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## 3-INPUT VIDEO SWITCH

### ■ GENERAL DESCRIPTION

The NJM2249 is 3-input video switch for video and audio signal. One input terminal 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).

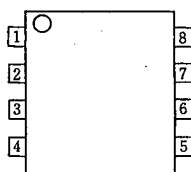
### ■ FEATURES

- Operating Voltage ( $V^+ = +4.75V \sim +13V$ )
- 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

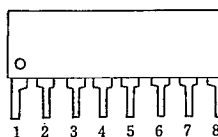
### ■ APPLICATION

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

### ■ PIN CONFIGURATION



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NJM2249V

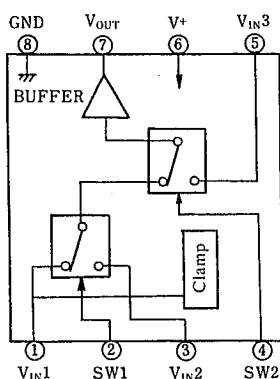


NJM2249L

#### 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

| SW 1 | SW 2 | OUTPUT SIGNAL |
|------|------|---------------|
| L    | L    | $V_{IN1}$     |
| H    | L    | $V_{IN2}$     |
| L/H  | H    | $V_{IN3}$     |

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### ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER                   | SYMBOL           | RATINGS     | UNIT |
|-----------------------------|------------------|-------------|------|
| Supply Voltage              | V*               | 15          | V    |
| Power Dissipation           | P <sub>D</sub>   | (DIP8) 500  | mW   |
|                             |                  | (DMP8) 300  | mW   |
|                             |                  | (SSOP8) 250 | mW   |
|                             |                  | (SIP8) 800  | mW   |
| Operating Temperature Range | T <sub>opr</sub> | -20~+75     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40~+125    | °C   |

### ■ ELECTRICAL CHARACTERISTICS:

(V\*=5V, Ta=25°C)

| PARAMETERS                 | SYMBOLS         | TEST CONDITIONS                                                                        | MIN. | TYP. | MAX. | UNIT |
|----------------------------|-----------------|----------------------------------------------------------------------------------------|------|------|------|------|
| Recommended Supply Voltage | V*              |                                                                                        | 4.75 | —    | 13.0 | V    |
| Operating Current          | I <sub>CC</sub> | S1=S2=S3=S4=S5=1                                                                       | —    | 10.5 | 13.0 | mA   |
| Voltage Gain               | G <sub>V</sub>  | V <sub>I</sub> =2.5V <sub>P-P</sub> , 100kHz, V <sub>O</sub> /V <sub>I</sub>           | -0.5 | —    | +0.5 | dB   |
| Frequency Characteristics  | G <sub>f</sub>  | V <sub>I</sub> =2.0V <sub>P-P</sub> , V <sub>O</sub> (10MHz)/V <sub>O</sub> (100kHz)   | -1.0 | 0    | +1.0 | dB   |
| Differential Gain          | DG              | V <sub>I</sub> =2V <sub>P-P</sub> , Staircase Signal                                   | —    | 0    | —    | %    |
| Differential Phase         | DP              | V <sub>I</sub> =2V <sub>P-P</sub> , Staircase Signal                                   | —    | 0    | —    | deg  |
| Cross-talk                 | CT              | V <sub>I</sub> =2.0V <sub>P-P</sub> , 4.43MHz, V <sub>O</sub> /V <sub>I</sub> (note 1) | —    | -70  | —    | dB   |
| Switch Change Voltage      | V <sub>CH</sub> | All inside SW: ON                                                                      | 2.4  | —    | —    | V    |
|                            | V <sub>CL</sub> | All inside SW: OFF                                                                     | —    | —    | 0.8  | V    |
| Output Impedance           | R <sub>O</sub>  |                                                                                        | —    | 10   | —    | Ω    |

(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

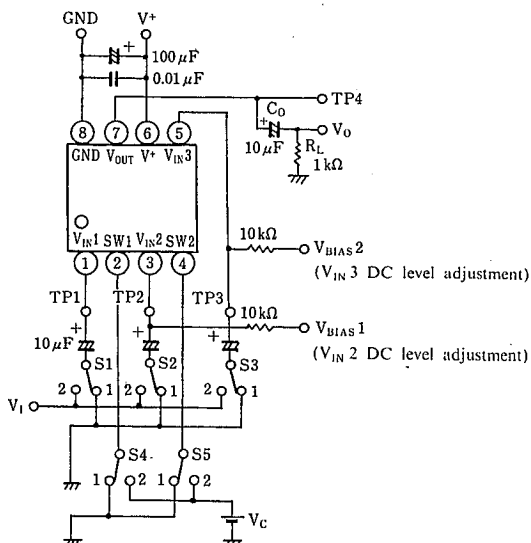
(Note2): Unless specified, tested with V<sub>BIAS1</sub>=V<sub>BIAS2</sub>=3V.

(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 or 2, S5=2

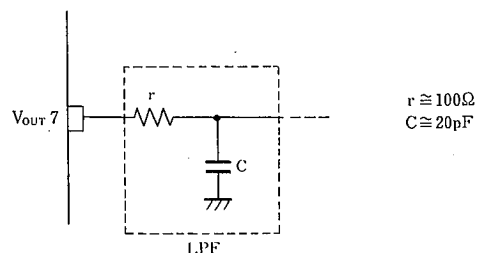
(Note 4): V<sub>IN1</sub> clamp voltage is about 2/5 of supply voltage (about 2.0V if V\*=5V).

### ■ TEST CIRCUIT



### ■ SPECIAL CARES TO BE TAKEN WHEN APPLICATION

This IC requires 1MΩ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



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■ 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       | SW 1             |                    | 6       | V <sup>+</sup>   |                    |
| 3       | V <sub>IN2</sub> |                    | 7       | V <sub>OUT</sub> |                    |
| 4       | SW 2             |                    | 8       | GND              |                    |

5

# NJM2249

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## MEMO

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