

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**

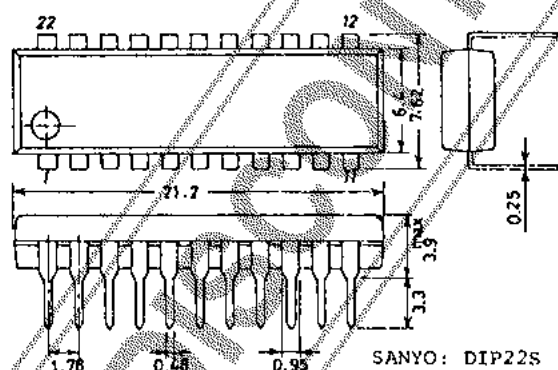
			unit
Maximum Supply Voltage	V _{CC} max	(PB) 7.0	V
		(REC) 14.0	V
Allowable Power Dissipation	P _d max	(DIP) 840	mW
Operating Temperature	T _{opg}	-10 to +65	°C
Storage Temperature	T _{stg}	-40 to +150	°C

Operating Conditions at T_a = 25°C

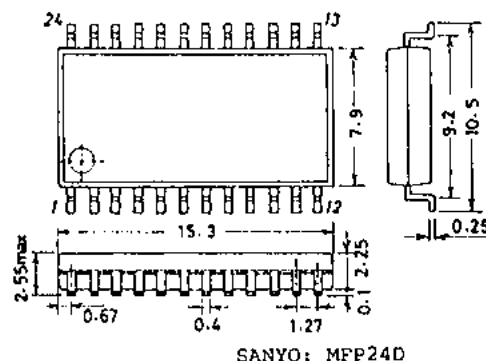
			unit
Recommended Supply Voltage	V _{CC}	(PB) 5.0	V
		(REC) 12.0	V
Operating Voltage Range	V _{CC op}	(PB) 4.5 to 5.5	V
		(REC) 10 to 13	V

Case Outline 3059-D22SIC

(unit : mm) [LA7270]

**Case Outline 3108-M24IC**

(unit : mm) [LA7270M]



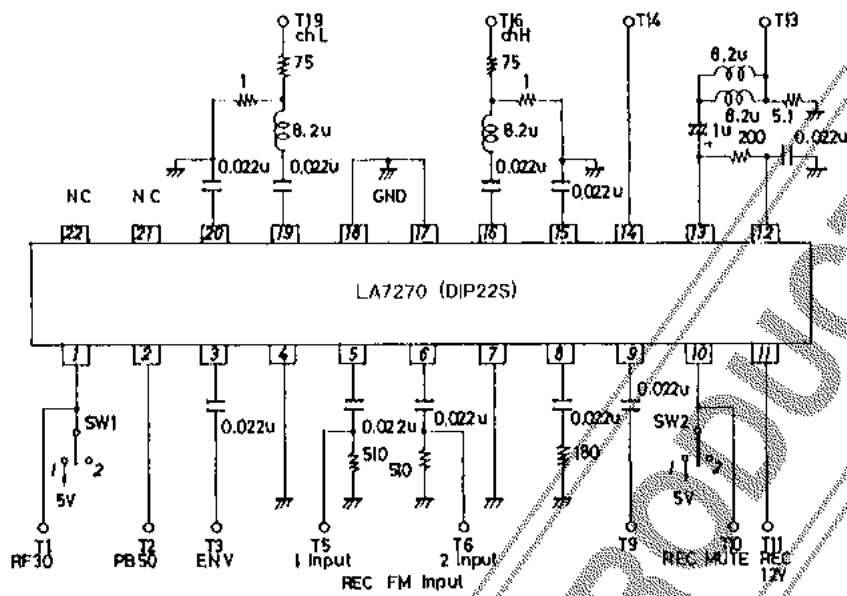
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N248TA, TS No.2733-1/6

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		PB + 5V	RF	REC MUTE				
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 = 38mVpp f = 1MHz	2		56.5	59.5	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	$\frac{V_{out}}{G_{VP}(1),(2)}$	2		1.1	1.5		μV rms
	CH2	V _{NI} (2)		T3	after 2.0MHz I.L.P.F.	1					
Frequency Characteristic	CH1	ΔV _{fp} (1)	T19	T3	V _i = 38mVpp f = 100k, 7MHz	2		-1.0	0		dB
	CH2	ΔV _{fp} (2)	T16	T3	$\frac{2MHz}{100kHz}$ output ratio	1					
2nd Harmonic Distortion	CH1	V _{hdp} (1)	T19	T3	V _i = 38mVpp f = 2MHz	2		-40	-35		dB
	CH2	V _{hdp} (2)	T16	T3	$\frac{4M \text{ component}}{2M \text{ component}}$ output ratio	1					
Maximum Output Level	CH1	V _{OMP} (1)	T19	T3	V _i = 1MHz	2		0.8	1.0		V _{pp}
	CH2	V _{OMP} (2)	T16	T3	Output level when 3rd distortion is -30dB.	1					
Crosstalk	CH1	V _{CR} (1)	T16	T3	V _i = 38mVpp f = 4MHz	2		-40	-35		dB
	CH2	V _{CR} (2)	T16	T3	$\frac{V_{out}}{G_{VP}(1),(2)}$ output ratio	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	Input	Output	Test Conditions		min	typ	max	unit
						SW1	SW2			
(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			
	2	V _{HDR} (2)	T6	T13	4M, 6M component 2M component output ratio		2	-40	-35	
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			
	2	V _{MR} (2)	T6	T13	G _{VR} (1), (2) output ratio		1	-50	-45	
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	PL 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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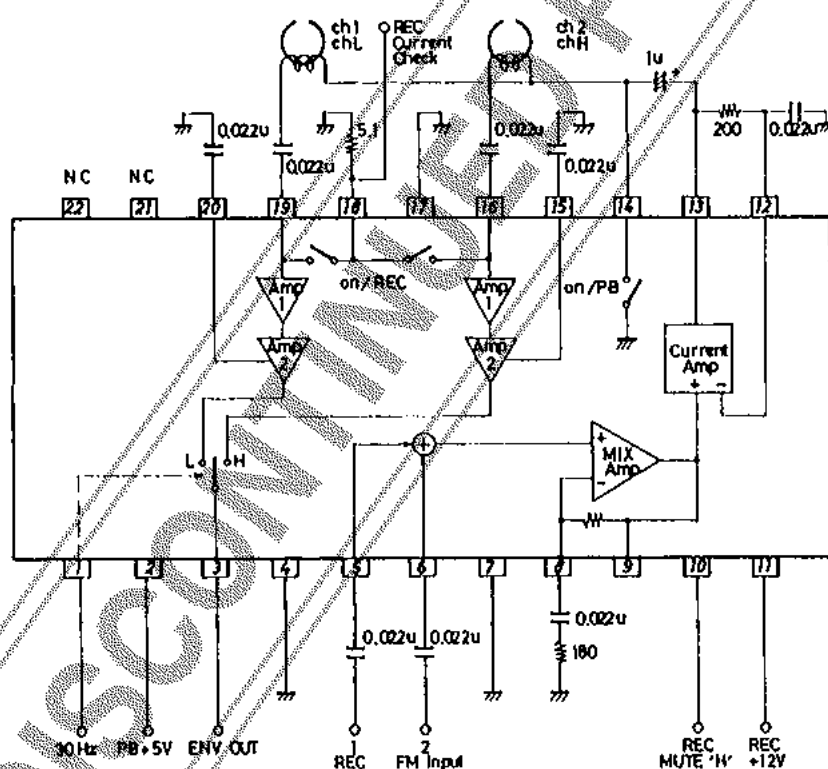
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Characteristic	Symbol	Test Conditions		min	typ	max	unit
		Input	Output				
Control Pin (Threshold Level)							
RF Switch (Threshold Level)	SW RF(1)	T1	CH1→CH2 changeover voltage	※		2.6	V
	SW RF(2)		CH2→CH1 changeover voltage			0	
REC Muting Switch Threshold Level	SW MUTE(1)	T10	T10 voltage when T13 output waveform dis- appears	※		2.6	V
	SW MUTE(2)		T10 voltage when T13 output waveform appears			0	

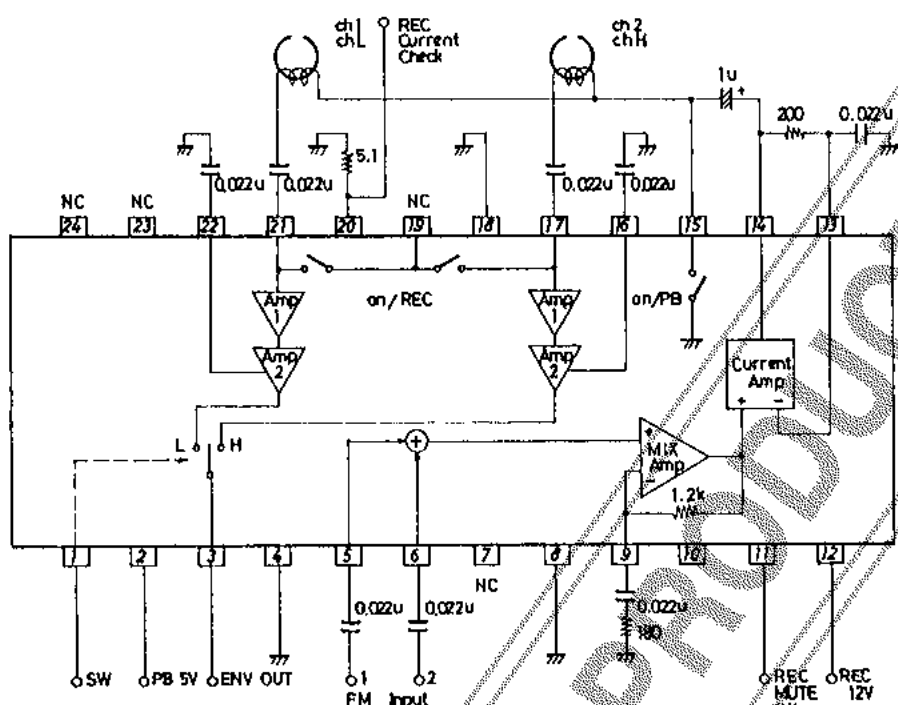
※1 Let the ON resistance to be obtained be x ,
 $2x(\text{mV})$ at 2mA flow-in $x(\text{mV})$ at 1mA flow-in
 Therefore, difference $2x - x = x$ is the ON resistance.

LA7270 (DIP22S) Block Diagram



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LA7270M (MFP24) Block Diagram



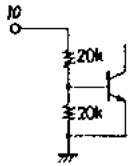
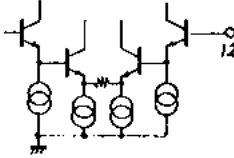
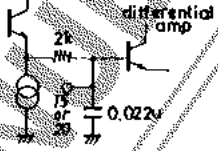
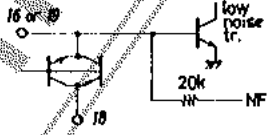
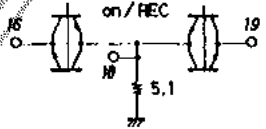
Pin Description

Pin No.	Function	Standard Potential	Input/Output Configuration	Remarks
1	RF 301Hz 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	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			