

SANYO

No.2733

LA7270, 7270M

Monolithic Linear IC

VHS VTR Playback Head Amplifier
Recording Amplifier (Hi-Fi Audio Use)

Functions and Features

(Functions) · 2-channel playback head amp

- 1-channel recording amp
- PB : 1 head select switch
- REC : 2 head select switches

(Features) · Designed for 2 heads

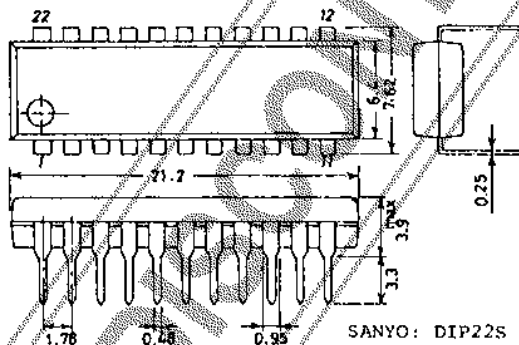
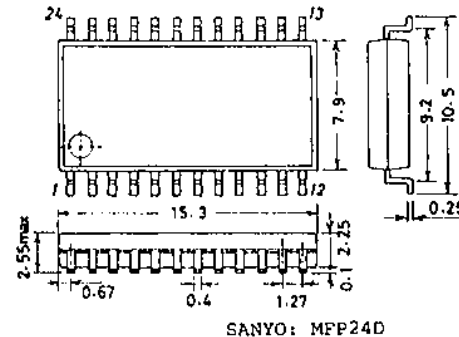
- On-chip driver transistor permitting direct recording (current type)
- On-chip head select switches (2 types) facilitating printed circuit pattern design of a set
- Load variations cause less recording current variations because of recording amp of constant-current type.

(Maximum recording current : 60mA_{p-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	P _d max	(DIP) 840	mW
Operating Temperature	T _{opg}	-10 to +65	°C
Storage Temperature	T _{stg}	-40 to +150	°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) 4.5 to 5.5	V
		(REC) 10 to 13	V

Case Outline 3059-D22SIC
(unit : mm) [LA7270]**Case Outline 3108-M24IC**
(unit : mm) [LA7270M]

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.

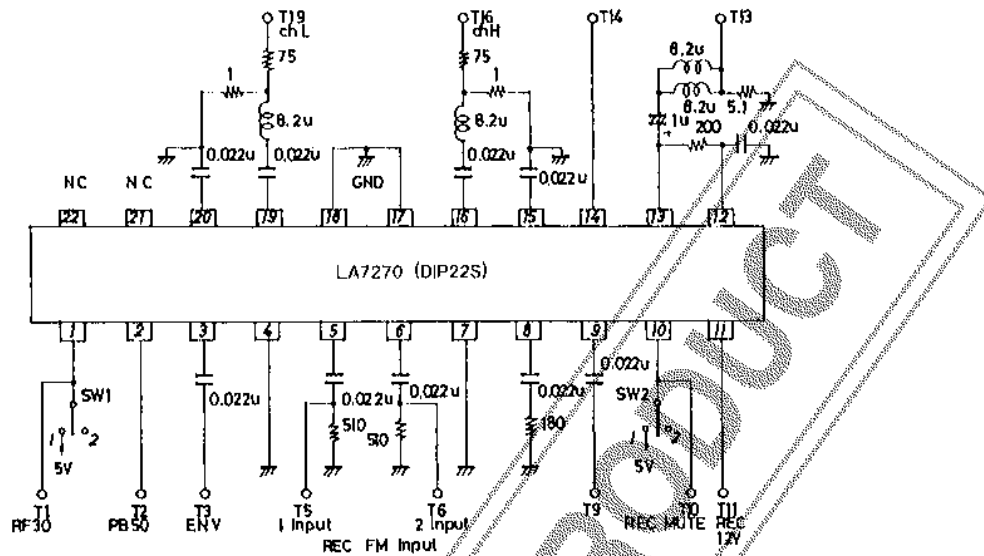
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N248TA, TS No.2733-1/6

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LA7270 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	1		9 12 16 mA
Voltage Gain	CH1 G _{VP(1)}	T19	T3	V _i = 38mV _{pp} f = 1MHz	2		56.5 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 2.0MHz L.P.F.	2		1.1 1.5 μV rms
	CH2 V _{NI(2)}		T3		1		
Frequency Characteristic	CH1 ΔV _{fp(1)}	T19	T3	V _i = 38mV _{pp} f = 100k, 7MHz 2MHz 100kHz output ratio	2		-1.0 0 dB
	CH2 ΔV _{fp(2)}	T16	T3		1		
2nd Harmonic Distortion	CH1 V _{hdp(1)}	T19	T3	V _i = 38mV _{pp} f = 2MHz 4M component 2M component output ratio	2		-40 -36 dB
	CH2 V _{hdp(2)}	T6	T3		1		
Maximum Output Level	CH1 V _{OMP(1)}	T19	T3	V _i = 1MHz 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 = 38mV _{pp} f = 4MHz V _{out} G _{VP(1),(2)} output ratio	2		-40 -36 dB
	CH2 V _{CR(2)}	T16	T3		1		
Output DC Offset	ΔV _{OBc}		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	I_{ccR}	T11		Pin 11 flow-in current		2	54.0 64.0 mA
Voltage Gain	1 $G_{VR(1)}$	T5	T13	$V_i = 300mV_{pp}$ $f = 2MHz$		2	-8.0 6.0 -4.0 dB
	2 $G_{VR(2)}$	T6	T13	$V_i = 300mV_{pp}$ $f = 2MHz$		2	-8.0 6.0 -4.0 dB
Frequency Characteristic	1 $\Delta V_{IR(1)}$	T5	T13	$V_i = 300mV_{pp}$ $f = 1MHz, 2MHz$ 2M		2	-1.0 0.5 1.0 dB
	2 $\Delta V_{IR(2)}$	T6	T13	1M output ratio		2	
2nd Harmonic Distortion	1 $V_{HDR(1)}$	T5	T13	$V_{out} = 50mApp$ $f = 2MHz$ 4M, 6M component		2	-40 -35 dB
	2 $V_{HDR(2)}$	T6	T13	2M component output ratio		2	
Maximum Output Level	1 $V_{OMP(1)}$	T5	T13	$f = 2MHz$ Output level when 2rd distortion is -40dB.		2	40 50 mApp
	2 $V_{OMP(2)}$	T6	T13			2	
Muting Attenuation	1 $V_{MR(1)}$	T5	T13	$V_i = 300mV_{pp}$ $f = 2MHz$ V_{out}		1	-50 -45 dB
	2 $V_{MR(2)}$	T6	T13	$G_{VR(1),(2)}$ output ratio		1	
Y/C MIX Amp Voltage Gain	1 $G(1)$	T5	T9	$V_i = 300mV_{pp}$ $f = 2MHz$			8.0 10.5 13.0 dB
	2 $G(2)$	T6	T9	$V_i = 300mV_{pp}$ $f = 2MHz$			
(Switch Tr) ON Resistance							
ON Resistance of SW turned ON at PB	$R_{P_{ON}(14)}$		Pin 14	PIF 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 $R_{R_{ON}(19)}$		Pin 19	REC mode *1 Difference between DC voltage at 1mA flow-in and DC voltage at 2mA flow-in			7 10 Ω
	CH2 $R_{R_{ON}(16)}$		Pin 16				
Switch Tr Leakage Current							
Leakage Current of SW Tr turned ON at PB	$I_L(14)$		Pin 14	REC mode Flow-in current when $\pm 5V$ is applied			-2 0 2 μA

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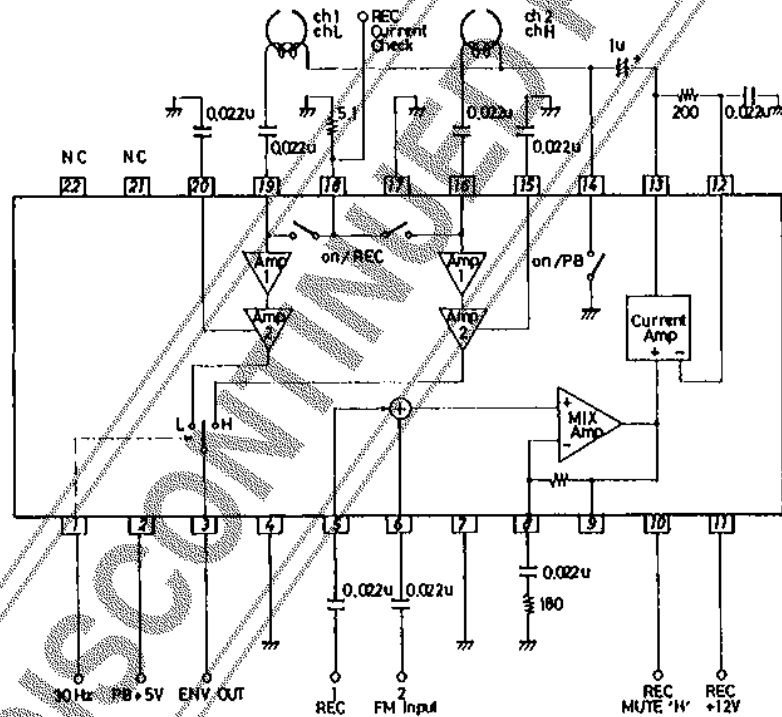
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Characteristic	Symbol	Test Conditions		min	typ	max	unit
		Input	Output				
Control Pin (Threshold Level)							
RF Switch (Threshold Level)	SW RF(1)	T1	CH1→CH2 changeover voltage	*		2.6	V
	SW RF(2)		CH2→CH1 changeover voltage			0	
REC Muting Switch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

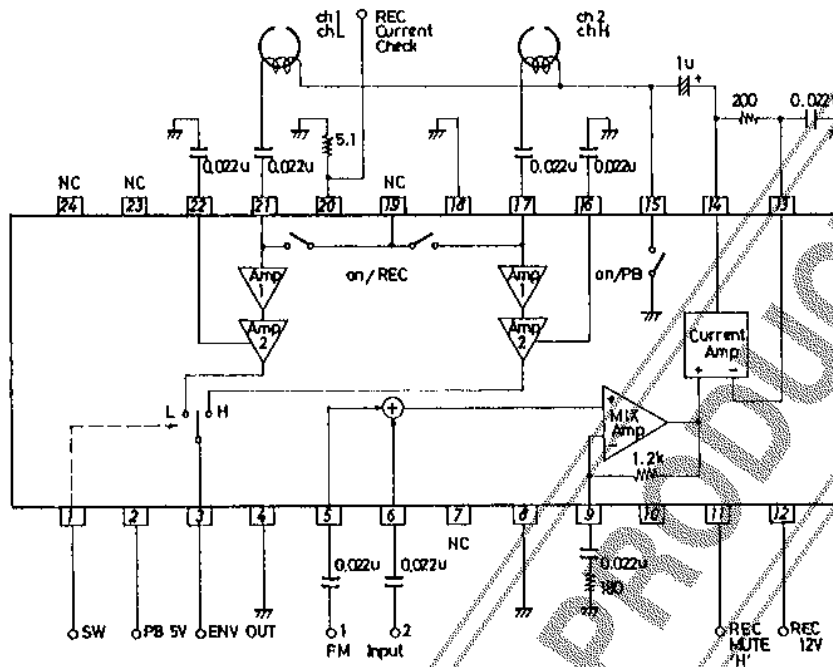
※1 Let the ON resistance to be obtained be x ,
 $2x$ (mV) at 2mA flow-in x (mV) at 1mA flow-in
 Therefore, difference $2x - x = x$ is the ON resistance.

LA7270 (DIP22S) Block Diagram



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LA7270M (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	REC amp GND	0 (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	5.9 (V)		

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Pin No.	Function	Standard Potential	Input/Output Configuration	Remarks
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: 60mA p-p (2ch)
14	Pin for switch Tr turned ON at PB			ON resistance : 6 to 10kΩ
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			

DISCONTINUED PRODUCT