

SANYO	No.2868A	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 6dB video amplifier
- Ripple filter
- 75Ω output driver for video monitor (COMMON OUT)

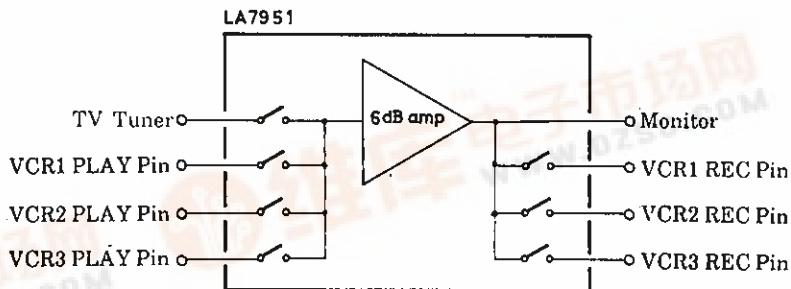


Figure 1. Editing System Switch Connections

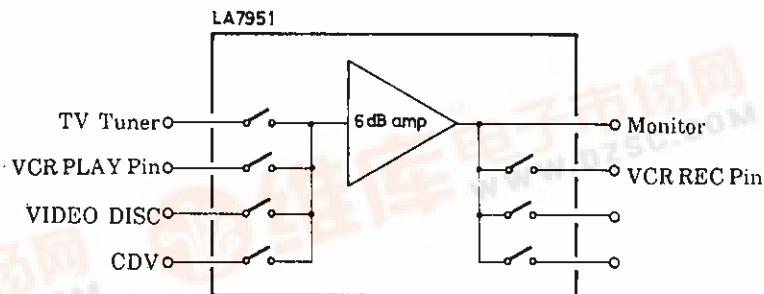
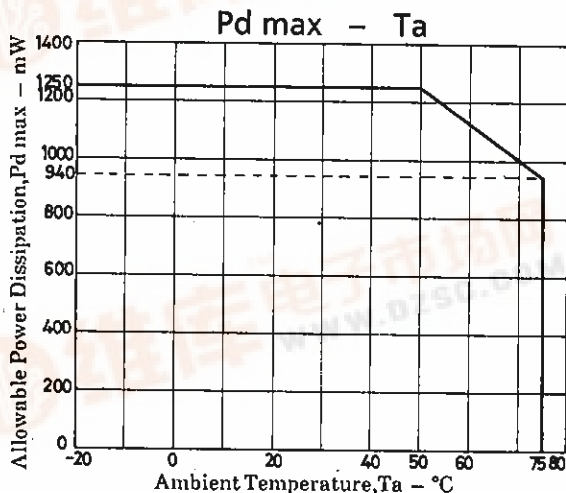
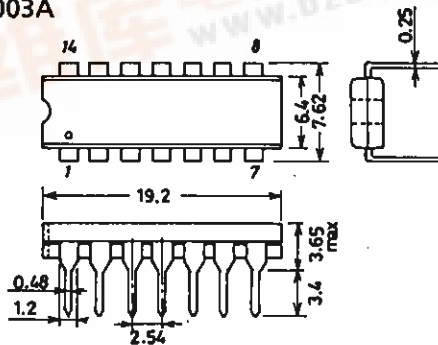


Figure 2. Video Selector Switch Connections



Package Dimensions

(unit : mm)
3003A



SANYO: DIP14



LA7951

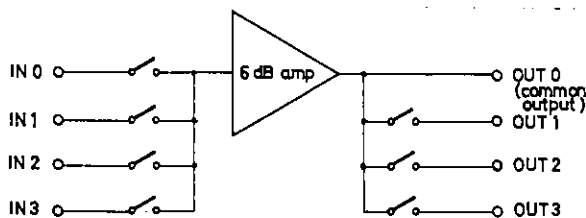
Maximum Ratings at $T_a = 25^\circ\text{C}$				unit
Maximum Supply Voltage	V_4 max		14	V
Maximum Control Input Voltage	V_6 max, V_9 max		V_{CC}	V
Maximum Signal Output Current (1)	V_{13} max			
Maximum Signal Output Current (2)	I_1 max		-5	mA
Maximum Signal Output Current (1)	I_7 max, I_8 max		-20	mA
Maximum Signal Output Current (2)	I_{14} max			
Allowable Power Dissipation	P_d max	$T_a \leq 50^\circ\text{C}$	1.25	W
Operating Temperature	T_{opr}		-20 to +75	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +125	$^\circ\text{C}$

Operating Conditions at $T_a = 25^\circ\text{C}$				unit
Recommended Supply Voltage	V_{CC}		12	V
Operating Voltage Range	$V_{CC\ op}$		9 to 13.2	V

Operating Characteristics at $T_a = 25^\circ\text{C}, V_{CC} = 12\text{V}$				min	typ	max	unit
Quiescent Current	I_{CC}	Pins 7,8,14 open Pins 6,9,13 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	$V_6 = 5\text{V}$		0.32	0.5		mA
Control Input Current 2	I_9, I_{13}	$V_9 = V_{13} = 5\text{V}$		0	-50		μA
Voltage Gain 1	GV_1	$f = 1\text{MHz}, V_o = 1\text{Vpp}$ See Note.	-0.5	+0.5	+1.5		dB
Voltage Gain 2	GV_2	$f = 1\text{MHz}, V_o = 1\text{Vpp}$ See Note.	-0.7	+0.3	+1.3		dB
Frequency Characteristics	GV_f	$f = 100\text{kHz}, V_o = 1\text{Vpp} = 0\text{dB}$, $f = 10\text{MHz}$ 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	$f = 10\text{kHz}, V_o = 1.5\text{Vpp}$ See Note.		0.5	1.2		%
Output Dynamic Range 2	DR2	$f = 10\text{kHz}, V_o = 1.5\text{Vpp}$ See Note.		1.0	2.0		%
Crosstalk 1	CT1	$f = 4\text{MHz}, V_o = 1\text{Vpp}$ See Note.	-50	-55			dB
Crosstalk 2	CT2	$f = 4\text{MHz}, V_o = 1\text{Vpp}$ See Note.	-20	-40			dB

Note) Measured output terminated with 75 Ω . 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

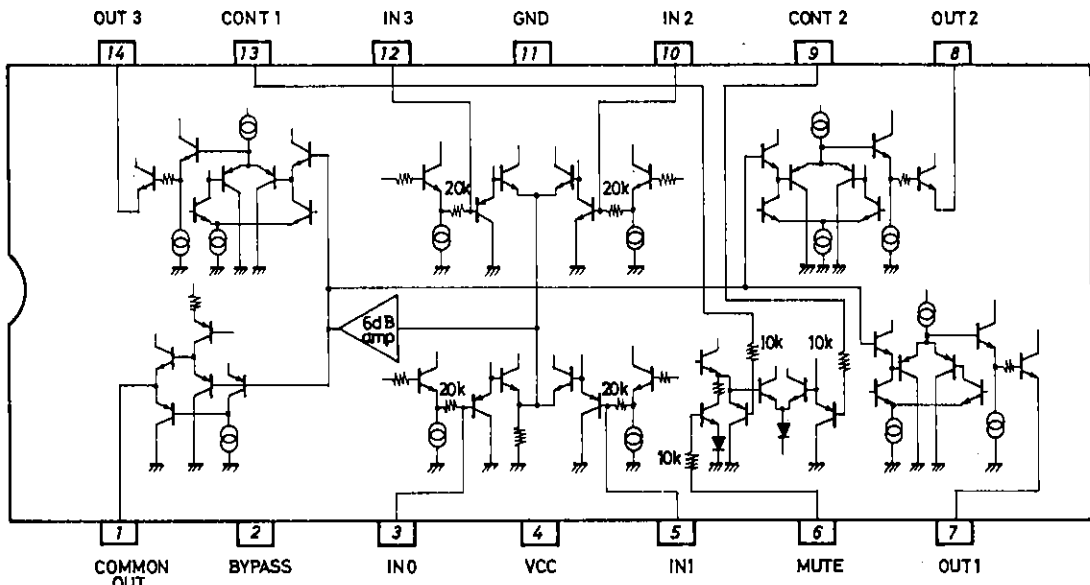


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Switching Functions

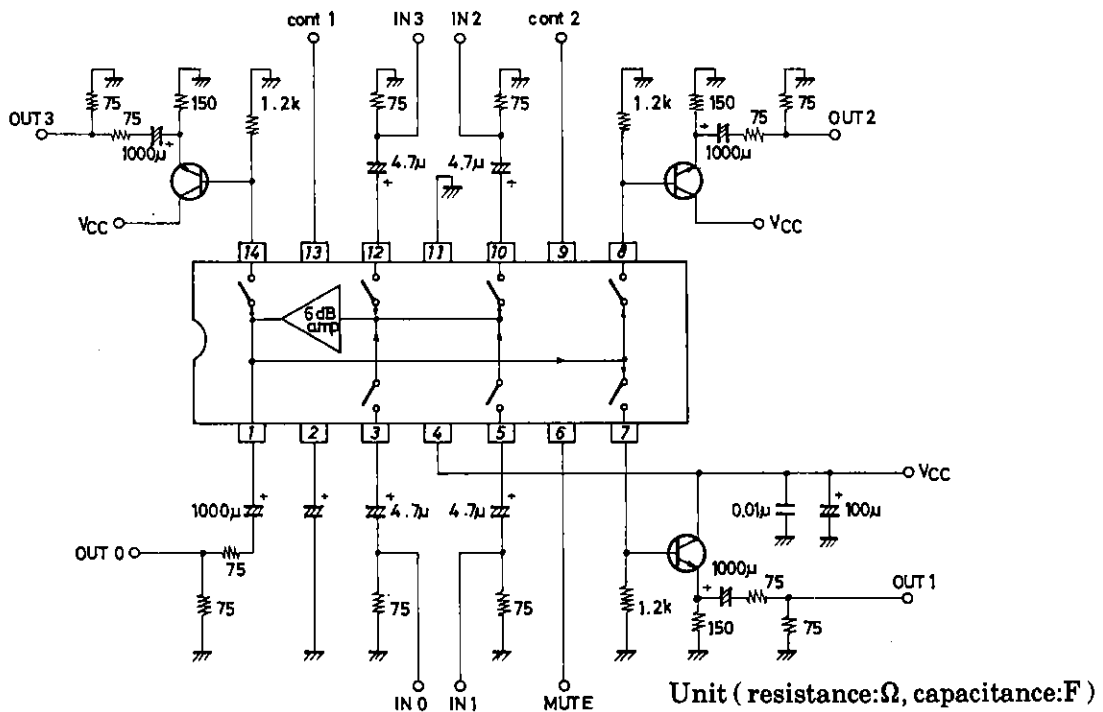
Control			Input				Output			
MUTE (Pin 6)	1 (Pin 13)	2 (Pin 9)	0 (Pin 3)	1 (Pin 5)	2 (Pin 10)	3 (Pin 12)	COMMON (Pin 1)	1 (Pin 7)	2 (Pin 8)	3 (Pin 14)
L	-	-	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
H	L	L	ON	OFF	OFF	OFF	ON	ON	ON	ON
H	L	H	OFF	ON	OFF	OFF	ON	OFF	ON	ON
H	H	L	OFF	OFF	ON	OFF	ON	ON	OFF	ON
H	H	H	OFF	OFF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

Equivalent Circuit Block Diagram



Unit (resistance:Ω)

Sample Application Circuit



Unit (resistance:Ω, capacitance:F)

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

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