



LA7956

Video Switch for TV/VCR Use

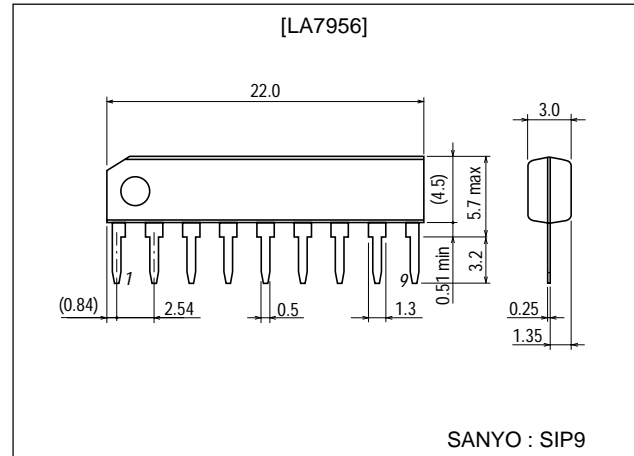
Features

- 4 inputs, 1 output, 75Ω termination, driver on-chip.
- 6dB amplifier on-chip.
- Excellent crosstalk characteristic.
- Wide band.

Package Dimensions

unit:mm

3017D-SIP9



Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_7 max		14	V
Maximum input supply voltage 1	V_4 max, V_6 max, V_8 max, V_9 max		8	V
Maximum input supply voltage 2	V_2 max, V_3 max	$V_{CC}=14\text{V}$	14	V
Maximum output current	I_1 max		10	mA
Allowable power dissipation	P_d max	$T_a \leq 65^\circ\text{C}$	540	mW
Operating temperature	T_{opr}		-20 to +65	$^\circ\text{C}$
Storage temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings	Unit
Operating voltage range	$V_{CC\ op}$		10.5 to 13.5	V
Recommended supply voltage	V_{CC}		12	V

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Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC}=12\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent current drain	I_{CC}		15	21	30	mA
Input bias voltage	V_4, V_6, V_8, V_9		3.5	3.8	4.1	V
Output bias voltage	V_1		4.6	6.1	7.6	V
Output DC offset voltage	V_{OS}	(Note 1)	-50	0	+50	mV
Control threshold voltage	V_{2H}, V_{3H}		2.3			V
	V_{2L}, V_{3L}				0.7	V
Control input current	I_2, I_3		-20	-6		μA
Voltage gain	GV	$f=1\text{MHz}, V_{IN}=2\text{Vp-p}$ (Note 1)	5.6	6.1	6.4	dB
Frequency characteristics	GV_f	0dB at $f=100\text{kHz}$ (Note 1) $f=10\text{MHz}, V_{IN}=1\text{Vp-p}$	-3	0		dB
Output dynamic range	VDR	$f=15\text{kHz}, V_{IN}=1.5\text{Vp-p}$ (Note 1)	1.4	1.5		Vp-p
Crosstalk (Note 2)	C_T	$V_{IN}=1\text{Vp-p}, f=3\text{MHz}$ (Note 1)	50(48)	58(55)		dB
		$V_{IN}=1\text{Vp-p}, f=5\text{MHz}$ (Note 1)	45(45)	55(52)		dB

The current flowing into the IC is defined as positive and current from the IC is defined as negative.

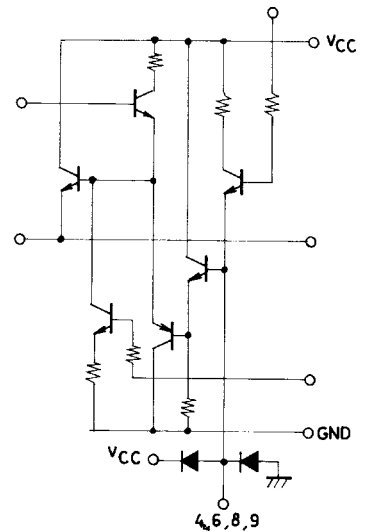
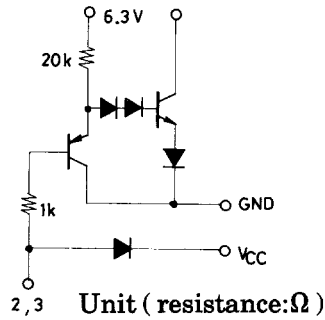
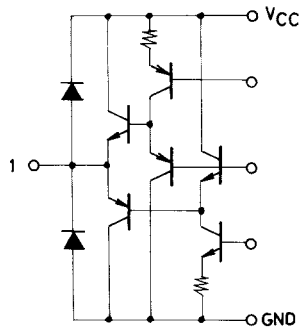
Video Switch Truth Table

S2 (Pin 2)	S3 (Pin 3)	V_{IN1} (Pin 4)	V_{IN2} (Pin 6)	V_{IN3} (Pin 8)	V_{IN4} (Pin 9)
H	H	ON	OFF	OFF	OFF
L	H	OFF	ON	OFF	OFF
H	L	OFF	OFF	ON	OFF
L	L	OFF	OFF	OFF	ON

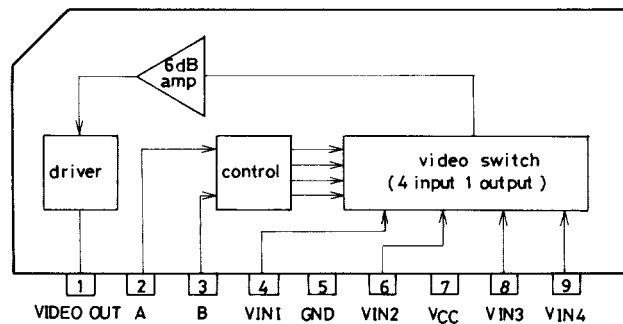
Note 1 : Refer to this Truth Table and make measurements by switching S2, S3.

Note 2 : () : Crosstalk between pins 8 and 9.

Input/Output Equivalent Circuit

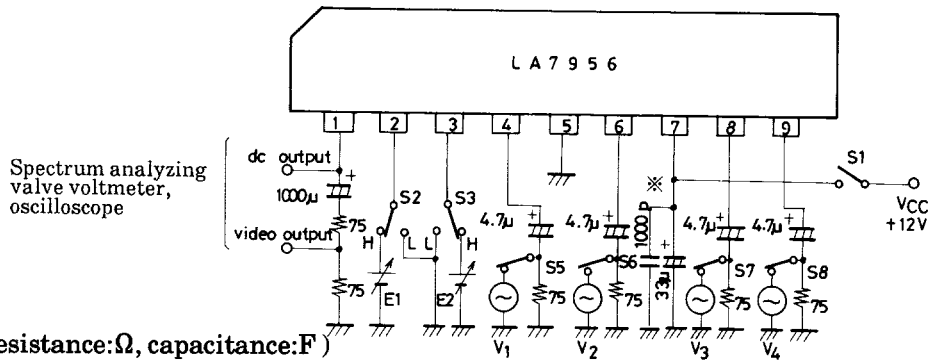


Equivalent Circuit Block Diagram



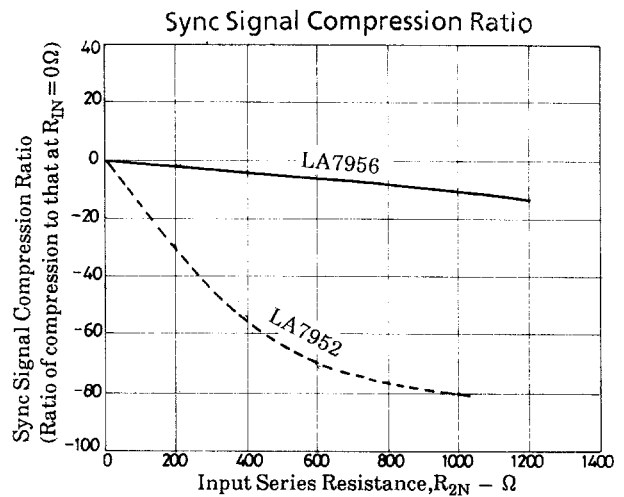
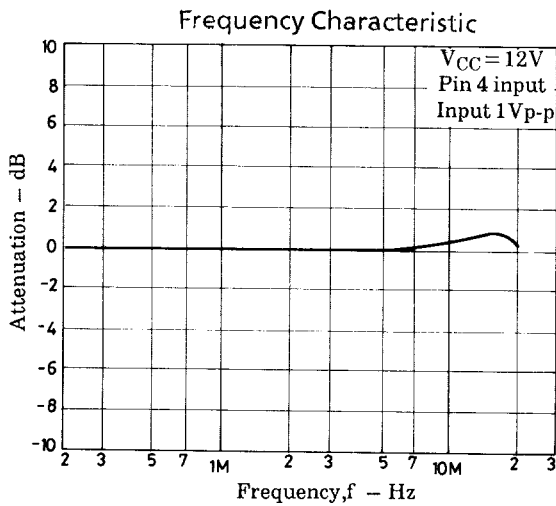
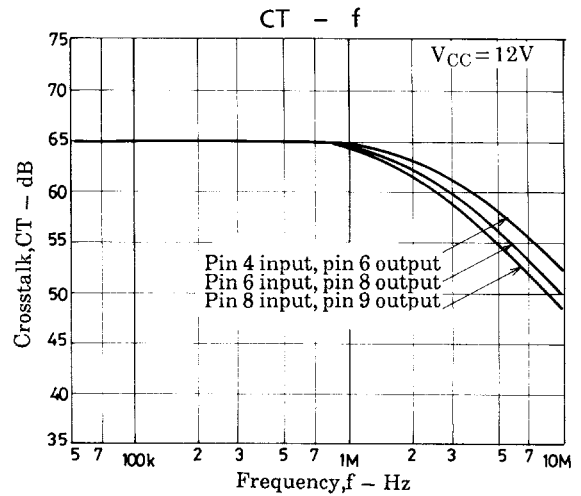
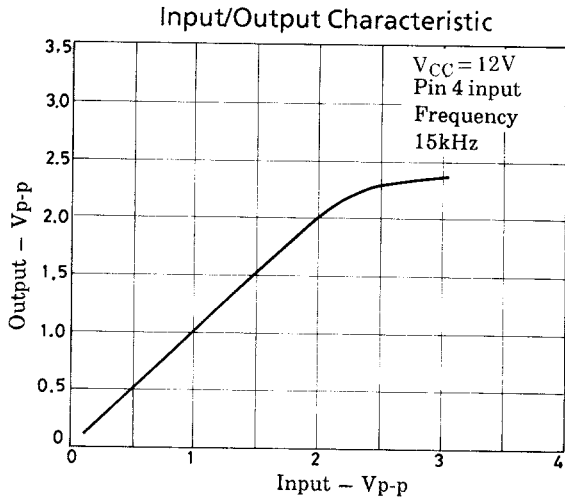
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Test Circuit



Unit (resistance:Ω, capacitance:F)

※ : Connect the bypass capacitor for V_{CC} as close to pin 7 as possible.



Design Notes

An improvement in the DC clamp circuit has improved the sync signal compression attributable to the signal source impedance, but the response time of the DC clamp is made longer accordingly than that of the LA7952. Make adjustments by connecting a high resistance (several hundred kΩ) across input pin and GND (decreasing the resistance makes the sync signal compression larger).

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