

**2-INPUT 1-OUTPUT VIDEO SWITCH**

■ GENERAL DESCRIPTION

The **NJM2533** is a video switch for VCR, TV, and others.  
It contains two bias-type inputs and one buffer-type output.

■ FEATURES

- Operating Voltage (+4.75V to +13V)
- Low Operating Current (MAX : 3.7mA)
- Crosstalk (-70dB)
- 2-Input, 1-Output
- Bipolar Technology
- Package Outline DIP8, DMP8, SIP8, SSOP8

■ PACKAGE OUTLINE



**NJM2533D**



**NJM2533M**

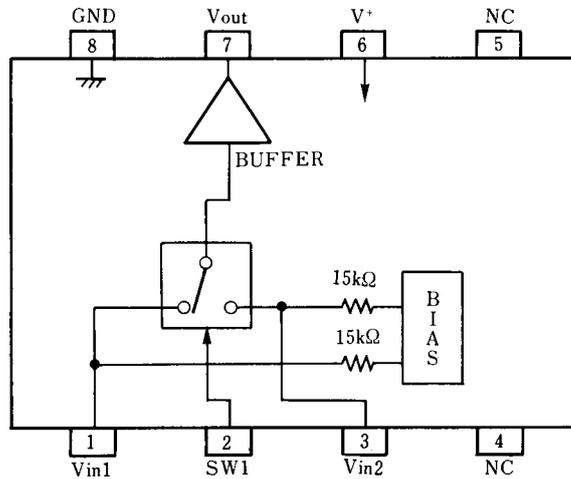


**NJM2533L**



**NJM2533V**

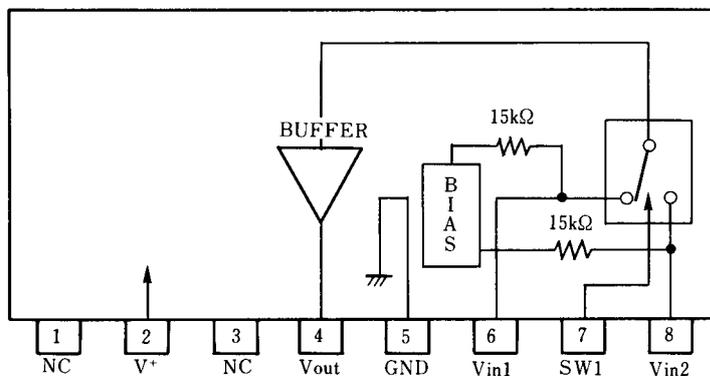
■ PIN CONFIGURATION



PIN FUNCTION

- 1 : Vin1
- 2 : SW1
- 3 : Vin2
- 4 : NC
- 5 : NC
- 6 : V+
- 7 : V<sub>OUT</sub>
- 8 : GND

**NJM2533D**  
**NJM2533M**  
**NJM2533V**



PIN FUNCTION

- 1 : NC
- 2 : V+
- 3 : NC
- 4 : V<sub>OUT</sub>
- 5 : GND
- 6 : Vin1
- 7 : SW1
- 8 : Vin2

**NJM2533L**

## ■ ABSOLUTE MAXIMUM RATINGS

(T<sub>a</sub> = 25°C)

| PARAMETER                   | SYMBOL           | RATINGS   | UNIT |
|-----------------------------|------------------|---|------|
| Supply Voltage              | V <sup>+</sup>   | +15   | V    |
| Power Dissipation           | P <sub>D</sub>   | (DIP-8) 500<br>(DMP-8) 300<br>(SIP-8) 800<br>(SSOP-8) 250 | mW   |
| Operating Temperature Range | T <sub>opr</sub> | -40 to +85  | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40 to +125   | °C   |

## ■ ELECTRICAL CHARACTERISTICS

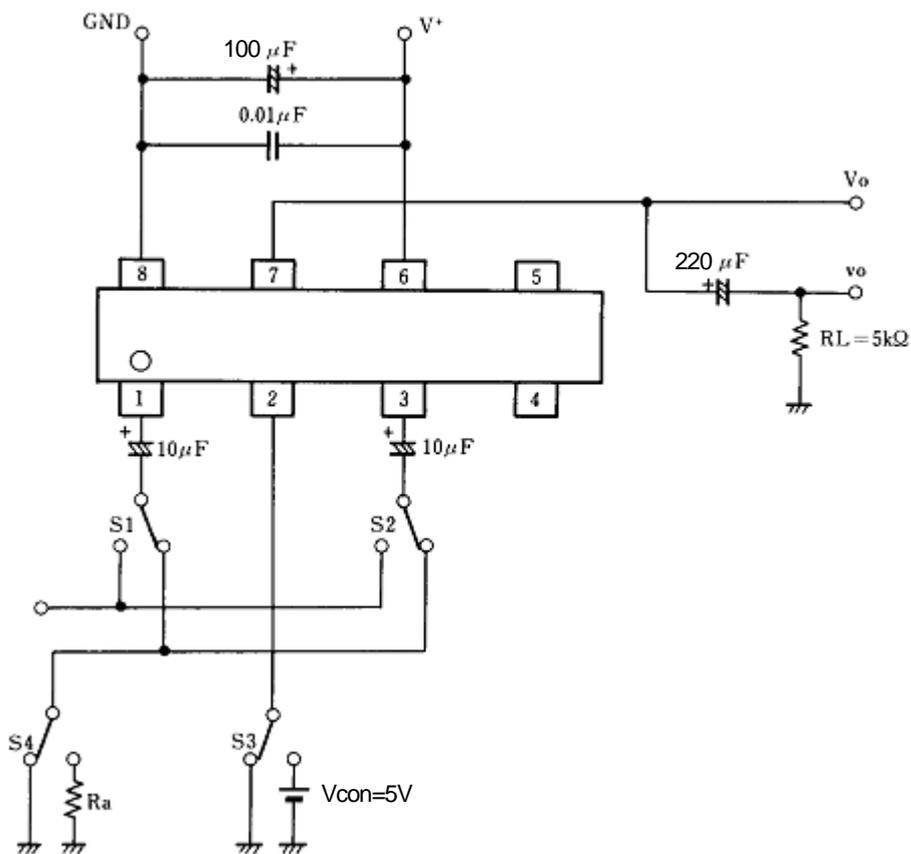
(V<sup>+</sup> = 5V, T<sub>a</sub> = 25°C)

| PARAMETER                 | SYMBOL           | TEST CONDITIONS   | MIN. | TYP. | MAX.  | UNIT |
|---------------------------|------------------|---|------|------|-------|------|
| Operating Voltage         | V <sup>+</sup>   |   | +4.5 | -    | +13.0 | V    |
| Operating Current         | I <sub>CC</sub>  |   | -    | 2.7  | 3.7   | mA   |
| Frequency Characteristics | G <sub>f</sub>   | V <sub>IN</sub> = 2V <sub>PP</sub> , V <sub>O</sub> = 10MHz/100kHz        | -1.0 | 0    | +1.0  | dB   |
| Voltage Gain              | G <sub>v</sub>   | V <sub>IN</sub> = 2V <sub>PP</sub> , 100kHz                               | -0.5 | 0    | +0.5  | dB   |
| Total Harmonic Distortion | THD              | V <sub>IN</sub> = 2.5V <sub>PP</sub> , 1kHz                               | -    | 0.05 | 0.1   | %    |
| Differential Gain         | DG               | V <sub>IN</sub> = 2V <sub>PP</sub> , Standard staircase signal, APL = 50% | -    | 0.2  | 3.0   | %    |
| Differential Phase        | DP               | V <sub>IN</sub> = 2V <sub>PP</sub> , Standard staircase signal, APL = 50% | -    | 0.2  | 3.0   | deg  |
| Output Offset Voltage     | V <sub>off</sub> |   | -15  | 0    | +15   | mV   |
| Crosstalk                 | CT               | V <sub>IN</sub> = 2V <sub>PP</sub> , 4.3MHz                               | -    | -70  | -60   | dB   |
| Switching Voltage         | V <sub>CH</sub>  |   | 2.4  | -    | -     | V    |
|                           | V <sub>CL</sub>  |   | -    | -    | 0.8   | V    |
| Input Impedance           | R <sub>i</sub>   |   | -    | 30   | -     | kΩ   |
| Output Impedance          | R <sub>o</sub>   |   | -    | 25   | -     | Ω    |
| Input Bias Voltage        | V <sub>IN</sub>  |   | -    | 2.5  | -     | V    |

## ■ CONTROL SIGNAL-OUTPUT SIGNAL

| SW1 | OUTPUT SIGNAL    |
|-----|------------------|
| L   | V <sub>IN1</sub> |
| H   | V <sub>IN2</sub> |

■ TEST CIRCUIT



Terminal DC voltage at test circuit (Ta=25°C)

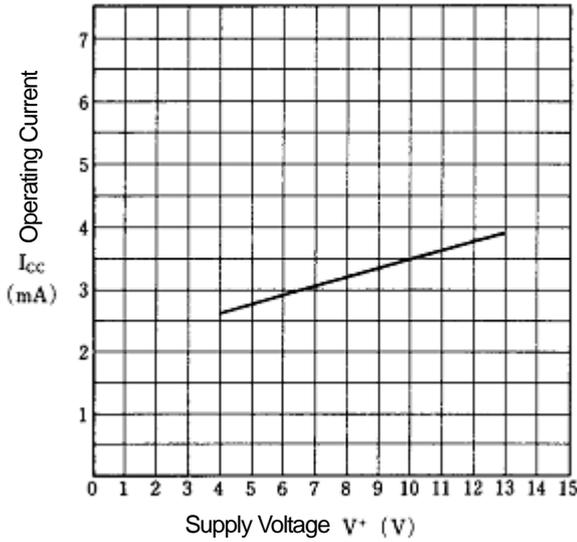
| Terminal name  | Vin1    | Vin2    | Vout          |
|----------------|---------|---------|---------------|
| DC voltage (V) | $V^+/2$ | $V^+/2$ | $V^+/2 - 0.7$ |

■ TERMINAL DESCRIPTION (Terminal number indicates the DIP , DMP, SSOP)

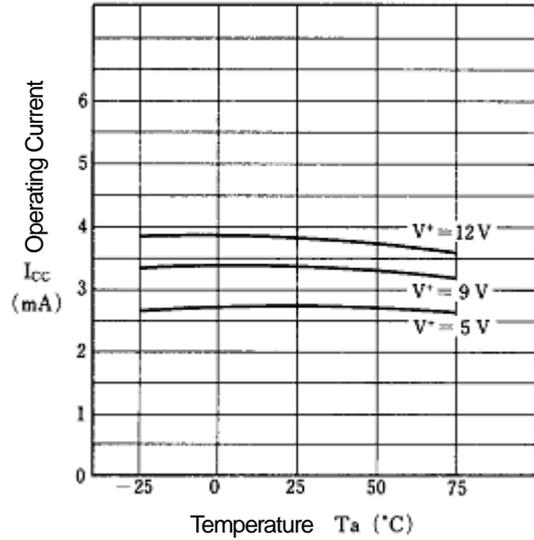
| No. | SYMBOL           | EQUIVALENT CIRCUIT | No. | SYMBOL           | EQUIVALENT CIRCUIT |
|-----|------------------|--------------------|-----|------------------|--------------------|
| 1   | V <sub>IN1</sub> |                    | 5   | NC               | _____              |
| 2   | SW1              |                    | 6   | V <sup>+</sup>   | _____              |
| 3   | V <sub>IN2</sub> |                    | 7   | V <sub>OUT</sub> |                    |
| 4   | NC               | _____              | 8   | GND              | _____              |

■ TYPICAL CHARACTERISTICS

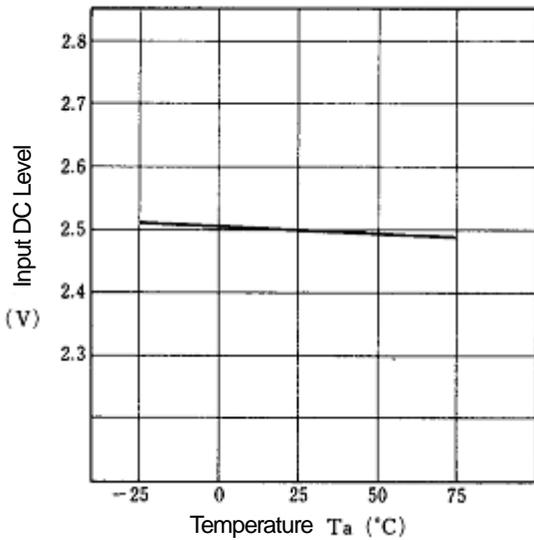
Operating Current vs. Supply Voltage  
( $T_a = 25^\circ\text{C}$ )



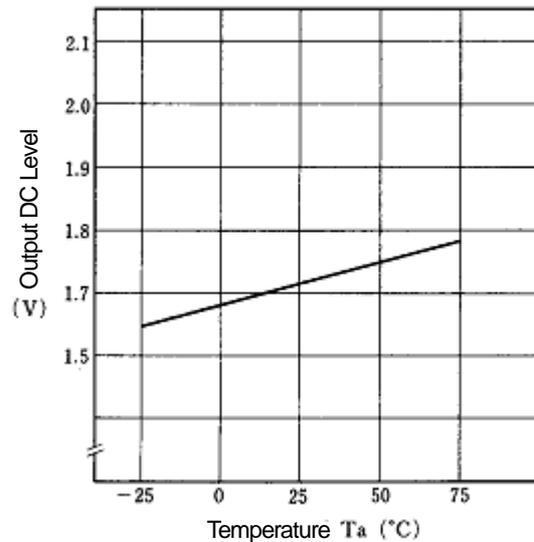
Operating Current vs. Temperature  
( $T_a = 25^\circ\text{C}$ )



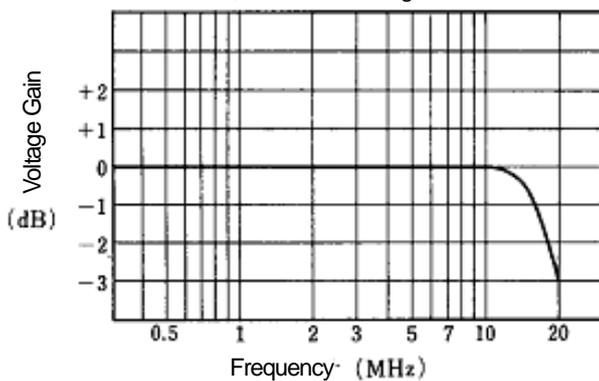
Input DC Level vs. Temperature  
( $V^+ = 5\text{V}$ ,  $T_a = 25^\circ\text{C}$ )



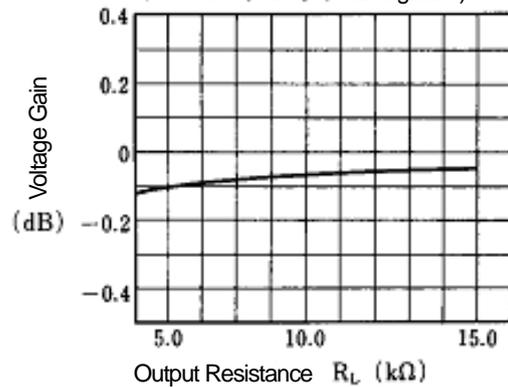
Output DC Level vs. Temperature  
( $V^+ = 5\text{V}$ )



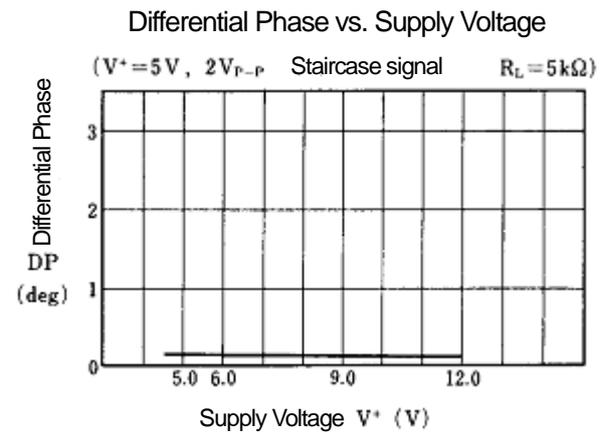
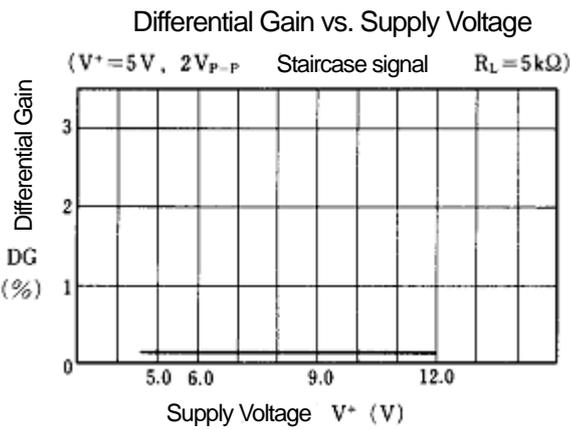
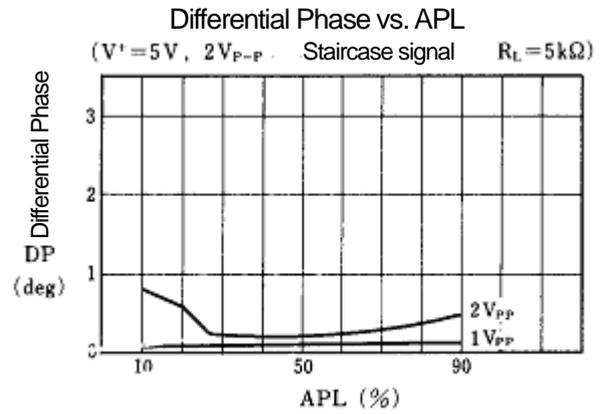
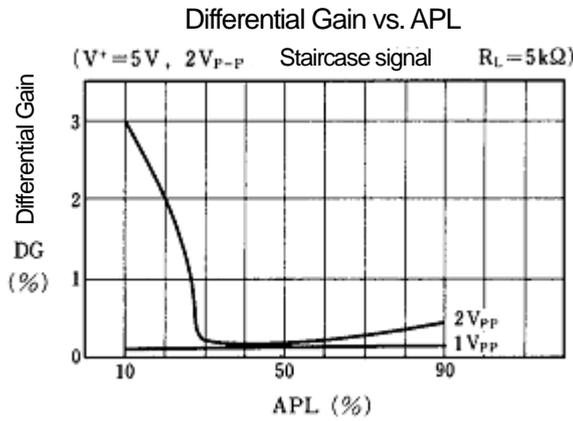
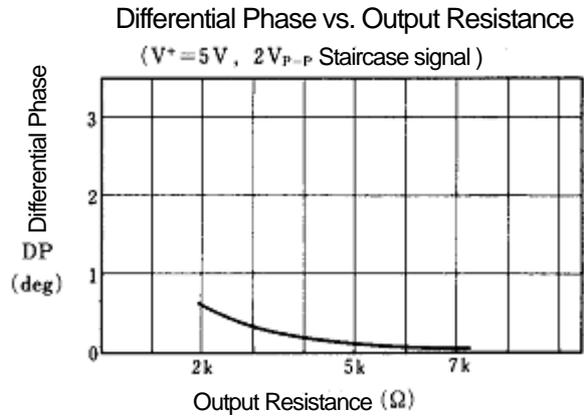
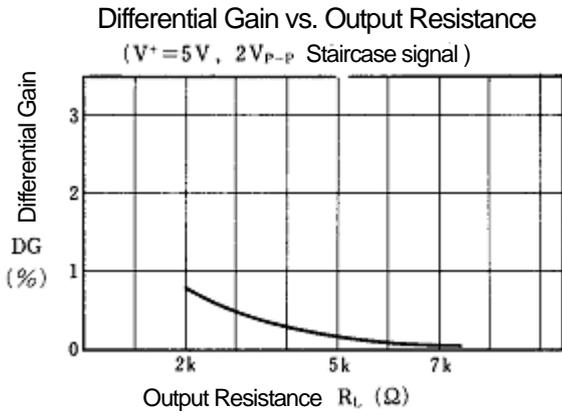
Voltage Gain vs. Frequency  
( $V^+ = 5\text{V}$ ,  $2V_{P-P}$  Sin signal,  $R_L = 5\text{k}\Omega$ )



Voltage Gain vs. Output Resistance  
( $V^+ = 5\text{V}$ ,  $2V_{P-P}$  Sin signal )

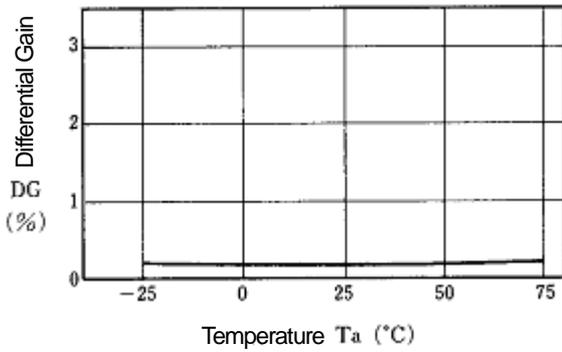


■ TYPICAL CHARACTERISTICS

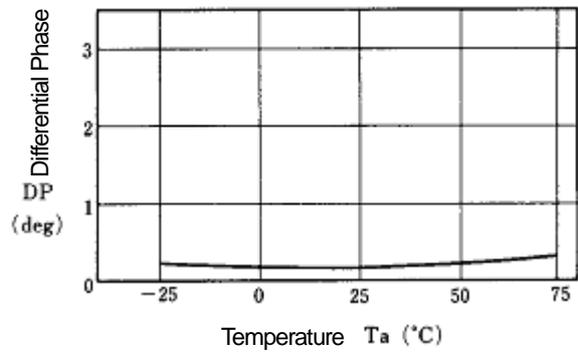


■ TYPICAL CHARACTERISTICS

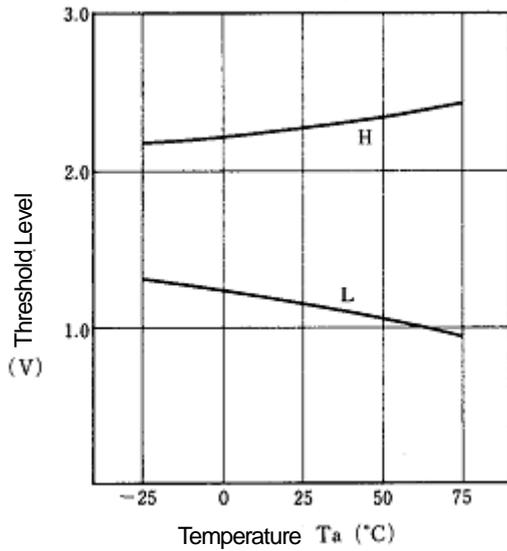
Differential Gain vs. Temperature  
( $V^+ = 5V$ ,  $2V_{P-P}$  Staircase signal)



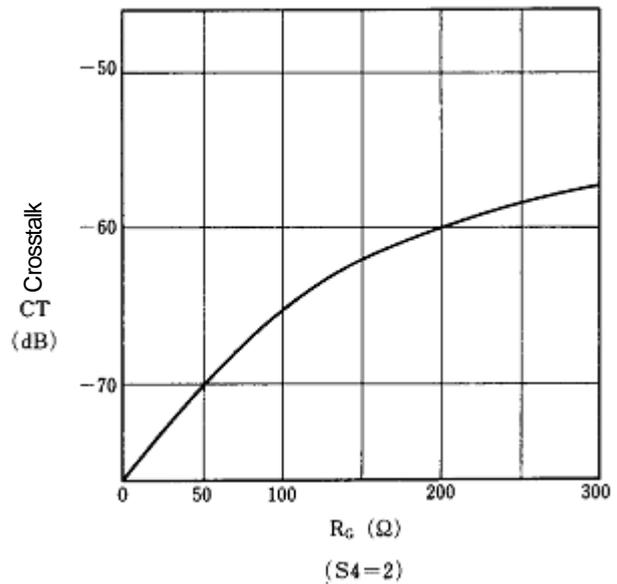
Differential Phase vs. Temperature  
( $V^+ = 5V$ ,  $2V_{P-P}$  Staircase signal)



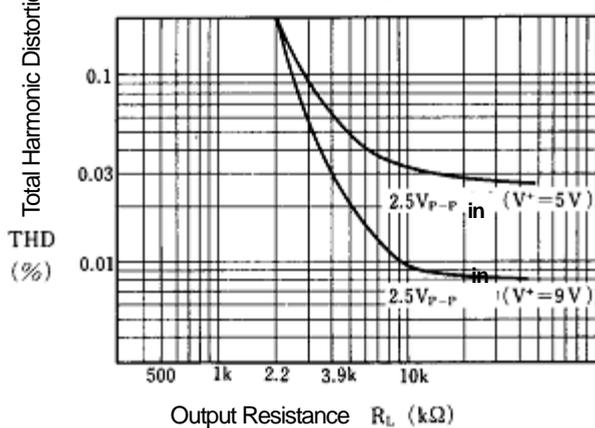
Threshold Level vs. Temperature  
( $V^+ = 5V$ )



Crosstalk vs.  $R_G$   
( $V^+ = 5V$ ,  $4.43MHz$   $2V_{P-P}$  Sin signal)

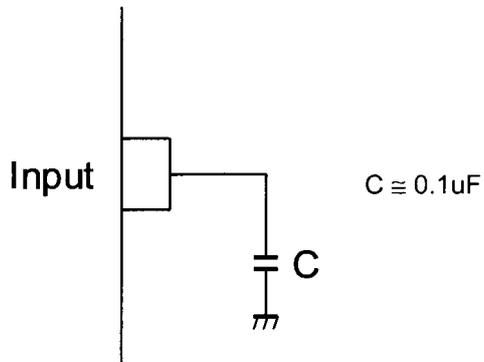


Total Harmonic Distortion vs. Output Resistance  
( $1kHz$  Sin signal)



## ■ APPLICATION

This IC requires 0.1 $\mu$ F capacitor between INPUT and GND for bias type input at mute mode.



## [CAUTION]

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