



# 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.

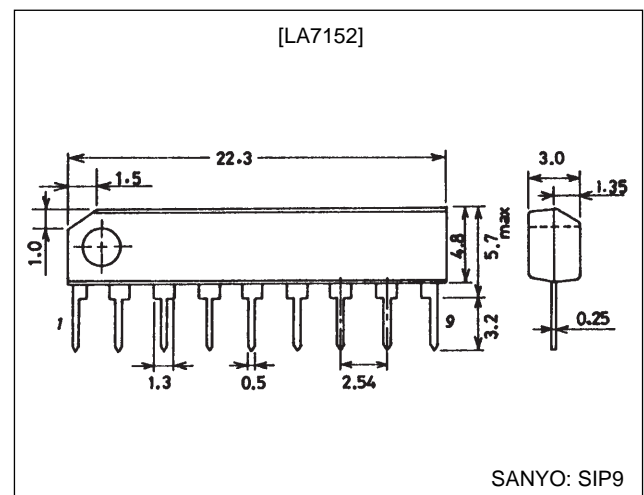
### Features

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

### Package Dimensions

unit: mm

#### 3017C-SIP9



### Specifications

#### Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{CC \text{ max}}$		7.0	V
Allowable power dissipation	$P_d \text{ max}$		100	mW
Operating temperature	$T_{opr}$		-10 to +70	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-40 to +150	$^\circ\text{C}$

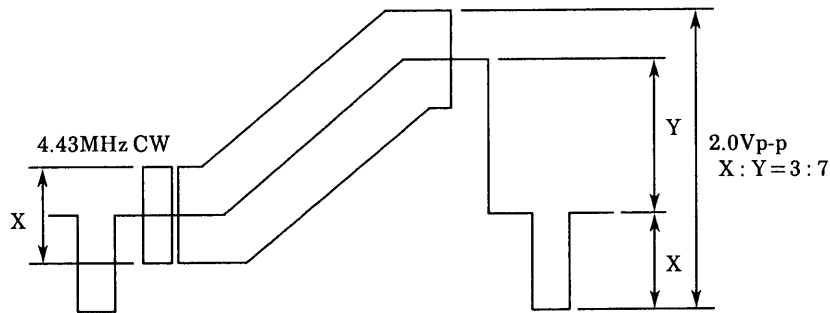
#### Recommended Conditions at $T_a = 25^\circ\text{C}$

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

**Operating Characteristics at Ta = 25°C, VCC = 5 V**

Parameter	Symbol	Conditions	min	typ	max	Unit
Current drain	ICC	*1	3.0	4.1	5.2	mA
Maximum input level	VIN max	*2	2.0	2.5		Vp-p
Frequency characteristics	Gf	*3		0	±0.5	dB
Total harmonic distortion	THD	*4		0.03	0.1	%
Inter-channel crosstalk	CTC	*5		-65	-60	dB
Muting circuit crosstalk	CTM	*6		-55	-50	dB
Output DC offset	ΔVOUT	*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 μF)  
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 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,  
VIN = 2.0 Vp-p, VOUT (5 MHz)/VOUT (100 KHz)
4. Total harmonic distortion (input C = 10 μF)  
For each of the three conditions in item 2, measure the total harmonic distortion with VIN = 2.0 Vp-p and f = 1 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.  
VIN = 2.0 Vp-p, f = 4.43 MHz, VOUT/VIN
6. Muting circuit crosstalk  
With S6 = 1, measure in the modes for all combinations of S1 to S5.  
VIN = 2.0 Vp-p, f = 4.43 MHz, VOUT/VIN
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

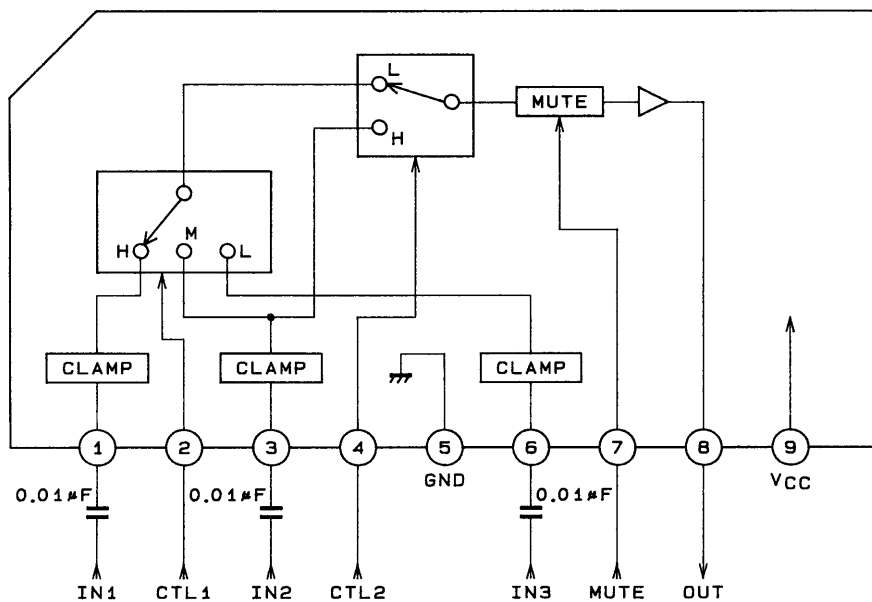


**Switching Characteristics at Ta = 25°C, VCC = 5 V**

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		VCC	V
	M		1.5		3.0	V
	L		0		1.0	V
CTL2	H		2.5		VCC	V
	L		0		1.5	V
MUTE	H		3.0		VCC	V
	L		0		1.5	V

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## Equivalent Circuit Block Diagram and Application Circuit Diagram

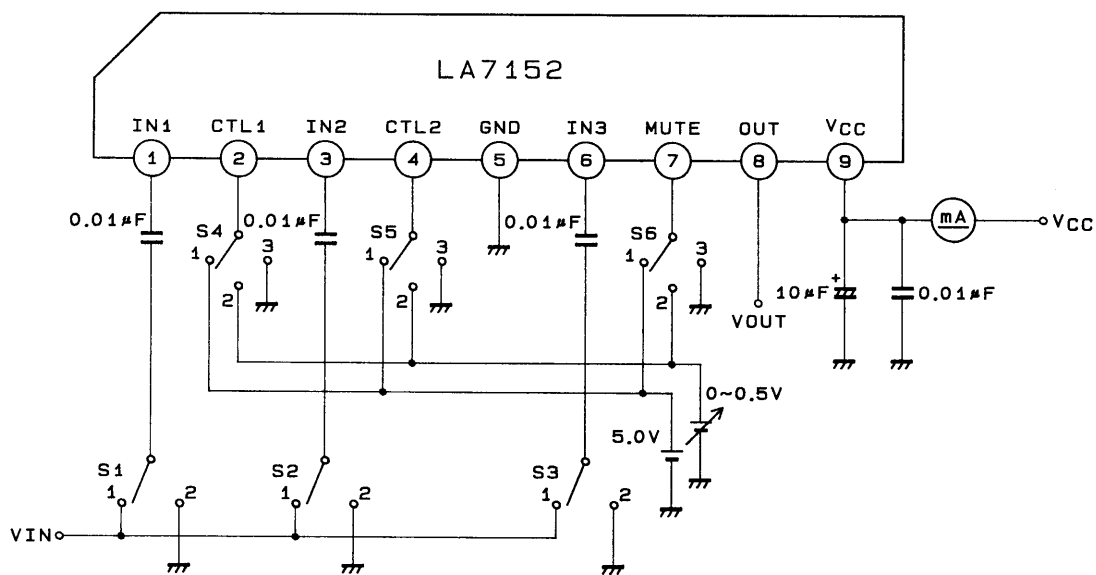


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### Truth Table

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

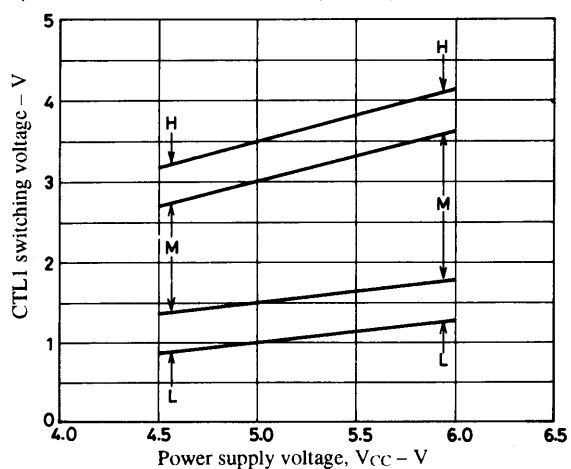


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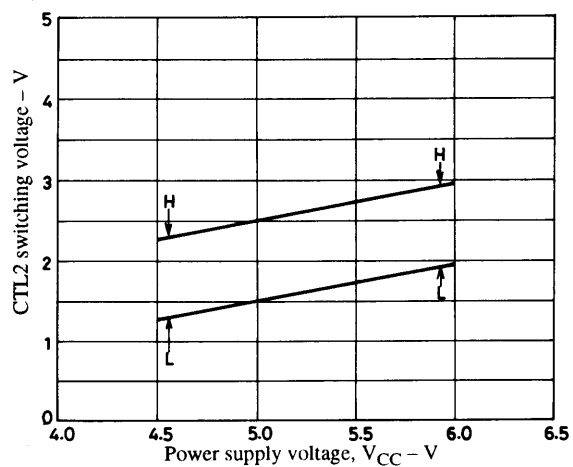
Pin Functions

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>		

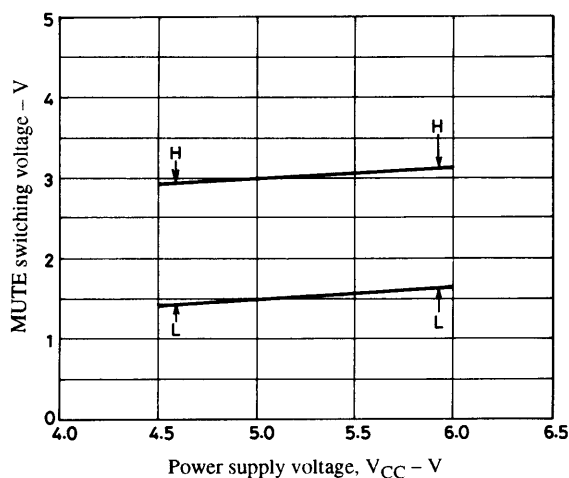
Dependence of CTL1 switching voltage on supply voltage



Dependence of CTL2 switching voltage on supply voltage



Dependence of MUTE switching voltage on supply voltage



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