

Ordering number : EN 3212

<b>SANYO</b>	No.3212	Monolithic Linear IC
	<b>LA7150</b>	
<b>Audio / Video Switch for PAL System VCR</b>		

The LA7150 is ideal as a PAL VCR 21-pin connector interface IC with a 2-input 1-output video switch, 2-input 1-output audio switch, 14dB amp, function select switch (FSS), and power supply ripple filter on chip.

**Functions**

- 2-input 1-output video switch
- 2-input 1-output audio switch
- 14dB amp
- Function select switch (FSS)
- Power supply ripple filter on chip.
- Current protector

**Features**

- Low distortion
- Extremely few peripheral components
- Low crosstalk
- On-chip function select switch (FSS) with current protector

**Absolute Maximum Ratings at Ta=25°C**

Maximum Supply Voltage	V <sub>CC</sub> max	15	unit
Allowable Power Dissipation	P <sub>D</sub> max	750	mW
Operating Temperature	T <sub>opr</sub>	-10 to +65	°C
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C

**Operating Conditions at Ta=25°C**

Recommended Supply Voltage	V <sub>CC</sub>	12.0	unit
Operating Supply Voltage Range	V <sub>CC op</sub>	11.5 to 12.5	V

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

Current Dissipation		min	typ	max	unit
I <sub>CE1</sub>	No input, EE mode control 0V	7.0	10.0	13.0	mA
I <sub>CE2</sub>	No input, EE mode control 5V	7.5	11.0	14.5	mA
I <sub>CP1</sub>	No input, PB mode control 0V	7.5	11.0	14.5	mA
I <sub>CP2</sub>	No input, PB mode control 5V	8.0	12.5	16.5	mA

**[Video Switch Section]**

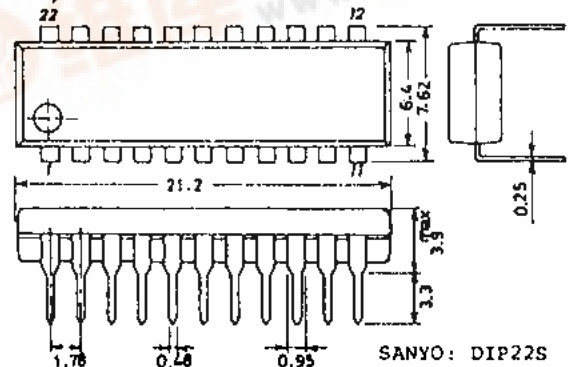
Frequency Characteristic	G <sub>FV</sub>	f=100kHz to 5MHz at V <sub>IN</sub> =1V <sub>pp</sub> , 100kHz:0dB	-0.5	0	0.5	dB
Insertion Loss	G <sub>LV</sub>	V <sub>IN</sub> =2V <sub>pp</sub> , f=100kHz	-0.5	-0.2		dB
Offset Voltage	ΔV <sub>offset</sub>	P <sub>in</sub> 17 DC	-50	0	+50	mV
Crosstalk	CR	V <sub>IN</sub> =2V <sub>pp</sub> , f=4.43MHz	-65	-60		dB
Input Impedance	Z <sub>iv</sub>			15		kΩ
Output Impedance	Z <sub>ov</sub>			20	50	Ω

Continued on next page.

**Package Dimensions**

(unit :mm)

3059



SANYO: DIP22S



# LA7150

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**[Audio Switch Section]**

			min	typ	max	unit
Insertion Loss	$G_{LA}$	$V_{IN}=1V_{rms}, f=20Hz \text{ to } 20kHz$	-0.5	-0.2		dB
Offset Voltage	$\Delta V_{ODCA}$	Pin 5 DC	-50	0	+50	mV
Total Harmonic Distortion	$THD_A$	$V_{IN}=1V_{rms}, f=1kHz$		0.005	0.1	%
Maximum Output	$V_{OMA}$	$f=1kHz, THD=1\%$	2.5	3.5		Vrms
Input Impedance	$Z_{IA}$			50		k $\Omega$
Output Impedance	$Z_{OA}$			20	50	$\Omega$
Output Noise Voltage	$V_{ONA}$	$R_g=600\Omega, \text{DIN AUDIO FILTER}$		2.0	4.0	$\mu V_{rms}$

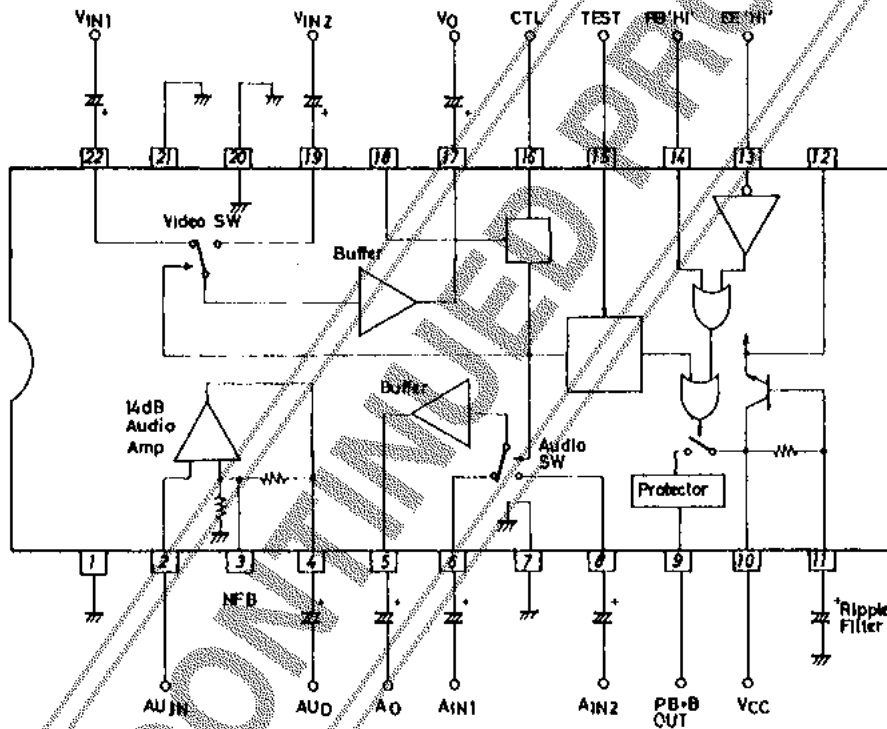
**[Audio Amp Section]**

Voltage Gain	VG	$V_{IN}=0.1V_{rms}, f=20Hz \text{ to } 20kHz$	13.0	14.0	15.0	dB
Total Harmonic Distortion	$THD_{AMP}$	$V_{IN}=0.1V_{rms}, f=1kHz$		0.02	0.1	%
Maximum Output	$V_{OMAMP}$	$f=1kHz, THD=1\%$	2.0	2.5		Vrms
Input Impedance	$Z_{IAMP}$			50		k $\Omega$
Output Impedance	$Z_{OAMPA}$			20	50	$\Omega$
Output Noise Voltage	$V_{ONAMPA}$	$R_g=600\Omega, \text{DIN AUDIO FILTER}$		60	120	$\mu V_{rms}$

**[Control Section]**

High Level Voltage	$V_{CHI}$	Pins 13, 14, 15, 16 and DC	3.5		$V_{CC}$	V
Low Level Voltage	$V_{CLOW}$	Pins 13, 14, 15, 16 and DC	0		1.0	V

### Equivalent Circuit Block Diagram



Note: Pins 1 and 21 are NC pins, so must be grounded or left be open. (Do not connect to other pins.)

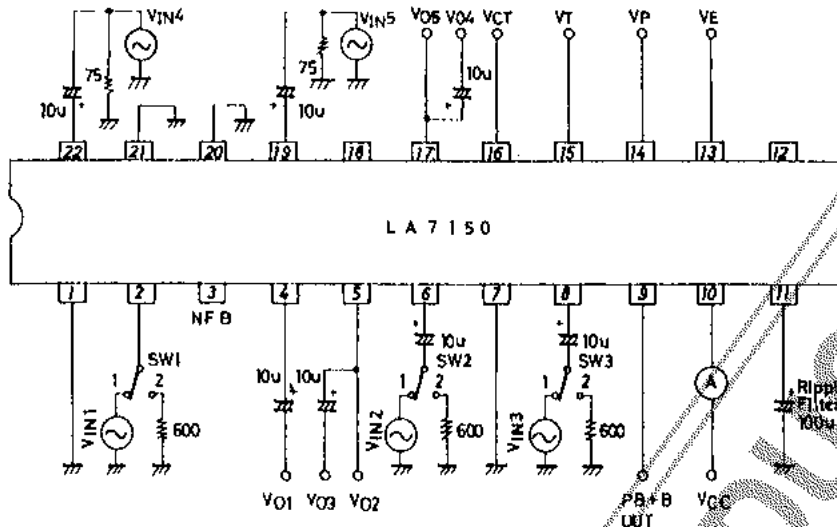
MODE	CTL	TEST	PB+B OUT
EE	L	L	L
	H	L	L
	L	H	H
	H	H	L
PB	L	L	H
	H	L	H
	L	H	H
	H	H	H

CTL	SW SELECT
L	$V_{IN1}$
	$A_{IN1}$
H	$V_{IN2}$
	$A_{IN2}$

Pins 13 and 14 are for handling EE H or PB H system control. When using pin 13, ground pin 14; when using pin 14, connect pin 13 to pin 12.

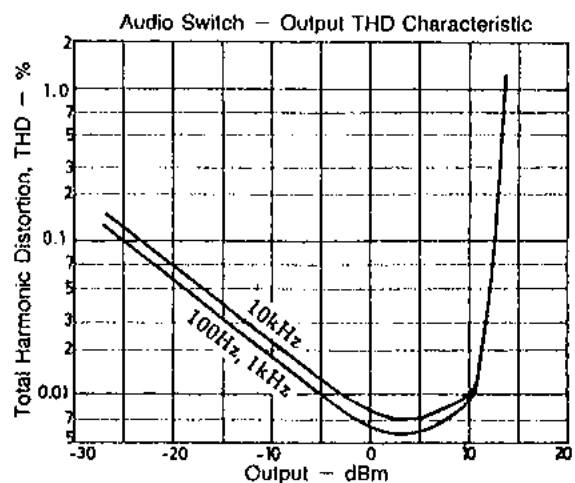
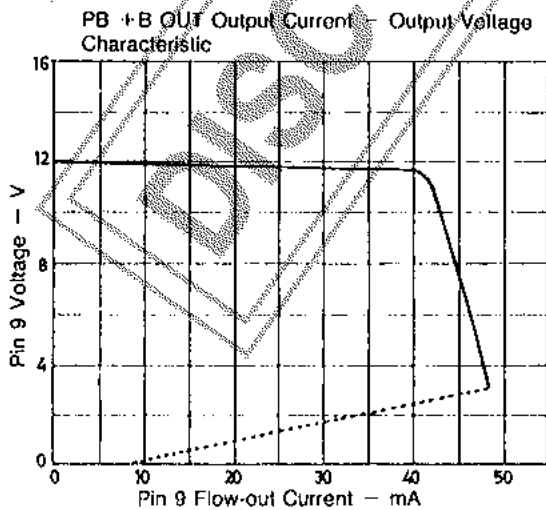
# LA7150

## Test Circuit

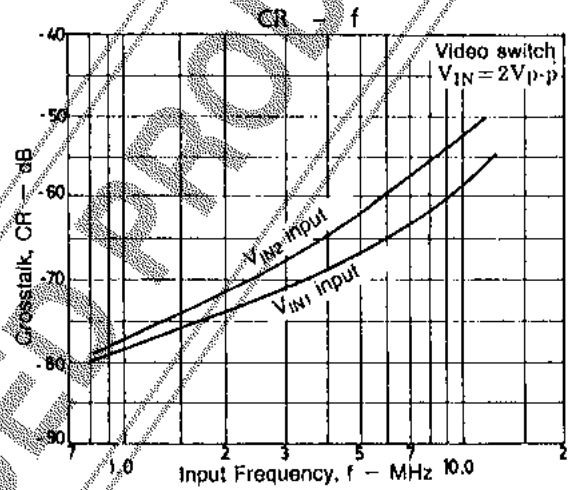
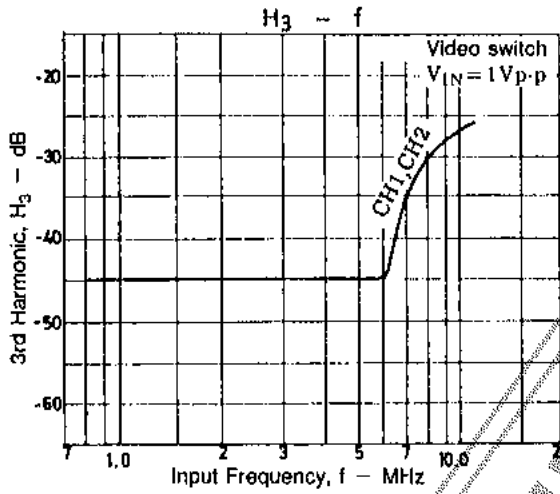
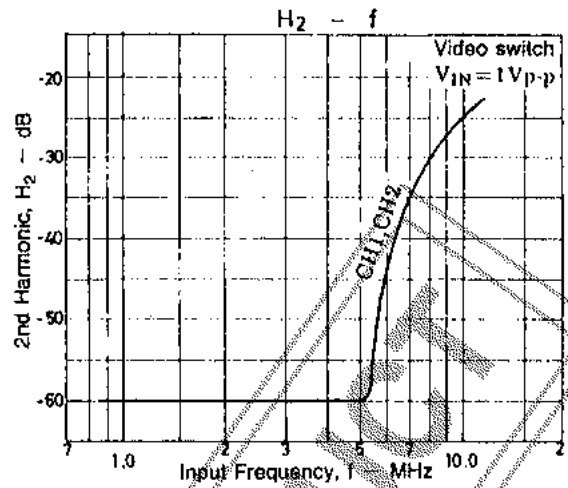
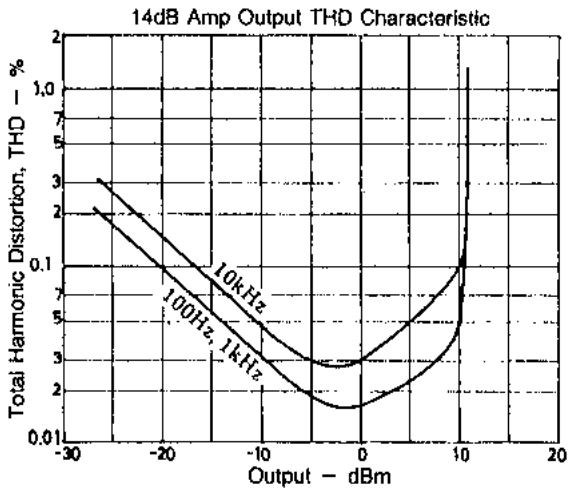


## Test Conditions

Measurement Item	SW1	SW2	SW3	V <sub>ct</sub>	V <sub>i</sub>	V <sub>p</sub>	V <sub>E</sub>	Input	Test Point
I <sub>CE1</sub>	2	2	2	GND	GND	GND	9V	—	A
I <sub>CE2</sub>	2	2	2	5V	GND	GND	5V	—	A
I <sub>CP1</sub>	2	2	2	GND	GND	GND	GND	—	A
I <sub>CP2</sub>	2	2	2	5V	GND	GND	GND	—	A
G <sub>FV</sub>	2	2	2	GND/5V	GND	GND	GND	V <sub>IN4</sub> /V <sub>IN5</sub>	V <sub>04</sub>
G <sub>LV</sub>	2	2	2	GND/5V	GND	GND	GND	V <sub>IN4</sub> /V <sub>IN5</sub>	V <sub>04</sub>
ΔV <sub>ODCV</sub>	2	2	2	5V/GND	GND	GND	GND	—	V <sub>05</sub>
CR	2	2	2	5V/GND	GND	GND	GND	V <sub>IN4</sub> /V <sub>IN5</sub>	V <sub>04</sub>
G <sub>LA</sub>	2	2/1	1/2	GND/5V	GND	GND	GND	V <sub>IN2</sub> /V <sub>IN3</sub>	V <sub>03</sub>
ΔV <sub>ODCA</sub>	2	2	2	5V/GND	GND	GND	GND	—	V <sub>02</sub>
THD	2	2/1	1/2	GND/5V	GND	GND	GND	V <sub>IN2</sub> /V <sub>IN3</sub>	V <sub>03</sub>
V <sub>OMA</sub>	2	2	2	GND/5V	GND	GND	GND	V <sub>IN2</sub> /V <sub>IN3</sub>	V <sub>03</sub>
V <sub>ONA</sub>	2	2	2	GND/5V	GND	GND	GND	—	V <sub>03</sub>
VG	1	2	2	GND	GND	GND	GND	V <sub>IN1</sub>	V <sub>01</sub>
THD <sub>AMP</sub>	1	2	2	GND	GND	GND	GND	V <sub>IN1</sub>	V <sub>01</sub>
V <sub>OMAMP</sub>	1	2	2	GND	GND	GND	GND	V <sub>IN1</sub>	V <sub>01</sub>
V <sub>ONAMP</sub>	2	2	2	GND	GND	GND	GND	—	V <sub>01</sub>
PB+B OUT	2	2	2	GND	GND	GND	GND	—	Pin 9



LA7150



DISCONTINUED PRODUCT