



SANYO Semiconductors

DATA SHEET

Monolithic Linear IC

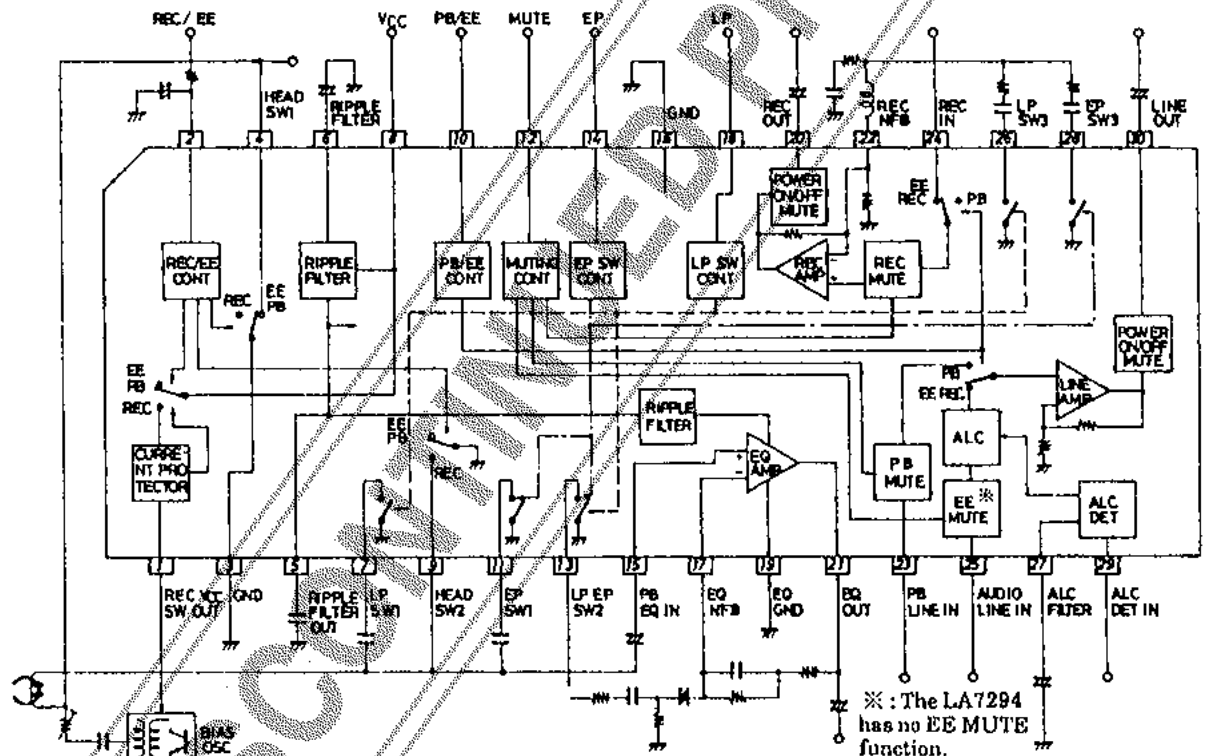
LA7295 Series — VTR Audio Signal Recording / Playback Processor

Features

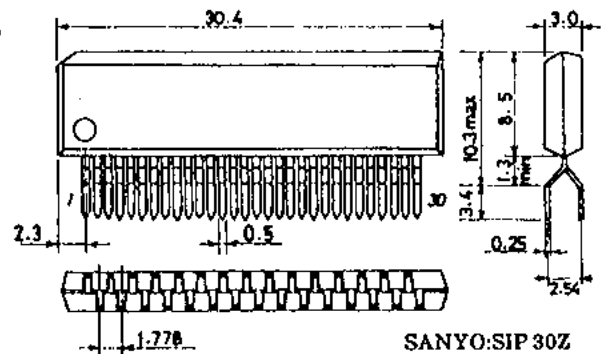
- Single-chip ICs that provide various functions (including two tape head select switches, a power supply switch for the OSC bias circuit, and five equalizer select switches (LP, EP) required for VTR audio signal recording / playback
- High merit in space because of SIP package
- Minimum number of external parts required

LA7295	... V _{CC} = 12V, PB "Hi"
LA7294	... V _{CC} = 12V, PB "Hi", no EE muting function
LA7296	... V _{CC} = 12V, PB "Lo"
LA7297	... V _{CC} = 9V, PB "Hi"

Block Diagram



Package Dimensions 3117 (unit:mm)



Specifications and information herein are subject to change without notice.

LA7294,7295,7296,7297

Maximum Ratings at Ta = 25°C			LA7294/95/96	LA7297	unit	
Maximum Supply Voltage	V _{CC} max		14	11	V	
Allowable Power Dissipation	P _d max	Ta = 65°C	600	600	mW	
Operating Temperature	T _{op}		-10 to +65	-10 to +65	°C	
Storage Temperature	T _{stg}		-55 to +125	-55 to +125	°C	
Operating Conditions at Ta = 25°C			LA7294/95/96	LA7297	unit	
Recommended Supply Voltage	V _{CC}		12.0	9.0	V	
Operating Voltage Range	V _{CC op}		11.25 to 12.75	8.25 to 9.75	V	
Operating Characteristics at Ta = 25°C, V _{CC} = 12V(9V), f = 1kHz, 0dBv:1.0Vrms						
			min	typ	max	unit
Current Dissipation (EE)	I _{CC} E	Quiescent	11.0	15.0	20.0	mA
Current Dissipation (PB)	I _{CC} P	Quiescent	12.0	16.0	21.0	mA
Current Dissipation (REC)	I _{CC} R	Quiescent	9.0	13.0	18.0	mA
Overall Gain at PB Mode	V _G PB	EQ IN to LINE OUT, Vo = -5dBv	67.0	68.0	69.0	dB
[Equalizer Amp]						
Open-Loop Voltage Gain	V _G OE	Vo = -5dBv	67.0	72.0		dB
Equivalent Input Noise Voltage	V _N IE	Rg = 2.2kΩ, DIN audio filter		1.0	1.8μVrms	
Input Resistance	r _{ie}			130		kΩ
[Line Amp]						
Voltage Gain (PB Input)	V _G LP	Vo = -5dBv	32.0	33.0	34.0	dB
Voltage Gain (EE, REC Input)	V _G LR	Vo = -5dBv	32.0	33.0	34.0	dB
Total Harmonic Distortion	THD _L	Vo = -5dBv		0.15	0.40	%
Output Noise Voltage	V _N OL	DIN audio filter		-70.0	-64.0	dBv
Input Resistance (PB Input)	r _{i1}			30.0		kΩ
Input Resistance (EE, REC Input)	r _{i2}			30.0		kΩ
Maximum Output Voltage	V _O ML	THD = 1%	1.5	2.2		Vrms
Output Voltage at ALC Mode	V _O A	V _{IN} = -35dBv	-6.5	-5.0	-3.5	dBv
ALC Effect	ALC	V _{IN} = -35 to -10dBv		1.0	3.0	dB
Total Harmonic Distortion at ALC Mode	THD _A	V _{IN} = -35dBv		0.2	0.6	%
[Recording Amp]						
Voltage Gain (Open Loop)	V _G OR	Vo = -5dBv	51.0	57.0		dB
Voltage Gain (Closed Loop)	V _G CR	Vo = -5dBv	13.5	14.5	15.5	dB
Total Harmonic Distortion	THD _R	Vo = -5dBv		0.1	0.3	%
Input Resistance	r _{ir}			30.0		kΩ
Maximum Output Voltage	V _O MR	THD = 1%	1.5	2.2		Vrms
[Muting Circuit]						
ON-State Voltage	V _M ON	Pin 12 DC	3.3		V _{CC}	V
OFF-State Voltage	V _M OFF	Pin 12 DC	0		1.0	V
Muting Attenuation (PB, EE)	M _{P, M} E	LA7294: No EE required	85.0	90.0		dB
Muting Attenuation (REC)	M _R		73.0	78.0		dB
[PB/EE Select Circuit]						
PB Mode Hold Voltage (LA7296 EE mode)	V _{PP}	Pin 10 DC	3.3		6.0	V
EE Mode Hold Voltage (LA7296 PB mode)	V _{PE}	Pin 10 DC	0		1.0	V
[REC/EE Select Circuit]						
REC Mode Hold Voltage	V _{RR}	Pin 2 DC	3.8		6.0	V
EE Mode Hold Voltage	V _{RE}	Pin 2 DC	0		1.0	V

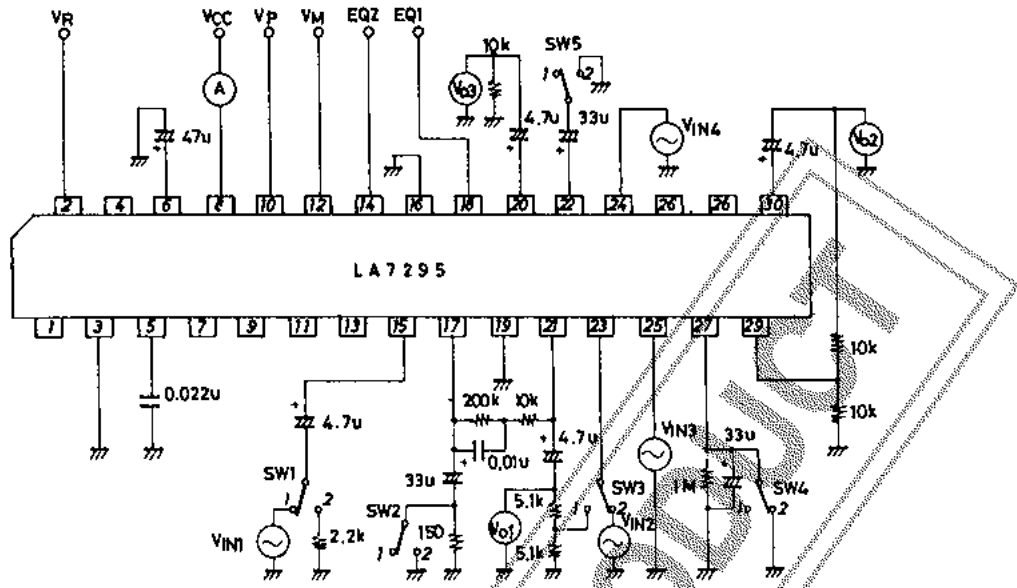
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		min	typ	max	unit
[Equalizer Select Circuit]					
Switch ON-State Voltage	V_{EON} Pins 14,18 DC	3.0		6.0	V
Switch OFF-State Voltage	V_{EOFF} Pins 14,18 DC	0		0.8	V
[Head Select Switch]					
Pin 4 ON-State Resistance	R_{ON4} $I_4 = \pm 1\text{mA}$		10	20	Ω
Pin 9 ON-State Resistance	R_{ON9} $I_9 = \pm 1\text{mA}$		5	10	Ω
Pin 4 Input Voltage	V_{IN4} $T_a = 65^\circ\text{C}, f = 80\text{kHz}(\text{sin})$ $I_{LK} = 10\mu\text{A}$			± 40	V
[REC V_{CC} Switch]					
Pin 1 Output Voltage (LA7294/95/96)	V_{RO} Pin 1 load current 100mA	10.5	10.8		V
Pin 1 Output Voltage (LA7297)	V_{RO} Pin 1 load current 100mA	7.5	7.8		V

DISCONTINUED PRODUCT

Test Circuit



(Switch Operating Table)

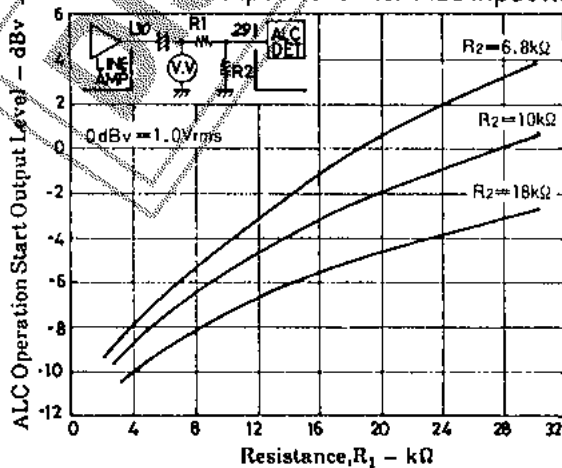
Item (Symbol)	SW1	SW2	SW3	SW4	SW5	V _M	V _P	V _R	Input	'test
I _{CCE}	2	1	1	2	1	GND	GND	GND		A
I _{CCP}	2	1	1	2	1	GND	5V	GND		A
I _{CCR}	2	1	1	2	1	GND	GND	5V		A
V _{GPB}	1	1	1	2	1	GND	5V	GND	V _{IN1}	Vo2
V _{GOE}	1	2	2	2	1	GND	5V	GND	V _{IN1}	Vo1
V _{NIE}	2	1	2	2	1	GND	5V	GND		Vo1
V _{GLP,THDL,VOML}	2	1	2	2	1	GND	5V	GND	V _{IN2}	Vo2
V _{GLR}	2	1	1	2	1	GND	GND	GND	V _{IN3}	Vo2
V _{NOL}	2	1	2	2	1	GND	GND	GND		Vo2
V _{OA,ALC,THDA}	2	1	2	1	1	GND	GND	GND	V _{IN3}	Vo2
V _{GOR}	2	1	2	2	2	GND	GND	GND	V _{IN4}	Vo3
V _{GCR,THDR,VOBR}	2	1	2	2	1	GND	GND	GND	V _{IN4}	Vo3
M _P	1	1	1	2	1	5V	5V	GND	V _{IN1}	Vo2
M _R	2	1	1	2	1	5V	GND	GND	V _{IN4}	Vo3
M _E	2	1	2	2	1	5V	GND	GND	V _{IN2}	Vo2

For the LA7294 that has no EE MUTE function, the ME test is not required.

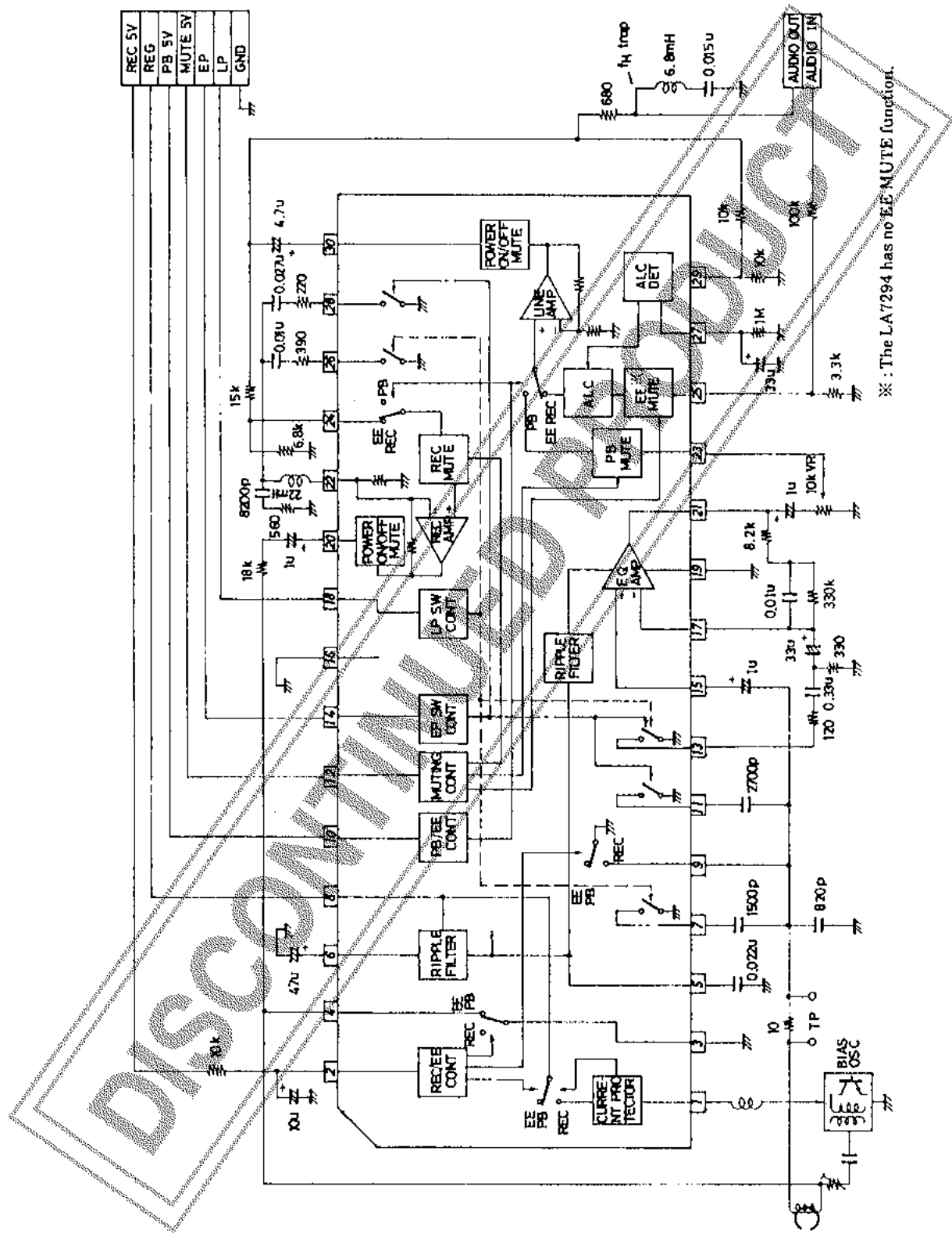
ALC Output Level Setting

The ALC output level depends on the value of the resistor connected to the detector input (pin 29) as shown below

ALC Operation Start Output Level vs. ALC Input Resistance



Sample Application Circuit



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