



# 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

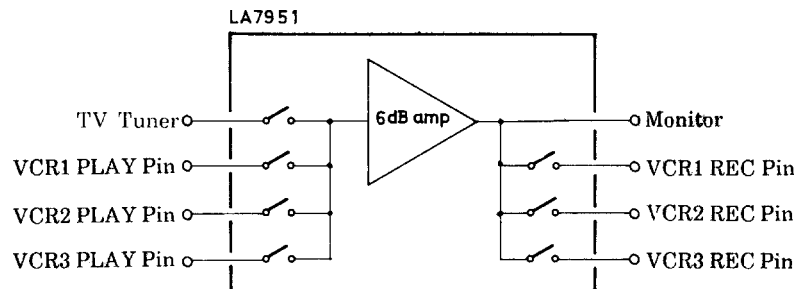
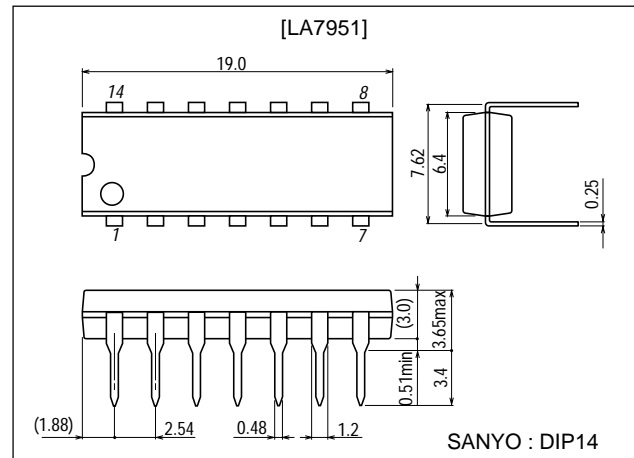


Figure 1. Editing System Switch Connections

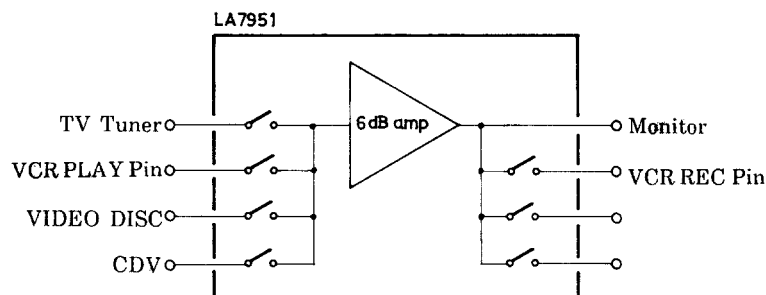


Figure 2. Video Selector Switch Connections

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## Specifications

### Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>4</sub> max		14	V
Maximum control input voltage	V <sub>6</sub> max, V <sub>9</sub> max, V <sub>13</sub> max		V <sub>CC</sub>	V
Maximum signal output current 1	I <sub>1</sub> max		-5	mA
Maximum signal output current 2	I <sub>7</sub> max, I <sub>8</sub> max, I <sub>14</sub> 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

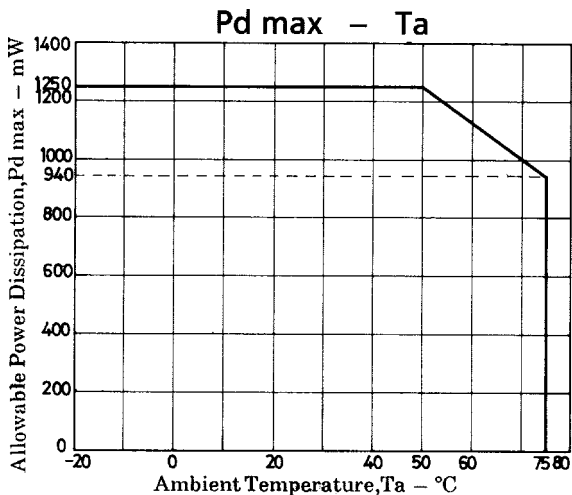
### Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V <sub>CC</sub>		12	V
Operating voltage range	V <sub>CC</sub> op		9 to 13.2	V

### Operating Characteristics at Ta = 25°C, V<sub>CC</sub>=12V

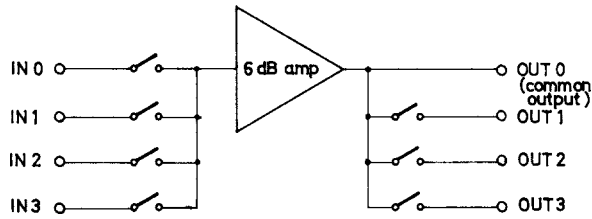
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current drain	I <sub>CC</sub>	Pins 7, 8, 14 open, pins 6, 9, 13 to GND	20	27.5	37	mA
Input pin bias voltage	V <sub>3</sub> , V <sub>5</sub> , V <sub>10</sub> , V <sub>12</sub>		2.6	3.1	3.6	V
Output pin bias voltage 1	V <sub>1</sub>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



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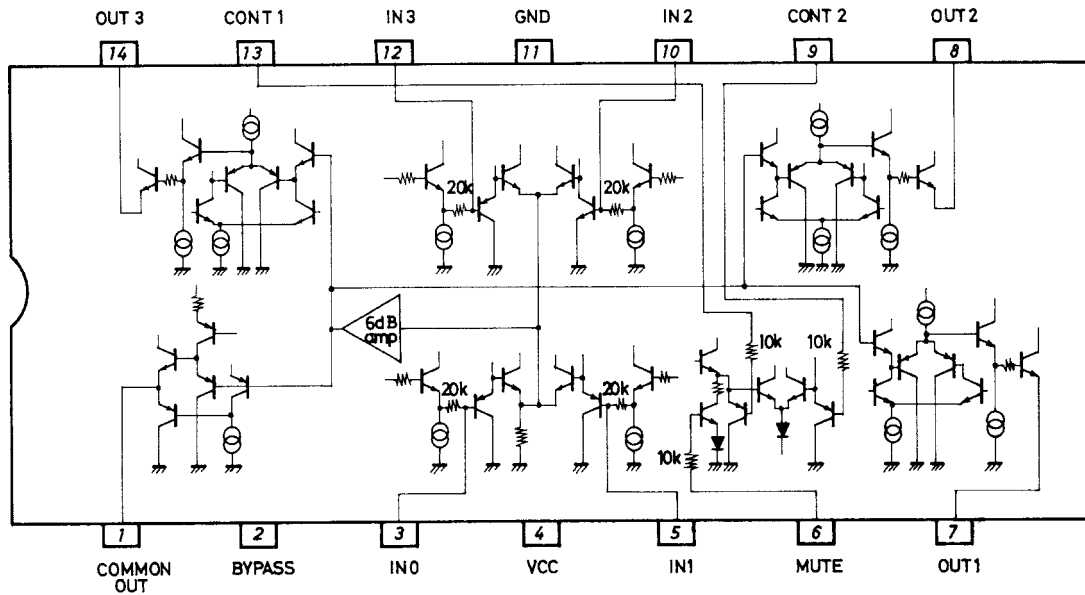
## Video Switch Block Diagram



## Switching Functions

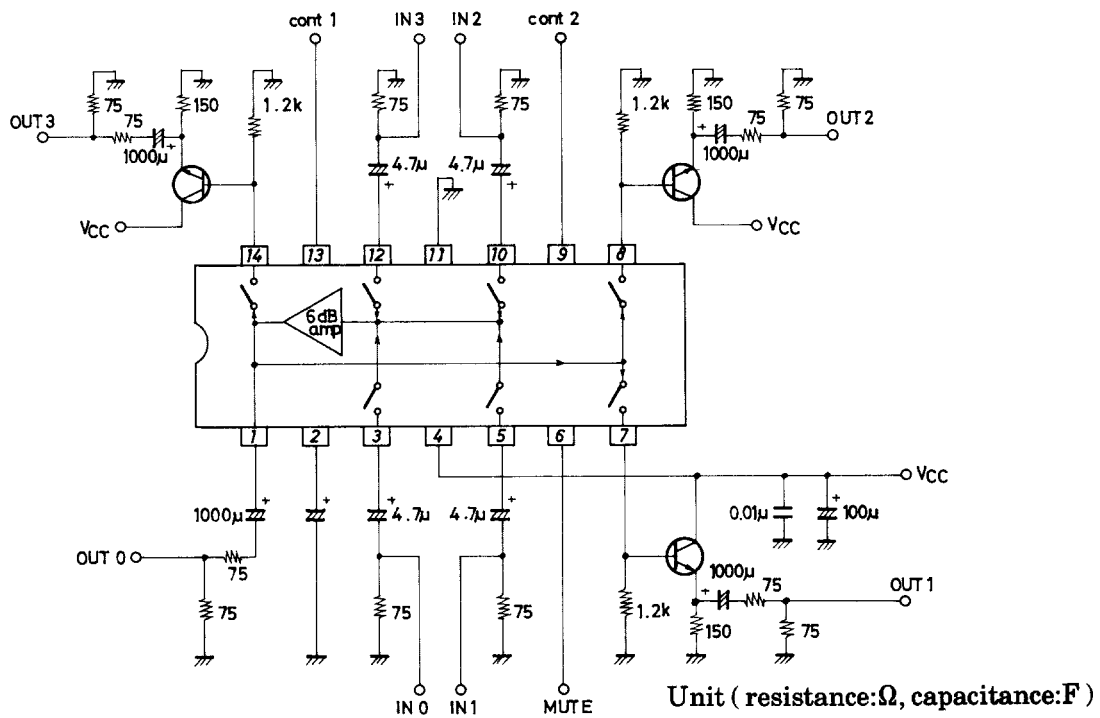
Control			Input				Output			
MUTE (Pin 6)	1 (Pin 13)	2 (Pin 9)	0 (Pin 3)	1 (Pin 5)	2 (Pin 10)	3 (Pin 12)	COMMON (Pin 1)	1 (Pin 7)	2 (Pin 8)	3 (Pin 14)
L	-	-	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
H	L	L	ON	OFF	OFF	OFF	ON	ON	ON	ON
H	L	H	OFF	ON	OFF	OFF	ON	OFF	ON	ON
H	H	L	OFF	OFF	ON	OFF	ON	ON	OFF	ON
H	H	H	OFF	OFF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

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