Ordering number:ENN2868A

Monolithic Linear IC

LA7951

Video Switch for TV/VCR Use

Overview

The LA7951 Video Switch is a solid-state 4-input 4-output video switch ideally suited for use as a video selector switch in multiple-source video systems and multiple VCR video editing systems.

The Switching logic, coupled with built-in video amplifier, ripple filter and 75Ω output driver facilitate a minimum parts count video switching subsystem. The solid-state switches feature low crosstalk and wide bandwidth.

The LA7951 operates from a single 12V power supply, and is available in 14-pin plastic DIPs.

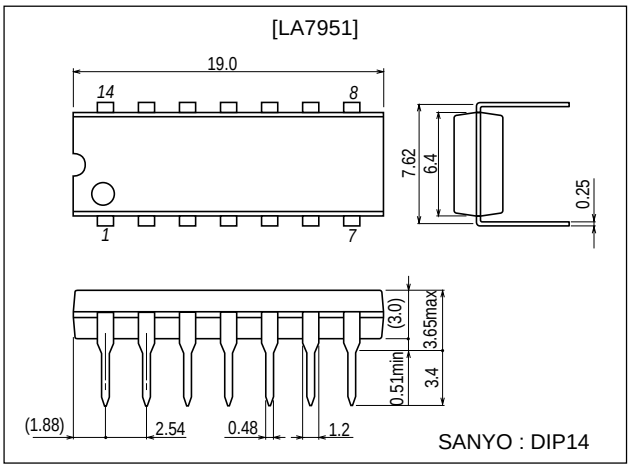
Features

- 4-input 4-output multi-functional video switch.
- Low crosstalk, wide bandwidth.
- Internal 6 dB video amplifier.
- Ripple filter.
- 75Ω output driver for video monitor (COMMON OUT).

Package Dimensions

unit:mm

3003B-DIP14



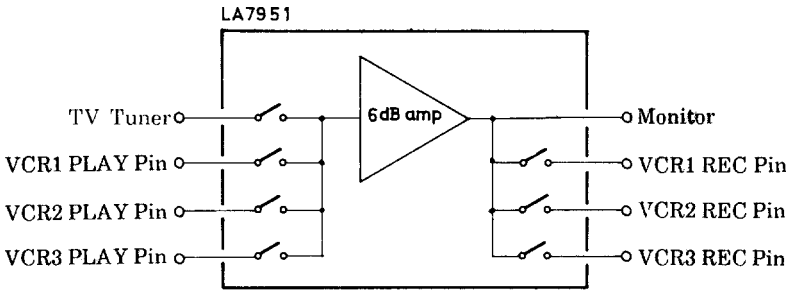


Figure 1. Editing System Switch Connections

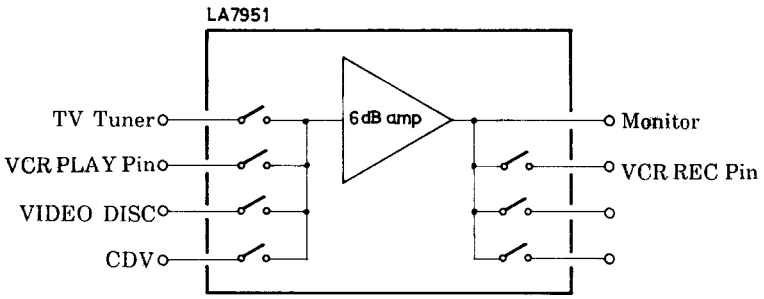


Figure 2. Video Selector Switch Connections

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Specifications

Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_4 max		14	V
Maximum control input voltage	V_6 max, V_9 max, V_{13} max		V_{CC}	V
Maximum signal output current 1	I_1 max		–5	mA
Maximum signal output current 2	I_7 max, I_8 max, I_{14}max		–20	mA
Allowable power dissipation	Pd max	Ta≤50˚C	1.25	mW
Operating temperature	Topr		–20 to +75	˚C
Storage temperature	Tstg		–55 to +125	˚C

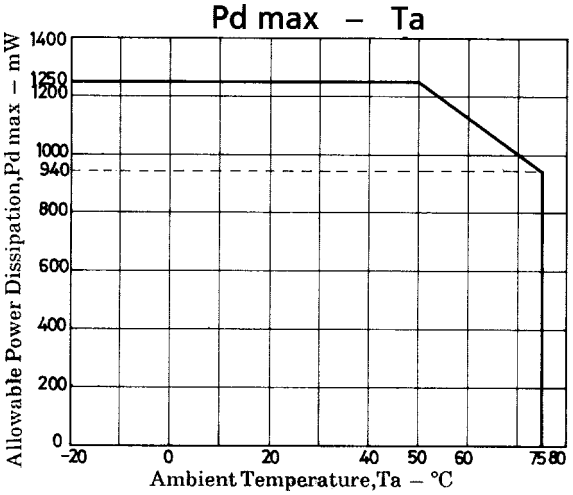
Operating Conditions at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		12	V
Operating voltage range	V_{CC} op		9 to 13.2	V

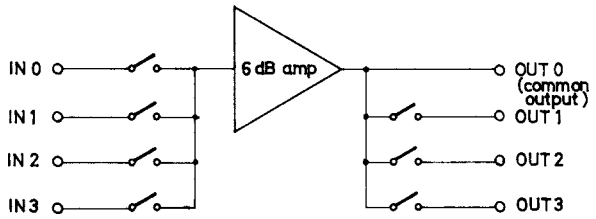
Operating Characteristics at Ta = 25˚C, V_{CC}=12V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current drain	I_{CC}	Pins 7, 8, 14 open, pins6, 9, 13 to GND	20	27.5	37	mA
Input pin bias voltage	V_3, V_5, V_{10}, V_{12}		2.6	3.1	3.6	V
Output pin bias voltage 1	V_1		4.6	5.3	6.0	V
Output pin bias voltage 2	V_7, V_8, V_{14}		3.3	4.0	4.7	V
Control threshold voltage H1	V_{6H}		2.3		V_{CC}	V
Control threshold voltage H2	V_{9H}, V_{13H}		3.0		V_{CC}	V
Control threshold voltage L1	V_{6L}		0		0.8	V
Control threshold voltage L2	V_{9L}, V_{13L}		0		1.5	V
Control input current 1	I_6	V_6=5V		0.32	0.5	mA
Control input current 2	I_9, I_{13}	V_9=V_{13}=5V		0	–50	µA
Voltage gain 1	GV1	f=1MHz, V_O=1Vp-p, See Note.	–0.5	+0.5	+1.5	dB
Voltage gain 2	GV2	f=1MHz, V_O=1Vp-p, See Note.	–0.7	+0.3	+1.3	dB
Frequency characteristics	GVf	f=100kHz, V_O=1Vp-p=0dB, f=10MHz, See Note.	–3	–1		dB
Output noise voltage	V_N	BPF=10kHz to 4.2MHz, See Note.		0.5	1.0	mVrms
Output dynamic range 1	DR1	f=10kHz, V_O=1.5Vp-p, See Note.		0.5	1.2	%
Output dynamic range 2	DR2	f=10kHz, V_O=1.5Vp-p, See Note.		1.0	2.0	%
Crosstalk 1	CT1	f=4MHz, V_O=1Vp-p, See Note.	–50	–55		dB
Crosstalk 2	CT2	f=4MHz, V_O=1Vp-p, See Note.	–20	–40		dB

Note) Measured output terminated with 75Ω. Current flowing into IC is taken as plus (+). Parameter 1 refers to the COMMON OUT signal output and parameter 2 to the OUT1 to OUT3 signal outputs.



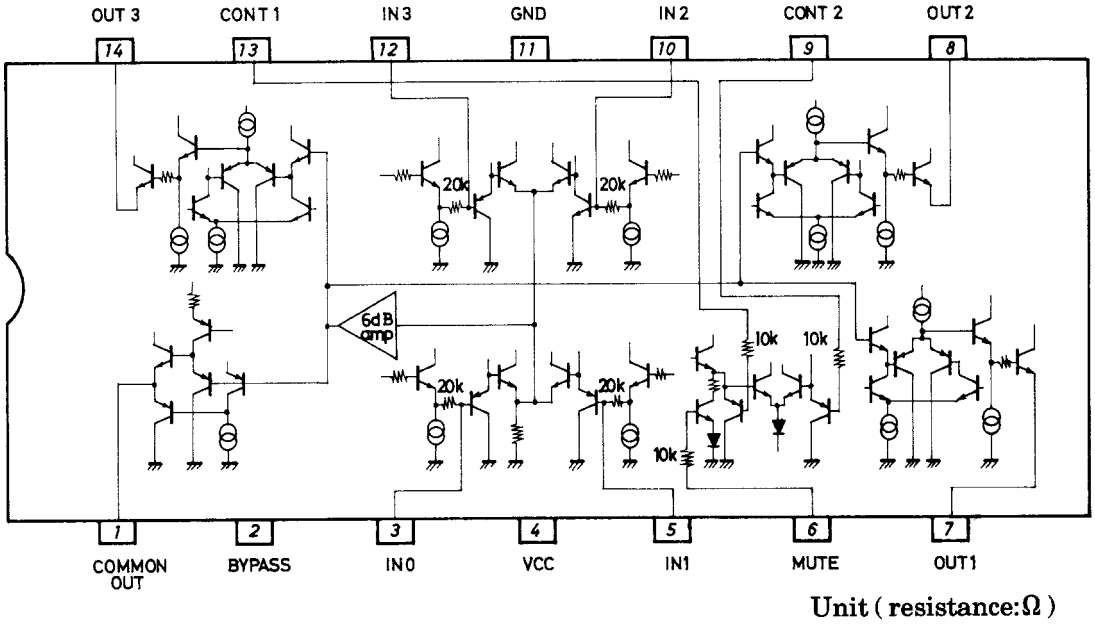
Video Switch Block Diagram



Switching Functions

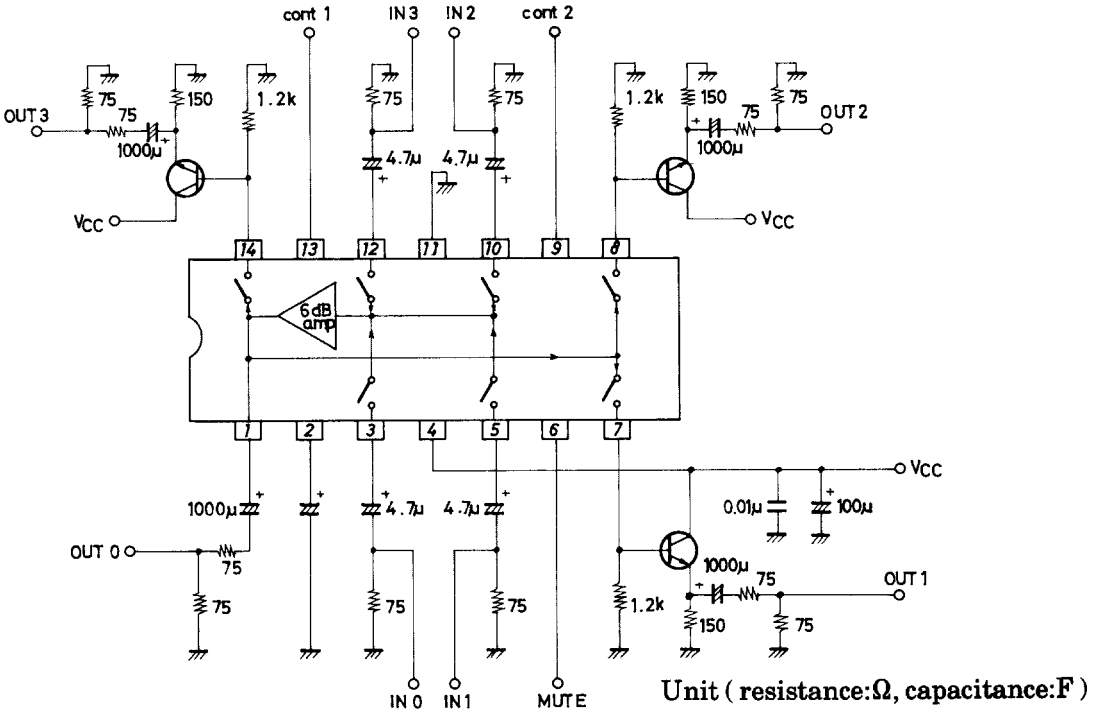
Control			Input				Output			
MUTE (Pin 6)	1 (Pin 13)	2 (Pin 9)	0 (Pin 3)	1 (Pin 5)	2 (Pin 10)	3 (Pin 12)	COMMON (Pin 1)	1 (Pin 7)	2 (Pin 8)	3 (Pin 14)
L	–	–	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
H	L	L	ON	OFF	OFF	OFF	ON	ON	ON	ON
H	L	H	OFF	ON	OFF	OFF	ON	OFF	ON	ON
H	H	L	OFF	OFF	ON	OFF	ON	ON	OFF	ON
H	H	H	OFF	OFF	OFF	ON	ON	ON	ON	OFF

Equivalent Circuit Block Diagram



Unit (resistance:Ω)

Sample Applicationn Circuit



The power supply decoupling capacitor should be mounted as close to the LA7951 as physically possible.