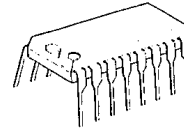


2-INPUT 3CHANNEL VIDEO SWITCH

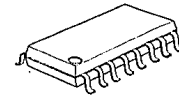
■ GENERAL DESCRIPTION

NJM2284 is a switching IC for switching over from one audio or video input signal to another. Internalizing 2 inputs, 1 output, and then each set of 3 can be operated independently. One of them is a "Clamp type" and it can be operated while DC level fixed in position of the video signal. It is a higher efficiency video switch, featuring the operating supply voltage 4.75 to 13.0V, the frequency feature 10MHz, and then the Crosstalk 75dB (at 4.43MHz).

■ PACKAGE OUTLINE



NJM2284D



NJM2284M



NJM2284V

■ FEATURES

- 2 Input-1 Output Internalizing 3 Circuits (one of them is a Clamp type).
- Wide Operating Voltage
- Crosstalk 75dB(at 4.43MHz)
- Wide Bandwidth Frequency Feature 10MHz(2V<sub>p-p</sub> Input)
- Package Outline DIP-16, DMP-16, SSOP-16

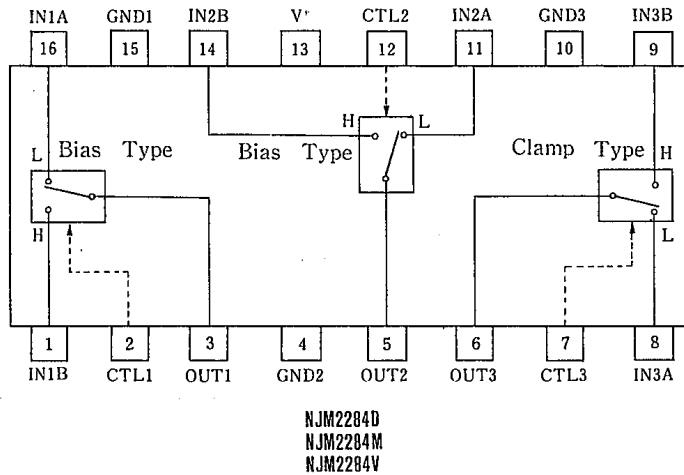
■ RECOMMENDED OPERATING CONDITION

- Supply Voltage V<sup>+</sup> 4.75~13.0V

■ APPLICATIONS

- VCR, Video Camera, AV-TV, Video Disk Player.

■ BLOCK DIAGRAM



## ■ MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER                   | SYMBOL | RATINGS      | UNIT |
|-----------------------------|--------|--------------|------|
| Supply Voltage              | V*     | 14           | V    |
| Power Dissipation           | Pd     | (DIP16) 700  | mW   |
|                             |        | (DMP16) 350  | mW   |
|                             |        | (SSOP16) 300 | mW   |
| Operating Temperature Range | Topr   | -40~+85      | °C   |
| Storage Temperature Range   | Tstg   | -40~+125     | °C   |

## ■ ELECTRICAL CHARACTERISTICS

(V\*=5V, Ta=25°C)

| PARAMETER                  | SYMBOL          | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT |
|----------------------------|-----------------|---|------|------|------|------|
| Operating Current (1)      | ICC1            | V+=5V (Note1)   | 8.1  | 11.6 | 15.1 | mA   |
| Operating Current (2)      | ICC2            | V+=9V (Note1)   | 10.2 | 14.6 | 19.0 | mA   |
| Voltage Gain               | Gv              | V <sub>i</sub> = 100kHz, 2V <sub>p-p</sub> , V <sub>O</sub> /V <sub>i</sub>         | -0.6 | -0.1 | +0.4 | dB   |
| Frequency Gain             | G <sub>F</sub>  | V <sub>i</sub> = 2V <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> , Standard Staircase Signal                      | —    | 0.3  | —    | %    |
| Differential Phase         | DP              | V <sub>i</sub> = 2V <sub>p-p</sub> , Standard Staircase Signal                      | —    | 0.3  | —    | deg  |
| Output Offset Voltage      | V <sub>OS</sub> | (Note2)   | -10  | 0    | +10  | mV   |
| Crosstalk                  | CT              | V <sub>i</sub> = 2V <sub>p-p</sub> , 4.43MHz, V <sub>O</sub> /V <sub>i</sub>        | —    | -75  | —    | dB   |
| Switch Change Over Voltage | V <sub>CH</sub> | All inside Switch ON  | 2.5  | —    | —    | V    |
| Switch Change Over Voltage | V <sub>CL</sub> | All inside Switch OFF   | —    | —    | 1.0  | V    |

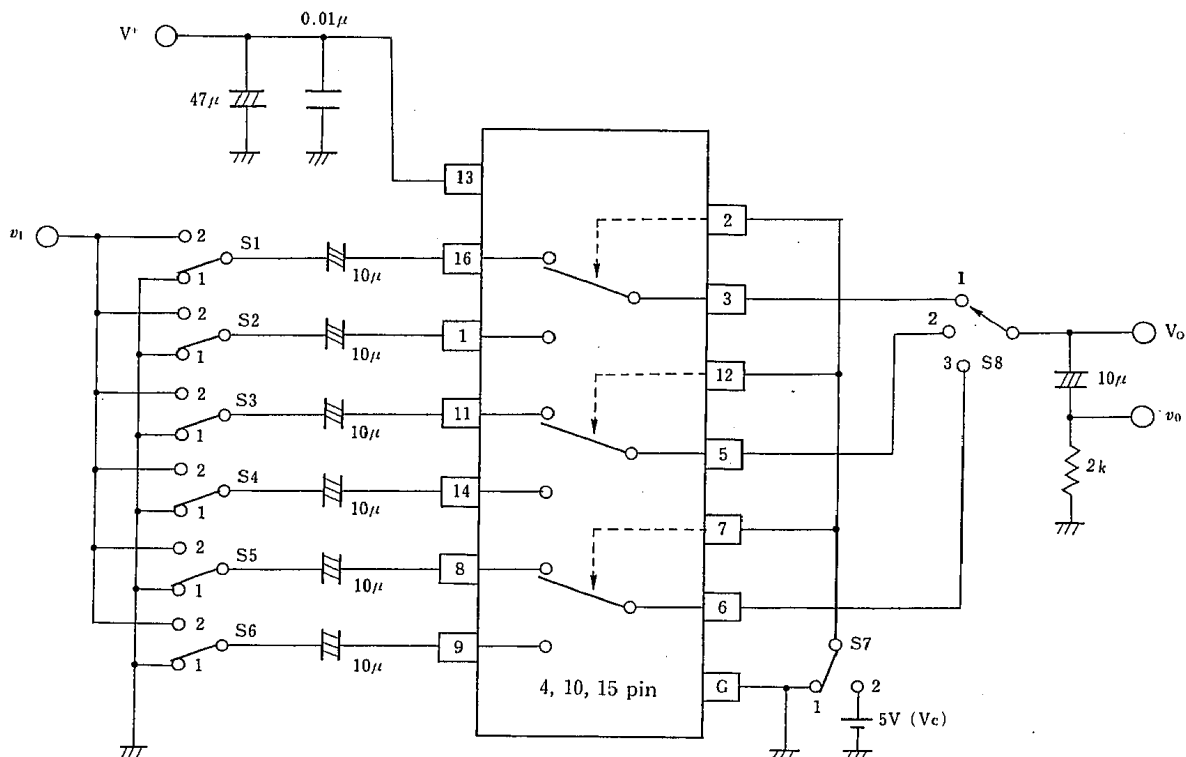
(Note1) S1=S2=S3=S4=S5=S6=S7=1

(Note2) S1=S2=S3=S4=S5=S6=1, S7=1→2 Measure the output DC voltage difference

## ■ TERMINAL EXPLANATION

| PIN No.             | PIN NAME  | VOLTAGE | INSIDE EQUIVALENT CIRCUIT |
|---------------------|---|---------|---------------------------|
| 16<br>1<br>11<br>14 | IN 1 A<br>IN 1 B<br>IN 2 A<br>IN 2 B<br>(Input) | 2.5V    |                           |
| 8<br>9              | IN 3 A<br>IN 3 B<br>(Input)                     | 1.5V    |                           |
| 2<br>12<br>7        | CTL 1<br>CTL 2<br>CTL 3<br>(Switching)          |         |                           |
| 3<br>5              | OUT 1<br>OUT 2                                  | 1.8V    |                           |
| 6                   | OUT 3<br>(Output)                               | 0.8V    |                           |
| 13                  | V+  | 5V      |                           |
| 15<br>4<br>10       | GND 1<br>GND 2<br>GND 3                         |         |                           |

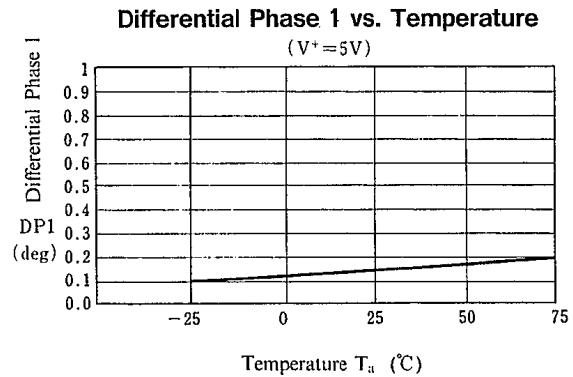
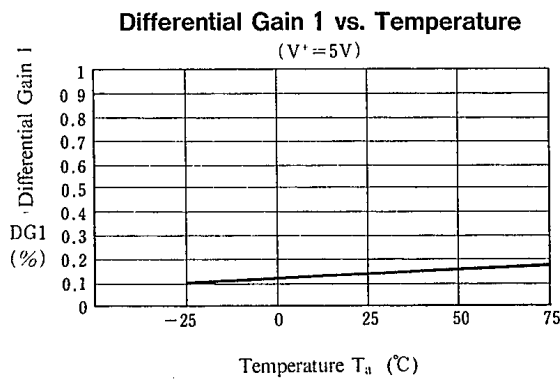
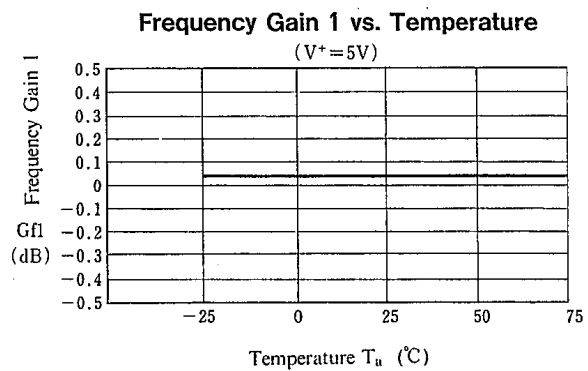
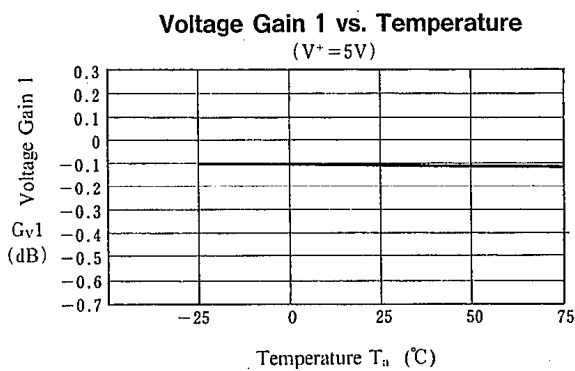
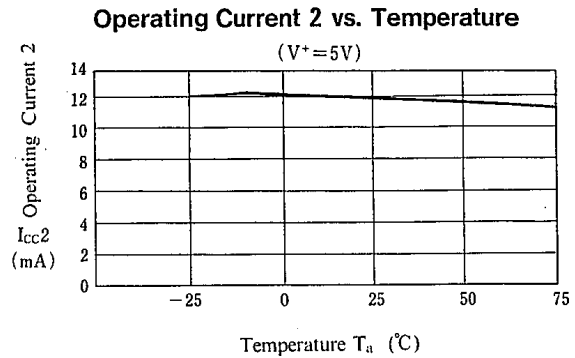
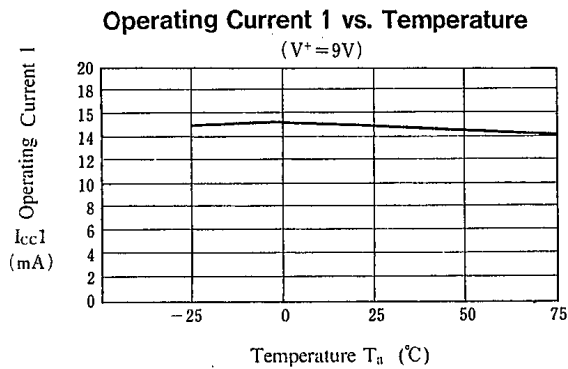
## TEST CIRCUIT



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

| Parameter | S 1 | S 2 | S 3 | S 4 | S 5 | S 6 | S 7   | S 8 | Test Part |
|-----------|-----|-----|-----|-----|-----|-----|-------|-----|-----------|
| $I_{cc1}$ | 1   | 1   | 1   | 1   | 1   | 1   | 1     | 1   | $V^+$     |
| $I_{cc2}$ | 1   | 1   | 1   | 1   | 1   | 1   | 1     | 1   |           |
| $G_{v1}$  | 2   | 1   | 1   | 1   | 1   | 1   | 1     | 1   | $v_0$     |
| $G_{r1}$  | 2   | 1   | 1   | 1   | 1   | 1   | 1     | 1   |           |
| $DG_1$    | 2   | 1   | 1   | 1   | 1   | 1   | 1     | 1   |           |
| $DP_1$    | 2   | 1   | 1   | 1   | 1   | 1   | 1     | 1   |           |
| CT 1      | 2   | 1   | 1   | 1   | 1   | 1   | 2     | 1   | $v_0$     |
| CT 2      | 1   | 2   | 1   | 1   | 1   | 1   | 1     | 1   |           |
| CT 3      | 1   | 1   | 2   | 1   | 1   | 1   | 2     | 2   |           |
| CT 4      | 1   | 1   | 1   | 2   | 1   | 1   | 1     | 2   |           |
| CT 5      | 1   | 1   | 1   | 1   | 2   | 1   | 2     | 3   |           |
| CT 6      | 1   | 1   | 1   | 1   | 1   | 2   | 1     | 3   |           |
| $V_{os1}$ | 1   | 1   | 1   | 1   | 1   | 1   | 1/2   | 1   | $V_0$     |
| $V_{c1}$  | 1/2 | 2/1 | 1   | 1   | 1   | 1   | $V_c$ | 1   | $V_c$     |
| THD       | 2   | 1   | 1   | 1   | 1   | 1   | 1     | 1   | $v_0$     |

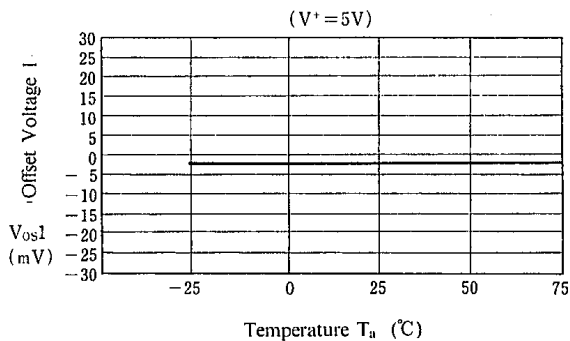
## ■ TYPICAL CHARACTERISTICS



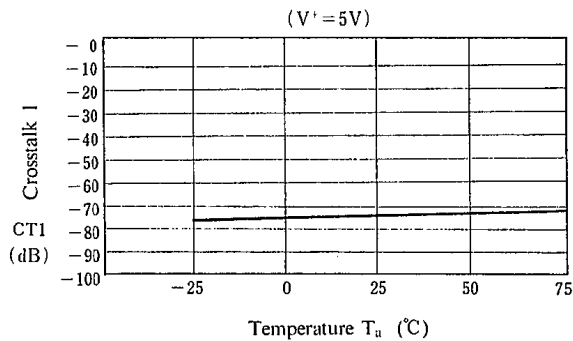
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## ■ TYPICAL CHARACTERISTICS

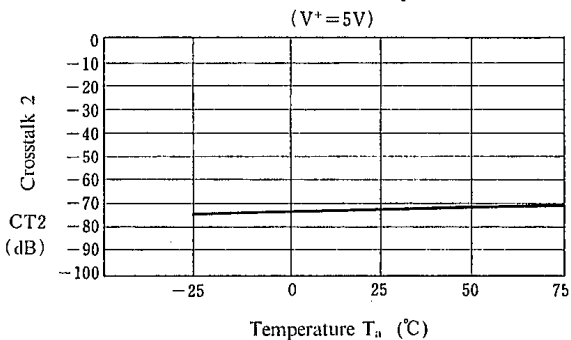
### Offset Voltage 1 vs. Temperature



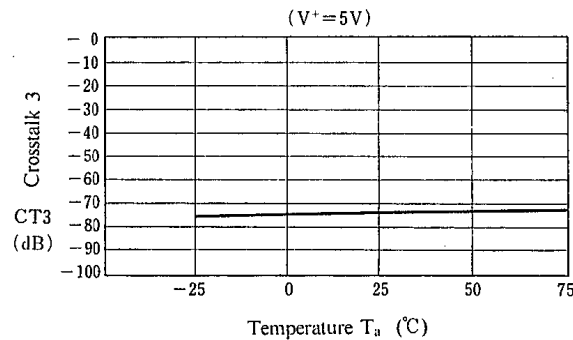
### Crosstalk 1 vs. Temperature



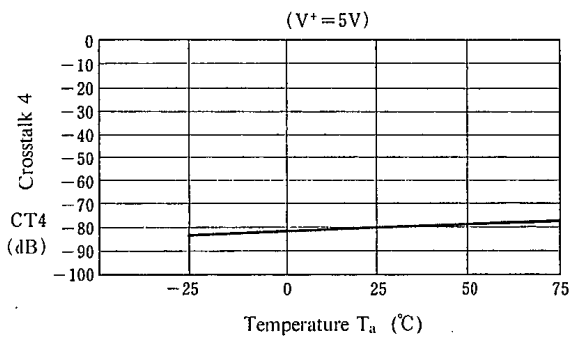
### Crosstalk 2 vs. Temperature



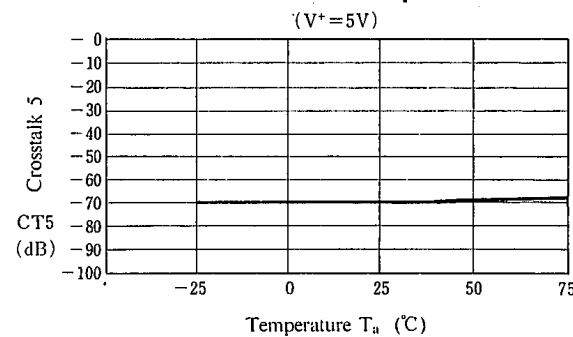
### Crosstalk 3 vs. Temperature



### Crosstalk 4 vs. Temperature



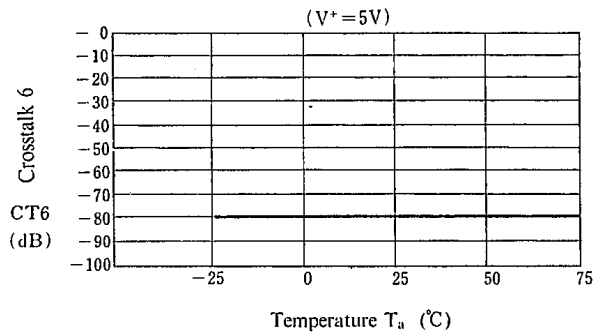
### Crosstalk 5 vs. Temperature



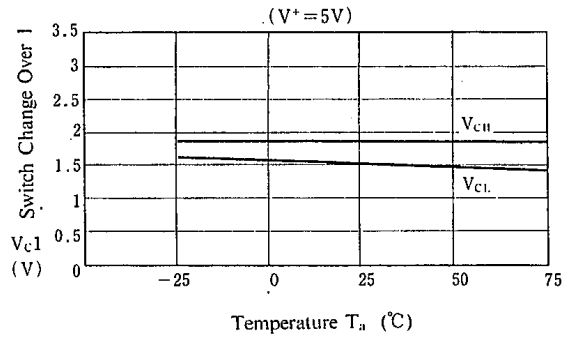
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■ TYPICAL CHARACTERISTICS

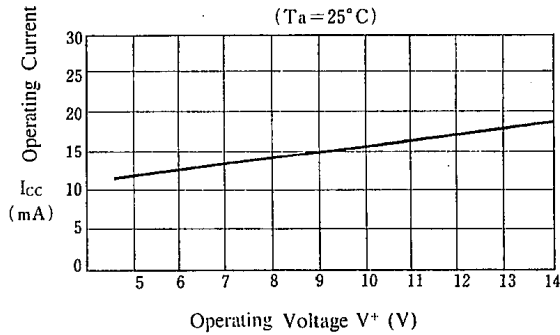
Crosstalk 6 vs. Temperature



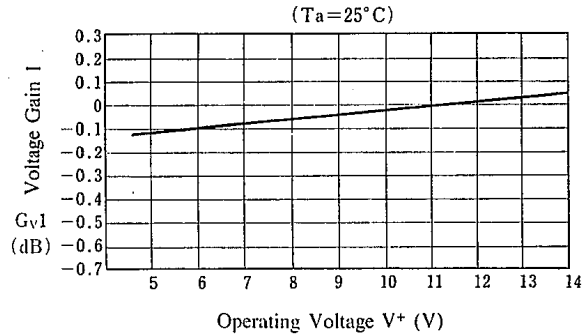
Switch Change Over 1 vs. Temperature



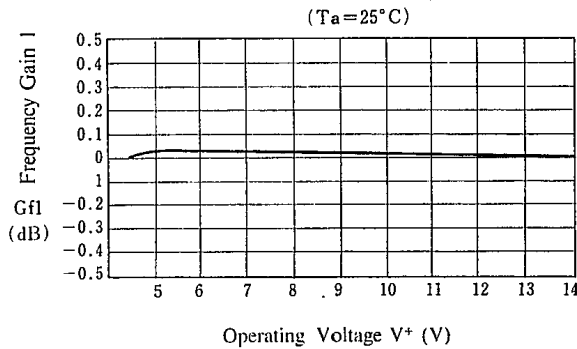
Operating Current vs. Operating Voltage



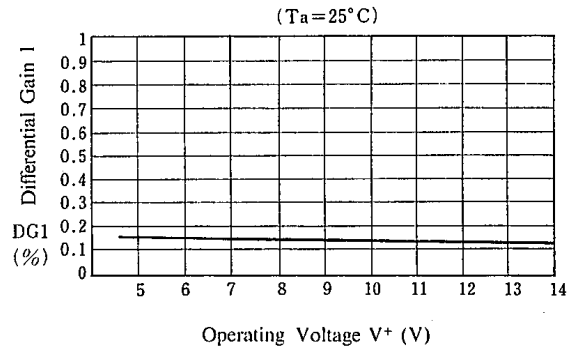
Voltage Gain 1 vs. Operating Voltage



Frequency Gain 1 vs. Operating Voltage



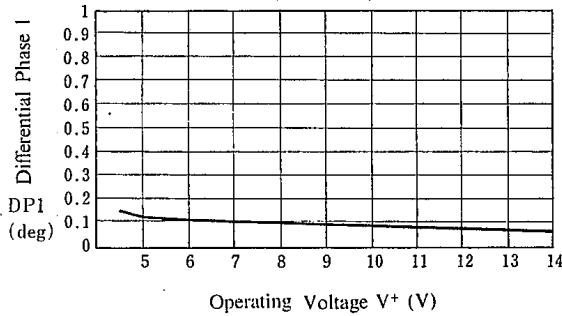
Differential Gain 1 vs. Operating Voltage



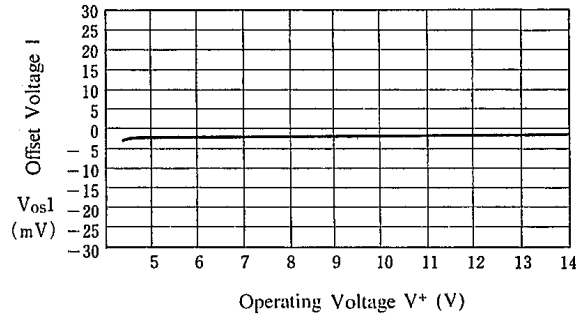
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## TYPICAL CHARACTERISTICS

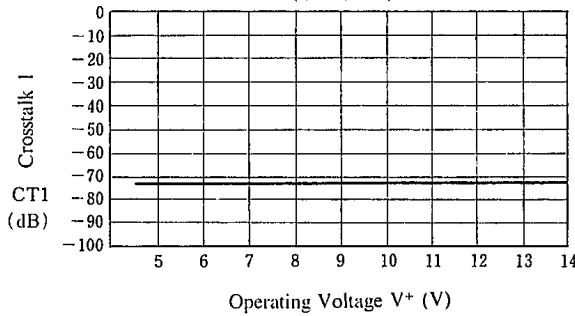
**Differential Phase 1 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



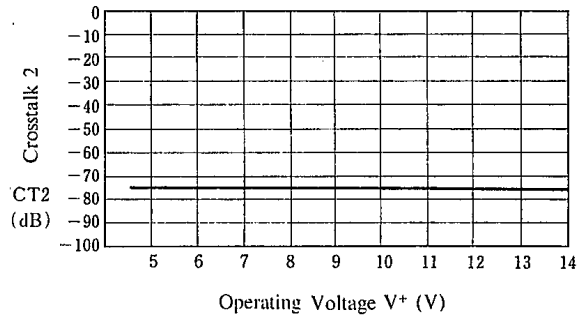
**Offset Voltage 1 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



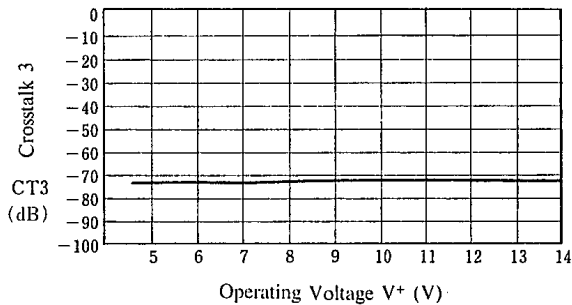
**Crosstalk 1 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



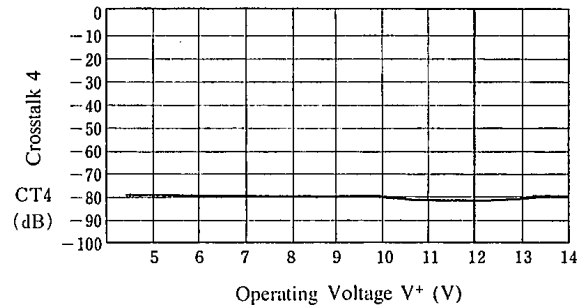
**Crosstalk 2 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



**Crosstalk 3 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



**Crosstalk 4 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )

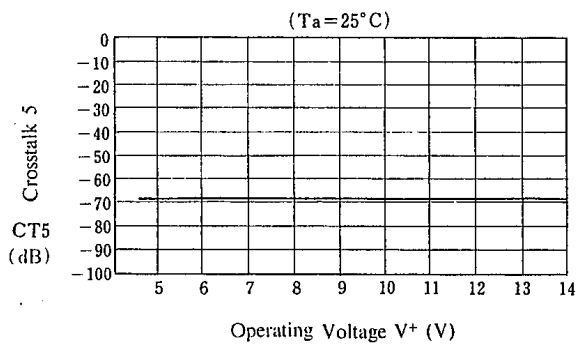


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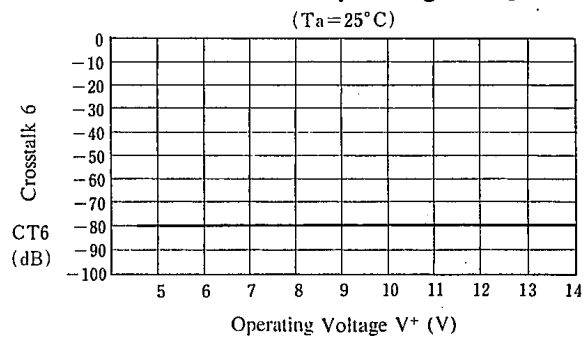


■ TYPICAL CHARACTERISTICS

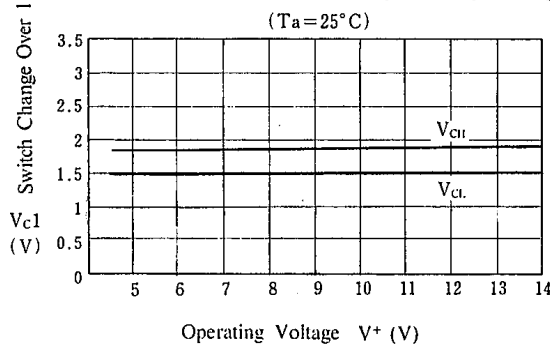
Crosstalk 5 vs. Operating Voltage



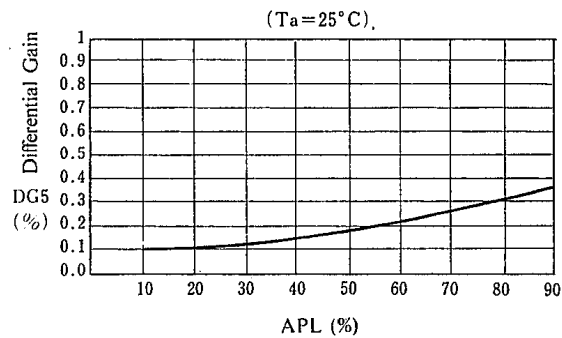
Crosstalk 6 vs. Operating Voltage



Switch Change Over 1 vs. Operating Voltage

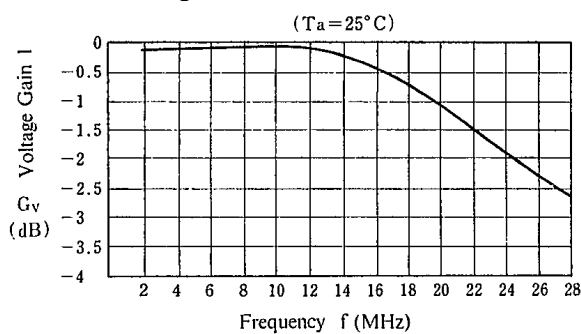


Differential Gain vs. APL

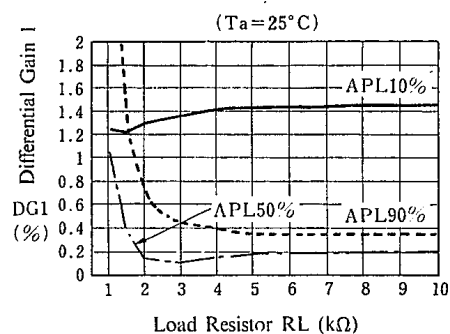


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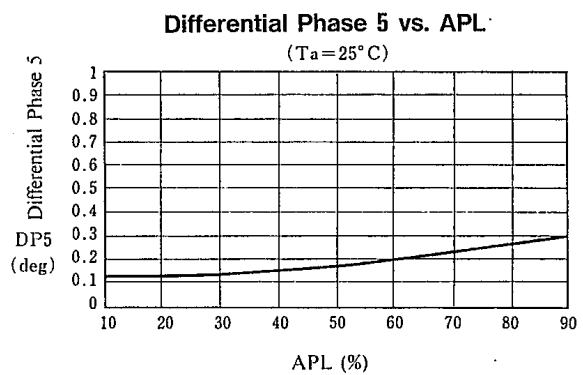
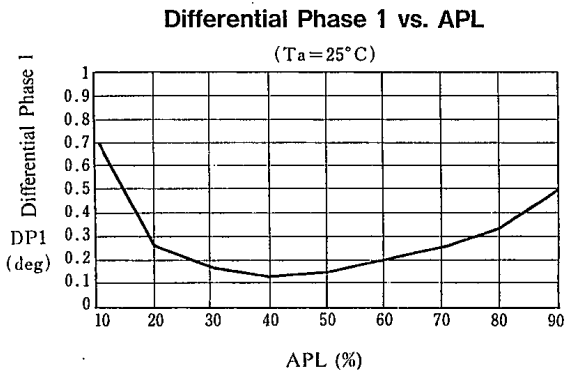
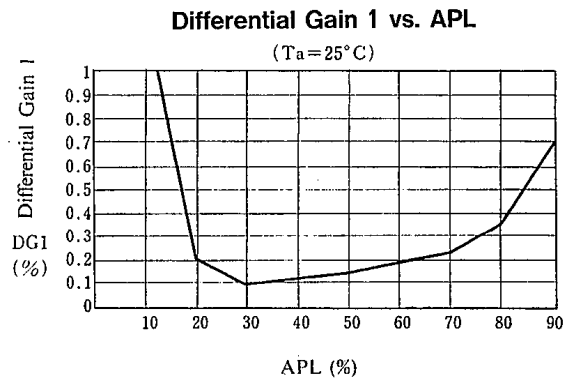
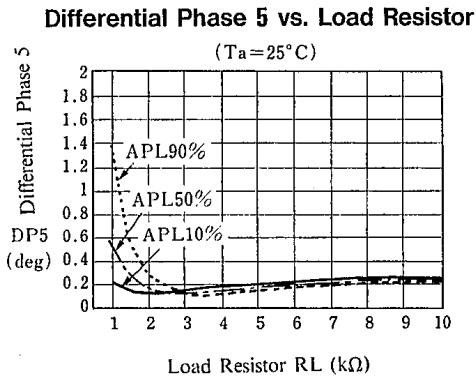
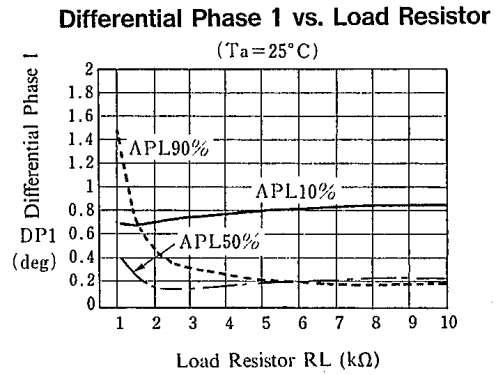
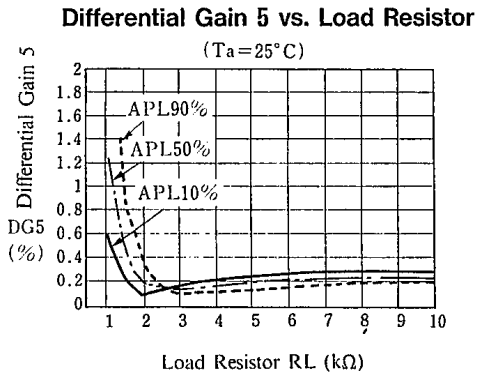
Voltage Gain 1 vs. Frequency Feature



Differential Gain 1 vs. Load Resistor

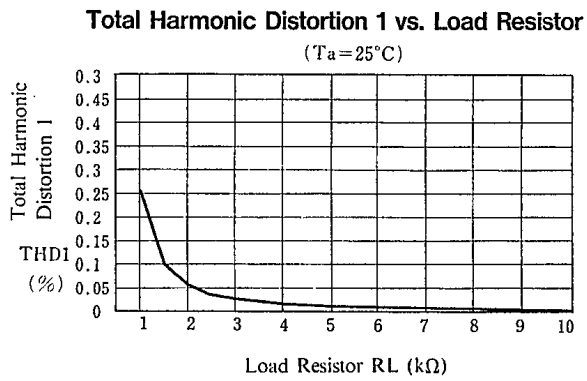


## ■ TYPICAL CHARACTERISTICS



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■ TYPICAL CHARACTERISTICS



## MEMO

**[CAUTION]**

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