Ordering number : 2 4 0 4

SANYO Semiconductors

DATA SHEET

Monolithic Linear IC

LA7301/7301M — 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

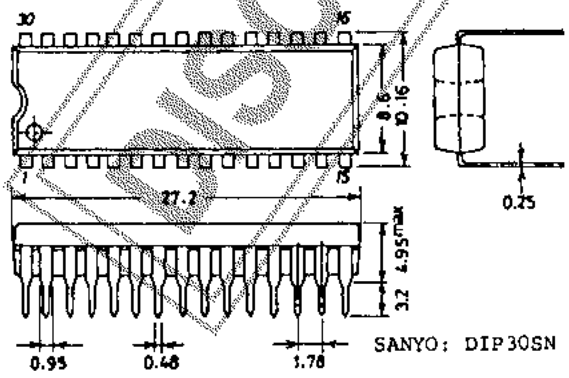
Maximum Ratings at Ta=25°C

			unit
Maximum Supply Voltage	V_{CC} max	(PB) 7.0	V
		(REC) 13.5	V
Alowable Power Dissipation	Pd max	(DIP) 920	mW
		(MFP) 840	mW
Operating Temperature	Topg	-10 to +65	°C
Storage Temperature	Tstg	-40 to +125	°C

Operating Conditions at Ta=25°C

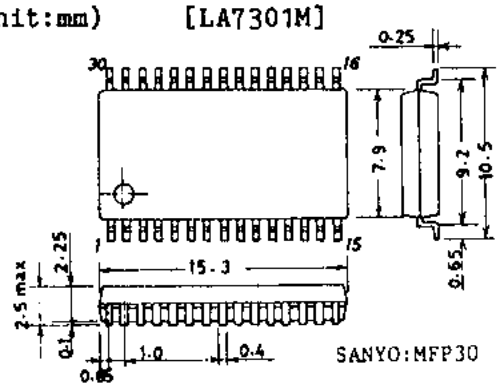
			unit
Supply Voltage	V_{CC}	(PB) 5.0	V
		(REC) 12.0	V
Operating Voltage Range	V_{CC} opg	(PB) 4.75 to 5.6	V
		(REC) 8.5 to 13.0	V

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



SANYO: DIP30SN

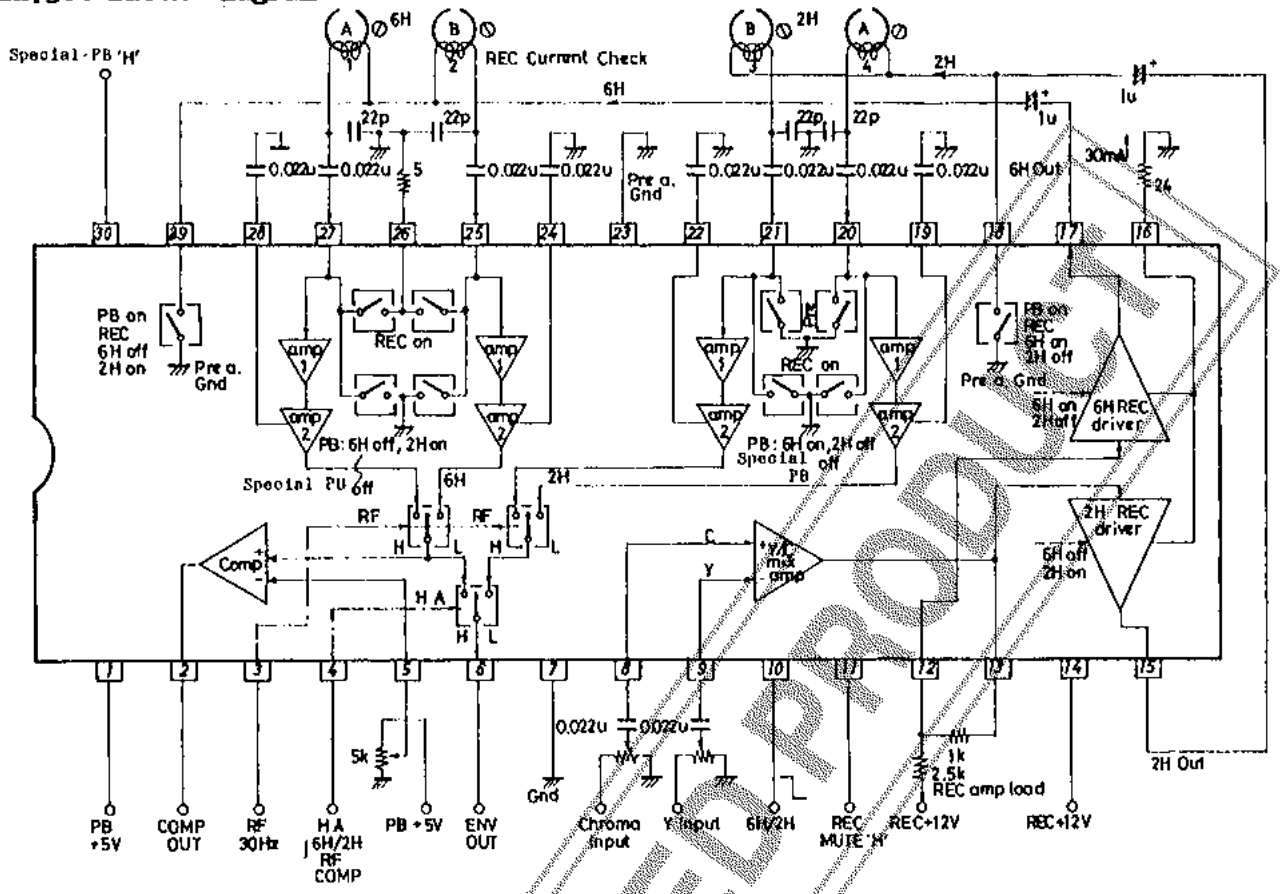
Case Outline 3073A-M30SIC [LA7301M]
(unit:mm)



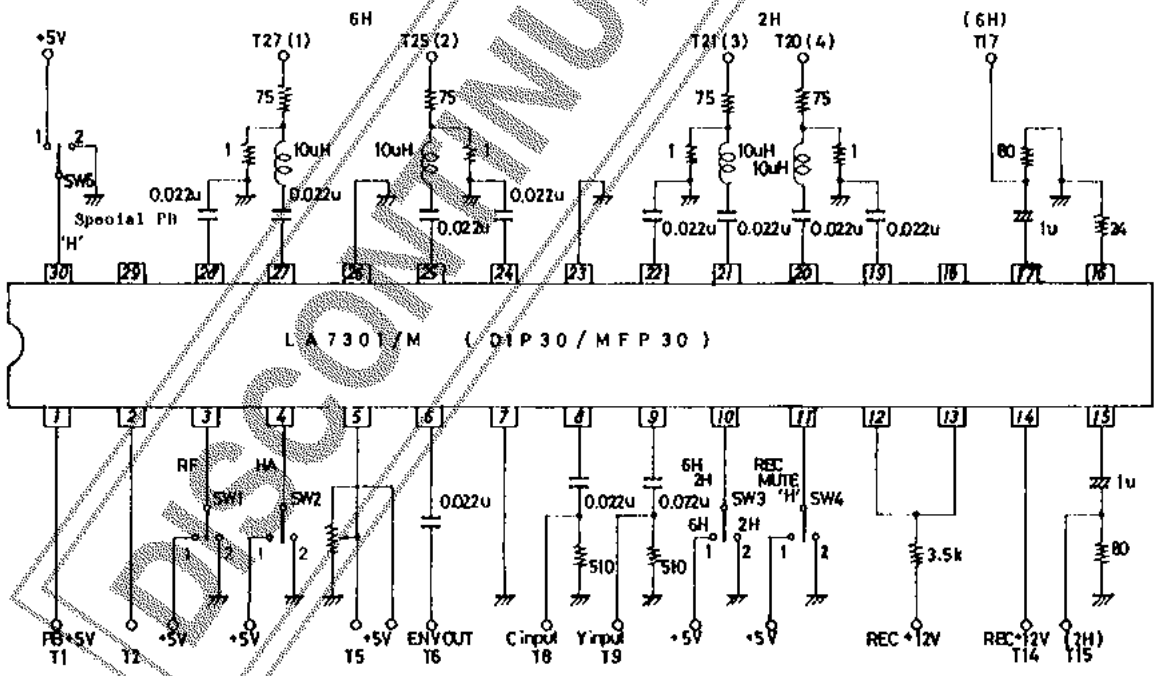
SANYO:MFP30

These specifications are subject to change without notice.

LA7301 Block Diagram



LA7301/M Test Circuit



Electrical Characteristics at Ta=25°C

Chracteristic		Symbol	Input	Output	Test Conditions	SW1	SW2	SW3	SW4	SW5	Limits min	Limits typ	Limits max	unit
(PB mode) CH			T1		PB+5V	RF 30	HA	6H/2H	REC MUTE	Special PB "H"				
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	vi=38mVpp	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	$\frac{V_{OUT}}{G_{VP}(1),(2),(3),(4)}$ after 1.1MHz L.P.F	1	1	1		2		1.1	1.5	uV rms
	2	(2)		T6		2	1	1		2				
	3	(3)		T6		1	2	2		2				
	4	(4)		T6		2	2	2		2				
Frequency Characteristic	1	$\Delta V_{FP}(1)$	T27	T6	vi=38mVpp f=100kHz,7MHz $\frac{7M}{100k}$ output ratio	1	1	1		2	-2.5	0		dB
	2	(2)	T25	T6		2	1	1		2				
	3	(3)	T21	T6		1	2	2		2				
	4	(4)	T20	T6		2	2	2		2				
Second Harmonic Distortion	1	$V_{HDP}(1)$	T27	T6	vi=38mVpp f=4MHz $\frac{8M}{4M}$ output ratio	1	1	1		2		-40	-35	dB
	2	(2)	T25	T6		2	1	1		2				
	3	(3)	T21	T6		1	2	2		2				
	4	(4)	T20	T6		2	2	2		2				
Maximum Output Level	1	$V_{OMP}(1)$	T27	T6	f=1MHz Output level when 3rd harmonic distortion is 30dB.	1	1	1		2				
	2	(2)	T25	T6		2	1	1		2	0.8	1.0		Vpp
	3	(3)	T21	T6		1	2	2		2				
	4	(4)	T20	T6		2	2	2		2				
Crosstalk 1 6H	1	$V_{CR1}(1)$	T25	T6	vi=38mVpp f=1MHz $V_{OUT}/G_{VP}(1),(2)$ output ratio	1	1	1		2				
	2	(2)	T27	T6		2	1	1		2		-40	-35	dB
Crosstalk 2 2H	3	$V_{CR2}(3)$	T20	T6	vi=38mVpp f=1MHz $V_{OUT}/G_{VP}(3),(4)$ output ratio	1	2	2		2				
	4	(4)	T21	T6		2	2	2		2		-40	-35	dB
Output DC Offset 1 to 6	1	ΔV_{ODC}		Pin6	CH1-2 Output DC	1-2	1			1				
	2				CH3-4 difference	1-2	2			1				
	3				CH1-3	1	1-2			1	-100	0	100	mV
	4				CH2-4	2	1-2			1				
	5				CH1-4	1-2	1-2			1				
	6				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→H.	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	SW1	SW2	SW3	SW4	SW5	Limits min	Limits typ	Limits max	unit
(REC mode)			T14		REC+12V	RF	HA	6H/2H	REC MUTE	Special PB "H"				
Current Dissipation		I_{CCR}	T14		Pin14 flow-in current			1	2		37	50	63	mA
Voltage Gain 6H	C	G_{VR}(6C)	T8	T17	vi=0.4Vpp			1	2					
	Y	(6Y)	T9	T17	f=1MHz			1	2		16.0	19.0	22.0	dB
2H	C	(2C)	T8	T15				2	2					
	Y	(2Y)	T9	T15				2	2					
Voltage Gain Difference 1		ΔG_{VR}(6H)	-	-	G_{VR}(6C)-(6Y)						-1.0	0	1.0	dB
Voltage Gain Difference 2		ΔG_{VR}(2H)	-	-	G_{VR}(2C)-(2Y)						-1.0	0	1.0	dB
Frequency Characteristic	C	ΔV_{FR}(6C)	T8	T17	vi=0.4Vpp			1	2					
	Y	(6Y)	T9	T17	f=1MHz,7MHz			1	2		-4.5	-2.0	0	dB
	C	(2C)	T8	T15	7M/1M output ratio			2	2					
	Y	(2Y)	T9	T15				2	2					
Second Harmonic Distortion	C	V_{HDR}(6C)	T8	T17	vi=0.4Vpp			1	2					
	Y	(6Y)	T9	T17	f=4MHz			1	2			-50	-40	dB
	C	(2C)	T8	T15	8M/4M output ratio			2	2					
	Y	(2Y)	T9	T15				2	2					
Maximum Output Level	C	V_{OHR}(6C)	T8	T17	f=1MHz			1	2					
	Y	(6Y)	T9	T17	Output level when			1	2		5.0	5.7		Vpp
	C	(2C)	T8	T15	3rd harmonic distor-			2	2					
	Y	(2Y)	T9	T15	tion is -30dB			2	2					
Mute Attenuation	C	V_{MR}(6C)	T8	T17	vi=0.4Vpp			1	1					
	Y	(6Y)	T9	T17	f=1MHz			1	1					
	C	(2C)	T8	T15	V_{out} output			2	1			-60	-50	dB
	Y	(2Y)	T9	T15	G_{VR}(6C)(6Y)(2C)(2Y) ratio			2	1					
Cross Modulation Relative Level	6H	V_{CY}(6H)	T8		T8 vi=55mVpp									
			T9	T17	f=630kHz			1	2			-50	-40	dB
					T9 vi=0.4Vpp									
	2H	V_{CY}(2H)	T8		f=4MHz									
			T9	T15	4±0.63M output 4MHz ratio			2	2			-50	-40	dB