Ordering number : EN 4064A

Monolithic Linear IC

No.4064A

LA7155M

Audio Switch for PAL 21 Pin Connectors

Overview

The LA7155M is an audio switch of a stereophonic system for PAL21 pin connectors.

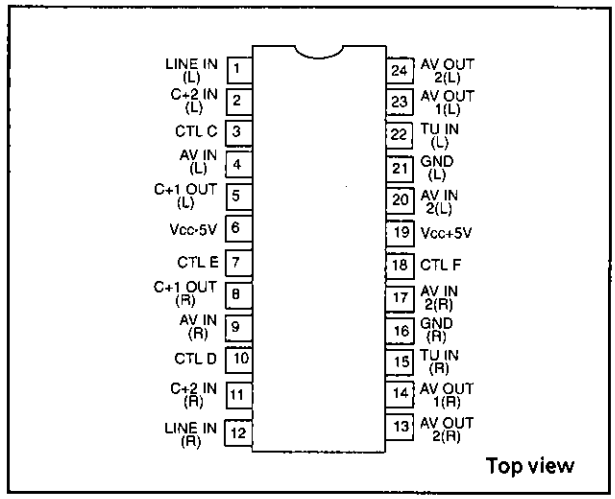
Features

- +-5V power supply.
- Smaller size allowing for saving space.
- Low distortion factor.

Functions

- 4 audio switch circuits of 2 inputs and 1 output.
- 2 audio switch circuits of 3 inputs and 1 output.
- 2 audio amplifying circuits of 2dB.
- 2 audio amplifying circuits of 12dB.

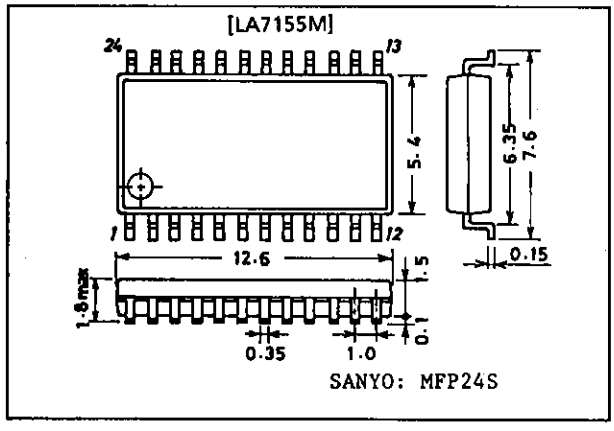
Pin Assignment



Package Dimensions

(unit :mm)

3112



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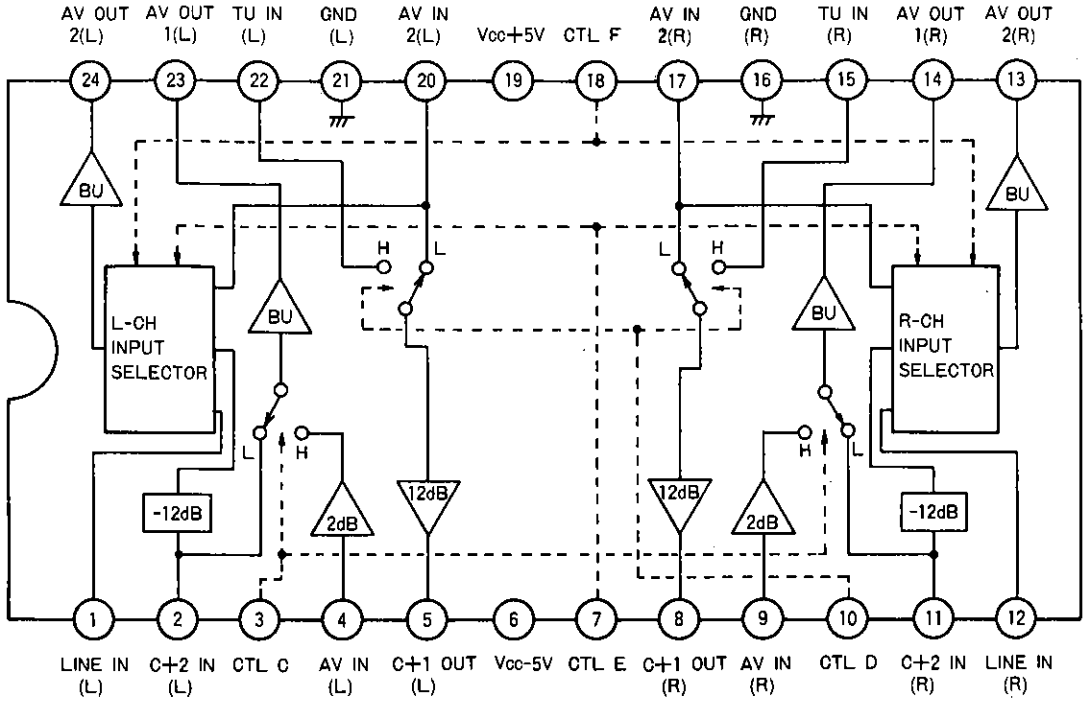
Maximum Ratings at Ta = 25°C				Unit
Maximum supply voltage	V_{CC} max		±7	V
Allowable power dissipation	Pd max	Ta ≦ 75°C	300	mV
Operating temperature	**Topr**		−20 to +75	°C
Storage temperature	Tstg		−55 to +150	°C

Operating Conditions at Ta = 25°C			Unit
Recomended supply voltage	V_{CC}	±5	V
Operating voltage range	V_{CC} op	±4 to ±6	V

* Both + and − voltages of supply are required.

Operating characteristics at Ta=25°C, Vcc=±5V and f=1kHz			min	typ	max	Unit
Current dissipation	I_{CC}	No signal	8	11	14	mA
Output voltage 1	V_{O1}	V_{IN}=−18dBV	−19	−18	−17	dBV
Output voltage 2	V_{O2}	V_{IN}=−6 dBV	−19	−18	−17	dBV
Output voltage 3	V_{O3}	V_{IN}=−6 dBV	−7	−6	−5	dBV
Output voltage 4	V_{O4}	V_{IN}=−8 dBV	−7	−6	−5	dBV
Output voltage 5	V_{O5}	V_{IN}=−18dBV	−7	−6	−5	dBV
Total harmonic distortion 1	THD_1	V_{IN}=−18dBV		0.005	0.1	%
Total harmonic distortion 2	THD_2	V_{IN}=−6 dBV		0.005	0.1	%
Total harmonic distortion 3	THD_3	V_{IN}=−6 dBV		0.008	0.1	%
Total harmonic distortion 4	THD_4	V_{IN}=−8 dBV		0.01	0.1	%
Total harmonic distortion 5	THD_5	V_{IN}=−18dBV		0.01	0.1	%
Maximum output voltage 1	V_{OM1}	THD=1%	5.0	9.0		dBV
Maximum output voltage 2	V_{OM2}	THD=1%	−7	−3		dBV
Maximum output voltage 3	V_{OM3}	THD=1%	6.0	9.0		dBV
Maximum output voltage 4	V_{OM4}	THD=1%	6.0	9.0		dBV
Maximum output voltage 5	V_{OM5}	THD=1%	6.0	9.0		dBV
Output noise voltage 1	V_{ON1}	No signal Rg=600Ω DIN AUDIO FILTER		−110	−104	dBV
Output noise voltage 2	V_{ON2}			−110	−104	dBV
Output noise voltage 3	V_{ON3}			−107	−101	dBV
Output noise voltage 4	V_{ON4}			−105	−99	dBV
Output noise voltage 5	V_{ON5}			−101	−94	dBV
Input separation	V_{CR}	V_{IN}=−8dBV, Other input, Rg=600Ω	−80			dB
Switched DC offset	V_{DC}	Outputs at pins 13 and 24 No signal	−20	0	+20	mV
H mode hold voltage	V_{CHI}	V_3, V_7, V_{10}, V_{18}	3.5		$+V_{CC}$	V
L mode hold voltage	V_{CLOW}	V_3, V_7, V_{10}, V_{18}	0		1.0	V

Block Diagram



AV OUT 1

Control pin 3	Output L-CH	Output R-CH
L	C+2 IN (L)	C+2 IN (R)
H	AV IN (L)	AV IN (R)

C+1 OUT

Control pin 10	Output L-CH	Output R-CH
L	AV IN 2(L)	AV IN 2(R)
H	TU IN (L)	TU IN (R)

AV OUT 2

Control pin 7	Control pin 18	Output L-CH	Output R-CH
L	L	AV IN 2(L)	AV IN 2(R)
L	H	LINE IN (L)	LINE IN (R)
H	L	C+2 IN (L)	C+2 IN (R)
H	H	LINE IN (L)	LINE IN (R)

Test Circuit

Unit (resistance: Ω)

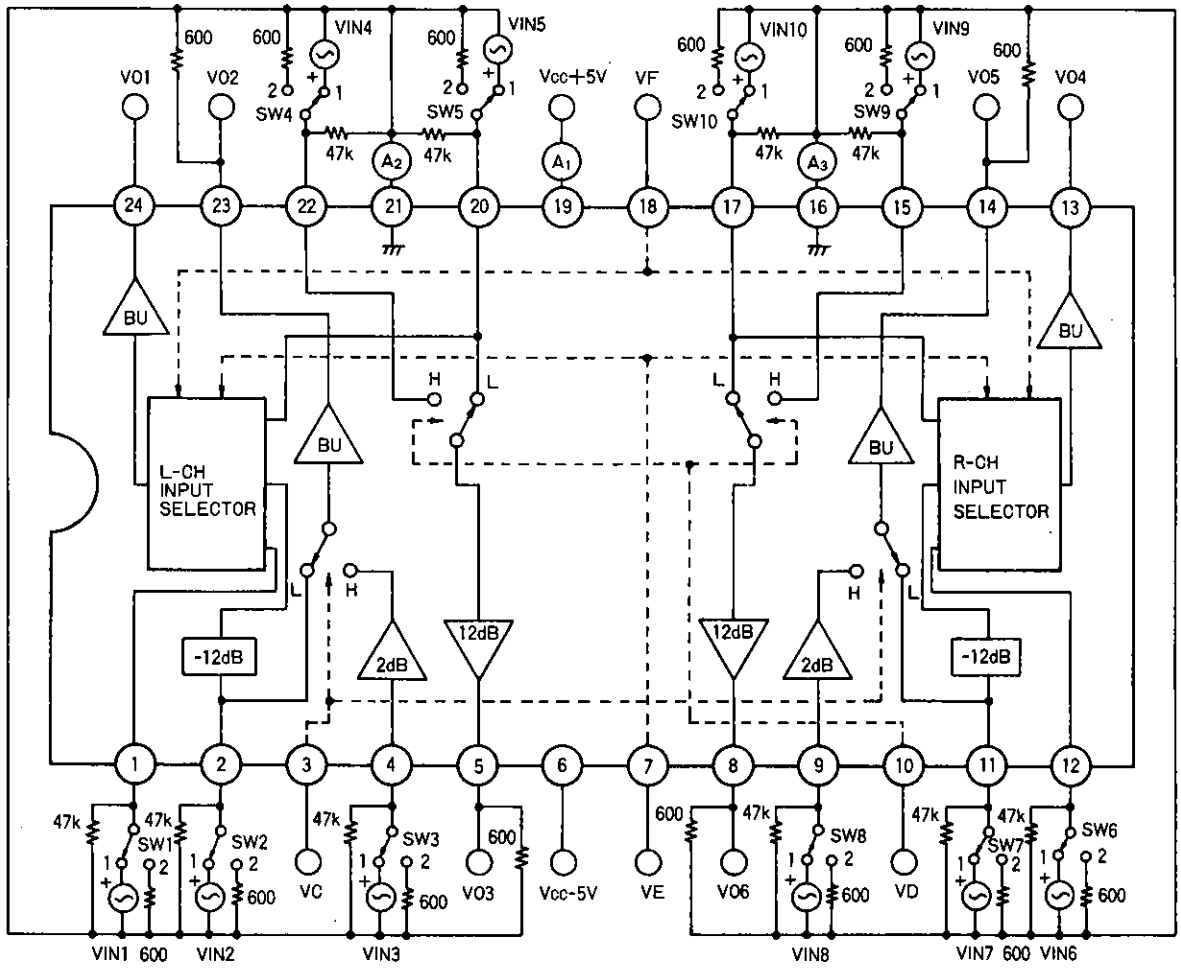


Table of switch operation

Symbol	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	VC	VD	VE	VF	Measuring point
I_{CC}	2	2	2	2	2	2	2	2	2	2	L	L	L	L	$A_1+A_2+A_3$
V_{O1-1L}	1	2	2	2	2	2	2	2	2	2	L	L	L	H	V_{O1}
V_{O1-1R}	2	2	2	2	2	1	2	2	2	2	L	L	L	H	V_{O4}
V_{O1-2L}	2	2	2	2	1	2	2	2	2	2	L	L	L	L	V_{O1}
V_{O1-2R}	2	2	2	2	2	2	2	2	2	1	L	L	L	L	V_{O4}
V_{O2-1L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	V_{O1}
V_{O2-1R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	V_{O4}
V_{O3-1L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	V_{O2}
V_{O3-1R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	V_{O5}
V_{O4-1L}	2	2	1	2	2	2	2	2	2	2	H	L	H	L	V_{O2}
V_{O4-1R}	2	2	2	2	2	2	2	1	2	2	H	L	H	L	V_{O5}
V_{O5-1L}	2	2	2	1	2	2	2	2	2	2	H	H	H	L	V_{O3}
V_{O5-1R}	2	2	2	2	2	2	2	2	1	2	H	H	H	L	V_{O6}
V_{O5-2L}	2	2	2	2	1	2	2	2	2	2	H	L	H	L	V_{O3}
V_{O5-2R}	2	2	2	2	2	2	2	2	2	1	H	L	H	L	V_{O6}
THD_{1-1L}	1	2	2	2	2	2	2	2	2	2	L	L	L	H	V_{O1}
THD_{1-1R}	2	2	2	2	2	1	2	2	2	2	L	L	L	H	V_{O4}
THD_{1-2L}	2	2	2	2	1	2	2	2	2	2	L	L	L	L	V_{O1}
THD_{1-2R}	2	2	2	2	2	2	2	2	2	1	L	L	L	L	V_{O4}
THD_{2-1L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	V_{O1}
THD_{2-1R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	V_{O4}
THD_{3-1L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	V_{O2}
THD_{3-1R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	V_{O5}
THD_{4-1L}	2	2	1	2	2	2	2	2	2	2	H	L	H	L	V_{O2}
THD_{4-1R}	2	2	2	2	2	2	2	1	2	2	H	L	H	L	V_{O5}
THD_{5-1L}	2	2	2	1	2	2	2	2	2	2	H	H	H	L	V_{O3}
THD_{5-1R}	2	2	2	2	2	2	2	2	1	2	H	H	H	L	V_{O6}
THD_{5-2L}	2	2	2	2	1	2	2	2	2	2	H	L	H	L	V_{O3}
THD_{5-2R}	2	2	2	2	2	2	2	2	2	1	H	L	H	L	V_{O6}
V_{OM1-1L}	1	2	2	2	2	2	2	2	2	2	L	L	L	H	V_{O1}
V_{OM1-1R}	2	2	2	2	2	1	2	2	2	2	L	L	L	H	V_{O4}
V_{OM1-2L}	2	2	2	2	1	2	2	2	2	2	L	L	L	L	V_{O1}
V_{OM1-2R}	2	2	2	2	2	2	2	2	2	1	L	L	L	L	V_{O4}
V_{OM2-1L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	V_{O1}
V_{OM2-1R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	V_{O4}
V_{OM3-1L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	V_{O2}
V_{OM3-1R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	V_{O5}
V_{OM4-1L}	2	2	1	2	2	2	2	2	2	2	H	L	H	L	V_{O2}
V_{OM4-1R}	2	2	2	2	2	2	2	1	2	2	H	L	H	L	V_{O5}
V_{OM5-1L}	2	2	2	1	2	2	2	2	2	2	H	H	H	L	V_{O3}
V_{OM5-1R}	2	2	2	2	2	2	2	2	1	2	H	H	H	L	V_{O6}
V_{OM5-2L}	2	2	2	2	1	2	2	2	2	2	H	L	H	L	V_{O3}
V_{OM5-2R}	2	2	2	2	2	2	2	2	2	1	H	L	H	L	V_{O6}

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Symbol	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	SW9	SW10	VC	VD	VE	VF	Measuring point
V_{ON1-1L}	2	2	2	2	2	2	2	2	2	2	L	L	L	H	V_{O1}
V_{ON1-1R}	2	2	2	2	2	2	2	2	2	2	L	L	L	H	V_{O4}
V_{ON1-2L}	2	2	2	2	2	2	2	2	2	2	L	L	L	L	V_{O1}
V_{ON1-2R}	2	2	2	2	2	2	2	2	2	2	L	L	L	L	V_{O4}
V_{ON2-1L}	2	2	2	2	2	2	2	2	2	2	L	L	H	L	V_{O1}
V_{ON2-1R}	2	2	2	2	2	2	2	2	2	2	L	L	H	L	V_{O4}
V_{ON3-1L}	2	2	2	2	2	2	2	2	2	2	L	L	H	L	V_{O2}
V_{ON3-1R}	2	2	2	2	2	2	2	2	2	2	L	L	H	L	V_{O5}
V_{ON4-1L}	2	2	2	2	2	2	2	2	2	2	H	L	H	L	V_{O2}
V_{ON4-1R}	2	2	2	2	2	2	2	2	2	2	H	L	H	L	V_{O5}
V_{ON5-1L}	2	2	2	2	2	2	2	2	2	2	H	H	H	L	V_{O3}
V_{ON5-1R}	2	2	2	2	2	2	2	2	2	2	H	H	H	L	V_{O6}
V_{ON5-2L}	2	2	2	2	2	2	2	2	2	2	H	L	H	L	V_{O3}
V_{ON5-2R}	2	2	2	2	2	2	2	2	2	2	H	L	H	L	V_{O6}
V_{CR-1L}	1	2	2	2	2	2	2	2	2	2	L	L	L	H	$V_{O2, 3, 4, 5, 6}$
V_{CR-1R}	2	2	2	2	2	1	2	2	2	2	L	L	L	H	$V_{O1, 2, 3, 5, 6}$
V_{CR-2L}	2	2	2	2	1	2	2	2	2	2	L	L	L	L	$V_{O2, 3, 4, 5, 6}$
V_{CR-2R}	2	2	2	2	2	2	2	2	2	1	L	L	L	L	$V_{O1, 2, 3, 5, 6}$
V_{CR-3L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	$V_{O2, 3, 4, 5, 6}$
V_{CR-3R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	$V_{O1, 2, 3, 5, 6}$
V_{CR-4L}	2	1	2	2	2	2	2	2	2	2	L	L	H	L	$V_{O1, 3, 4, 5, 6}$
V_{CR-4R}	2	2	2	2	2	2	1	2	2	2	L	L	H	L	$V_{O1, 2, 3, 4, 6}$
V_{CR-5L}	2	2	1	2	2	2	2	2	2	2	H	L	H	L	$V_{O1, 3, 4, 5, 6}$
V_{CR-5R}	2	2	2	2	2	2	2	1	2	2	H	L	H	L	$V_{O1, 2, 3, 4, 6}$
V_{CR-6L}	2	2	2	1	2	2	2	2	2	2	H	H	H	L	$V_{O1, 2, 4, 5, 6}$
V_{CR-6R}	2	2	2	2	2	2	2	2	1	2	H	H	H	L	$V_{O1, 2, 3, 4, 5}$
V_{CR-7L}	2	2	2	2	1	2	2	2	2	2	H	L	H	L	$V_{O1, 2, 4, 5, 6}$
V_{CR-7R}	2	2	2	2	2	2	2	2	2	1	H	L	H	L	$V_{O1, 2, 3, 4, 5}$
V_{DC-L}	2	2	2	2	2	2	2	2	2	2	L	L	L/H	L/H	V_{O1}
V_{DC-R}	2	2	2	2	2	2	2	2	2	2	L	L	L/H	L/H	V_{O4}
V_{CH1-3}	2	2	1	2	2	2	2	2	2	2	—	L	H	L	V_C
V_{CH1-7}	2	1	2	2	2	2	2	2	2	2	L	L	—	L	V_F
V_{CH1-10}	2	2	2	1	2	2	2	2	2	2	H	—	H	L	V_D
V_{CH1-18}	1	2	2	2	2	2	2	2	2	2	L	L	L	—	V_E
V_{CLOW-3}	2	1	2	2	2	2	2	2	2	2	—	L	H	L	V_C
V_{CLOW-7}	2	2	2	2	1	2	2	2	2	2	L	L	—	L	V_F
$V_{CLOW-10}$	2	2	2	2	1	2	2	2	2	2	H	—	H	L	V_D
$V_{CLOW-18}$	2	2	2	2	1	2	2	2	2	2	L	L	L	—	V_E