



Overview

The LA7957 is an audio and video switch for televisions, VCRs and other video equipment, and for audio and video amplifiers in multimedia equipment.

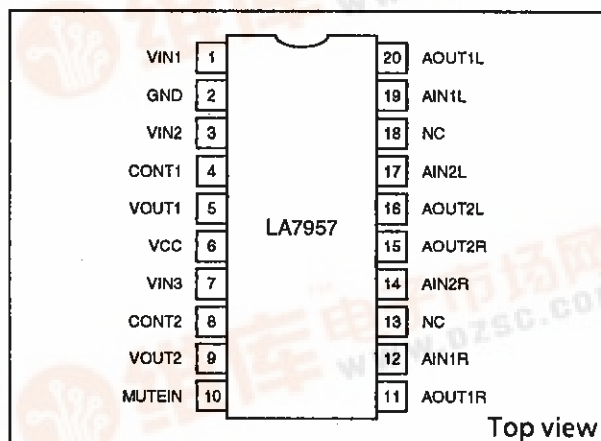
The LA7957 is ideal for audio and video switching in dual-tuner, BS and PIP applications.

The LA7957 operates from a 12 V supply and is available in 20-pin SDIPs.

Features

- Suitable for dual tuner, BS and PIP applications
- Three video inputs
- Two video outputs
- Two stereo audio channels
- Muting of one audio channel
- 8.0 to 13.2 V supply voltage
- 20-pin SDIPs

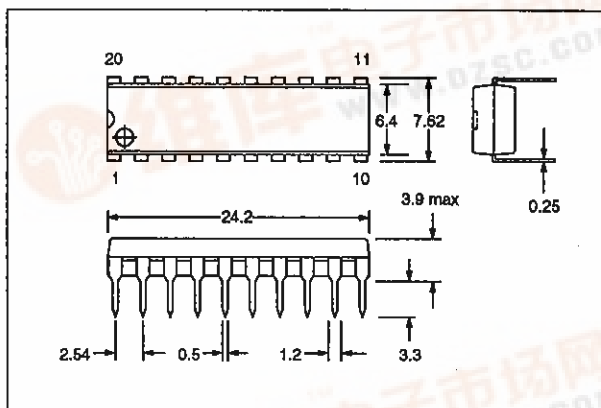
Pin Assignment



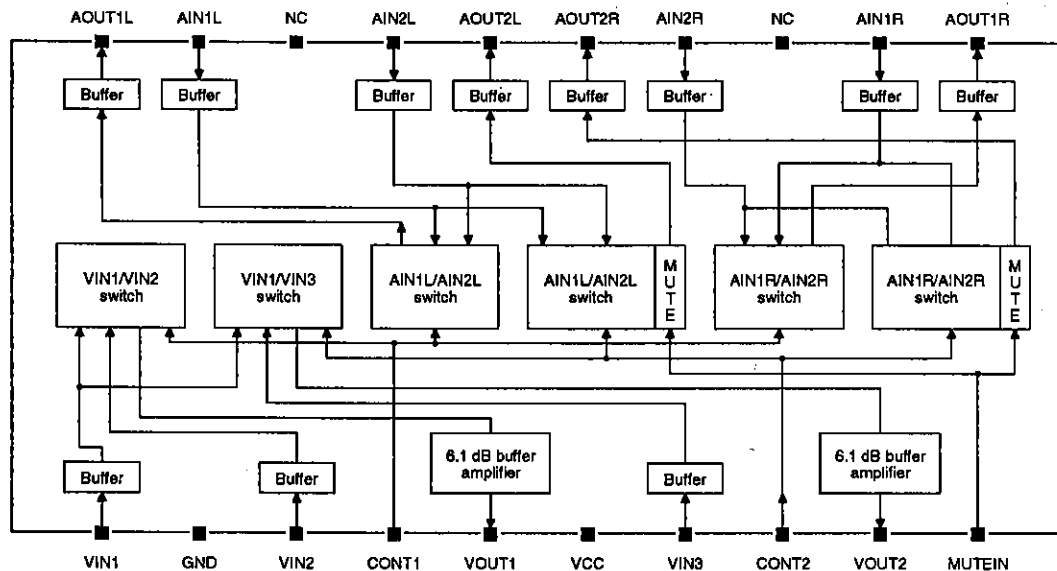
Package Dimensions

Unit: mm

3021B-DIP20



Block Diagram



Pin Functions

Number	Name	Description
1	VIN1	Video input channel 1
2	GND	Ground
3	VIN2	Video input channel 2
4	CONT1	Video and audio channel 1 source select input
5	VOUT1	Video output channel 1
6	VCC	Supply voltage
7	VIN3	Video input channel 3
8	CONT2	Video and audio channel 2 source select input
9	VOUT2	Video output channel 2
10	MUTEIN	Mute control input
11	AOUT1R	Audio channel 1 right-channel output
12	AIN1R	Audio channel 1 right-channel input
13	NC	No connection
14	AIN2R	Audio channel 2 right-channel input
15	AOUT2R	Audio channel 2 right-channel output
16	AOUT2L	Audio channel 2 left-channel output
17	AIN2L	Audio channel 2 left-channel input
18	NC	No connection
19	AIN1L	Audio channel 1 left-channel input
20	AOUT1L	Audio channel 1 left-channel output

Specifications

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	14.4	V
CONT1, CONT2 and MUTEIN voltage	V_I	14.4	V
Power dissipation	P_D	700	mW
Operating temperature range	T_{opr}	-20 to +70	°C
Storage temperature range	T_{stg}	-55 to +125	°C

Recommended Operating Conditions

$T_A = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	12	V
Supply voltage range	V_{CC}	8.0 to 13.2	V

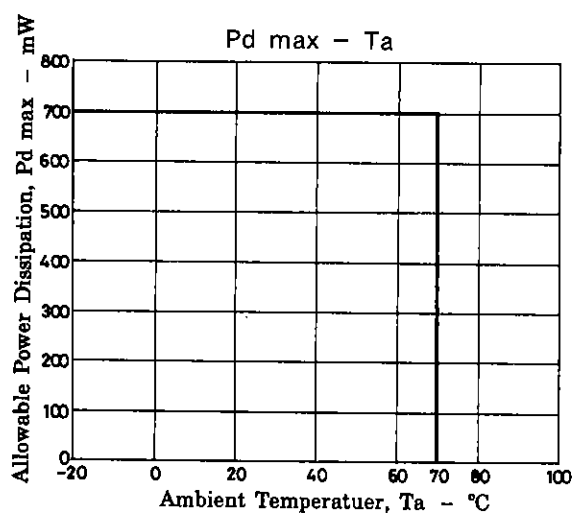
Electrical Characteristics

$V_{CC} = 12\text{ V}$, $T_A = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Supply current	I_{CC}		35	43	57	mA
VIN1 to VIN3 input bias voltage	V_{IB}		4.4	4.7	5.0	V
VOUT1 and VOUT2 output bias voltage	V_{OB}		6.2	6.8	7.4	V
VIN1 to VIN3 input impedance	Z_{IV}	$f = 1\text{ kHz}$	15	21	27	$k\Omega$
		$f = 1\text{ kHz}$, VIN3 connected to VIN2	—	10.5	—	
Video-channel voltage gain	A_V	$V_I = 1\text{ V}_{pp}$ sine wave, $f = 0.1\text{ MHz}$	5.6	6.1	6.6	dB
Video-channel bandwidth	BW_V	$V_I = 0.7\text{ V}_{pp}$ sine wave, 0.1 MHz to the -3 dB point	10	—	—	MHz
Video-channel noise voltage	V_{NV}	$R_g = 75\ \Omega$, 10 MHz bandwidth	—	0.3	1.0	mV _{rms}
VIN1 to VIN2 crosstalk rejection	CT_{V1}	$R_g = 75\ \Omega$, $f = 3.58\text{ MHz}$	45	50	—	dB
VIN1 to VIN3 or VIN2 to VIN3 crosstalk rejection	CT_{V2}	$R_g = 75\ \Omega$, $f = 3.58\text{ MHz}$	45	50	—	dB
Video-channel hum rejection	HR_V	$f = 50\text{ Hz}$, $R_g = 75\ \Omega$	18	23	—	dB
AIN1L, AIN1R, AIN2L and AIN2R input bias voltage	V_{IAB}		4.5	5.1	5.7	V
AOUT1 and AOUT2 output bias voltage	V_{OA}		3.2	3.8	4.4	V
AIN1L and AIN1R input impedance	Z_{IA1}	$f = 1\text{ kHz}$	47	68	88	$k\Omega$
AIN2L and AIN2R input impedance	Z_{IA2}	$f = 1\text{ kHz}$	51	74	95	$k\Omega$

LA7957

Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Audio-channel voltage gain	A_A	$f = 1 \text{ kHz}$, $V_i = 500 \text{ mV}_{\text{rms}}$	-0.5	-0.02	+0.5	dB
Audio-channel bandwidth	BW_A	$V_i = 500 \text{ mV}_{\text{rms}}$, 1 kHz to the -1 dB point	100	-	-	kHz
Audio-channel total harmonic distortion	THD	$V_i = 500 \text{ mV}_{\text{rms}}$, $f = 1 \text{ kHz}$	-	0.03	0.2	%
Audio-channel noise voltage	V_{NA}	$R_g = 600 \Omega$, $f = 20 \text{ Hz}$ to 20 kHz	-	10	50	μV_{rms}
AIN1 to AIN2 crosstalk rejection	CT_{A1}	$R_g = 4.7 \text{ k}\Omega$, $f \leq 1 \text{ kHz}$	75	90	-	dB
Left- to right-channel crosstalk rejection	CT_{AS}	$R_g = 4.7 \text{ k}\Omega$, $f \leq 1 \text{ kHz}$	72	82	-	dB
Mute output noise voltage	V_{OAM}	$V_i = 500 \text{ mV}_{\text{rms}}$, $f = 1 \text{ kHz}$	-	0.02	0.1	mV_{rms}
Audio-channel hum rejection	HR_A	$R_g = 4.7 \text{ k}\Omega$	40	46	-	dB
		Input open or mute ON	28	39	-	
CONT1 and CONT2 HIGH-level input voltage	V_{IH1}		1.1	1.4	1.7	V
CONT1 leakage current	I_{L1}	$V_{\text{CONT1}} = 0 \text{ V}$	-	-	-3	μA
CONT2 leakage current	I_{L2}	$V_{\text{CONT2}} = 0 \text{ V}$	-	-	-3	μA
MUTEIN HIGH-level input voltage	V_{IH2}		1.1	1.4	1.7	V
MUTEIN leakage current	I_{L3}	$V_{\text{MUTEIN}} = 0 \text{ V}$	-	-	-3	μA



Output Selection

CONT1	CONT2	MUTEIN	VOUT1	VOUT2	AOUT1L/R	AOUT2L/R
LOW	LOW	LOW	VIN1	VIN1	AIN1L/R	AIN1L/R
LOW	HIGH	LOW	VIN1	VIN3	AIN1L/R	AIN2L/R
HIGH	LOW	LOW	VIN2	VIN1	AIN2L/R	AIN1L/R
HIGH	HIGH	LOW	VIN2	VIN3	AIN2L/R	AIN2L/R
LOW	LOW	HIGH	VIN1	VIN1	AIN1L/R	-
LOW	HIGH	HIGH	VIN1	VIN3	AIN1L/R	-
HIGH	LOW	HIGH	VIN2	VIN1	AIN2L/R	-
HIGH	HIGH	HIGH	VIN2	VIN3	AIN2L/R	-

Note

When using the two-input, two-output configuration, VIN2 and VIN3 should be connected externally.

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