

3-INPUT VIDEO SWITCH WITH 6dB AMPLIFIER

■ GENERAL DESCRIPTION

The NJM2246 is three input integrated video switch which selects one video or audio signal from three input signals. It contains 6dB amplifier and its operating supply voltage range is 4.75 to 13V and bandwidth is 5MHz. Crosstalk is 65dB (at 4.43MHz).

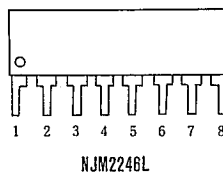
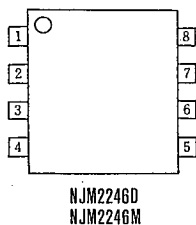
■ FEATURES

- Operating Voltage 4.75~13V
- 3 Input-1 Output
- Internal 6dB Amplifier
- Muting Function available
- Internal Clamp Function
- Cross-talk 65dB(at 4.43MHz)
- Wide Frequency Range 5MHz(1V_{PP} Input)
- Package Outline DIP8, DMP8, SIP8
- Bipolar Technology

■ APPLICATION

- VCR, AV-TV Video Disc Player

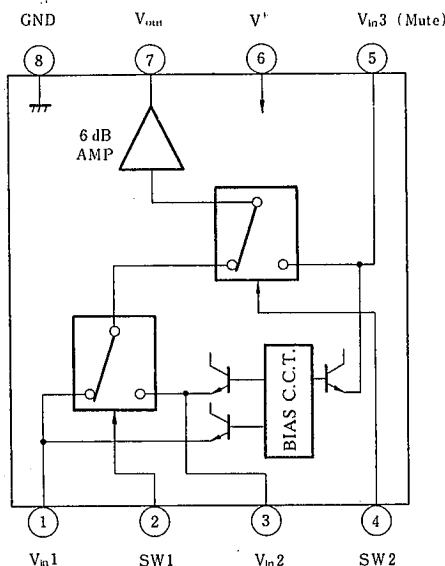
■ PIN CONFIGURATION



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 _{IN 1} |
| H | L | V _{IN 2} |
| L/H | H | V _{IN 3} |

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

■ 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 |
| | | (SIP8) 800 | mW |
| Operating Temperature Range | T_{opr} | $-40 \sim +85$ | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | $-40 \sim +125$ | $^\circ\text{C}$ |

■ ELECTRICAL CHARACTERISTICS

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

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------|-----------|---|------|------|----------|------|
| Recommended Supply Voltage | V^+ | | 4.75 | — | 13.0 | V |
| Operating Current | I_{CC} | $S1=S2=S3=S4=S5=2$ | 9.5 | 14.0 | 21.0 | mA |
| Voltage Gain | G_v | $V_{in}=1.0V_{p-p}$, 1MHz, V_o/V_i , $R_L=1k\Omega$ | 5.5 | 6.0 | 6.5 | dB |
| Frequency Characteristic | G_f | $V_{in}=1.0V_{p-p}$, $V_o(10\text{MHz})/V_o(1\text{MHz})$, $R_L=1k\Omega$ | -1.0 | — | +1.0 | dB |
| Differential Gain | DG | $V_{in}=1.0V_{p-p}$, staircase, $R_L=1k\Omega$ | — | 0.3 | — | % |
| Differential Phase | DP | $V_{in}=1.0V_{p-p}$, staircase, $R_L=1k\Omega$ | — | 0.3 | — | deg. |
| Output Offset Voltage | V_{off} | $S1=S2=S3=2$, $S5=1 \rightarrow 2$ V_O :voltage change | — | — | ± 60 | mV |
| Crosstalk | CT | $V_{in}=1V_{p-p}$, 4.43MHz, V_o/V_i | — | -65 | — | dB |
| Switch Change Voltage | V_{CH} | All inside SW:ON | 2.4 | — | — | V |
| | V_{CL} | All inside SW:OFF | — | — | 0.8 | V |

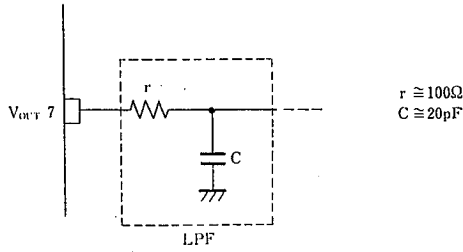
(note) Unless specified, tested with three mode below.

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

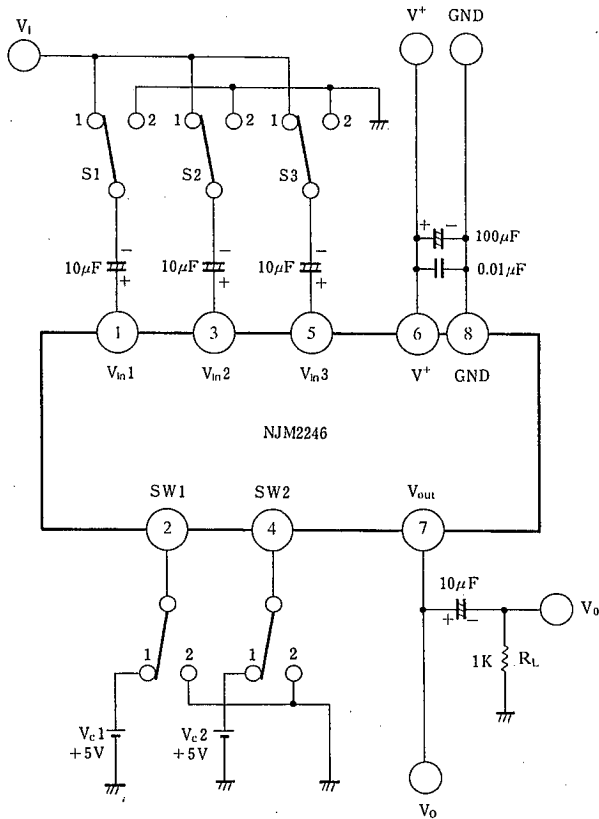
5

■ APPLICATION

Oscillation Prevention on light loading conditions Recommended under circuit.
 This IC requires $1M\Omega$ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



■ TEST CIRCUIT



DC Voltage Each Terminal
 Typ. on Test Circuit $T_a \approx 25^\circ\text{C}$

| 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 _{IN1} | | 5 | V _{IN3} (Mute) | |
| 2 | SW 1 | | 6 | V ⁺ | _____ |
| 3 | V _{IN2} | | 7 | V _{OUT} | |
| 4 | SW 2 | | 8 | GND | _____ |

5

MEMO

[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.