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## 3 – INPUT VIDEO SWITCH

### ■ GENERAL DESCRIPTION

The **NJM2249** is 3-input video switch for video and audio signal. One input terminals has sink-chip clamp function and so it is applied to fixed DC level of video signal. Two other input terminals are transistor base input for luminant signal and so luminant level may be easily fixed by outer circuit. Its operating supply voltage range is 4.75 to 13V and bandwidth is 10MHz. Cross-talk is 70dB (at 4.43MHz).

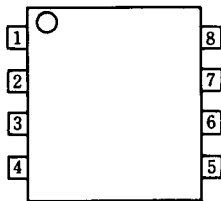
### ■ FEATURES

- Operating Voltage ( $V^+$  = +4.75V to +13V)
- 3 Input - 1 Output
- Internal Clamp Function ( $V_{IN1}$ )
- Internal Luminance Signal Control Function ( $V_{IN2}$ ,  $V_{IN3}$ )
- Cross - talk 70dB (at 4.43MHz)
- Wide Frequency Range
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

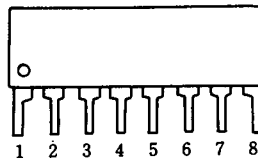
### ■ APPLICATION

- VCR, Video Camera, AV-TV, Video Disc Player

### ■ PIN CONFIGURATION



**NJM2249D**  
**NJM2249M**  
**NJM2249V**

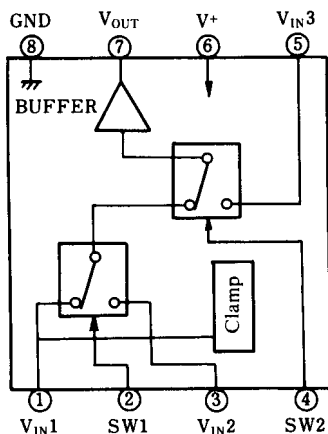


**NJM2249L**

#### PIN FUNCTION

1.  $V_{IN1}$
2. SW 1
3.  $V_{IN2}$
4. SW 2
5.  $V_{IN3}$
6.  $V^+$
7.  $V_{OUT}$
8. GND

### ■ BLOCK DIAGRAM



### ■ INPUT CONTROL SIGNAL-OUTPUT SIGNAL

| SW1 | SW2 | OUTPUT SIGNAL |
|-----|-----|---------------|
| L   | L   | $V_{IN1}$     |
| H   | L   | $V_{IN2}$     |
| L/H | H   | $V_{IN3}$     |

# NJM2249

## ■ ABSOLUTE MAXIMUM RATINGS

( $T_a = 25^\circ\text{C}$ )

| PARAMETER                   | SYMBOL    | RATINGS     | UNIT             |
|-----------------------------|-----------|-------------|------------------|
| Supply Voltage              | $V^+$     | 15          | V                |
| Power Dissipation           | $P_D$     | (DIP8) 500  | mW               |
|                             |           | (DMP8) 300  | mW               |
|                             |           | (SSOP8) 250 | mW               |
|                             |           | (SIP8) 800  | mW               |
| Operating Temperature Range | $T_{opr}$ | -20 to +75  | $^\circ\text{C}$ |
| Storage Temperature Range   | $T_{stg}$ | -40 to +125 | $^\circ\text{C}$ |

## ■ ELECTRICAL CHARACTERISTICS

( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )

| PARAMETERS                 | SYMBOLS  | TEST CONDITIONS                                     | MIN. | TYP. | MAX. | UNIT     |
|----------------------------|----------|---|------|------|------|----------|
| Recommended Supply Voltage | $V^+$    |   | 4.75 | -    | 13.0 | V        |
| Operating Current          | $I_{CC}$ | $S1 = S2 = S3 = S4 = S5 = 1$                        | -    | 10.5 | 13.0 | mA       |
| Voltage Gain               | $G_V$    | $V_1 = 2.5V_{P-P}$ , 100kHz, $V_O / V_1$            | -0.5 | -    | +0.5 | dB       |
| Frequency Characteristics  | $G_f$    | $V_1 = 2.0V_{P-P}$ , $V_O$ (10MHz) / $V_O$ (100MHz) | -1.0 | 0    | +1.0 | dB       |
| Differential Gain          | DG       | $V_1 = 2V_{P-P}$ , Staircase signal                 | -    | 0    | -    | %        |
| Differential Phase         | DP       | $V_1 = 2V_{P-P}$ , Staircase signal                 | -    | 0    | -    | deg      |
| Cross-talk                 | CT       | $V_1 = 2.0V_{P-P}$ , 4.43MHz, $V_O / V_1$ (Note 1)  | -    | -70  | -    | dB       |
| Switch Change Voltage      | $V_{CH}$ | All inside SW : ON                                  | 2.4  | -    | -    | V        |
|                            | $V_{CL}$ | All inside SW : OFF                                 | -    | -    | 0.8  | V        |
| Output Impedance           | $R_O$    |   | -    | 10   | -    | $\Omega$ |

(Note 1) : Tested on all combination except three below.

a)  $S1 = 2, S4 = S5 = 1$  b)  $S2 = 2, S4 = 2, S5 = 1$  c)  $S3 = 2, S5 = 2$

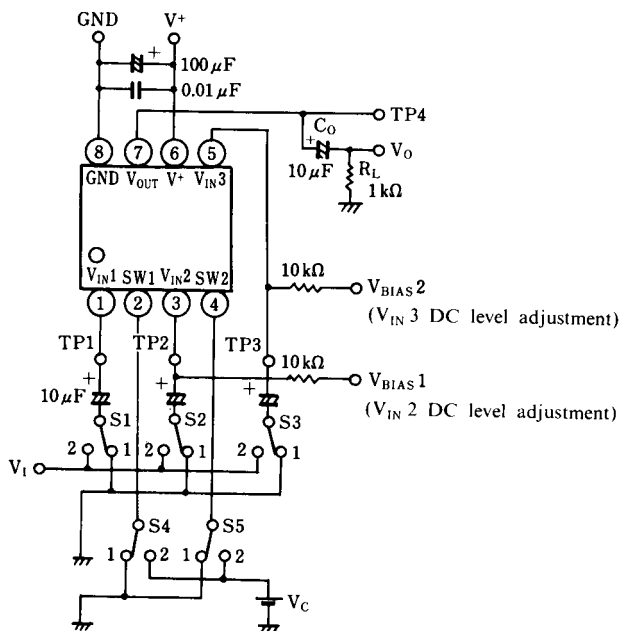
(Note 2) : Unless specified, tested with  $V_{BIAS1} = V_{BIAS2} = 3\text{V}$ .

(Note 3) : If it is not shown about switch condition, it is tested on three condition below.

a)  $S1 = 2, S2 = S3 = S4 = S5 = 1$  b)  $S1 = 1, S2 = 2, S3 = 1, S4 = 2, S5 = 1$  c)  $S1 = S2 = 1, S3 = 2, S4 = 1 \text{ or } 2, S5 = 2$

(Note 4) :  $V_{IN1}$  clamp voltage is about 2 / 5 of supply voltage (about 2.0V if  $V^+ = 5\text{V}$ ).

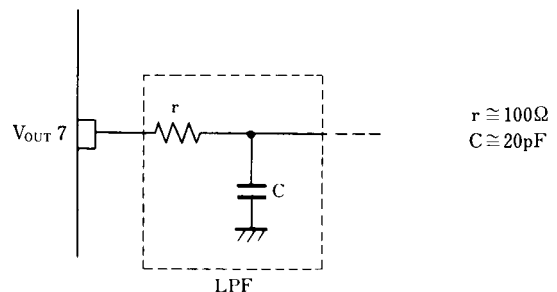
## ■ TEST CIRCUIT



## ■ SPECIAL CARES TO BE TAKEN WHEN APPLICATION

Oscillation Prevention on light loading conditions

Recommended under circuit.



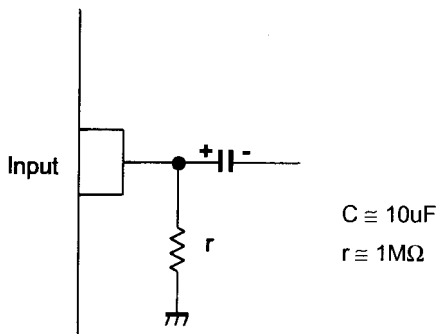
## ■ TERMINAL FUNCTION

| PIN NO. | PIN SYMBOL       | EQUIVALENT CIRCUIT | PIN NO. | PIN SYMBOL       | EQUIVALENT CIRCUIT |
|---------|------------------|--------------------|---------|------------------|--------------------|
| 1       | V <sub>IN1</sub> |                    | 5       | V <sub>IN3</sub> |                    |
| 2       | SW1              |                    | 6       | V <sup>+</sup>   | _____              |
| 3       | V <sub>IN2</sub> |                    | 7       | V <sub>OUT</sub> |                    |
| 4       | SW2              |                    | 8       | GND              | _____              |

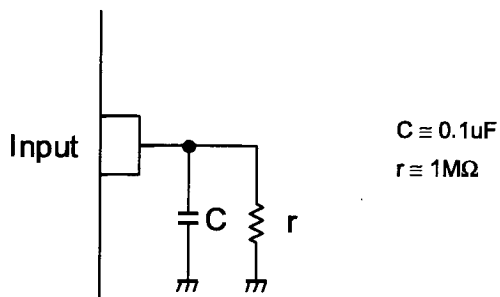
# NJM2249

## ■ APPLICATION

This IC requires  $1\text{M}\Omega$  resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



This IC requires  $0.1\mu\text{F}$  capacitor between INPUT and GND,  $1\text{M}\Omega$  resistance between INPUT and GND for clamp type input at mute mode.



**[CAUTION]**

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