

SANYO

No.2404

LA7301, 7301M

Monolithic Linear IC

VHS VTR PLAYBACK HEAD AMP, RECORDING AMP

Functions

- . 4-channel playback head amp
- . 2-channel recording amp
- . PB: 2 head select switches, 4 mode select switches
- . REC: 4 head select switches, 2 mode select switches
- . Comparator for special playback

Features

- . No more than one IC required for 4-head use
- . On-chip comparator permitting GT-4-head use
- . On-chip driver transistor permitting direct recording
- . On-chip head select switches (4 types) facilitating the pattern design of a set

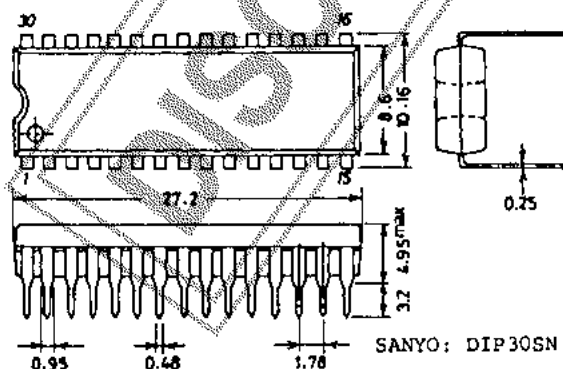
Maximum Ratings at Ta=25°C

			unit
Maximum Supply Voltage	$V_{CC \text{ max}}$	(PB) 7.0	V
		(REC) 13.5	V
Allowable Power Dissipation	$P_d \text{ max}$	(DIP) 920	mW
		(MFP) 840	mW
Operating Temperature	T_{opg}	-10 to +65	°C
Storage Temperature	T_{stg}	-40 to +125	°C

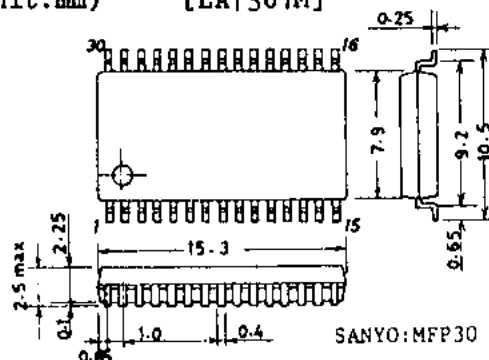
Operating Conditions at Ta=25°C

			unit
Supply Voltage	V_{CC}	(PB) 5.0	V
		(REC) 12.0	V
Operating Voltage Range	$V_{CC \text{ opg}}$	(PB) 4.75 to 5.6	V
		(REC) 8.5 to 13.0	V

Case Outline 3061-D30SNIC
(unit:mm) [LA7301]



Case Outline 3073A-M30SIC
(unit:mm) [LA7301M]

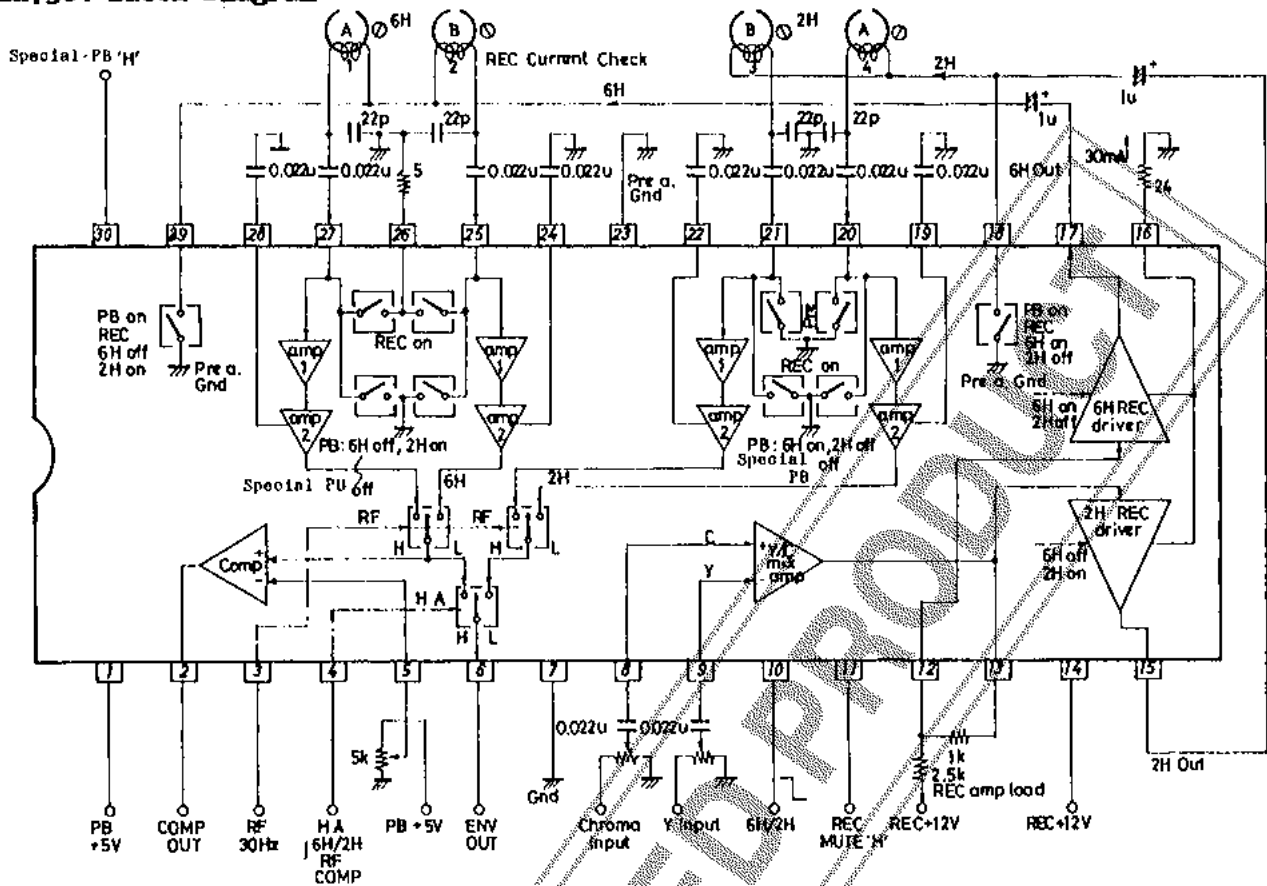


These specifications are subject to change without notice.

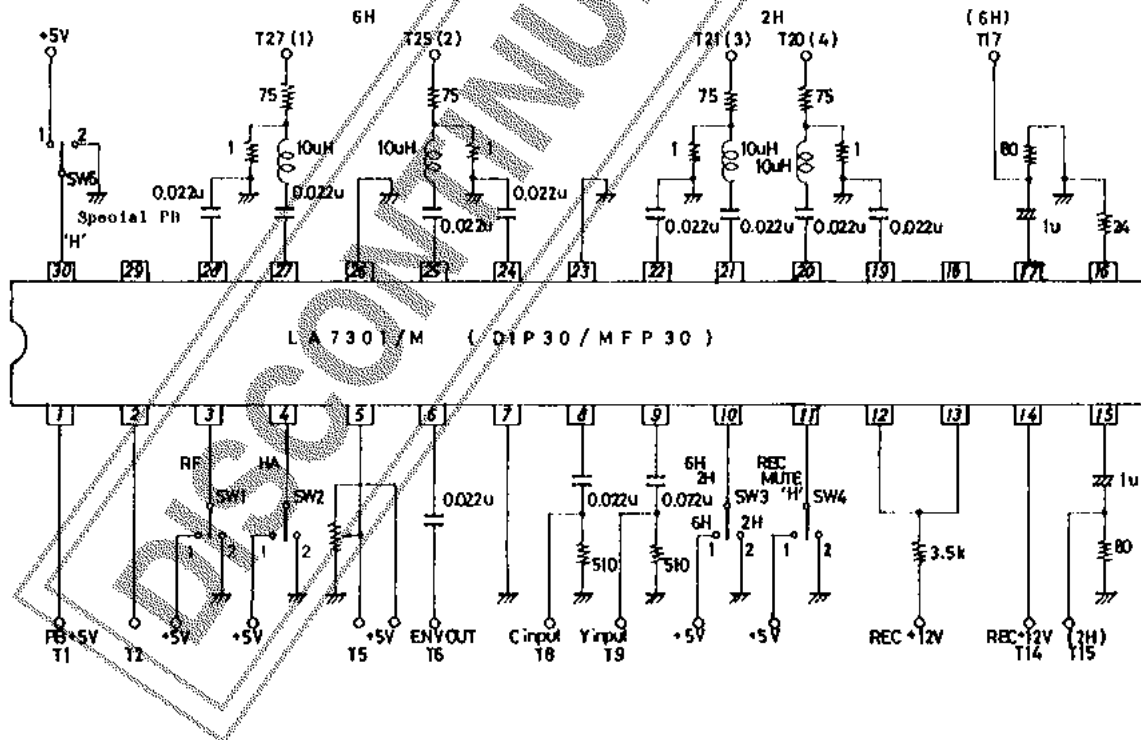
SANYO ELECTRIC CO., LTD. SEMICONDUCTOR DIVISION
15-13, 8-CHOME, SOTOKANDA, CHIYODA-KU, TOKYO 101 JAPAN

4027TA, TS No.2404-1/4

LA7301 Block Diagram



LA7301/M Test Circuit



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

Characteristic	Symbol	Test Conditions				Limits					unit			
		Input	Output	SW1	SW2	SW3	SW4	SW5	min	typ		max		
(PB mode)	CH		T1		PB+5V	RF	HA	6H/2H	REC	Special PB "H"				
						30			MUTE					
Current Dissipation	I_{CCP}				Pin1 flow-in current	1	1	1		1	22.5	30	37.5	mA
Voltage Gain	CH1	$G_{VP}(1)$	T27	T6	$v_i=38mV_{pp}$	1	1	1		2	56.5	59.5	62.5	dB
	2	(2)	T25	T6	$f=1MHz$	2	1	1		2				
	3	(3)	T21	T6		1	2	2		2	54.0	57.0	60.0	dB
	4	(4)	T20	T6		2	2	2		2				
Voltage Gain Difference 1	$\Delta G_{VP}(1)$				$G_{VP}(1)-G_{VP}(2)$						-1.0	0	1.0	dB
Voltage Gain Difference 2	$\Delta G_{VP}(2)$				$G_{VP}(3)-G_{VP}(4)$						-1.0	0	1.0	dB
Gain Difference between Modes	$\Delta G_{VP6H-2H}$				$G_{VP}(1)-G_{VP}(3)$						1.8	2.5	3.2	dB
Equivalent Input Noise Voltage	1 $V_{NIN}(1)$		T6		V_{OUT}	1	1	1		2				
	2 (2)		T6		$G_{VP}(1),(2),(3),(4)$	2	1	1		2				
	3 (3)		T6		after 1.1MHz L.P.F	1	2	2		2		1.1	1.5	μV_{rms}
	4 (4)		T6			2	2	2		2				
Frequency Characteristic	1 $\Delta V_{FP}(1)$	T27	T6		$v_i=38mV_{pp}$	1	1	1		2				
	2 (2)	T25	T6		$f=100kHz, 7MHz$	2	1	1		2				
	3 (3)	T21	T6		7M output ratio	1	2	2		2	-2.5	0		dB
	4 (4)	T20	T6		100k output ratio	2	2	2		2				
Second Harmonic Distortion	1 $V_{HDP}(1)$	T27	T6		$v_i=38mV_{pp}$	1	1	1		2				
	2 (2)	T25	T6		$f=4MHz$	2	1	1		2				
	3 (3)	T21	T6		8M output ratio	1	2	2		2	-40	-35		dB
	4 (4)	T20	T6		4M output ratio	2	2	2		2				
Maximum Output Level	1 $V_{OMP}(1)$	T27	T6		$f=1MHz$	1	1	1		2				
	2 (2)	T25	T6		Output level when	2	1	1		2	0.8	1.0		Vpp
	3 (3)	T21	T6		3rd harmonic distortion is 30dB.	1	2	2		2				
	4 (4)	T20	T6			2	2	2		2				
Crosstalk 1 6H	1 $V_{CR1}(1)$	T25	T6		$v_i=38mV_{pp}$	1	1	1		2				
	2 (2)	T27	T6		$f=1MHz$	2	1	1		2				
Crosstalk 2 2H	3 $V_{CR2}(3)$	T20	T6		$V_{OUT}/G_{VP}(1),(2)$ output ratio						-40	-35		dB
	4 (4)	T21	T6		$v_i=38mV_{pp}$	1	2	2		2				
Output DC Offset 1 to 6	1 V_{ODC1}		Pin6		$f=1MHz$	2	2	2		2				
	2				$V_{OUT}/G_{VP}(3),(4)$ output ratio						-40	-35		dB
Comparator Control Characteristic	1 V_{CM1}		T5		CH1-2 Output DC difference	1-2	1			1				
					CH3-4 difference	1-2	2			1				
					CH1-3	1	1-2			1	-100	0	100	mV
					CH2-4	2	1-2			1				
					CH1-4	1-2	1-2			1				
					CH2-3	2-1	1-2			1				
Comparator Control Characteristic	1 V_{CM1}		T5		Vary T5 potential and measure T5 DC when T2 output changes as L-R.	1	1			1	2.6	2.8	3.0	V
	2 V_{CM2}	T27	T5		Same as above after setting as $f=4MHz$ T6 output 200mVpp	1	1			1	3.4	3.6	3.8	V

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Characteristic	Symbol	Input	Output	Test Conditions					Limits				
(REC mode)		T14		REC+12V	SW1 RF	SW2 HA	SW3 6H/ 2H	SW4 REC MUTE	SW5 Special PB "R"	min	typ	max	unit
Current Dissipation	I_{CCB}	T14		Pin14 flow-in current			1	2		37	50	63	mA
Voltage Gain	$G_{VR}(6C)$	T8	T17	$v_i=0.4V_{pp}$			1	2					
6H	(6Y)	T9	T17	$f=1MHz$			1	2					
2H	(2C)	T8	T15				2	2		16.0	19.0	22.0	dB
	(2Y)	T9	T15				2	2					
Voltage Gain Difference 1	$\Delta G_{VR}(6H)$	-	-	$G_{VR}(6C)-(6Y)$						-1.0	0	1.0	dB
Voltage Gain Difference 2	$\Delta G_{VR}(2H)$	-	-	$G_{VR}(2C)-(2Y)$						-1.0	0	1.0	dB
Frequency Characteristic	$\Delta V_{FR}(6C)$	T8	T17	$v_i=0.4V_{pp}$			1	2					
	(6Y)	T9	T17	$f=1MHz, 7MHz$			1	2					
	(2C)	T8	T15	$\frac{7M}{1M}$ output ratio			2	2		-4.5	-2.8	0	dB
	(2Y)	T9	T15				2	2					
Second Harmonic Distortion	$V_{HDR}(6C)$	T8	T17	$v_i=0.4V_{pp}$			1	2					
	(6Y)	T9	T17	$f=4MHz$			1	2					
	(2C)	T8	T15	$\frac{8M}{4M}$ output ratio			2	2		-50	-40		dB
	(2Y)	T9	T15				2	2					
Maximum Output Level	$V_{OHR}(6C)$	T8	T17	$f=1MHz$			1	2					
	(6Y)	T9	T17	Output level when			1	2		5.0	5.7		V _{PP}
	(2C)	T8	T15	3rd harmonic distortion is -30dB			2	2					
	(2Y)	T9	T15				2	2					
Mute Attenuation	$V_{MR}(6C)$	T8	T17	$v_i=0.4V_{pp}$			1	1					
	(6Y)	T9	T17	$f=1MHz$			1	1					
	(2C)	T8	T15	V_{out} output ratio			2	1		-60	-50		dB
	(2Y)	T9	T15	$G_{VR}(6C)(6Y)(2C)(2Y)$			2	1					
Cross Modulation Relative Level	6H $V_{CY}(6H)$	T8	T17	$T8 \quad v_i=55mV_{pp}$			1	2					
		T9	T17	$f=630kHz$						-50	-40		dB
				$T9 \quad v_i=0.4V_{pp}$									
				$f=4MHz$									
	2H $V_{CY}(2H)$	T8	T15	$\frac{4 \pm 0.63M}{4MHz}$ output ratio			2	2		-50	-40		dB
		T9	T15										

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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