



SANYO Semiconductors

# DATA SHEET

## LV7150V — Bi-CMOS IC Switch for the Wideband Video Signal (with LPF)

### Overview

The LV7150V is switch for the wideband video signal. It has the two input switches by three channels. It built in the 6MHz/12MHz/30MHz-LPF. It is the best for the filter to remove the digital clock noise of the Component or RGB Analog video signal before the A/D converter. It can correspond to the full HD signal because it provides the flat frequency response to 60MHz.

### Functions

- Two input switches × three channels
- Component and RGB signal inputs
- Flat frequency response to 60MHz (Bypass filter)
- 6MHz/12MHz/30MHz-LPF

### Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum Supply voltage	V <sub>CC max</sub>		6	V
Allowable power dissipation	P <sub>d max</sub>	Ta ≤ 75°C Mounted on a specified board *	300	mW
Operating temperature	T <sub>opr</sub>		-20 to +75	°C
Storage temperature	T <sub>stg</sub>		-40 to +125	°C

Note \*: Mounted on a specified board: 114.3mm×76.1mm×1.6mm glass epoxy

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# LV7150V

## Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Recommended Supply voltage	V <sub>CC</sub>		5	V
Operating Supply voltage Range	V <sub>CC</sub> opg		4.75 to 5.25	V

## Electrical Characteristics at Ta = 25°C, V<sub>CC</sub> = 5.0V

Parameter	Input	Input signal				Out Point	Test Condition	Ratings			unit
		Point	Signal	Freq	Mag			min	typ	max	
<b>V<sub>CC</sub> Supply Current &amp; Internal reference regulator</b>											
V <sub>CC</sub> Supply Current		V3					At non-signal, The current flows to 3pin		34	42	mA
Regulator voltage value						T16	The voltage of 16pin	2.8	3.0	3.2	V
<b>Voltage Gain</b>											
Voltage Gain Py,Pb,Pr,R,G,B	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	100k	300mVpp	T15 T13 T11	Output gain to input, LPF-ON/OFF is selected	-0.5	-0.2	0.0	dB
<b>Frequency response</b>											
Frequency response 1 at LPF-OFF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	60M 100k	300mVpp	T15 T13 T11	LPF-OFF is selected, Output Gain difference between 100kHz and 60MHz	-1.0	0.0	1.0	dB
Frequency response 2 at 6MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	6M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 6MHz	-3.0	0.0	1.0	dB
Frequency response 3 at 6MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	13.5M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 13.5MHz		-30.0	-20.0	dB
Frequency response 4 at 12MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	12M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 12MHz	-3.0	0.0	1.0	dB
Frequency response 5 at 12MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	27M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 27MHz		-30.0	-20.0	dB
Frequency response 6 at 30MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	20M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 20MHz	-1.0	0.0	1.0	dB
Frequency response 7 at 30MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	30M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 30MHz	-3.5	-1.0	1.5	dB
Frequency response 8 at 30MHz_LPF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	75M 100k	300mVpp	T15 T13 T11	LPF-ON is selected, Output Gain difference between 100kHz and 75MHz		-45.0	-33.0	dB
<b>S/N</b>											
Compared with S/N at 30MHz_LPF	Py R G B	T1A T2A T4A T5A T7A T8A	SIG1	30M 100k	650mVpp	T15 T13 T11	30MHzLPF-ON is selected, S/N of the band between 100kHz and 30MHz, S/N is shown with dB		-60.0	-50.0	dB
<b>Crosstalk</b>											
Crosstalk	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	4M	700mVpp	T15 T13 T11	LPF-ON/OFF is selected, Ratio at level of non-selection output and selection output		-60.0	-55.0	dB

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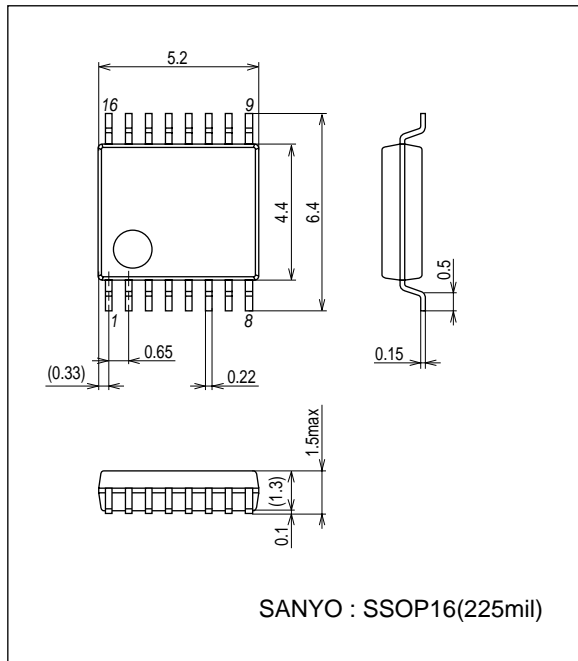
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Parameter	Input	Input signal				Out Point	Test Condition	Ratings			unit
		Point	Signal	Freq	Mag			min	typ	max	
<b>Group Delay</b>											
Group Delay 1 at LPF-OFF	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	60M 100k	300mVpp	T15 T13 T11	LPF-OFF is selected f=60MHz/100kHz		0.5	2.0	ns
Group Delay 2 at LPF-ON	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	6M 100k	300mVpp	T15 T13 T11	6M_LPF-ON is selected f=6MHz/100kHz		40.0	70.0	ns
Group Delay 3 at LPF-ON	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	12M 100k	300mVpp	T15 T13 T11	12M_LPF-ON is selected f=12MHz/100kHz		20.0	40.0	ns
Group Delay 4 at LPF-ON	Py/Pb/Pr R/G/B	T1A T2A T4A T5A T7A T8A	SIG2	30M 100k	300mVpp	T15 T13 T11	30MHz_LPF-ON is selected f=30MHz/100kHz		10.0	20.0	ns

## Package Dimensions

unit : mm (typ)

3178B



## Pin Control Table

Pin Control Table

SW No.	Pin No.	SW function name
SW1	Pin12	CLAMP/BIAS_CTL
SW2	Pin10	Filter_CTL1
SW3	Pin9	Filter_CTL2
SW4	Pin14	Input_Select_CTL

## Input Control Table

CLAMP/BIAS_CTL	Mode selected
Low(0 to 0.7V)	CLAMP_ON(Component_Mode)
High(2.3V to V <sub>CC</sub> )	BIAS_ON(RGB_Mode)

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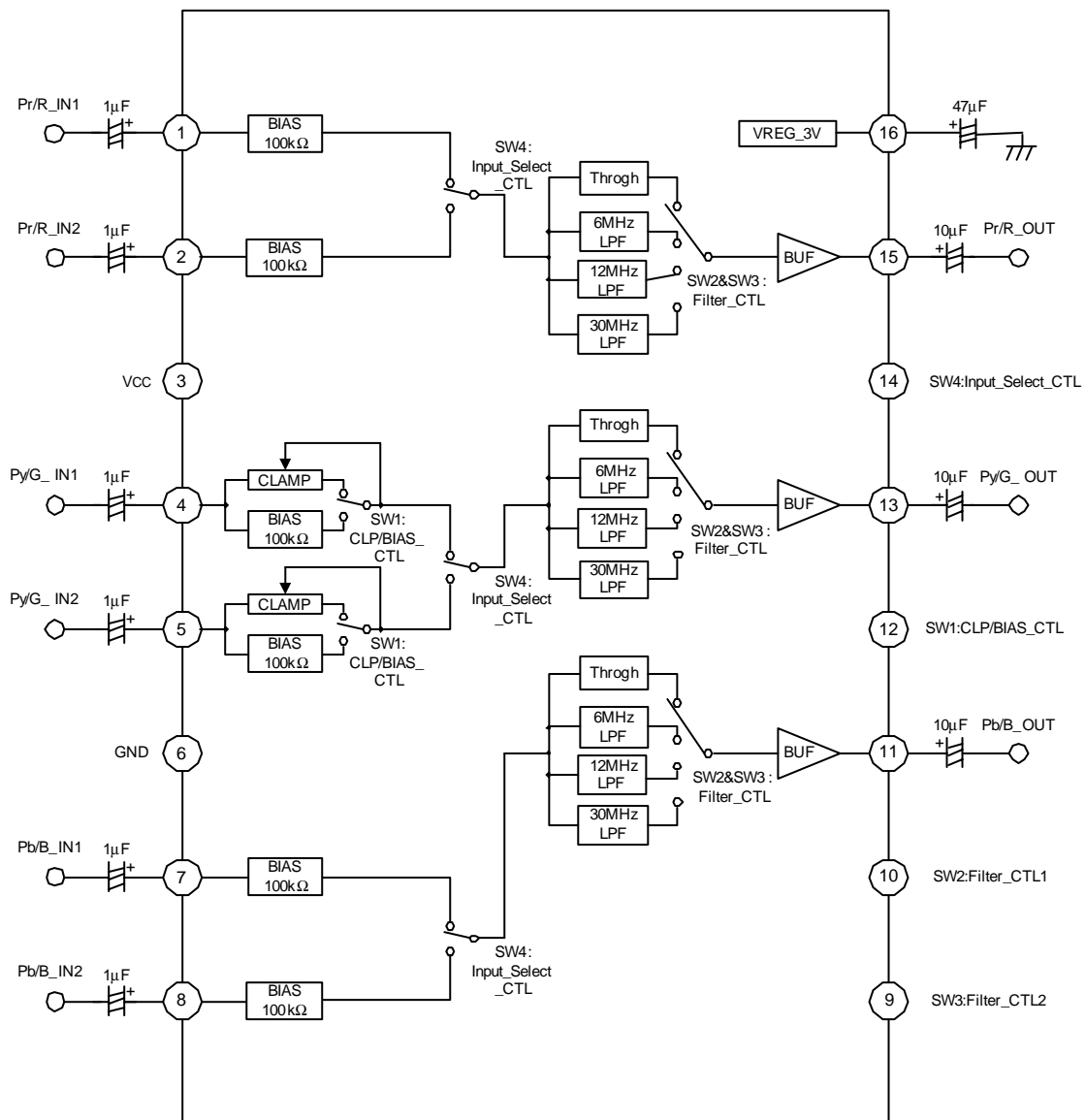
Filter Control Table

Filter_CTL1	Filter_CTL2	Mode selected
Low(0 to 0.7V)	Low(0 to 0.7V)	6M_LPF_ON
Low(0 to 0.7V)	High(2.3V to V <sub>CC</sub> )	12M_LPF_ON
High(2.3V to V <sub>CC</sub> )	Low(0 to 0.7V)	30M_LPF_ON
High(2.3V to V <sub>CC</sub> )	High(2.3V to V <sub>CC</sub> )	LPF_Through_ON

Input Select Control Table

Input_Select_CTL	Mode selected
Low(0 to 0.7V)	CH1_select
High(2.3V to V <sub>CC</sub> )	CH2_select

## Block Diagram



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