

## 2-INPUT SINGLE VIDEO SWITCH

### ■ GENERAL DESCRIPTION

The **NJM2233B** is 2-input signal video switch selecting one of two video or audio signals. Its operating voltage is 4.75 to 13V and bandwidth is 10MHz. Crosstalk is 70dB (at 4.43MHz). It is applied to both NTSC and PAL VTR.

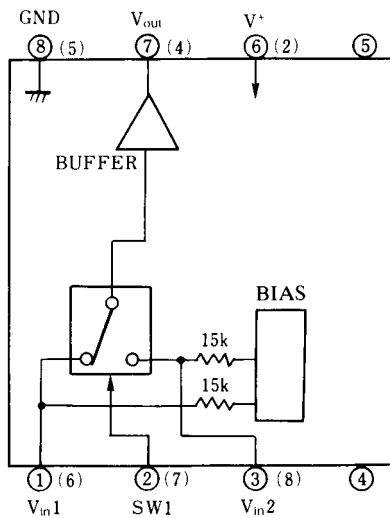
### ■ FEATURES

- Operating Voltage (+4.75V to +13V)
- 2 Input-1 Output
- Crosstalk 70dB (at 4.43MHz)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

### ■ APPLICATION

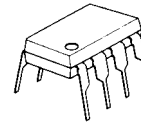
- VCR Video Camera AV-TV Video Disc player Audio

### ■ BLOCK DIAGRAM

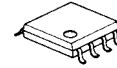


○ : DIP-8, DMP-8 (4, 5Pin NC)  
 ( ) : SIP-8 (1, 3pin NC)

### ■ PACKAGE OUTLINE



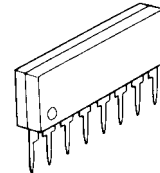
**NJM2233BD**



**NJM2233BM**



**NJM2233BV**

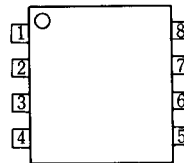


**NJM2233BL**

### ■ PIN CONFIGURATION

#### PIN FUNCTION

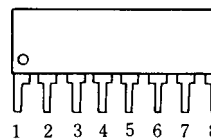
1.  $V_{in1}$
2. SW1
3.  $V_{in2}$
4. N.C.
5. N.C.
6.  $V^+$
7.  $V_{out}$
8. GND



**NJM2233BD**  
**NJM2233BM**  
**NJM2233BV**

#### PIN FUNCTION

1. N.C.
2.  $V^+$
3. N.C.
4.  $V_{out}$
5. GND
6.  $V_{in1}$
7. SW1
8.  $V_{in2}$



**NJM2233BL**

# NJM2233B

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

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

## ■ ELECTRICAL CHARACTERISTICS

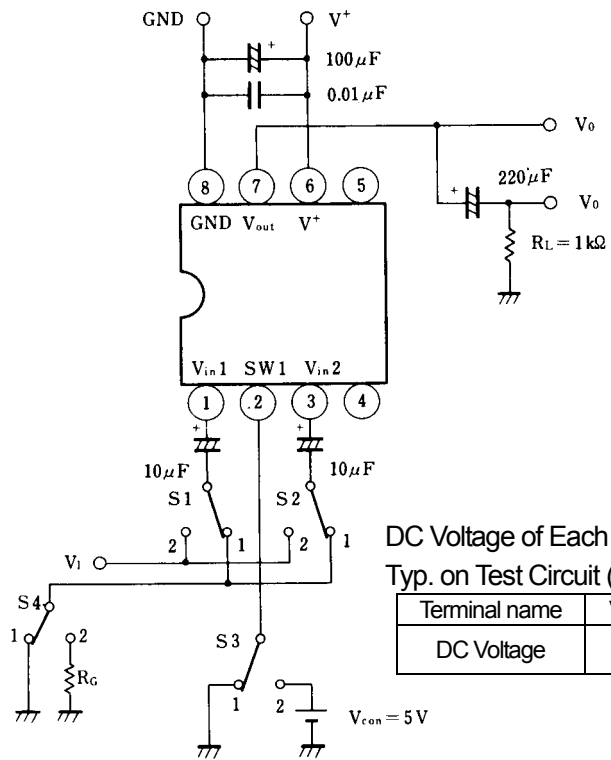
(V<sup>+</sup>=5V, Ta=25°C)

| PARAMETER                    | SYMBOL           | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT |
|------------------------------|------------------|---|------|------|------|------|
| Operating Voltage            | V <sup>+</sup>   |   | 4.75 | -    | 13.0 | V    |
| Operating Current            | I <sub>oc</sub>  | S1=S2=S3=1  | -    | 8.5  | 11.0 | mA   |
| Frequency Characteristic (1) | G <sub>f1</sub>  | V <sub>i</sub> =2.5V <sub>pp</sub> V <sub>o</sub> (20Hz)/V <sub>o</sub> (100kHz)                                    | -    | 0    | ±1.0 | dB   |
| Frequency Characteristic (2) | G <sub>f2</sub>  | V <sub>i</sub> =2.0V <sub>pp</sub> V <sub>o</sub> (10MHz)/V <sub>o</sub> (100kHz)                                   | -    | 0    | ±1.0 | dB   |
| Voltage Gain                 | G <sub>v</sub>   | V <sub>i</sub> =2.5V <sub>pp</sub> , 100kHz, V <sub>o</sub> /V <sub>i</sub>   | -0.5 | 0    | -    | dB   |
| Total Harmonic Distortion    | THD              | V <sub>i</sub> =2.5V <sub>pp</sub> , 1kHz   | -    | 0.01 | -    | %    |
| Differential Gain            | DG               | V <sub>i</sub> =2V <sub>pp</sub> standard staircase signal  | -    | 0    | -    | %    |
| Differential Phase           | DP               | V <sub>i</sub> =2V <sub>pp</sub> standard staircase signal  | -    | 0    | -    | deg  |
| Output Offset Voltage        | V <sub>off</sub> | S1=S2=1, S3=1→2, V <sub>o</sub> voltage change  | -    | 0    | ±15  | mV   |
| Crosstalk                    | CT               | (S1=S3=1, S2=2) and (S1=S3=2, S2=1)<br>V <sub>i</sub> =2.0V <sub>pp</sub> , 4.43MHz, V <sub>o</sub> /V <sub>i</sub> | -    | -70  | -    | dB   |
| Switch Change Voltage        | V <sub>CH</sub>  | Garanteed voltage of all switch on  | 2.4  | -    | -    | V    |
|                              | V <sub>CL</sub>  | Garanteed voltage of all switch off   | -    | -    | 0.8  | V    |
| Input Impedance              | R <sub>1</sub>   |   | -    | 1.5  | -    | KΩ   |
| Output Impedence             | R <sub>O</sub>   |   | -    | 10   | -    | Ω    |

## ■ CONTROL SIGNAL – OUTPUT SIGNAL

| SW 1 | OUTPUT SIGNAL     |
|------|-------------------|
| L    | V <sub>IN</sub> 1 |
| H    | V <sub>IN</sub> 2 |

## ■ TEST CIRCUIT

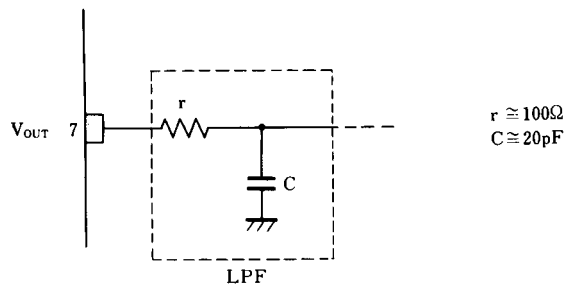


DC Voltage of Each Terminal  
Typ. on Test Circuit (Ta=25°C).

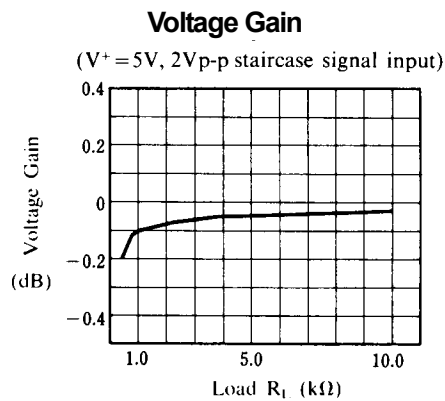
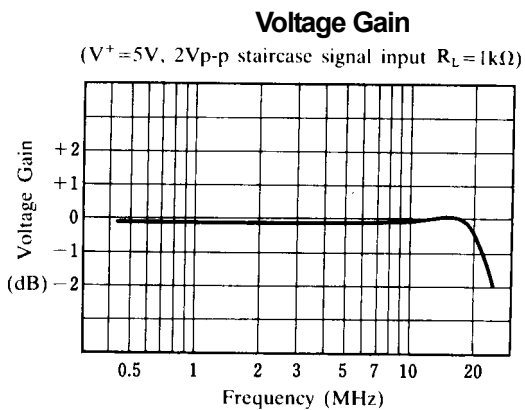
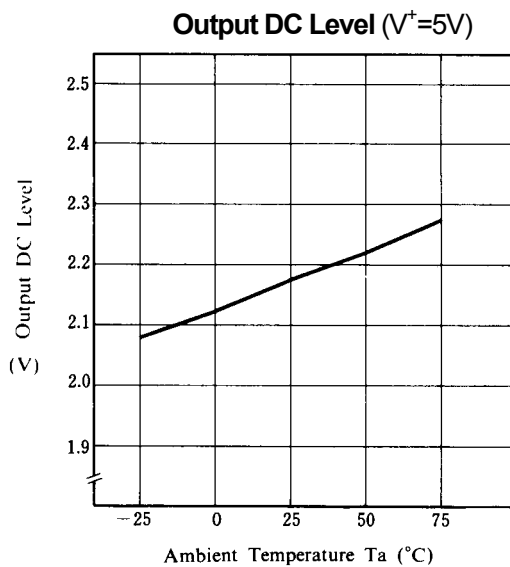
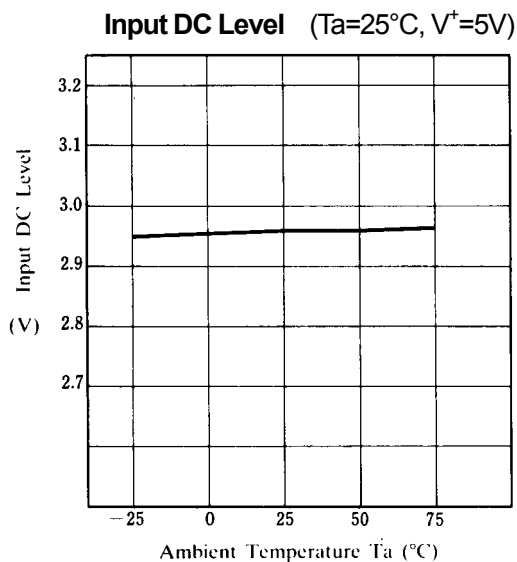
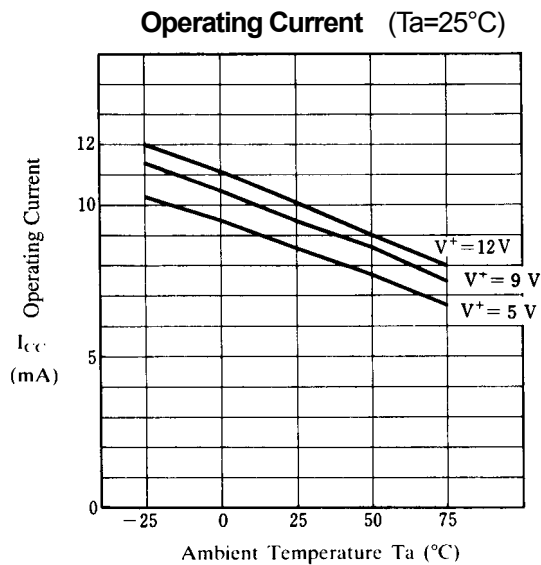
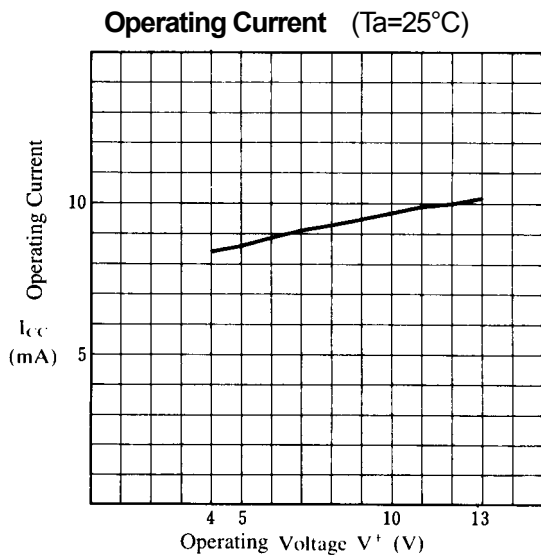
| Terminal name | V <sub>IN 1</sub> | SW 1 | V <sub>IN 2</sub> | V <sup>+</sup> | V <sub>OUT</sub>        | GND |
|---------------|-------------------|------|-------------------|----------------|-------------------------|-----|
| DC Voltage    | $\frac{3}{5} V^+$ | -    | $\frac{3}{5} V^+$ | -              | $\frac{3}{5} V^+ - 0.7$ | -   |

## ■ APPLICATION

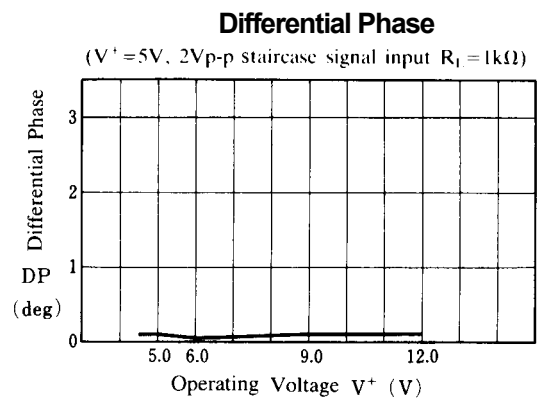
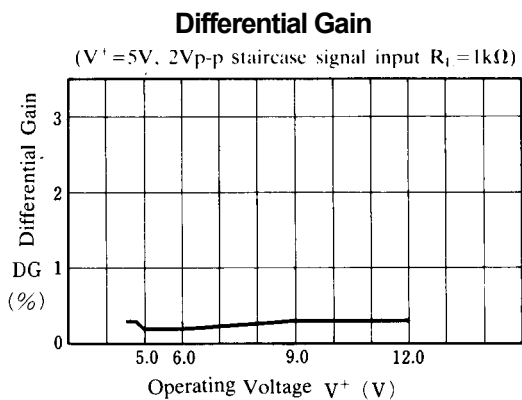
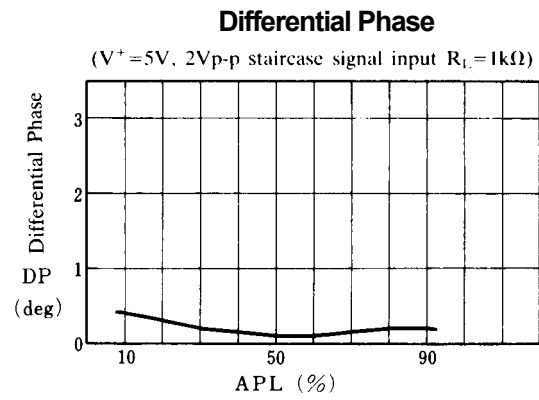
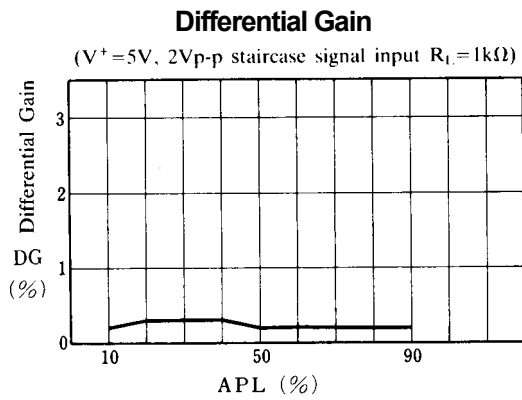
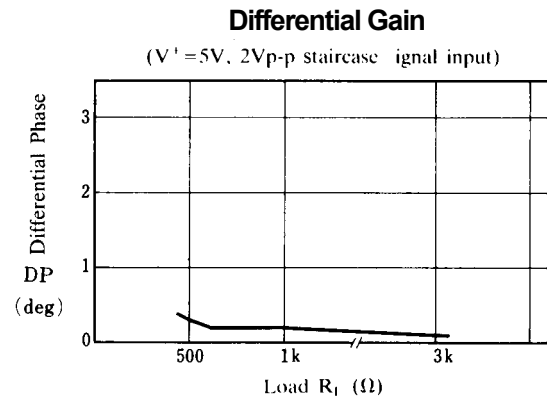
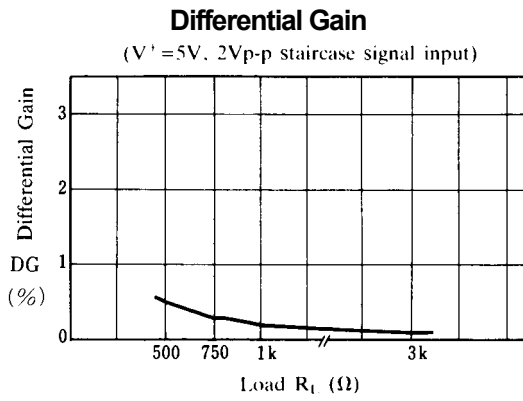
- Oscillation Prevention on light loading conditions
- Recommended under circuit



## ■ TYPICAL CHARACTERISTICS

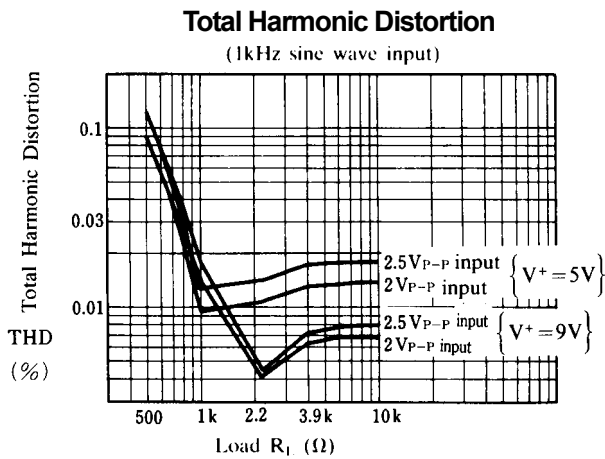
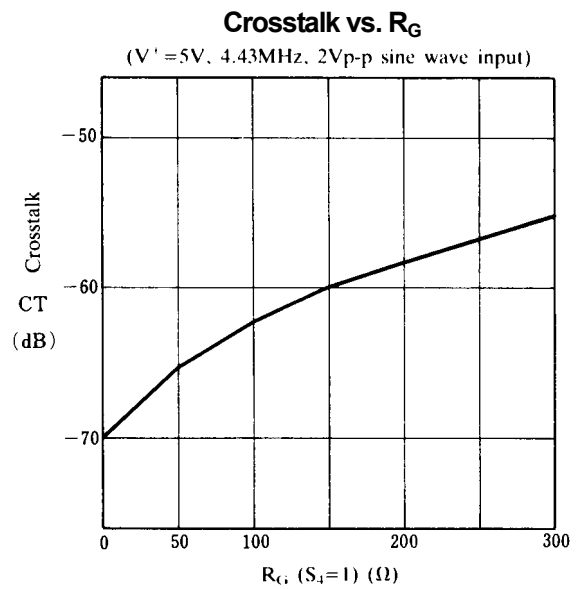
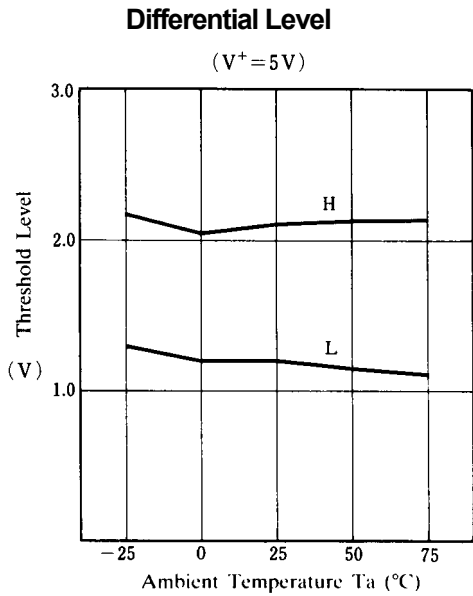
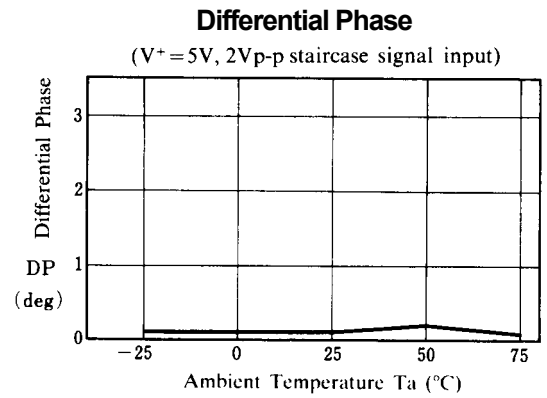
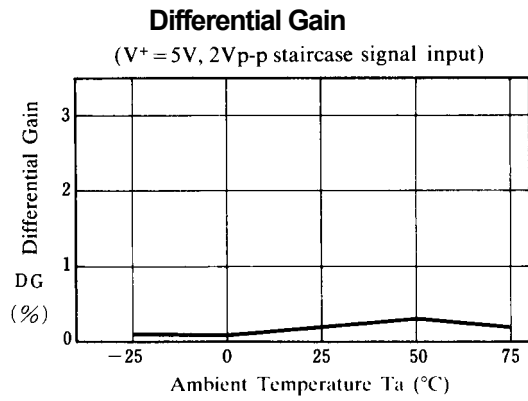


## ■ TYPICAL CHARACTERISTICS



# NJM2233B

## ■ TYPICAL CHARACTERISTICS



## ■ EQUIVALENT CIRCUIT

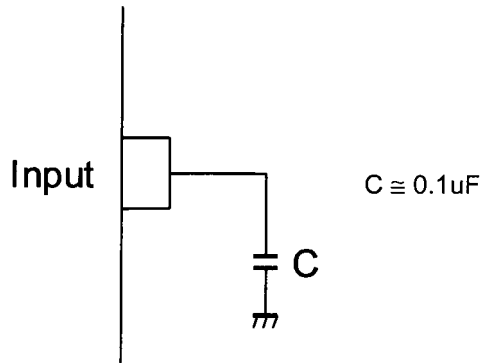
| PIN NO. | SYMBOL     | INSIDE EQUIVALENT CIRCUIT | PIN NO. | SYMBOL    | INSIDE EQUIVALENT CIRCUIT |
|---------|------------|---------------------------|---------|-----------|---------------------------|
| 1       | $V_{IN-1}$ |                           | 5       | NC        | _____                     |
| 2       | SW 1       |                           | 6       | $V^+$     | _____                     |
| 3       | $V_{IN2}$  |                           | 7       | $V_{OUT}$ |                           |
| 4       | NC         | _____                     | 8       | GND       | _____                     |

# NJM2233B

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## ■ APPLICATION

This IC requires 0.1uF capacitor between INPUT and GND for bias type input at mute mode.



[CAUTION]  
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