

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 T_a = 25°C**

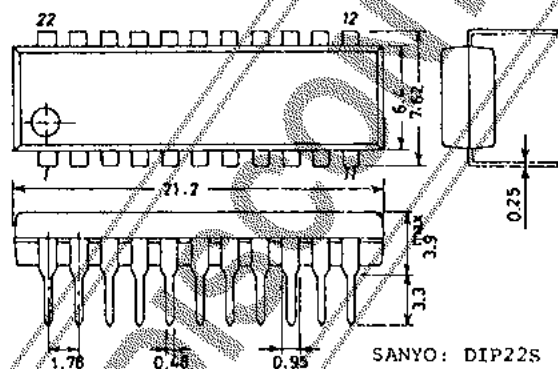
Maximum Supply Voltage	V _{CC} max	(PB) 7.0	unit
		(REC) 14.0	V
Allowable Power Dissipation	P _d max	(DIP) 840	mW
Operating Temperature	T _{opg}	-10 to +65	°C
Storage Temperature	T _{stg}	-40 to +150	°C

Operating Conditions at T_a = 25°C

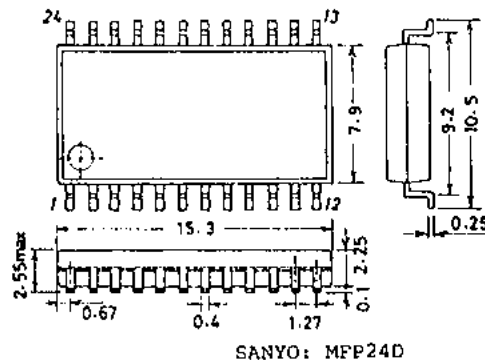
Recommended Supply Voltage	V _{CC}	(PB) 5.0	unit
		(REC) 12.0	V
Operating Voltage Range	V _{CC op}	(PB) 4.5 to 5.5	V
		(REC) 10 to 13	V

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.

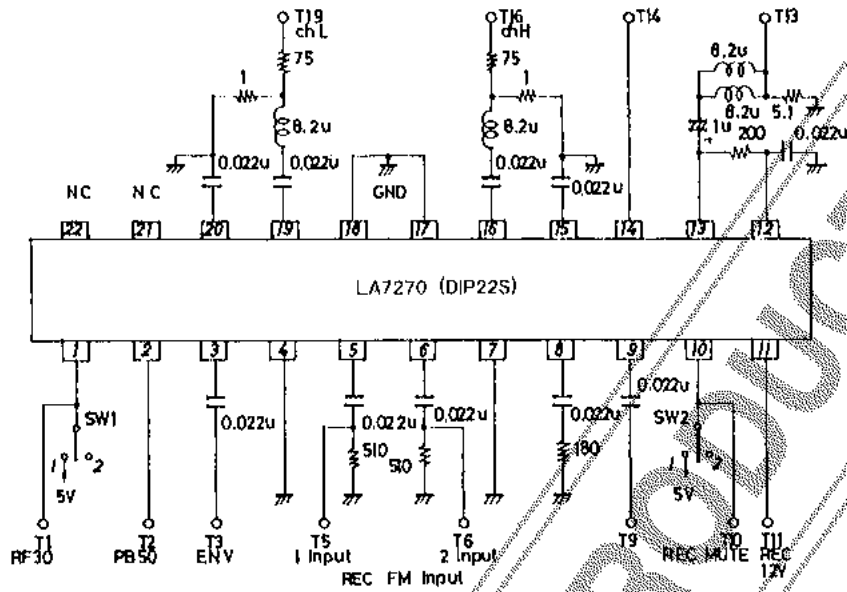
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N248TA, TS No.2733-1/6

LA7270 Test Circuit

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

Characteristic	Symbol	Test Conditions		min	typ	max	unit
		Input	Output				
(PB Mode)		T2					
Current Dissipation	I_{ccp}	T2			9	12	15 mA
Voltage Gain	CH1 $G_{vp}(1)$	T19	T3		56.5	69.5	62.5 dB
	CH2 $G_{vp}(2)$	T16	T3				
Voltage Gain Difference	ΔG_{vp}				-1.0	0	1.0 dB
Equivalent Input Noise Voltage	CH1 $V_{Ni}(1)$		T3		1.1	1.5	$\mu\text{V rms}$
	CH2 $V_{Ni}(2)$		T3				
Frequency Characteristic	CH1 $\Delta V_{fp}(1)$	T19	T3				
	CH2 $\Delta V_{fp}(2)$	T16	T3				
2nd Harmonic Distortion	CH1 $V_{fhd}(1)$	T19	T3				
	CH2 $V_{fhd}(2)$	T6	T3				
Maximum Output Level	CH1 $V_{omf}(1)$	T19	T3		0.8	1.0	Vpp
	CH2 $V_{omf}(2)$	T16	T3				
Crosstalk	CH1 $V_{cr}(1)$	T16	T3				
	CH2 $V_{cr}(2)$	T16	T3				
Output DC Offset	ΔV_{onc}		Pin 3		-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	54.0	64.0	mA
Voltage Gain	1	G _{VR} (1)	T5	T13	V _i = 300mVpp f = 2MHz		2	-8.0	-6.0	-4.0
	2	G _{VR} (2)	T6	T13	V _i = 300mVpp f = 2MHz		2	-8.0	-6.0	-4.0
Frequency Characteristic	1	ΔV _{IR} (1)	T5	T13	V _i = 300mVpp f = 1MHz, 2MHz		2	-1.0	-0.5	1.0
	2	ΔV _{IR} (2)	T6	T13	2M 1M output ratio		2			
2nd Harmonic Distortion	1	V _{HDR} (1)	T5	T13	V _{out} = 50mApp f = 2MHz		2	-40	-35	
	2	V _{HDR} (2)	T6	T13	4M, 6M component 2M component output ratio		2			
Maximum Output Level	1	V _{OMP} (1)	T5	T13	f = 2MHz		2	40	50	
	2	V _{OMP} (2)	T6	T13	Output level when 2rd distortion is -40dB.		2			
Muting Attenuation	1	V _{MR} (1)	T5	T13	V _i = 300mVpp f = 2MHz V _{out}		1	-50	-45	
	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 = 300mVpp f = 2MHz			8.0	10.5	13.0
	2	G(2)	T6	T9	V _i = 300mVpp f = 2MHz					
(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 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 ±5V is applied			-2	0	2

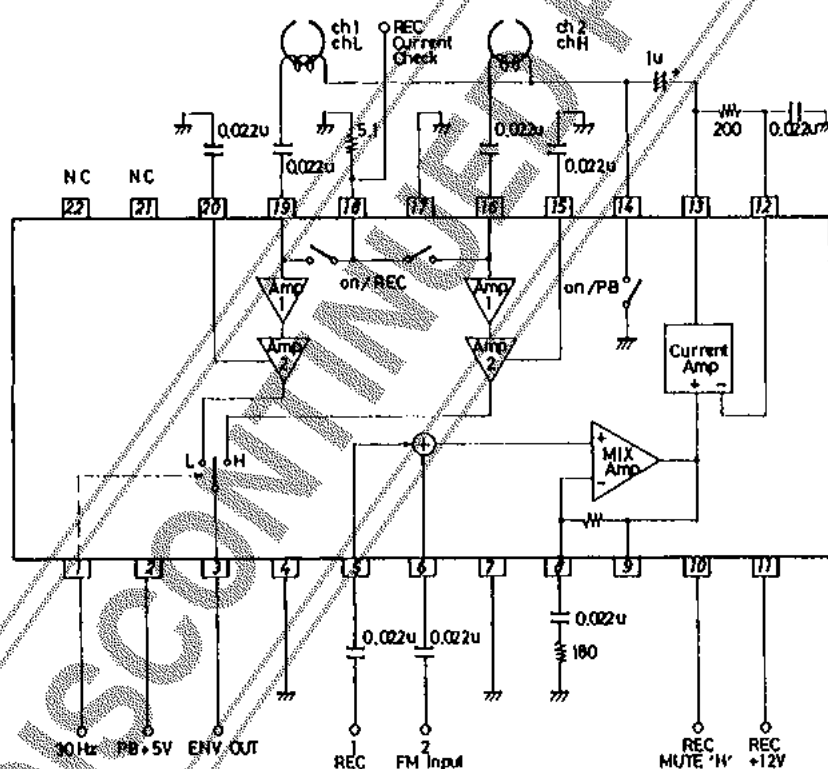
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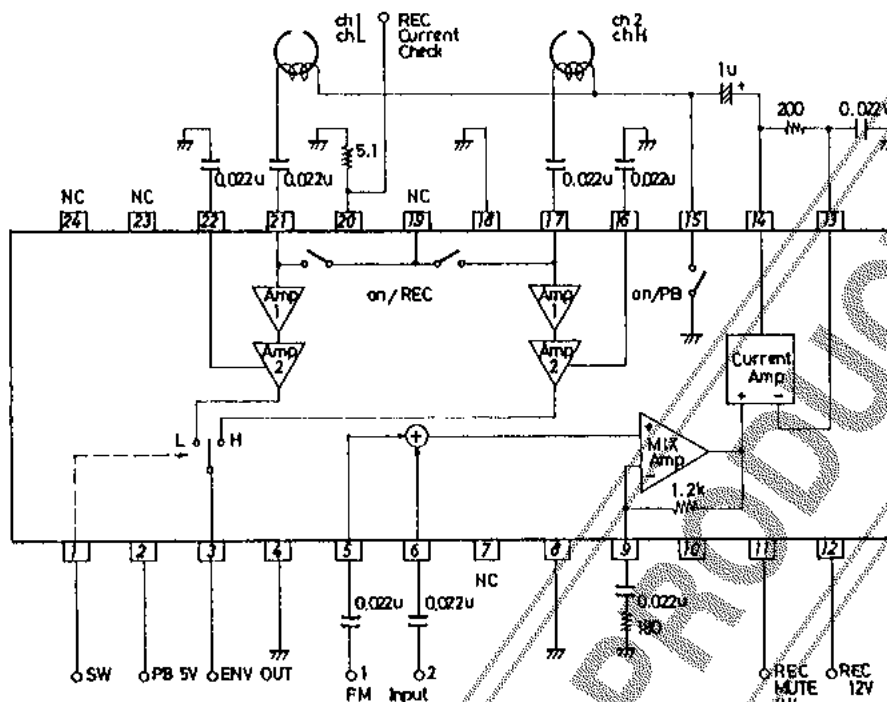
Characteristic	Symbol			Test Conditions	SW1	SW2	min	typ	max	unit
		Input	Output							
Control Pin (Threshold Level)										
RF Switch (Threshold Level)	SW RF(1)	T1		CH1→CH2 changeover voltage	※		2.6		5.0	V
	SW RF(2)			CH2→CH1 changeover voltage			0	0.8		
REC Muting Switch Threshold Level	SW MUTE(1)	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 ,
 $2x(\text{m}\Omega)$ at 2mA flow-in $x(\text{m}\Omega)$ at 1mA flow-in
 Therefore, difference $2x - x = x$ is the ON resistance.

LA7270 (DIP22S) Block Diagram



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 $R = 2k\Omega$ 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 R_1 . (Example) $R_1 : 180\Omega = 10.5dB$
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)		Rin ≅ 400Ω Cin ≅ 25 to 35p
17	Pre GND	0 (V)		
18				Switch Tr ON resistance : 7 to 10Ω
21 22	N.C			