



No.4955

**LA7152**

## VCR Electronic Switch

## Overview

The LA7152 is a three-input (clamped input) single-output analog switch for video signals. The LA7152 high input impedance structure allows 0.01  $\mu$ F ceramic capacitors to be used as the input coupling capacitors.

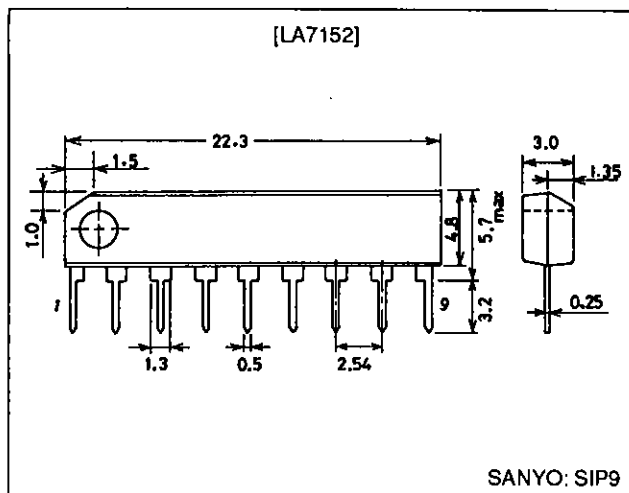
## Features

- Three inputs - one output
- Built-in video clamping circuits
- Built-in muting function

## Package Dimensions

unit: mm

**3017C-SIP9**



## Specifications

### Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>CC</sub> max		7.0	V
Allowable power dissipation	P <sub>d</sub> max		100	mW
Operating temperature	T <sub>opr</sub>		−10 to +70	°C
Storage temperature	T <sub>stg</sub>		−40 to +150	°C

### Recommended Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	$V_{CC}$		5.0	V
Operating supply voltage range	$V_{opg}$		4.5 to 6.0	V

**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**  
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

Operating Characteristics at  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 5\text{ V}$ 

Parameter	Symbol	Conditions	min	typ	max	Unit
Current drain	$I_{CC}$	*1	3.0	4.1	5.2	mA
Maximum input level	$V_{IN\text{ max}}$	*2	2.0	2.5		V <sub>p-p</sub>
Frequency characteristics	Gf	*3		0	$\pm 0.5$	dB
Total harmonic distortion	THD	*4		0.03	0.1	%
Inter-channel crosstalk	$CT_C$	*5		-65	-60	dB
Muting circuit crosstalk	$CT_M$	*6		-55	-50	dB
Output DC offset	$\Delta V_{OUT}$	*7		5	20	mV
Differential gain	DG	*8		0.5	1	%
Differential phase	DP	*9		0.5	1	deg

Note: 1. Current drain

 $S1 = S2 = S3 = 2$ ,  $S4 = S5 = S6 = 3$ 2. Maximum input level (input C = 10  $\mu\text{F}$ ) $S1 = 1$ ,  $S4 = 1$ ,  $S2 = S3 = 2$ ,  $S5 = S6 = 3$ , $S2 = 1$ ,  $S5 = 1$ ,  $S1 = S3 = 2$ ,  $S4 = S6 = 3$ , $S3 = 1$ ,  $S1 = S2 = 2$ ,  $S4 = S5 = S6 = 3$ For each of the above three conditions, with an input signal frequency  $f = 1\text{ kHz}$ , gradually increase the input signal level and determine the level where the total harmonic distortion reaches 0.1%.

3. Frequency characteristics

For each of the three conditions in Note 2,

 $V_{IN} = 2.0\text{ V}_{p-p}$ ,  $V_{OUT}$  (5 MHz)/ $V_{OUT}$  (100 KHz)4. Total harmonic distortion (input C = 10  $\mu\text{F}$ )For each of the three conditions in item 2, measure the total harmonic distortion with  $V_{IN} = 2.0\text{ V}_{p-p}$  and  $f = 1\text{ kHz}$ .

5. Crosstalk

With  $S6 = 3$ , measure in the modes for all combinations of  $S1$  to  $S5$  except for the following three conditions: a)  $S1 = S4 = 1$ , b)  $S2 = S5 = 1$  and c)  $S3 = 1$ ,  $S4 = S5 = 3$ . $V_{IN} = 2.0\text{ V}_{p-p}$ ,  $f = 4.43\text{ MHz}$ ,  $V_{OUT}/V_{IN}$ 

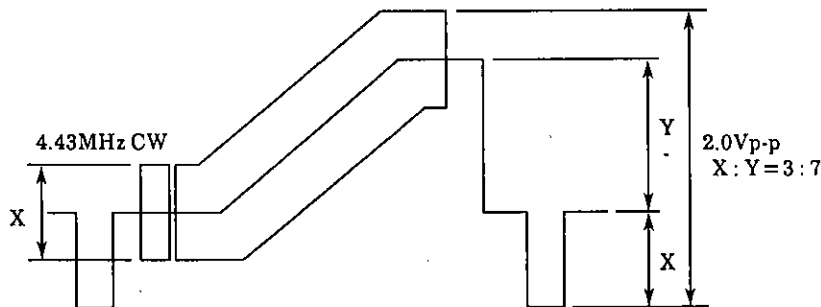
6. Muting circuit crosstalk

With  $S6 = 1$ , measure in the modes for all combinations of  $S1$  to  $S5$ . $V_{IN} = 2.0\text{ V}_{p-p}$ ,  $f = 4.43\text{ MHz}$ ,  $V_{OUT}/V_{IN}$ 

7. Output DC offset

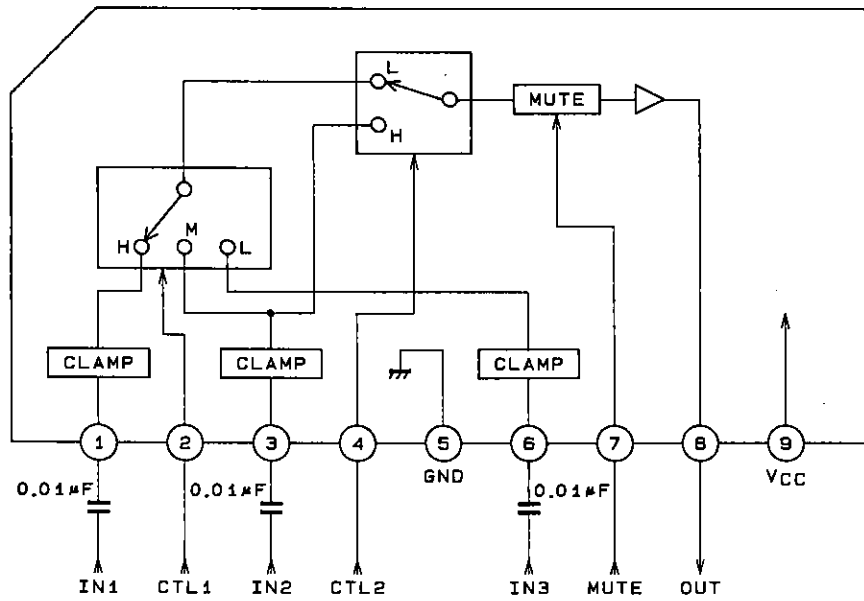
Measure the output DC voltage difference between the following modes with  $S1 = S2 = S3 = 2$ .a.  $S4 = 1$ ,  $S5 = S6 = 3$ b.  $S5 = 1$ ,  $S4 = S6 = 3$ c.  $S4 = S5 = S6 = 3$ d.  $S6 = 1$ ,  $S4 = S5 = 1$  or 2

8, 9. Differential gain, differential phase

Switching Characteristics at  $T_a = 25^\circ\text{C}$ ,  $V_{CC} = 5\text{ V}$ 

Parameter	Symbol	Conditions	min	typ	max	Unit
CTL1	H	In the state with $S4 = 2$ , $S5 = 2$ and $S6 = 2$ , measure the control voltage level when the input signal switches.	3.5		$V_{CC}$	V
	M		1.5		3.0	V
	L		0		1.0	V
CTL2	H		2.5		$V_{CC}$	V
	L		0		1.5	V
MUTE	H		3.0		$V_{CC}$	V
	L		0		1.5	V

## Equivalent Circuit Block Diagram and Application Circuit Diagram

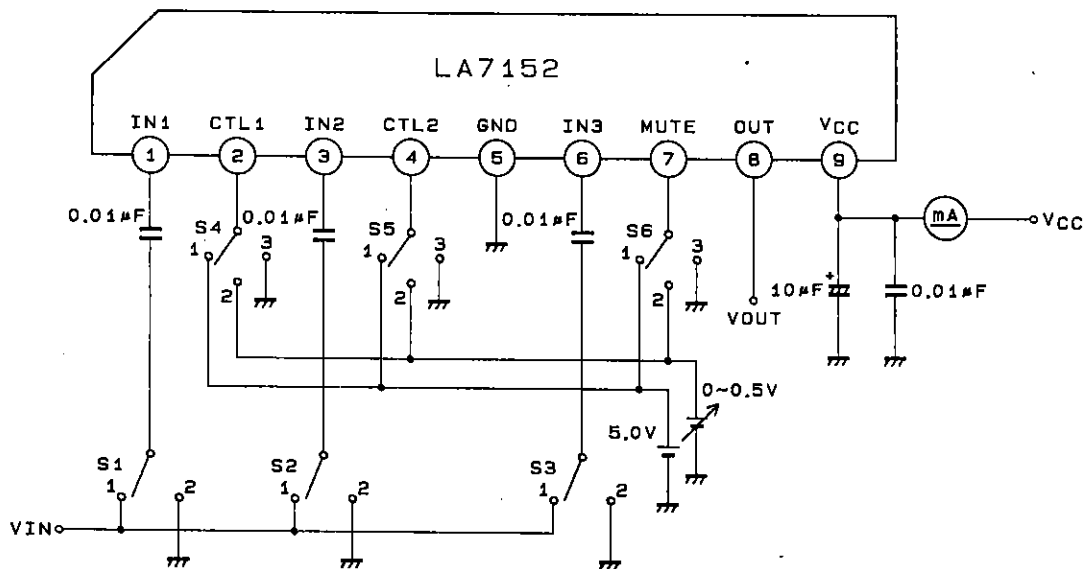


A03033

## Truth Table

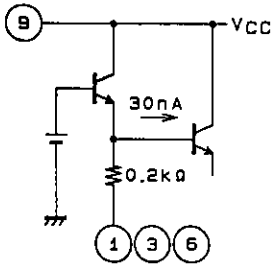
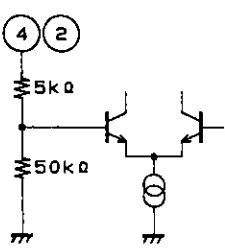
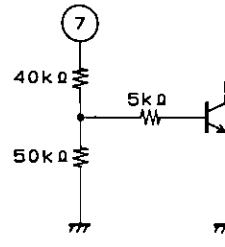
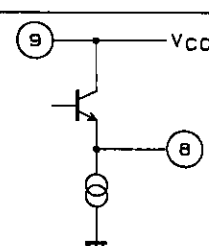
CTL1	L	L	M	M	H	H	—
CTL2	L	H	L	H	L	H	—
MUTE	L	L	L	L	L	L	H
OUT	IN3	IN2	IN2	IN2	IN1	IN2	DC

## Test Circuit

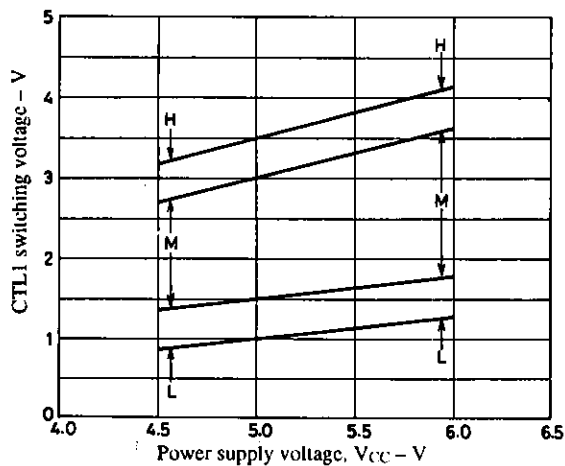


A03034

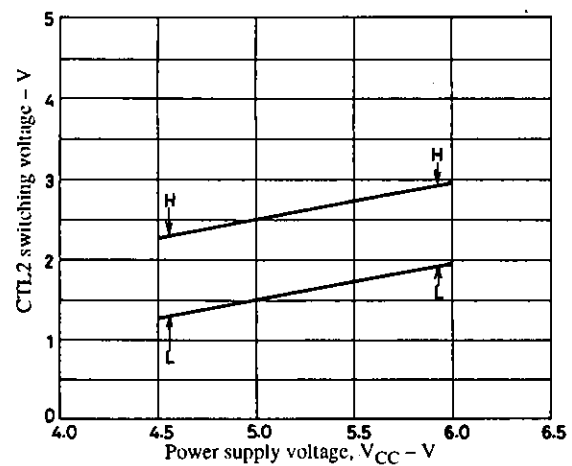
## Pin Functions

Pin No.	Symbol	I/O type	Note
1 3 6	IN1 IN2 IN3	 <p>A03035</p>	High impedance input
2 4	CONTROL1 CONTROL2	 <p>A03036</p>	Tie CONTROL2 (pin 4) to ground when using three-value control by CONTROL1 (pin 2).
5	GND		
7	MUTE CONTROL	 <p>A03037</p>	
8	OUT	 <p>A03038</p>	Collector current: 1.3 mA
9	V <sub>CC</sub>		

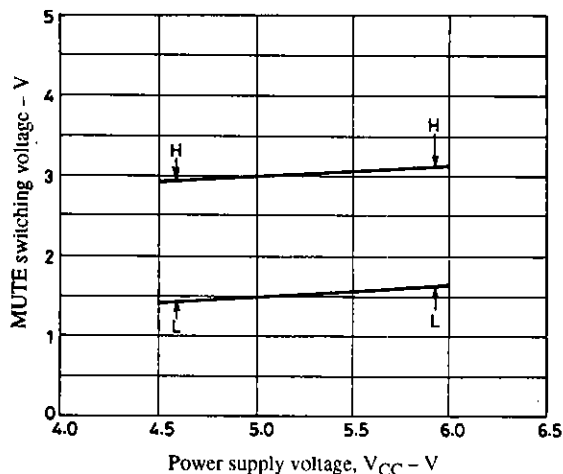
Dependence of CTL1 switching voltage on supply voltage



Dependence of CTL2 switching voltage on supply voltage



Dependence of MUTE switching voltage on supply voltage



■ No products described or contained herein are intended for use in surgical implants, life-support systems, aerospace equipment, nuclear power control systems, vehicles, disaster/crime-prevention equipment and the like, the failure of which may directly or indirectly cause injury, death or property loss.

■ Anyone purchasing any products described or contained herein for an above-mentioned use shall:

- ① Accept full responsibility and indemnify and defend SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors and all their officers and employees, jointly and severally, against any and all claims and litigation and all damages, cost and expenses associated with such use;
- ② Not impose any responsibility for any fault or negligence which may be cited in any such claim or litigation on SANYO ELECTRIC CO., LTD., its affiliates, subsidiaries and distributors or any of their officers and employees jointly or severally.

■ Information (including circuit diagrams and circuit parameters) herein is for example only; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of **December, 1996**. Specifications and information herein are subject to change without notice.