

Monolithic Linear IC

**SANYO**

No.2767A

**LA7295 Series**

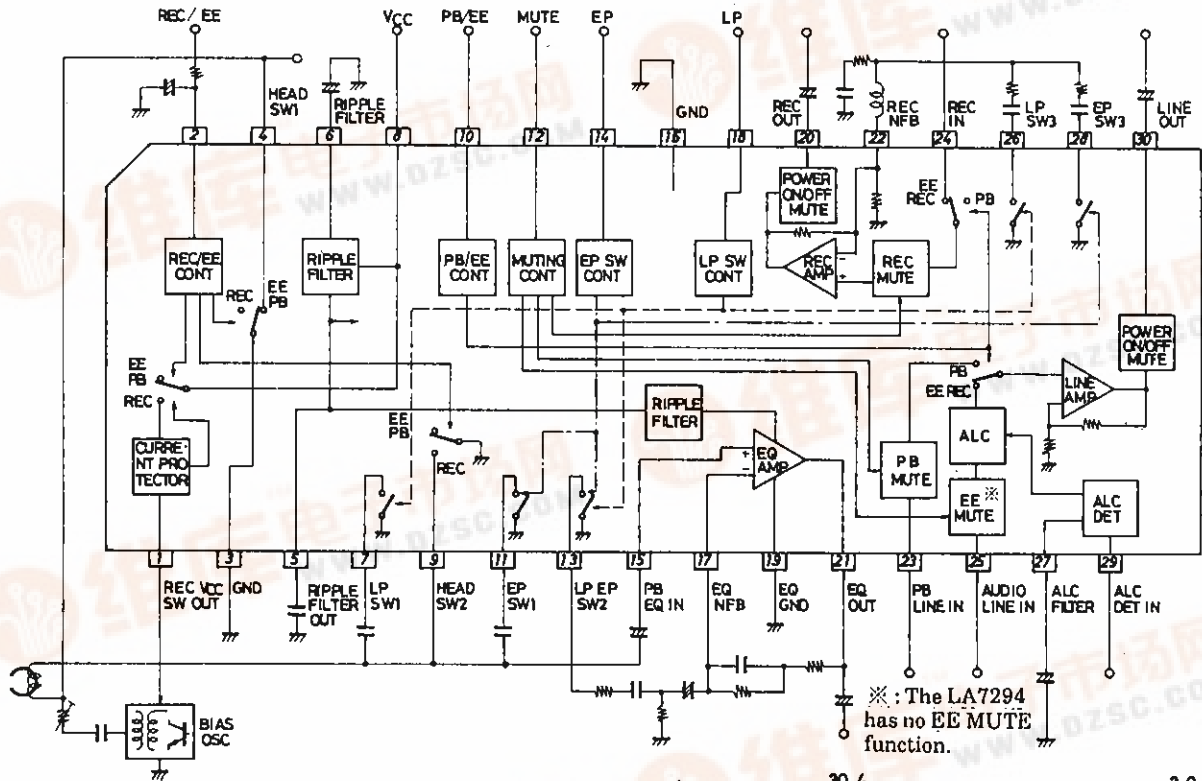
VTR Audio Signal Recording / Playback Processor

**Features**

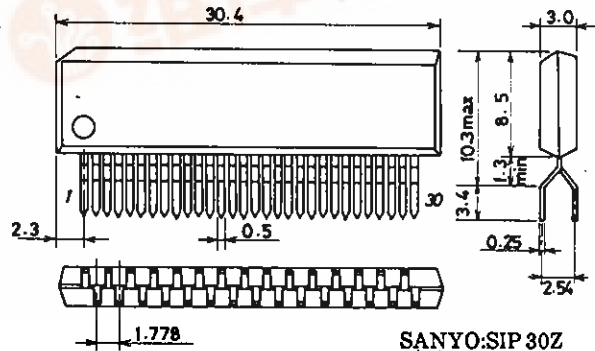
- Single-chip ICs that provide various functions (including two tape head select switches, a power supply switch for the OSC bias circuit, and five equalizer select switches (LP, EP) required for VTR audio signal recording / playback)
- High merit in space because of SIP package
- Minimum number of external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

LA7295	... V <sub>CC</sub> =12V, PB "Hi"
LA7294	... V <sub>CC</sub> =12V, PB "Hi", no EE muting function
LA7296	... V <sub>CC</sub> =12V, PB "Lo"
LA7297	... V <sub>CC</sub> =9V, PB "Hi"

**Block Diagram**



Package Dimensions 3117 (unit:mm)



LA7294,7295,7296,7297

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

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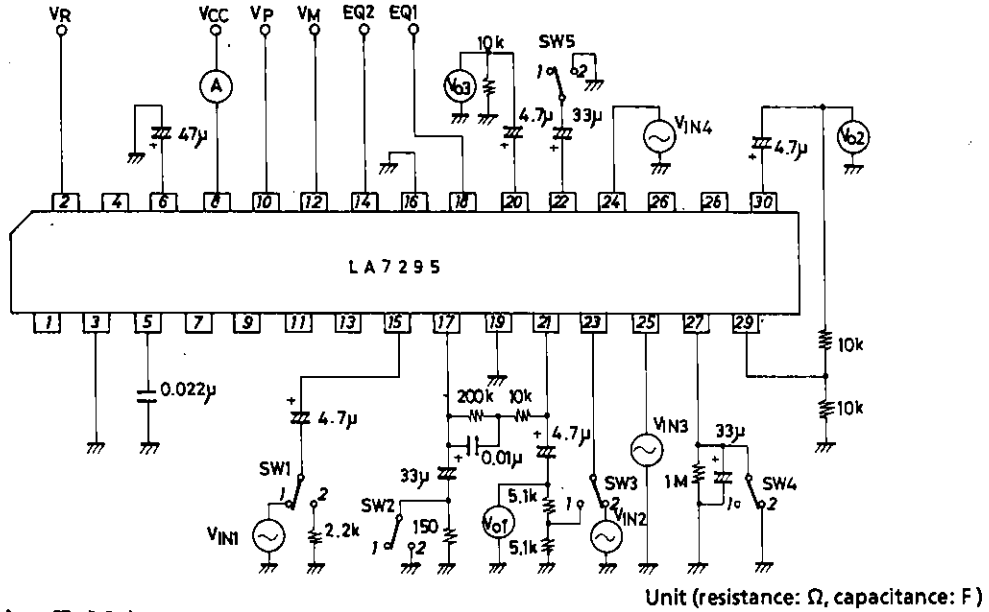
LA7294,7295,7296,7297

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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	$\Omega$
Pin 9 ON-State Resistance	$R_{ON9}$	$I_9 = \pm 1\text{mA}$		5	10	$\Omega$
Pin 4 Input Voltage	$V_{IN4}$	$T_a = 65^\circ\text{C}, f = 80\text{kHz}(\text{sin})$ $I_{LK} = 10\mu\text{A}$			$\pm 40$	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

# LA7294,7295,7296,7297

## Test Circuit



## (Switch Operating Table)

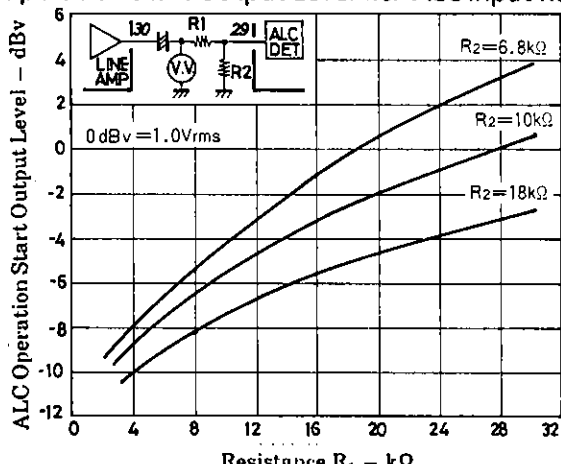
Item (Symbol)	SW1	SW2	SW3	SW4	SW5	V <sub>M</sub>	V <sub>P</sub>	V <sub>R</sub>	Input	Test
I <sub>CCE</sub>	2	1	1	2	1	GND	GND	GND		A
I <sub>CCP</sub>	2	1	1	2	1	GND	5V	GND		A
I <sub>CCR</sub>	2	1	1	2	1	GND	GND	5V		A
V <sub>G<sub>PB</sub></sub>	1	1	1	2	1	GND	5V	GND	V <sub>IN1</sub>	Vo2
V <sub>G<sub>OE</sub></sub>	1	2	2	2	1	GND	5V	GND	V <sub>IN1</sub>	Vo1
V <sub>NIE</sub>	2	1	2	2	1	GND	5V	GND		Vo1
V <sub>G<sub>LP</sub></sub> , THD <sub>L</sub> , V <sub>OML</sub>	2	1	2	2	1	GND	5V	GND	V <sub>IN2</sub>	Vo2
V <sub>G<sub>LR</sub></sub>	2	1	1	2	1	GND	GND	GND	V <sub>IN3</sub>	Vo2
V <sub>NOL</sub>	2	1	2	2	1	GND	GND	GND		Vo2
V <sub>OA</sub> , ALC, THD <sub>A</sub>	2	1	2	1	1	GND	GND	GND	V <sub>IN3</sub>	Vo2
V <sub>G<sub>OR</sub></sub>	2	1	2	2	2	GND	GND	GND	V <sub>IN4</sub>	Vo3
V <sub>G<sub>CR</sub></sub> , THD <sub>R</sub> , V <sub>OMR</sub>	2	1	2	2	1	GND	GND	GND	V <sub>IN4</sub>	Vo3
M <sub>P</sub>	1	1	1	2	1	5V	5V	GND	V <sub>IN1</sub>	Vo2
M <sub>R</sub>	2	1	1	2	1	5V	GND	GND	V <sub>IN4</sub>	Vo3
M <sub>E</sub>	2	1	2	2	1	5V	GND	GND	V <sub>IN2</sub>	Vo2

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

## ALC Output Level Setting

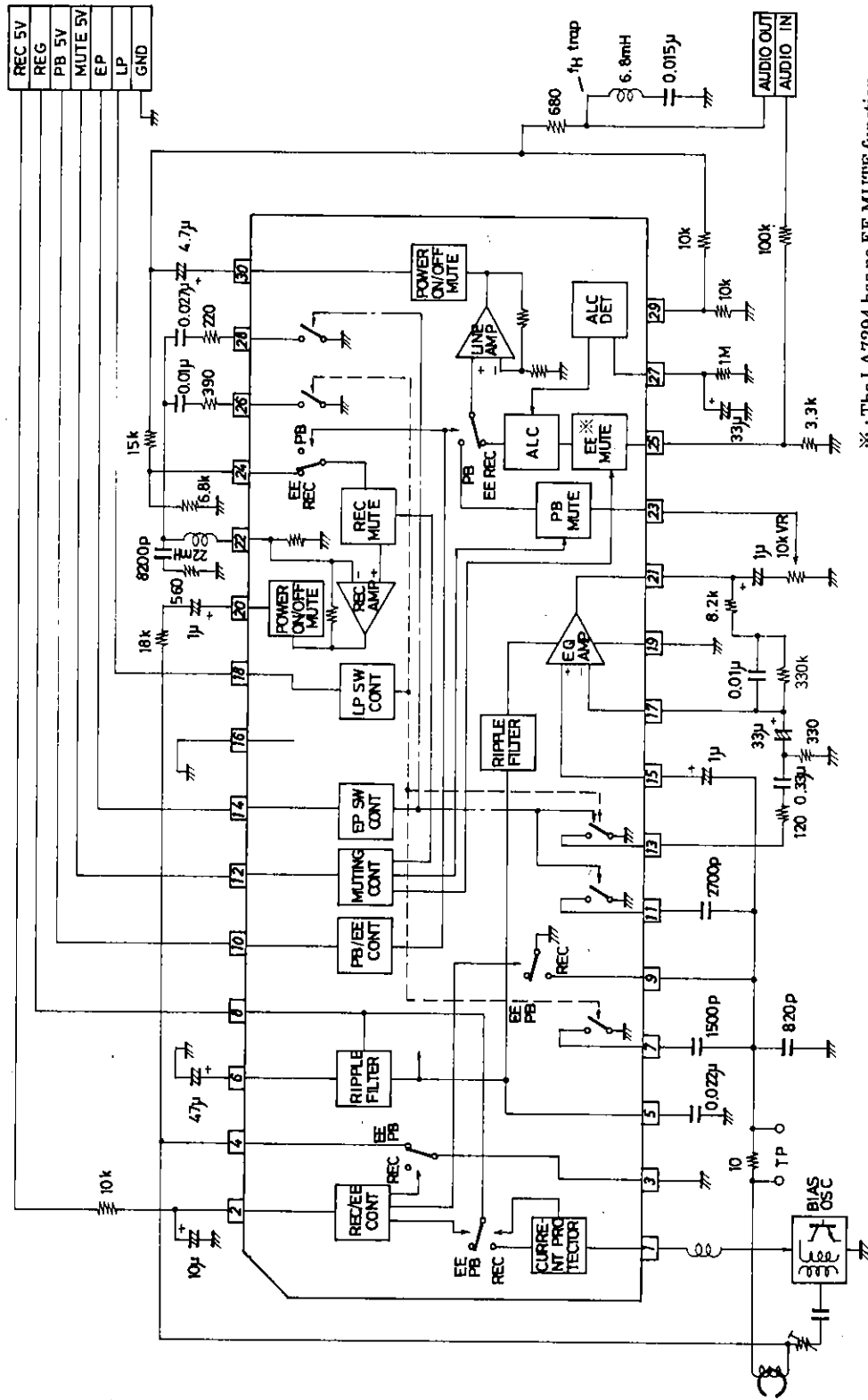
The ALC output level depends on the value of the resistor connected to the detector input (pin 29) as shown below.

## ALC Operation Start Output Level vs. ALC Input Resistance



LA7294,7295,7296,7297

Sample Application Circuit



※ : The LA7294 has no EE MUTE function.

Unit (resistance: Ω, capacitance: F)

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