

3-INPUT VIDEO SWITCH

■ GENERAL DESCRIPTION

The NJM2235 is 3-input video switch for video and audio signal. It has clamp function and so is applied to fixed DC level of video signal. Its operating supply voltage range is 5 to 12V and bandwidth is 10MHz. Crosstalk is 70dB (at 4.43MHz).

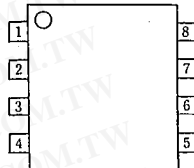
■ FEATURES

- Operating Voltage (+4.75V~+13V)
- 3 Input-1 Output
- Internal Clamp Function
- Wide Operating Supply Voltage Range 4.75~13V
- Cross-talk 70dB (at 4.43MHz)
- Wide Frequency Range 10MHz
- Muting Function available
- Package Outline DIP-8, DMP-8, SIP-8, SSOP-8
- Bipolar Technology

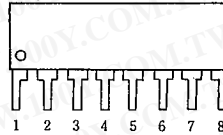
■ APPLICATION

- VCR: Video Camera AV-TV Video Disc Player

■ PIN CONFIGURATION



NJM2235D
NJM2235M
NJM2235V

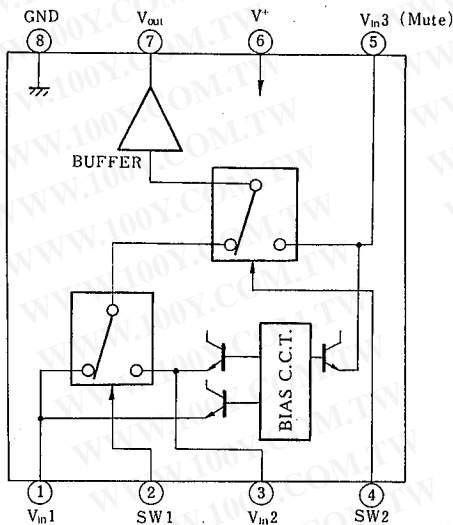


NJM2235L

PIN FUNCTION

1. V_{in1}
2. SW1
3. V_{in2}
4. SW2
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 _D | (DIP8) 500 (DMP8) 300 (SSOP8) 250 (SIP8) 800 | mW mW mW mW |
| Operating Temperature Range | T _{opr} | -20~+75 | °C |
| Storage Temperature Range | T _{stg} | -40~+125 | °C |

■ ELECTRICAL CHARACTERISTICS

(V*=5V, Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | 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 | 14.0 | mA |
| Frequency Characteristics | G _{fz} | V _i =2.0Vpp Vo(10Hz)/Vo(100kHz) | -1.0 | — | +1.0 | dB |
| Voltage Gain | G _v | V _i =2.5Vpp, 100kHz Vo/Vi | -0.5 | — | +0.5 | dB |
| Differential Gain | DG | V _i =2Vpp Staircase signal | — | 0 | — | % |
| Differential Phase | DP | V _i =2Vpp Staircase signal | — | 0 | — | deg |
| Output Offset Voltage | V _{off} | (note 2) | -30 | 0 | +30 | mV |
| Input Clamp Voltage | V _{ic} | (note 5) | — | 2.0 | — | V |
| Crosstalk (1) | CT1 | V _i =2.0Vpp, 4.43MHz, Vo/Vi (note 3) | — | -70 | — | dB |
| Crosstalk (2) | CT2 | V _i =2.0Vpp, 4.43MHz, Vo/Vi (note 4) | — | -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 | — | Ω |

(note 1): If it is not shown about switch condition, it is tested on three conditions below.

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

(note 2): S1=S2=S3=1, Output DC voltage difference of three mode below.

a) S4=S5=1 b) S4=2, S5=1 c) S4=1 or 2, S5=2

(note 3): S5=1, Tested on all combination of S1~S4 except two below.

a) S1=2, S4=1 b) S2=S4=2

(note 4): Tested on all combination of S1~S4 except one.

a) S5=2, S3=2

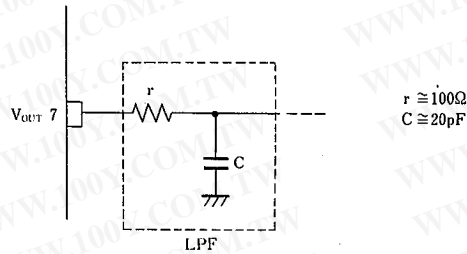
(note 5): Input clamp voltage is about 2/5 of supply voltage.

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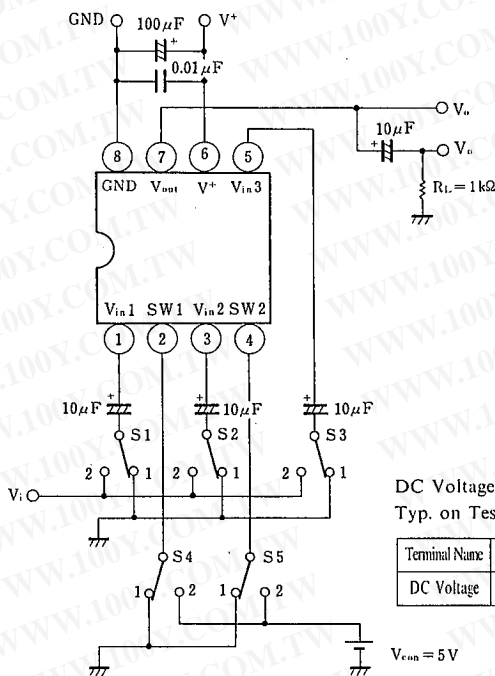
■ APPLICATION

Oscillation Prevention on light loading conditions
Recommended under circuit

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



■ TEST CIRCUIT



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DC Voltage Each Terminal
Typ. on Test Circuit Ta = 25°C

| Terminal Name | V _{IN1} | SW1 | V _{IN2} | SW2 | V _{IN3} | V ⁺ | V _{OUT} | GND |
|---------------|------------------|-----|------------------|-----|------------------|----------------|------------------------|-----|
| DC Voltage | $\frac{2}{3}V^+$ | — | $\frac{2}{3}V^+$ | — | $\frac{2}{3}V^+$ | — | $\frac{2}{3}V^+ - 0.7$ | — |

■ EQUIVALENT CIRCUIT

| PIN NO. | PIN FUNCTION | INSIDE EQUIVALENT CIRCUIT | PIN NO. | PIN FUNCTION | INSIDE EQUIVALENT CIRCUIT |
|---------|-------------------|---------------------------|---------|--------------------------|---------------------------|
| 1 | V _{IN 1} | | 5 | V _{IN 3} (Mute) | |
| 2 | SW 1 | | 6 | V+ | |
| 3 | V _{IN 2} | | 7 | V _{OUT} | |
| 4 | SW 2 | | 8 | GND | |

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MEMO

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