

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.

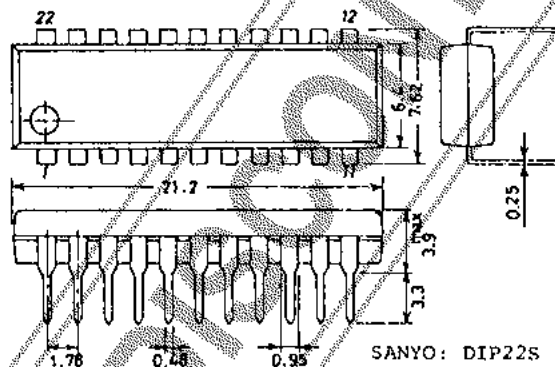
(Maximum recording current : 60mA_{p-p})**Maximum Ratings at Ta = 25°C**

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

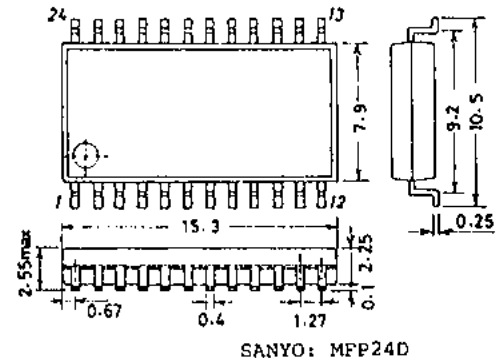
Operating Conditions at Ta = 25°C

Recommended Supply Voltage	V _{CC}			unit
			(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-D22S1C
(unit : mm) [LA7270]



Case Outline 3108-M241C
(unit : mm) [LA7270M]



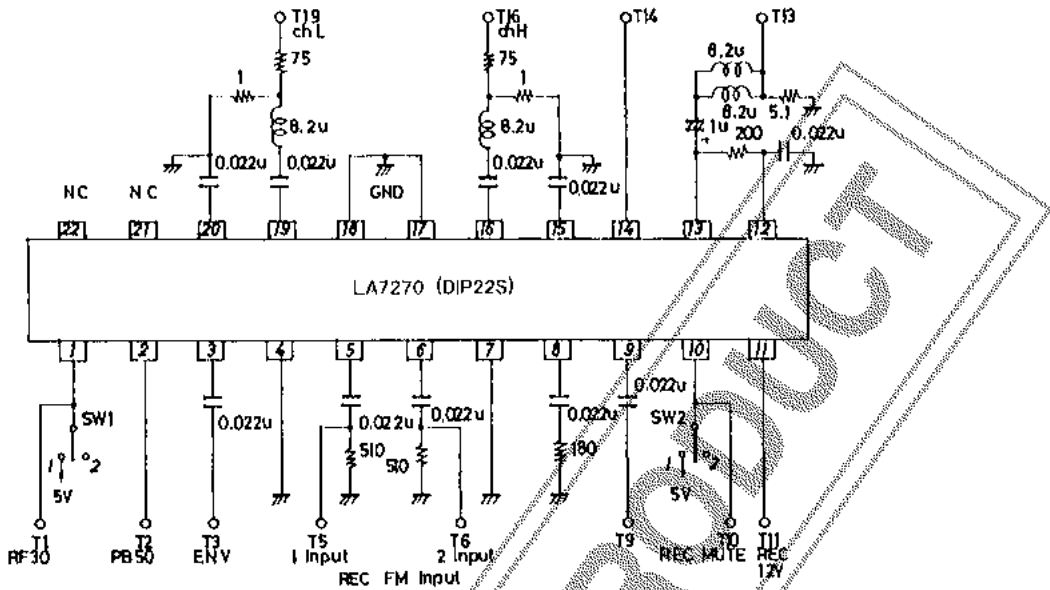
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N248TA, TS No.2733-1/6

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					
Current Dissipation	I_{ccp}	T2		PB + 5V			
				Pin 2 flow-in current	1		9 12 15 mA
Voltage Gain	CH1 $G_{VP(1)}$	T19	T3	$V_i = 38\text{mVpp}$ $f = 1\text{MHz}$	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	$\frac{V_{out}}{G_{VP(1),(2)}}$ after 2.0MHz 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	$V_i = 38\text{mVpp}$ $f = 100\text{k}, 7\text{MHz}$ $\frac{2\text{MHz}}{100\text{kHz}}$ output ratio	2		-1.0 0 dB
	CH2 $\Delta V_{fp(2)}$	T16	T3		1		
2nd Harmonic Distortion	CH1 $V_{fhd(1)}$	T19	T3	$V_i = 38\text{mVpp}$ $f = 2\text{MHz}$ $\frac{4\text{M component}}{2\text{M component}}$ output ratio	2		-40 -35 dB
	CH2 $V_{fhd(2)}$	T6	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	$V_i = 38\text{mVpp}$ $f = 4\text{MHz}$ $\frac{V_{out}}{G_{VP(1),(2)}}$ output ratio	2		-40 -35 dB
	CH2 $V_{CR(2)}$	T16	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		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	ΔV _{IR(1)}	T5	T13	V _i = 300mV _{pp} f = 1MHz, 2MHz		2	-1.0 -0.5 1.0 dB
	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 dB
	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 Output level when 2nd distortion is -40dB.		2	40 50 nApp
	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 _{ON(14)}		Pin 14	PF 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 _{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 _{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 ±5V is applied			-2 0 2 μA

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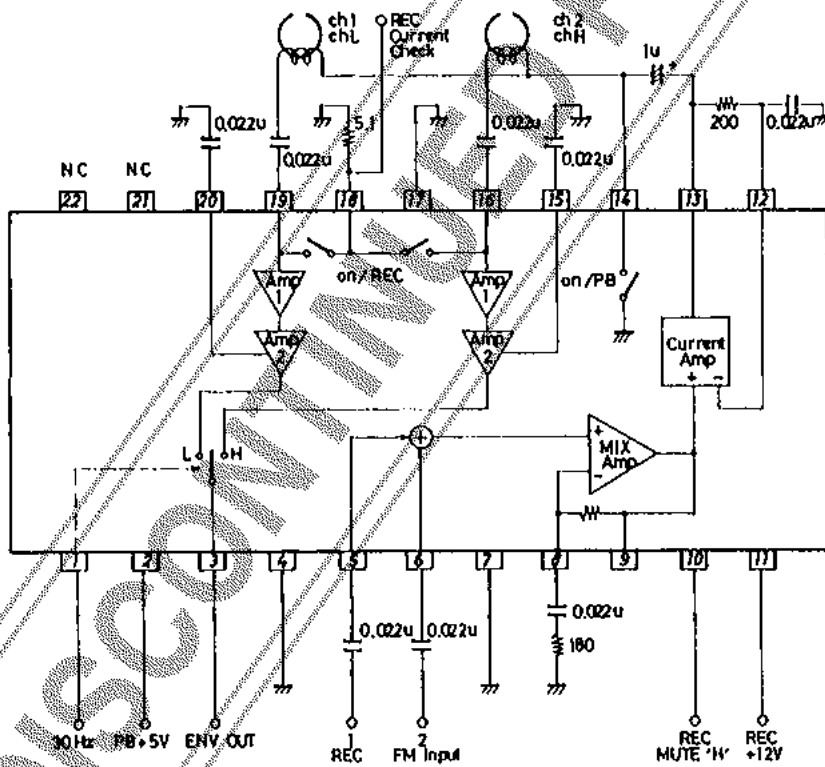
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Characteristic	Symbol	Test Conditions		SW1	SW2	min	typ	max	unit
		Input	Output						
Control Pin (Threshold Level)									
RF Switch (Threshold Level)	SW RF(1)	T1		CH1→CH2 changeover voltage	*	2.6		5.0	V
	SW RF(2)								
REC Muting Switch Threshold Level	SW MUTE(1)	T10		T10 voltage when T13 output waveform disappears		2.6		5.0	V
	SW MUTE(2)								

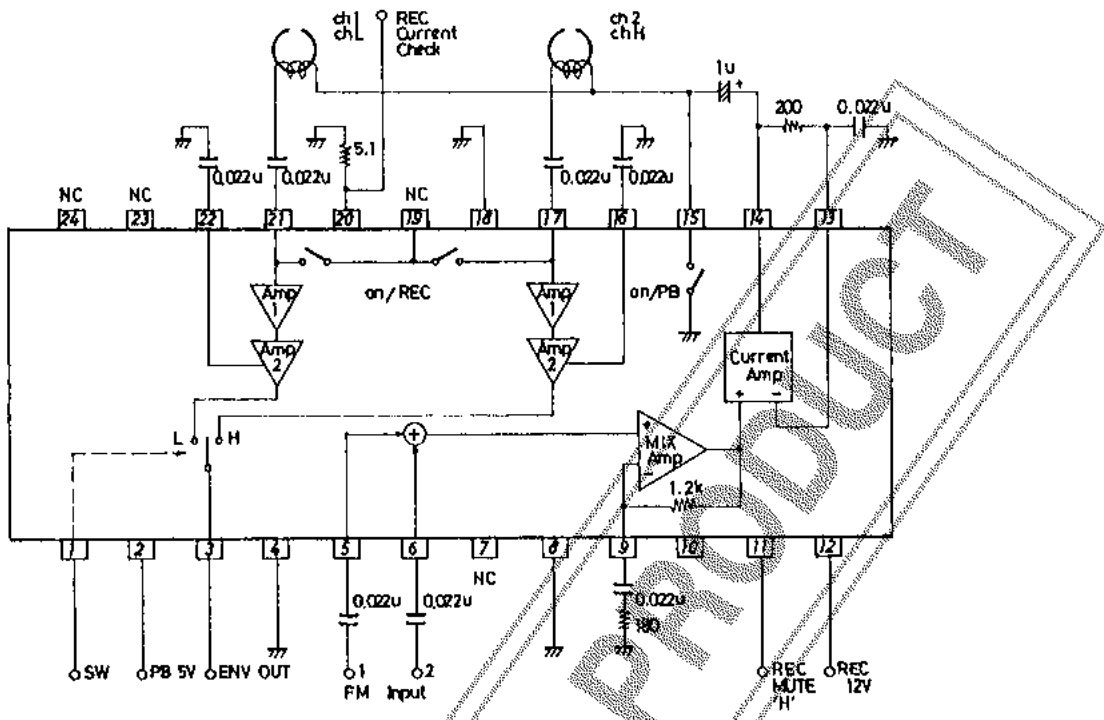
※1 Let the ON resistance to be obtained by x , $2x(\text{m}\Omega)$ at 2mA flow-in $x(\text{m}\Omega)$ at 1mA flow-in
Therefore, difference $2x - x = x$ is the ON resistance.

LA7270 (DIP22S) Block Diagram



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LA7270M (MFP24) Block Diagram



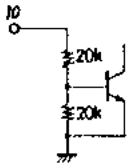
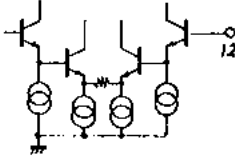

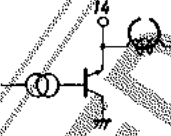
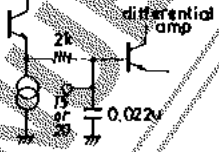
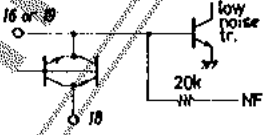
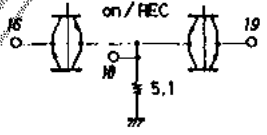
Pin Description

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 Y/C MIX amp feedback pin	5.9 (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			