

**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**Maximum Supply Voltage V<sub>CC</sub> max (PB) 7.0 V unit

(REC) 14.0 V

Allowable Power Dissipation Pd max Ta = 65°C (DIP) 750 mW

Operating Temperature T<sub>opg</sub> - 10 to + 65 °CStorage Temperature T<sub>stg</sub> - 40 to + 125 °C**Operating Conditions at Ta = 25°C**Recommended Supply Voltage V<sub>CC</sub> (PB) 5.0 V unit

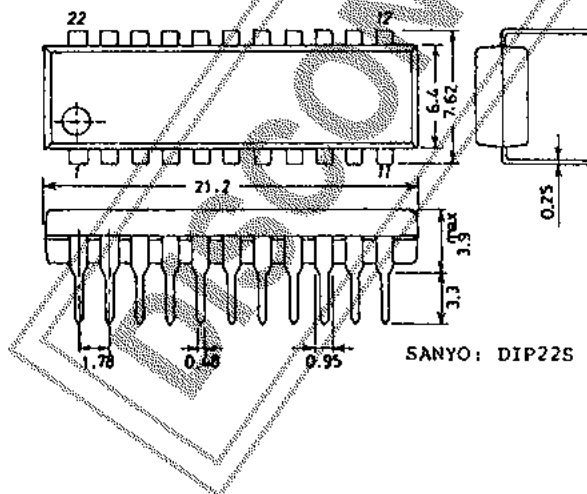
(REC) 12.0 V

Operating Voltage Range V<sub>CC</sub> op (PB) 4.75 to 5.5 V

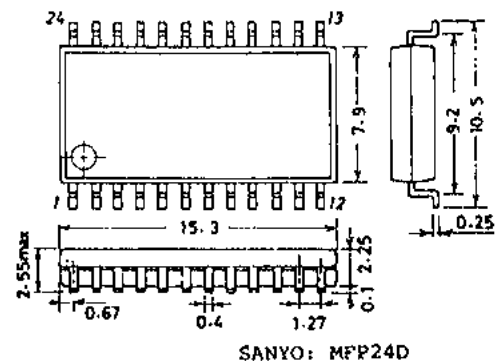
(REC) 10 to 13 V

**Case Outline 3059-D22SIC**

(unit : mm) [LA7320]

**Case Outline 3108-M24IC**

(unit : mm) [LA7320M]



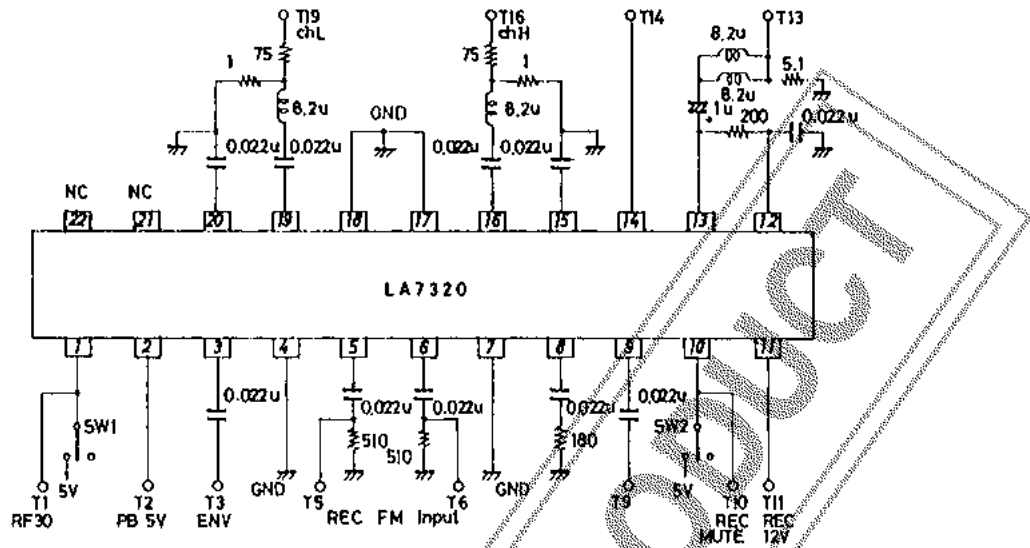
Specifications and information herein are subject to change without notice.

**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, 7320M

LA7320 Test Circuit



Operating Characteristics at T<sub>a</sub> = 25°C

Characteristic	Symbol	Test Conditions		min	typ	max	unit		
		Input	Output						
(PB Mode)		T2	PB + 5V						
Current Dissipation	I <sub>ccp</sub>	T2	Pin 2 flow-in current	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						
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	T3	V <sub>out</sub> G <sub>VP</sub> (1),(2) after f 1MHz L.P.F.	2	1.1	1.5	μV <sub>rms</sub>	
	CH2 V <sub>NI</sub> (2)	T3	T3						
Frequency Characteristic	CH1 ΔV <sub>FP</sub> (1)	T19	T3	V <sub>i</sub> = 30mV <sub>pp</sub> f = 100k, 7MHz 7MHz 100kHz output ratio	2	-2.5	0	dB	
	CH2 ΔV <sub>FP</sub> (2)	T16	T3						
2nd Harmonic Distortion	CH1 V <sub>HDP</sub> (1)	T19	T3	V <sub>i</sub> = 38mV <sub>pp</sub> f = 4MHz 8M component 4M component output ratio	2	-40	-35	dB	
	CH2 V <sub>HDP</sub> (2)	T16	T3						
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						
Crosstalk	CH1 V <sub>CR</sub> (1)	T16	T3	V <sub>i</sub> = 38mV <sub>pp</sub> f = 4MHz V <sub>out</sub> G <sub>VP</sub> (1),(2) output ratio	2	-40	-35	dB	
	CH2 V <sub>CR</sub> (2)	T19	T3						
Output DC Offset	ΔV <sub>ONC</sub>		Pin 3	Output pin DC voltage difference	2→1	-100	0	100	mV

Continued on next page.

LA7320, 7320M

Continued from preceding page.

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(C)</sub>	T5	T13	V <sub>i</sub> = 300mVpp f = 1MHz		2	-8.0	-6.0	-4.0
	Y	G <sub>VR(Y)</sub>	T6	T13	V <sub>i</sub> = 300mVpp f = 4MHz		2	-8.0	-6.0	-4.0
Frequency Characteristic	C	ΔV <sub>m(C)</sub>	T5	T13	V <sub>i</sub> = 300mVpp f = 1MHz, 7MHz		2			
	Y	ΔV <sub>m(Y)</sub>	T6	T13	$\frac{7M}{1M}$ output ratio		2	-2.0	-0.5	1.0
2nd Harmonic Distortion	C	V <sub>HDR(C)</sub>	T5	T13	V <sub>out</sub> = 30mApp f = 4MHz		2			
	Y	V <sub>HDR(Y)</sub>	T6	T13	$\frac{8M \text{ component}}{4M \text{ component}}$ output ratio		2	-45	-40	dB
Maximum Output Level	C	V <sub>OMP(C)</sub>	T5	T13	f = 4MHz Output level when 2nd distortion is -40dB.		2	30	40	mApp
	Y	V <sub>OMP(Y)</sub>	T6	T13			2			
Muting Attenuation	C	V <sub>MR(C)</sub>	T5	T13	V <sub>i</sub> = 300mVpp f = 1MHz, 4MHz		1			
	Y	V <sub>MR(Y)</sub>	T6	T13	$\frac{V_{out}}{G_{m(1)(2)}}$ 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					
(Switch Tr) ON Resistance										
ON Resistance of SW turned ON at PB		R <sub>PON(14)</sub>		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(19)</sub>		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(16)</sub>		Pin 19						
Switch Tr Leakage Current										
Leakage Current of SW Tr turned ON at PB		I <sub>L(14)</sub>		Pin 14	REC mode Flow-in current when ±5V is applied			-2	0	2

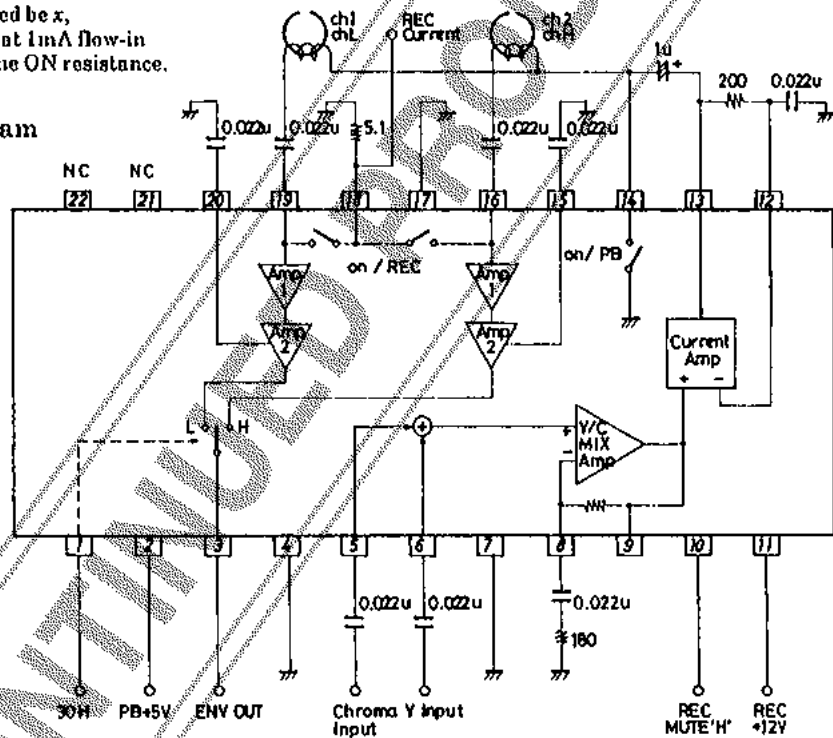
Continued on next page.

Continued from preceding page.

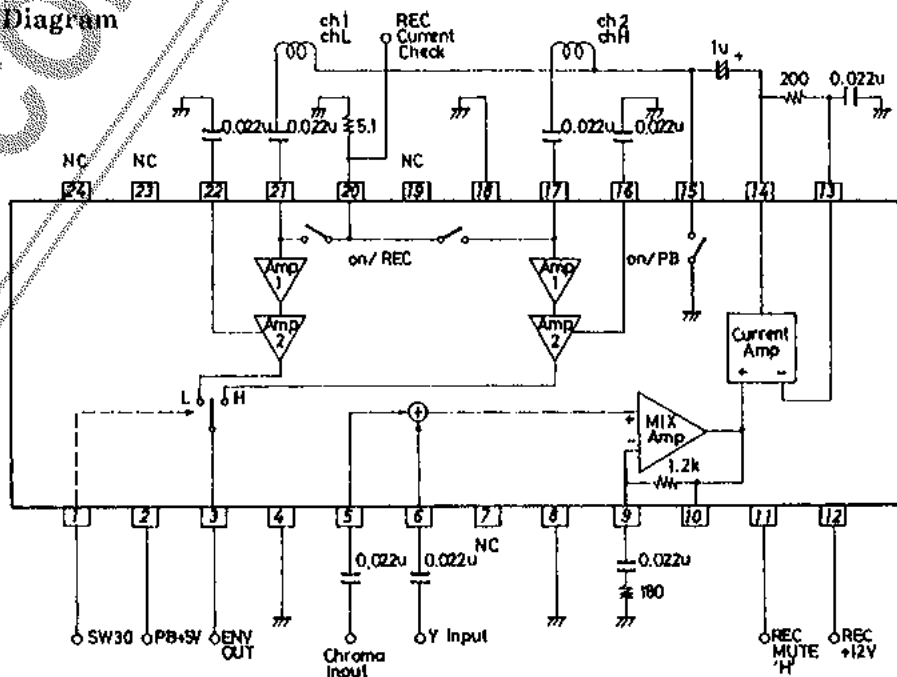
Characteristic	Symbol	Test Conditions		min	typ	max	unit
		Input	Output				
Control Pin (Threshold Level)							
RF Switch (Threshold Level)	SW RF(1)	T1	CH1→CH2 changeover voltage	2.5		5.0	V
	SW RF(2)		CH2→CH1 changeover voltage	0		0.8	
REC Muting Switch Threshold Level	SW MUTE(1)	T10	T10 voltage when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

LA7320 (DIP22S) Block Diagram



LA7320M (MFP24) Block Diagram



LA7320, 7320M

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

Continued on next page.

LA7320, 7320M

Continued from preceding page.

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.  
 The information herein is believed to be accurate and reliable. However, no responsibility is assumed by SANYO for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

DISCONTINUED PRODUCT