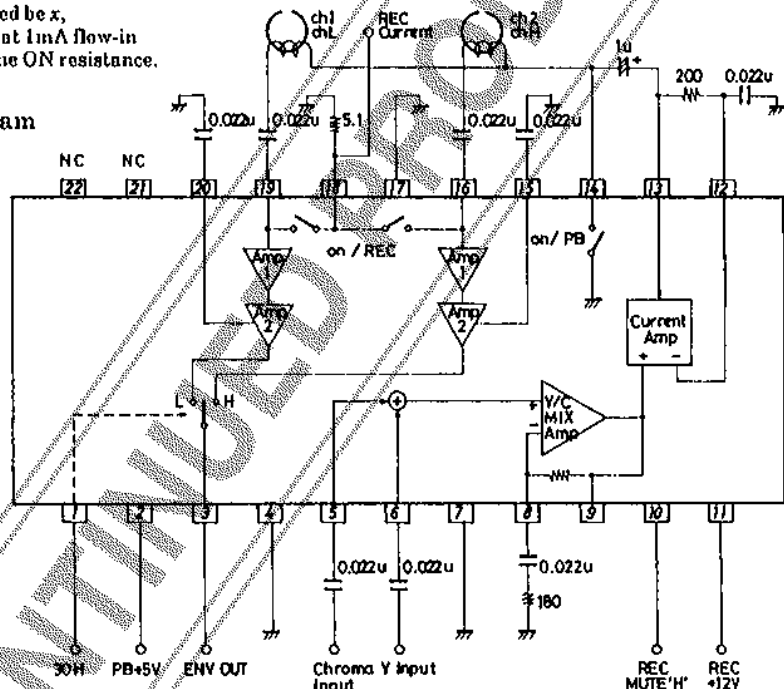
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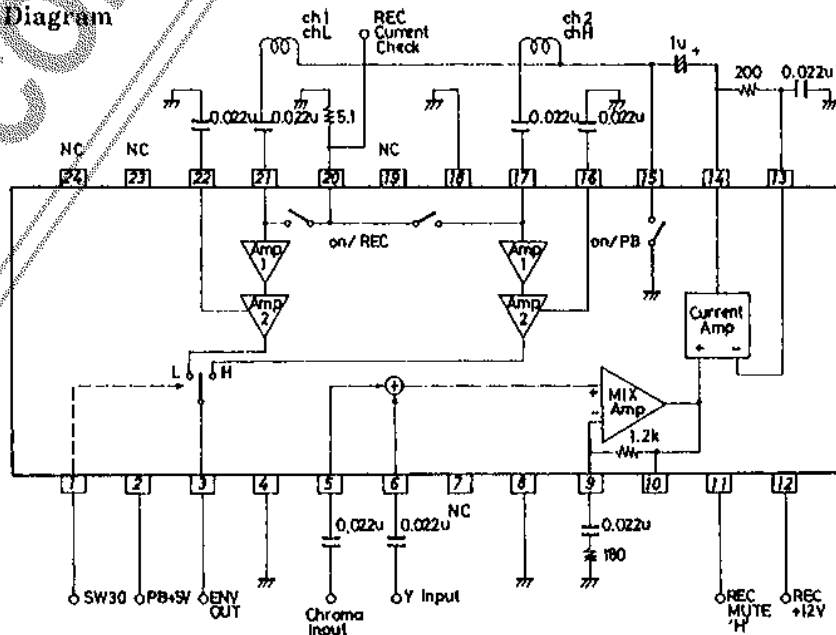
Characteristic	Symbol	Test Conditions		min	typ	max	unit
		Input	Output				
Control Pin (Threshold Level)							
RF Switch (Threshold Level)	SW RF(1)	T1	CH1→CH2 changeover voltage		2.5	5.0	V
	SW RF(2)		CH2→CH1 changeover voltage		0	0.8	
REC Muting Switch Threshold Level	SW MUTE(1)	T10	T10 voltage when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

LA7320 (DIP22S) Block Diagram

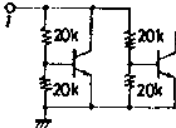
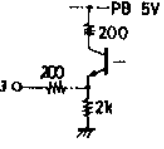
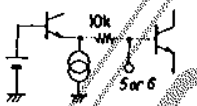
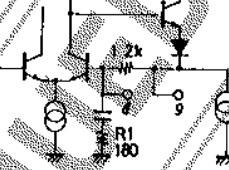
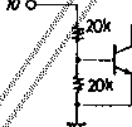
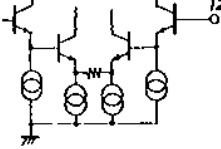
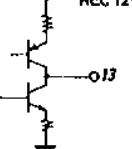
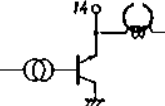


LA7320M (MFP24) Block Diagram



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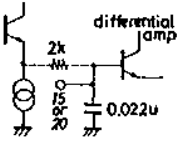
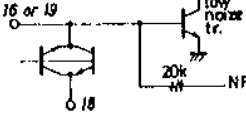
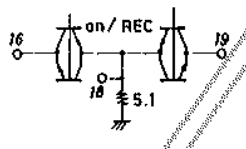
Pin Description

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 $R = 2k\Omega$ 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) $R1 : 180\Omega = 10.5dB$
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)		$R_{in} \approx 400\Omega$ $C_{in} \approx 25 \text{ to } 35\text{p}$
17	Pre GND	0 (V)		
18 22	N-C			Switch Tr ON resistance : 7 to 10Ω

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