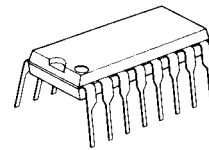


3-INPUT / 2-INPUT VIDEO SWITCH

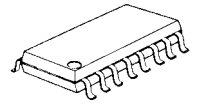
■ GENERAL DESCRIPTION

The **NJM2508** is video switch for video and audio signal. It contains 3 input-1 output and 2 input-1 output video switch. One input terminal has clamp function and so is applied to fixed DC level of video signal. Its operating voltage is 4.75 to 13V and bandwidth is 10MHz. Crosstalk is 75dB (at $f = 4.43\text{MHz}$)

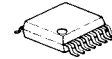
■ PACKAGE OUTLINE



NJM2508D



NJM2508M



NJM2508V

■ FEATURES

- Operating Voltage (+4.75V to +13V)
- 3 Input-1 Output and 2 Input-1 Output
- Crosstalk 75dB (at 4.43MHz)
- Wide Frequency Range 10MHz (2V_{P-P} Input)
- Package Outline DIP16, DMP16, SSOP16
- Bipolar Technology

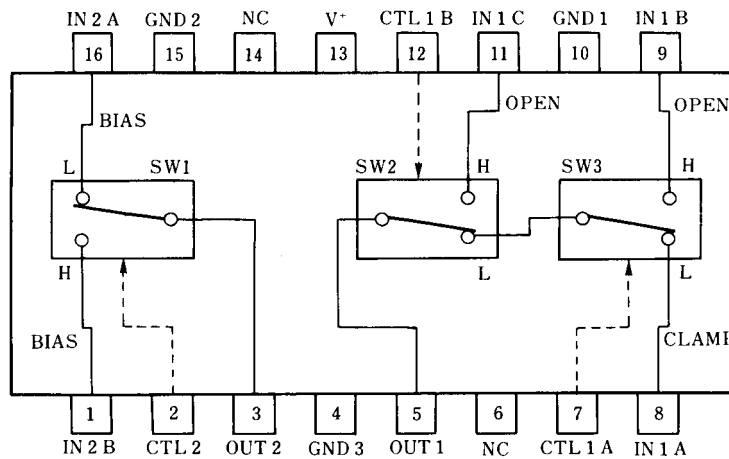
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage V^+ 4.75V to 13.0V

■ APPLICATION

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

■ BLOCK DIAGRAM



NJM2508D
NJM2508M
NJM2508V

NJM2508

■ ABSOLUTE MAXIMUM RATINGS

($T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|-----------|--|------------------|
| Supply Voltage | V^+ | 14 | V |
| Power Dissipation | P_D | (DIP16) 700 (DMP16) 350 (SSOP16) 300 | mW mW mW |
| Operating Temperature Range | T_{opr} | -40 to +85 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -40 to +125 | $^\circ\text{C}$ |

■ ELECTRICAL CHARACTERISTICS

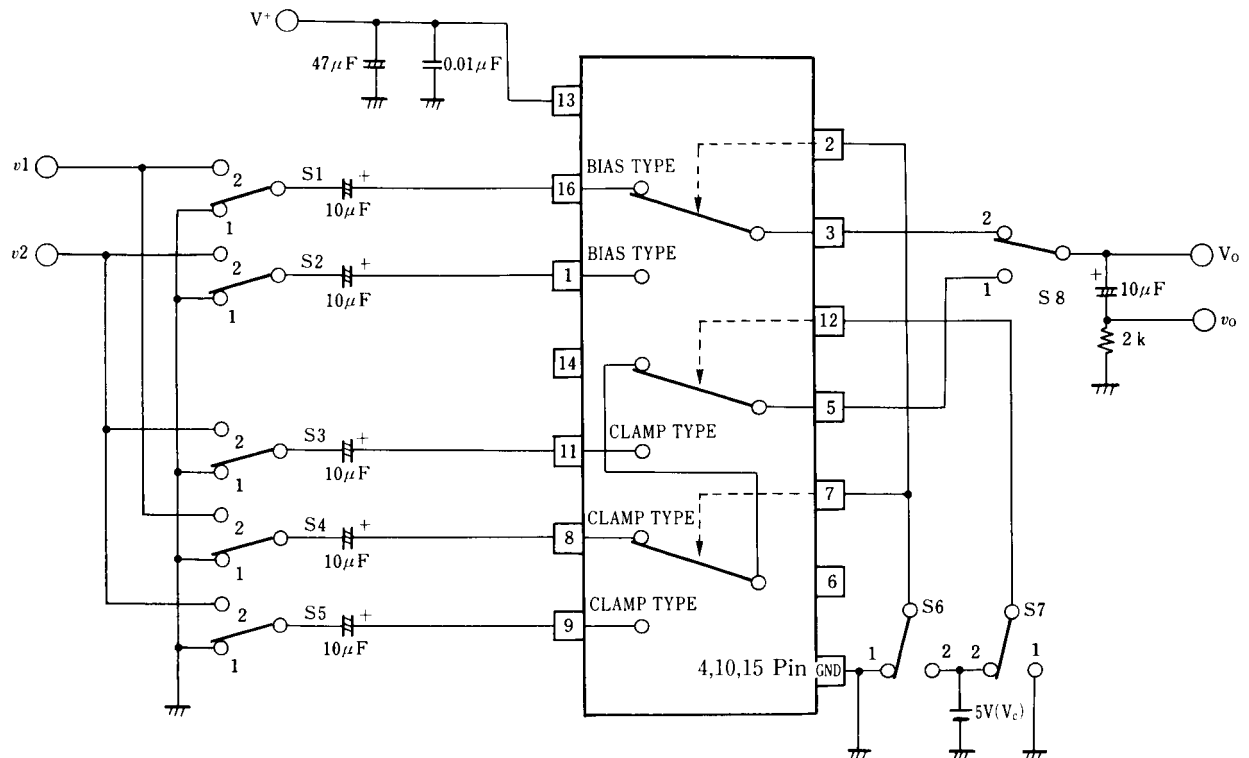
($V^+ = 5\text{V}$, $T_a = 25^\circ\text{C}$)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-----------------------|-----------|---|------|------|------|------|
| Operating Current 1 | I_{CC1} | $V^+ = 5\text{V}$ (Note1) | 6.6 | 9.4 | 12.3 | mA |
| Operating Current 2 | I_{CC2} | $V^+ = 9\text{V}$ (Note1) | 8.0 | 11.5 | 15.0 | mA |
| Voltage Gain | G_V | $V_I = 2V_{P.P.} / 100\text{kHz}$, V_O / V_I | -0.6 | -0.1 | +0.4 | dB |
| Frequency Response | G_f | $V_I = 2V_{P.P.}$, V_O (10MHz / 100kHz) | -1.0 | 0 | +1.0 | dB |
| Differential Gain | DG | $V_I = 2V_{P.P.}$, Staircase Signal | - | 0.3 | - | % |
| Differential Phase | DP | $V_I = 2V_{P.P.}$, Staircase Signal | - | 0.3 | - | deg |
| Output offset Voltage | V_{OS} | (Note2) | -10 | 0 | +10 | mV |
| Crosstalk | CT | $V_I = 2V_{P.P.}$, 4.43MHz, V_O / V_I | - | -75 | - | dB |
| Switch Change Voltage | V_{CH} | All inside SW : ON | 2.5 | - | - | V |
| Switch Change Voltage | V_{CL} | All inside SW : OFF | - | - | 1.0 | V |

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

(Note2) Output DC Voltage Difference is tested on $S6 = 1 \rightarrow 2$, $S1 = S2 = S3 = S4 = S5 = 1$, $S8 = 2$ and $S7 = 1$

■ TEST CIRCUIT

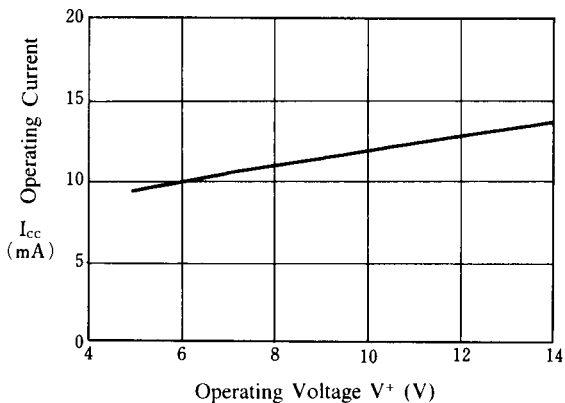


■ PIN FUNCTION

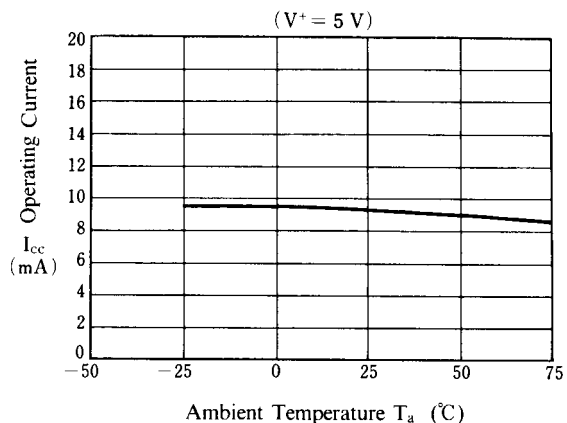
| PIN No. | PIN NAME | DC VOLTAGE | INSIDE EQUIVALENT CIRCUIT |
|---------------|--|------------|---------------------------|
| 16 1 | IN 2 A IN 2 B [Input] | 2.5V | |
| 8 | IN 1 A [Input] | 1.5V | |
| 9 11 | IN 1 B IN 1 C [Input] | | |
| 7 12 2 | CTL 1 A CTL 1 B CTL 2 [Control] | | |
| 5 | OUT1 [Output] | 1.8V | |
| 3 | OUT2 [Output] | 0.8V | |
| 13 | V ⁺ | 5V | |
| 15 4 10 | GND 1 GND 2 GND 3 | | |

■ TYPICAL CHARACTERISTICS (Ta = +25°C)

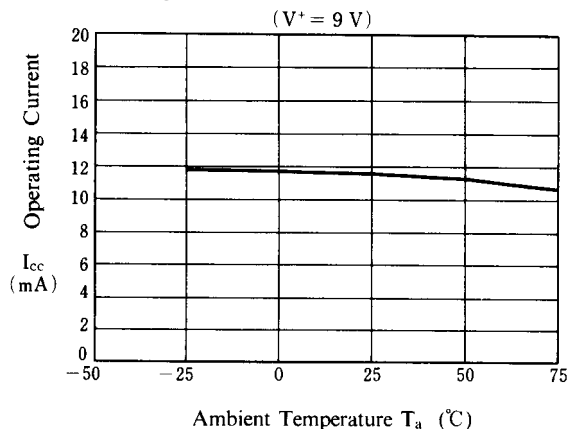
Operating Current vs. Operating Voltage



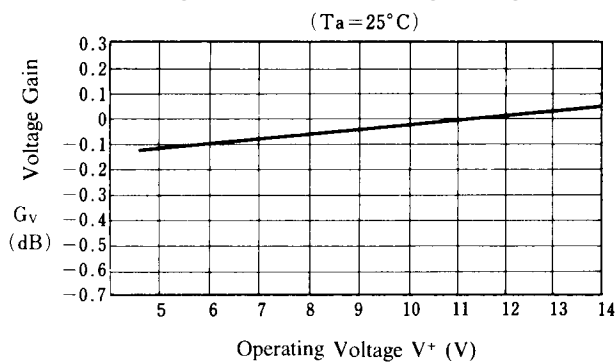
Operating Current vs. Ambient Temperature



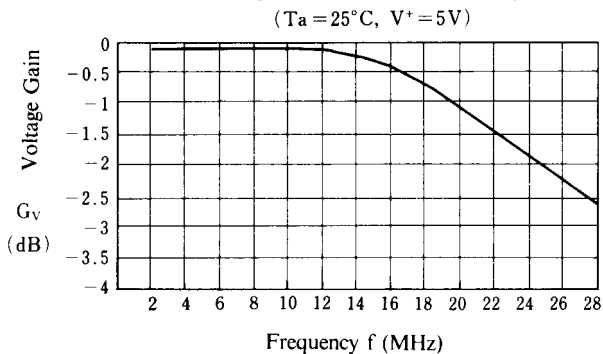
Operating Current vs. Ambient Temperature



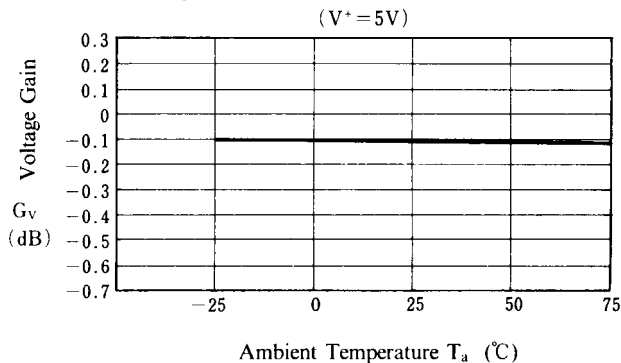
Voltage Gain vs. Operating Voltage



Voltage Gain vs. Frequency



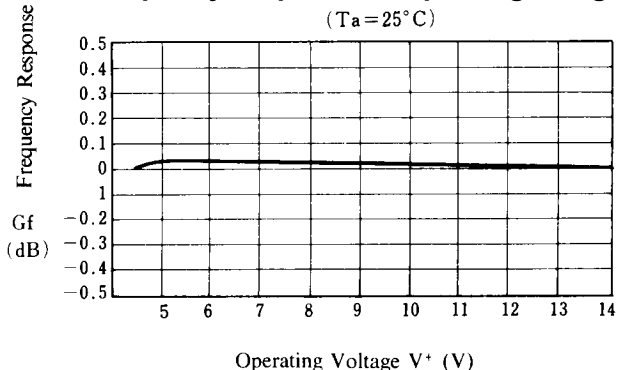
Voltage Gain vs. Ambient Temperature



■ TYPICAL CHARACTERISTICS (Ta = +25°C)

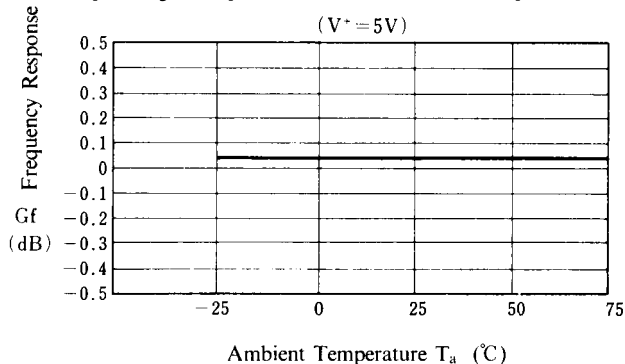
Frequency Response vs. Operating Voltage

(Ta = 25°C)



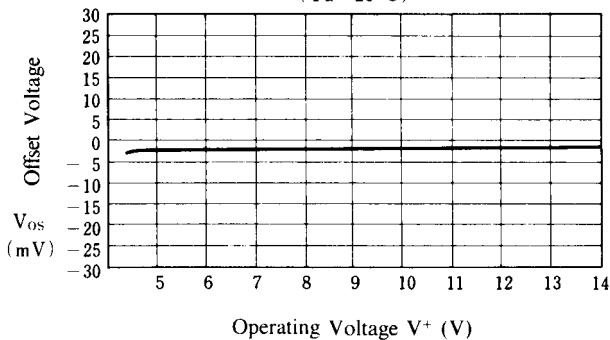
Frequency Response vs. Ambient Temperature

(V+ = 5V)



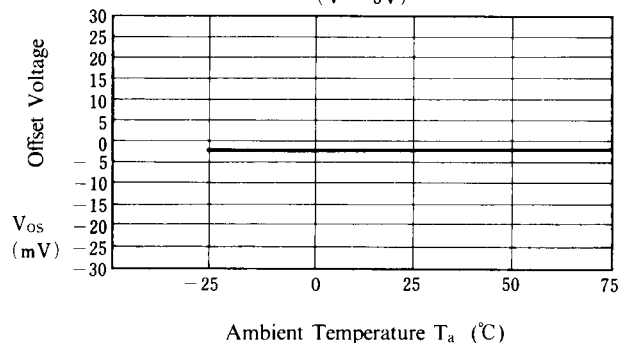
Offset Voltage vs. Operating Voltage

(Ta = 25°C)



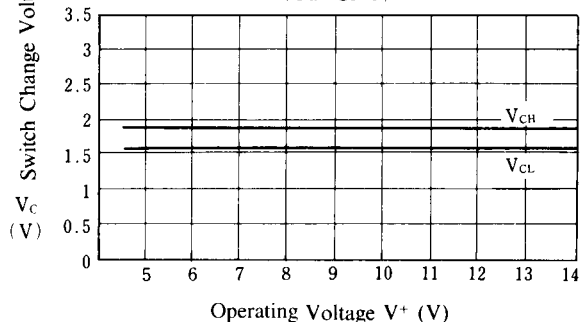
Offset Voltage vs. Ambient Temperature

(V+ = 5V)



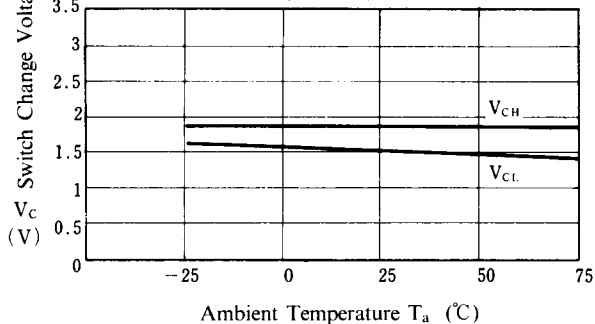
Switch Change Voltage vs. Operating Voltage

(Ta = 25°C)



Switch Change Voltage vs. Ambient Temperature

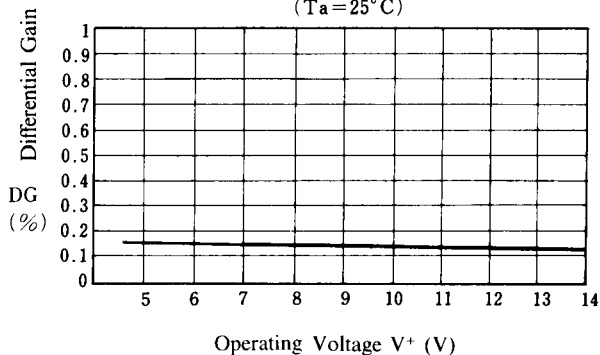
(V+ = 5V)



■ TYPICAL CHARACTERISTICS (Ta = +25°C)

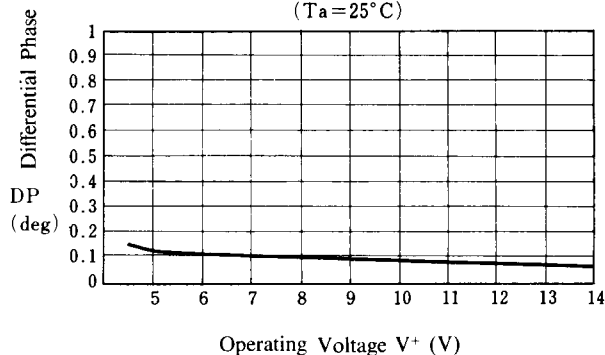
Differential Gain vs. Operating Voltage

(Ta = 25°C)



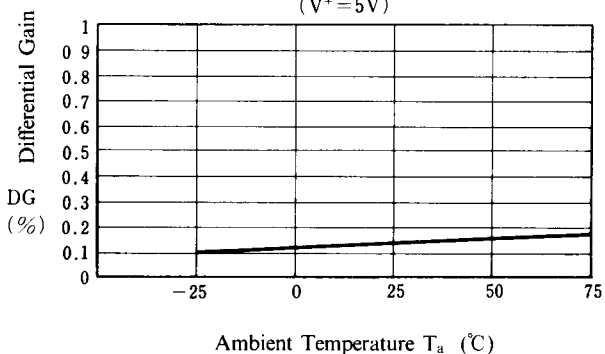
Differential Phase vs. Operating Voltage

(Ta = 25°C)



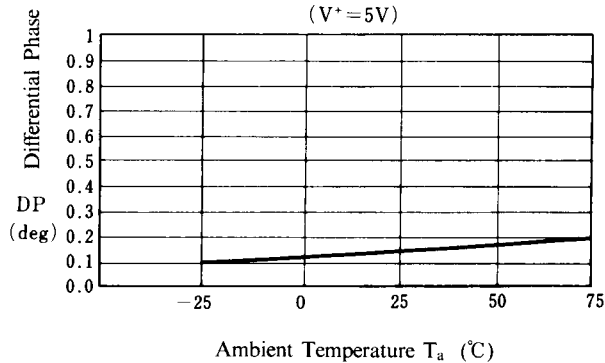
Differential Gain vs. Ambient Temperature

(V+ = 5V)



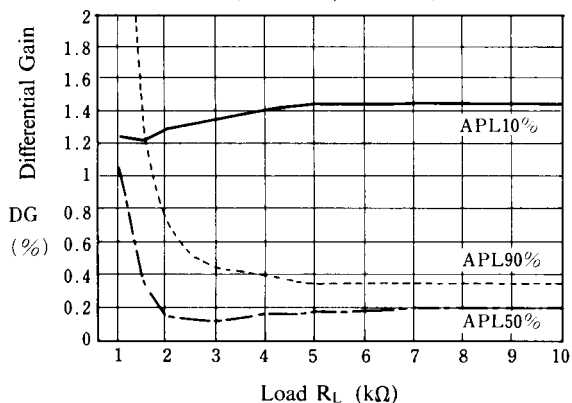
Differential Phase vs. Ambient Temperature

(V+ = 5V)



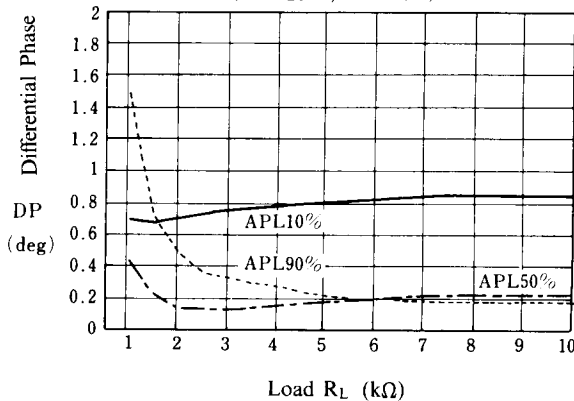
Differential Gain vs. Load

(Ta = 25°C, V+ = 5V)



Differential Phase vs. Load

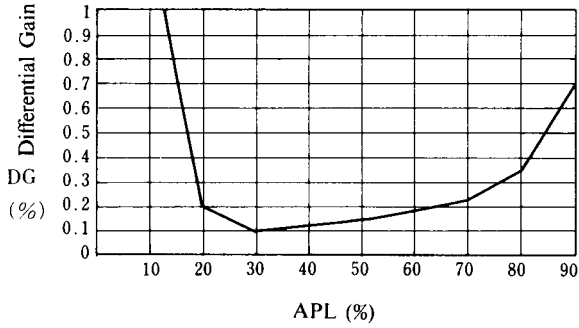
(Ta = 25°C, V+ = 5V)



■ TYPICAL CHARACTERISTICS (Ta = +25°C)

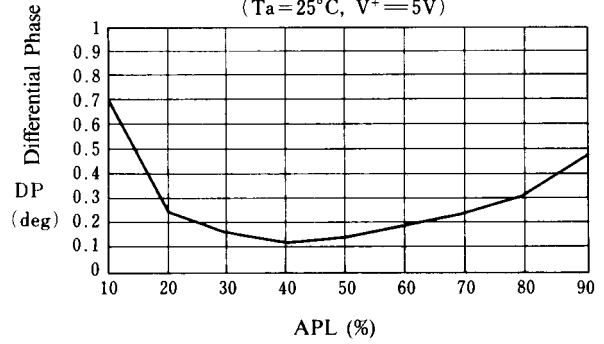
Differential Gain vs. APL

(Ta = 25°C, V+ = 5V)



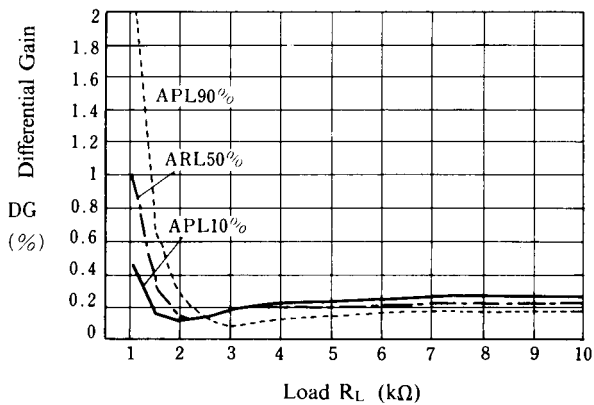
Differential Phase vs. APL

(Ta = 25°C, V+ = 5V)



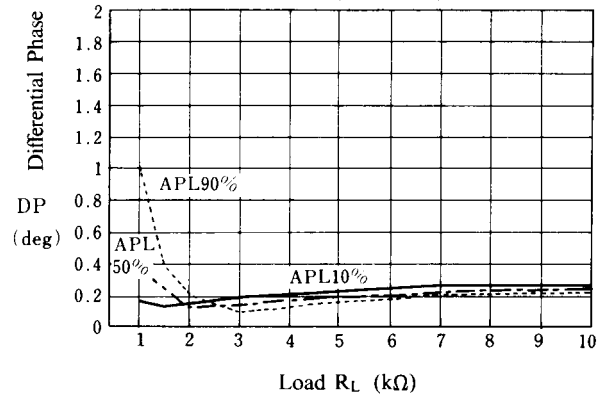
Differential Gain vs. Load

(Ta = 25°C, V+ = 5V)



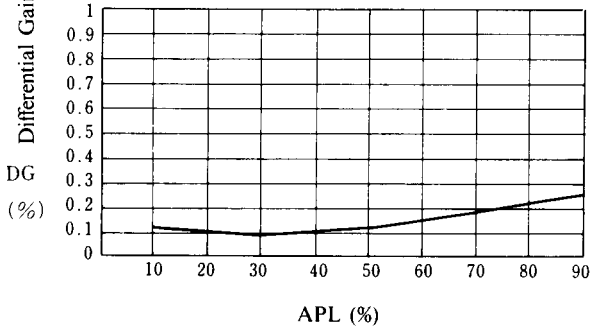
Differential Phase vs. Load

(Ta = 25°C, V+ = 5V)



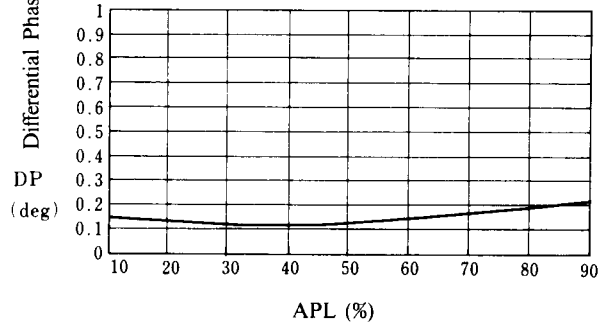
Differential Gain vs. APL

(Ta = 25°C, V+ = 5V)



Differential Phase vs. APL

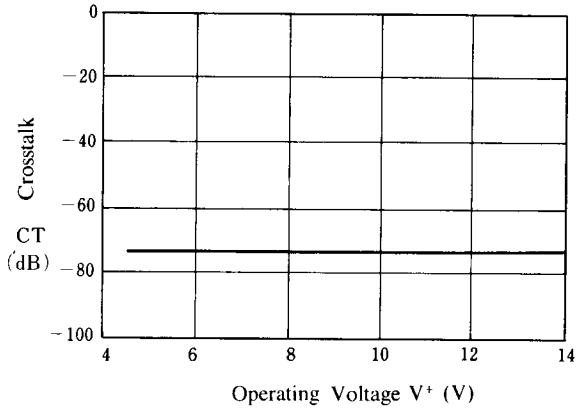
(Ta = 25°C, V+ = 5V)



■ TYPICAL CHARACTERISTICS (Ta = +25°C)

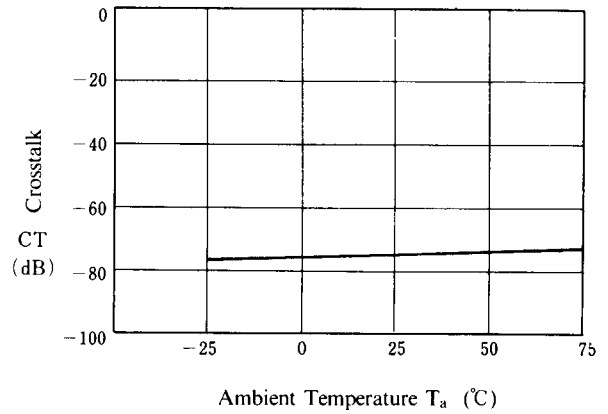
Crosstalk vs. Operating Voltage

(Ta = 25°C)



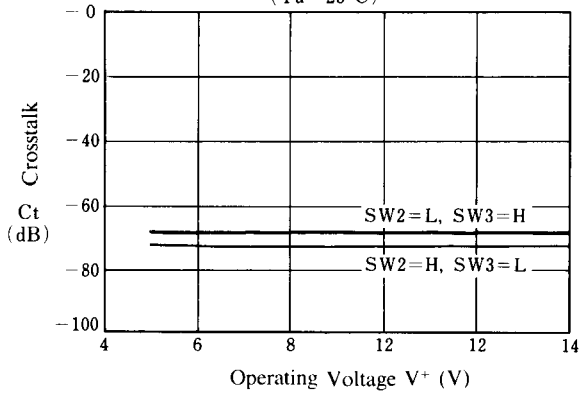
Crosstalk vs. Temperature

(V+ = 5V)



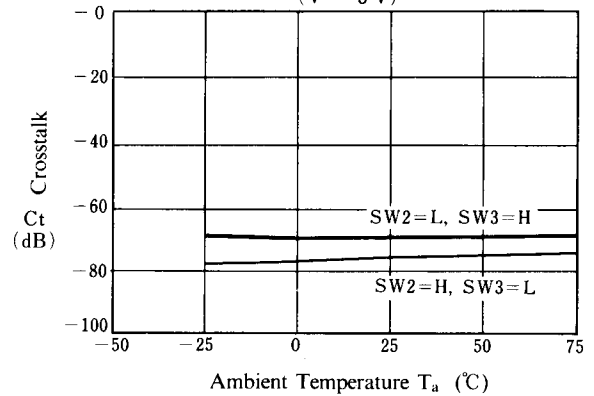
Crosstalk vs. Operating Voltage

(Ta = 25°C)



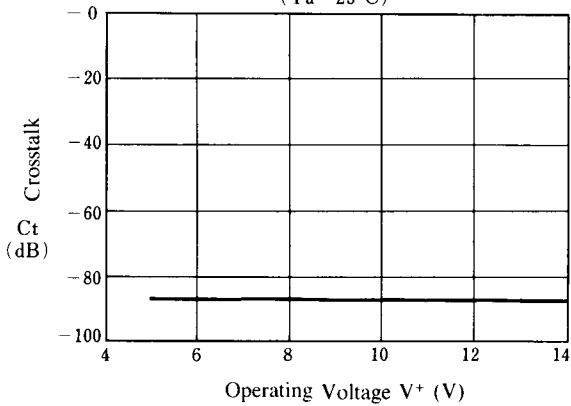
Crosstalk vs. Ambient Temperature

(V+ = 5V)



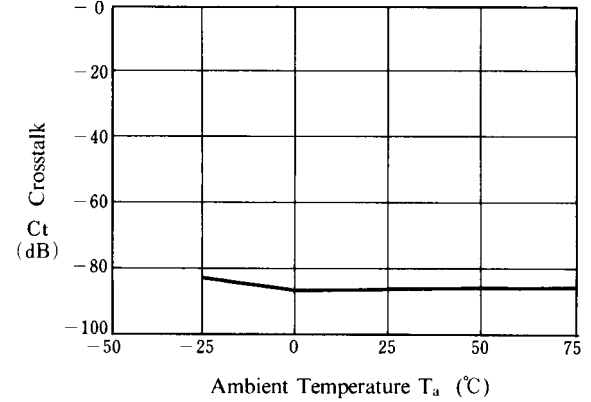
Crosstalk vs. Operating Voltage

(Ta = 25°C)

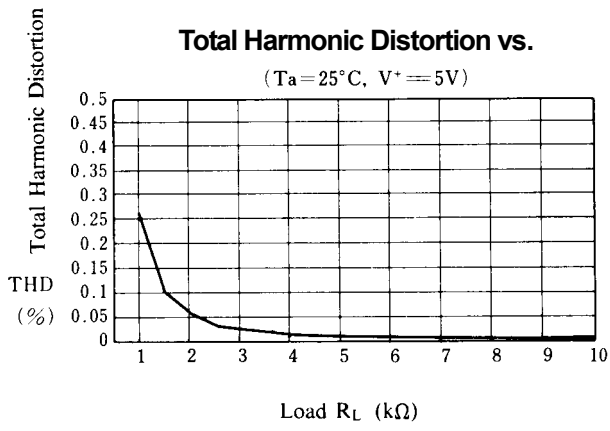


Crosstalk vs. Ambient Temperature

(V+ = 5V)



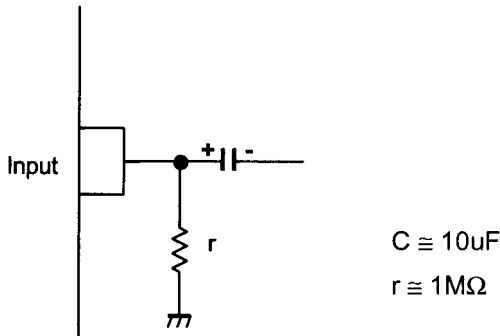
■ TYPICAL CHARACTERISTICS (T_a = +25°C)



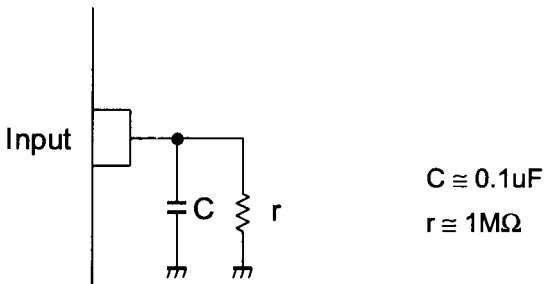
NJM2508

■ APPLICATION

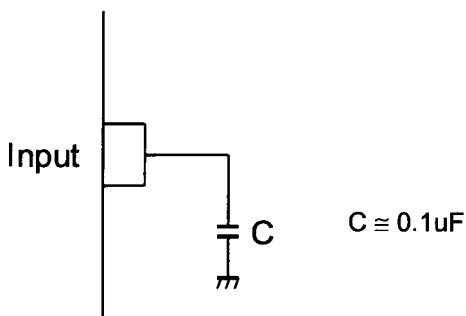
This IC requires $1M\Omega$ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



This IC requires $0.1\mu\text{F}$ capacitor between INPUT and GND, $1M\Omega$ resistance between INPUT and GND for clamp type input at mute mode.



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



[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.