# 3-INPUT 2-OUTPUT VIDEO SWITCH FOR AV-SET

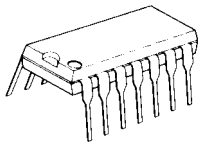
## ■ GENERAL DESCRIPTION

**NJM2279** is 3-input, 2-output video switch with 75Ω, driver circuit.

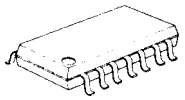
This video switch can be connected to TV monitor directly, as it has 6dB amplifier and 75Ω drivers circuit internally.

The **NJM2279** has the mute function.

## ■ PACKAGE OUTLINE



**NJM2279D**



**NJM2279M**

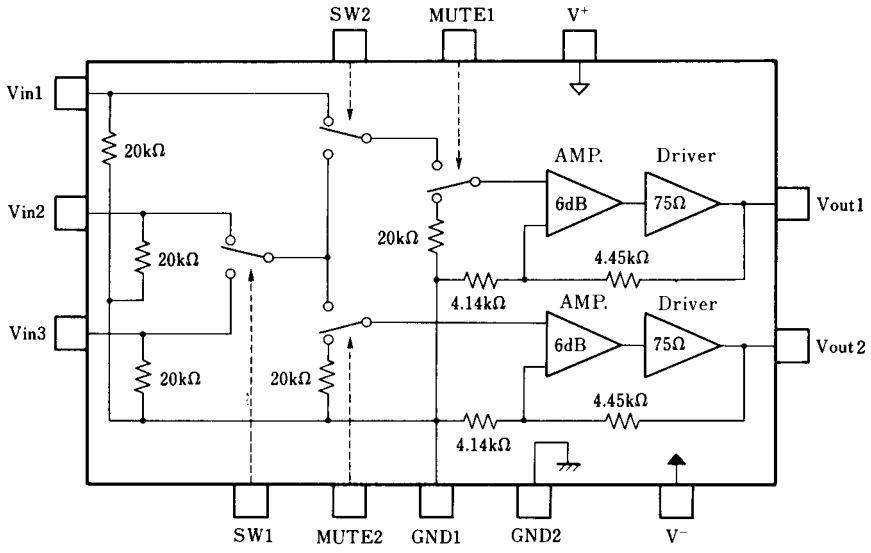
## ■ FEATURES

- 3 input 2 output
- Internal 6dB AMP.
- Internal 75Ω Driver Circuit
- Operating Voltage Dual (±4V to)
  Single (+8V to)
- Internal 2 Output Mute Function
- Package Outline DIP14, DMP14
- Bipolar Technology

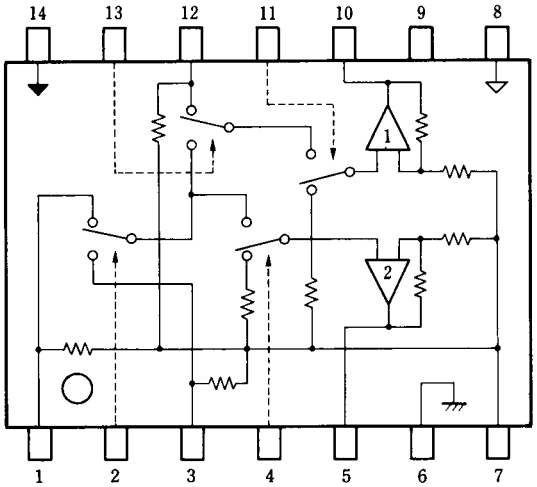
## ■ RECOMMENDED OPERATING CONDITION

| | | |
|---|---|---|
| • Supply Voltage | Dual | ±4.0V to ±7.0V |
| | Single | +8V to +14V |

## ■ BLOCK DIAGRAM




## ■ PIN CONFIGURATION




PIN FUNCTION

| | |
|---|---|
| 1. Vin3 | 8. V+ |
| 2. SW1 | 9. N.C. |
| 3. Vin2 | 10. Vout1 |
| 4. MUTE2 | 11. MUTE1 |
| 5. Vout2 | 12. Vin1 |
| 6. GND2 | 13. SW2 |
| 7. GND1 | 14. V− |

## ■ ABSOLUTE MAXIMUM RATINGS

($T_a$ = 25ºC)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+ / V^-$ | ±7.5 | V |
| Power Dissipation | $P_D$ | (DIP14) 700<br>(DMP14) 300 | mW<br>mW |
| Operating Temperature Range | $T_{opr}$ | -20 to +75 | ºC |
| Storage Temperature Range | $T_{stg}$ | -40 to +125 | ºC |

## ■ ELECTRICAL CHARACTERISTICS

($V^+ / V^-$ = ±5V, $R_L$ = 150Ω $T_a$ = 25°C)

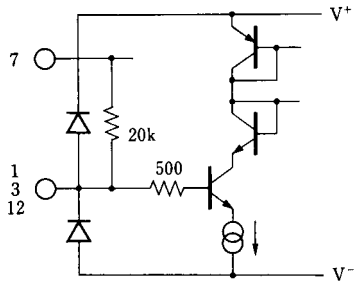
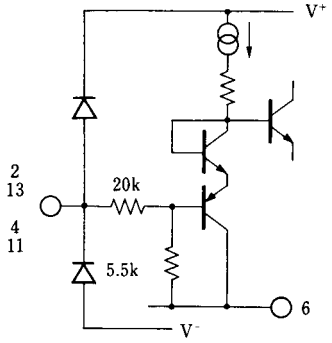
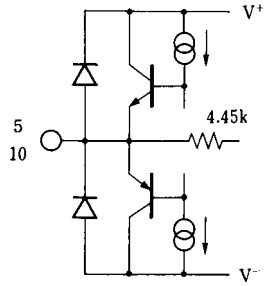
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Operating Current | $I_{CC}$ | No signal | 10.0 | 17.3 | 24.6 | mA |
| | $I_{EE}$ | No signal | -24.6 | -17.3 | -10.0 | mA |
| Voltage Gain | $G_V$ | $V_{IN}$ = 100kHz / 1.0$V_{P-P}$ | 6.0 | 6.3 | 6.8 | dB |
| Frequency Characteristic | $G_f$ | 5MHz / 100kHz, 1.0$V_{P-P}$ | -1.0 | 0.0 | +1.0 | dB |
| Differential Gain | DG | $V_{IN}$ = 1.0$V_{P-P}$, Stair wave | - | 0.2 | - | % |
| Differential Phase | DP | $V_{IN}$ = 1.0$V_{P-P}$, Stair wave | - | 0.2 | - | deg |
| Offset output Voltage 1 | $V_{OS}1$ | $V_{in}2$-$V_{in}$ 3 : no signal | -40 | 0 | +40 | mV |
| Offset output Voltage 2 | $V_{OS}2$ | $V_{in}1$-$V_{in}$ 2 / $V_{in}3$ : no signal | -60 | 0 | +60 | mV |
| Input / Output Crosstalk | CT | $V_{IN}$ = 4.43MHz / 1.0$V_{P-P}$, $V_O$ / $V_{IN}$ | - | -70 | - | dB |
| MUTE Crosstalk | $CT_M$ | $V_{IN}$ = 4.43MHz / 1.0$V_{P-P}$, $V_O$ / $V_{IN}$ | - | -60 | - | dB |
| Switch Change Voltage | $V_{CH}$ | | 2.5 | - | $V^+$ | V |
| | $V_{CL}$ | | 0.0 | - | 1.0 | V |
| Total Harmonic Distortion | THD | $V_{IN}$ = 1kHz 1.25$V_{P-P}$ | - | 0.1 | - | % |
| Input Impedance | $R_{in}$ | | - | 20 | - | kΩ |

## ■ CONTROL SIGNAL-OUTPUT SIGNAL

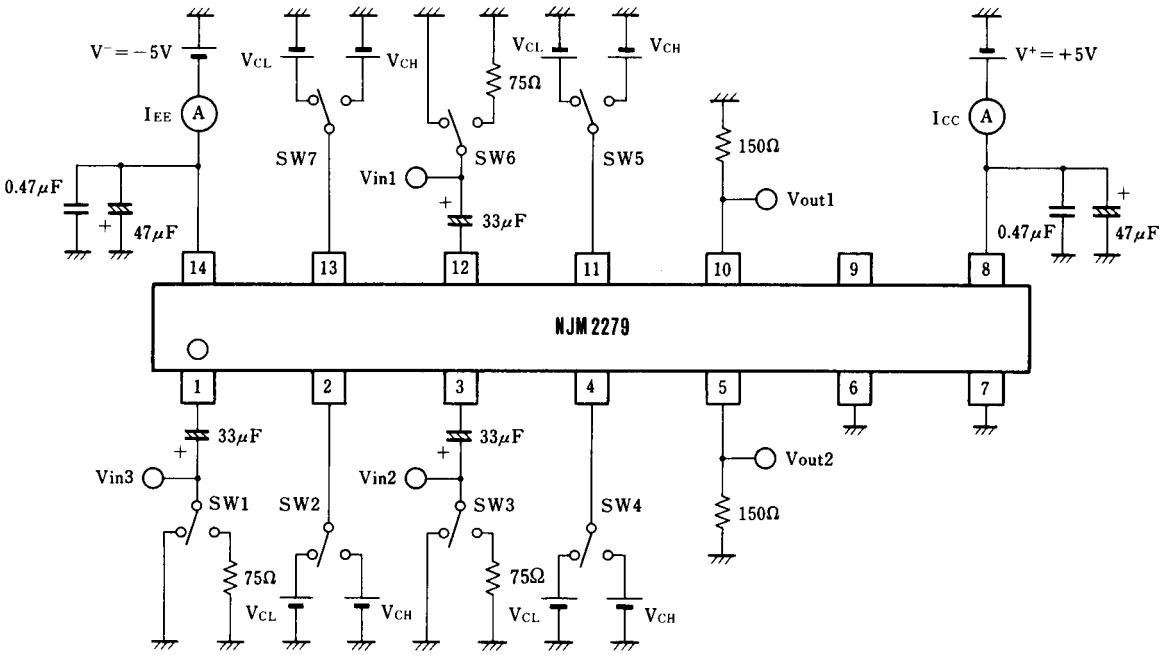
(L = $V_{CL}$, H = $V_{CH}$, X = LorH)

| CONTROL SIGNAL | | | | OUTPUT | |
|---|---|---|---|---|---|
| SW1 (2 pin) | SW2 (13 pin) | MUTE 1 (11 pin) | MUTE 2 (4 pin) | Vout 1 (10 pin) | Vout 2 (5 pin) |
| X | X | L | L | GND | GND |
| X | X | L | H | GND | OUT PUT |
| X | X | H | L | OUT PUT | GND |
| L | L | H | H | $V_{IN}$ 1 | $V_{IN}$ 2 |
| L | H | H | H | $V_{IN}$ 2 | $V_{IN}$ 2 |
| H | L | H | H | $V_{IN}$ 1 | $V_{IN}$ 3 |
| H | H | H | H | $V_{IN}$ 3 | $V_{IN}$ 3 |

## ■TERMINAL FUNCTION

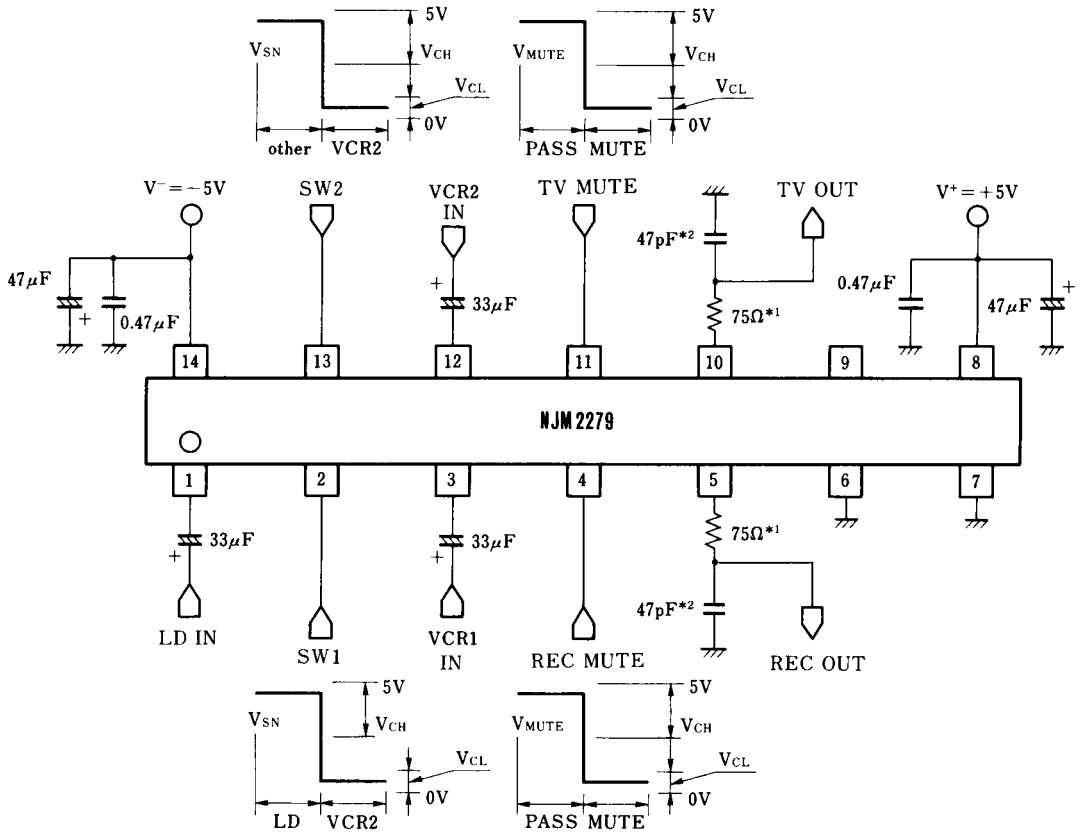
| PIN No. | PIN NAME | INSIDE EQUIVALENT CIRCUIT | NOTE |
|---|---|---|---|
| 1<br>3<br>12 | $V_{IN}3$<br>$V_{IN}2$<br>$V_{IN}1$ |  | Video signal input terminal<br>The bias is done with 20kΩ by the voltage of the terminal GND1.<br>1Vp-p input<br>(0.0V = GND1) |
| 7 | GND1 | | GND terminal<br>When a single power supply is used, the bias is done to 1/2V+. |
| 2<br>13 | SW1<br>SW2 |  | Switch control terminal for input signal selection<br>(0.0V = GND2, Uncontrolled) |
| 4<br>11 | MUTE2<br>MUTE1 | | Mute control terminal<br>The output is GND1 voltage at the mute.<br>(0.0V = GND2, Uncontrolled) |
| 6 | GND2 | | GND terminal<br>Please connect it with GND regardless of dual power supplies or single power supplies. |
| 5<br>10 | $V_{OUT}2$<br>$V_{OUT}1$ |  | Video signal input terminal<br>The output signal level becomes 1VP-P at 75Ω terminal. |
| 8 | $V^+$ | - | Power supply terminal |
| 14 | $V^-$ | - | Power supply terminal<br>When a single power supply is used, it becomes GND. |

## ■ TEST CIRCUIT



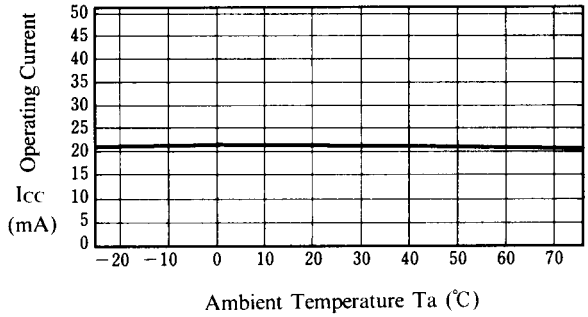

| PARAMETER | SYMBOL | UNIT | INPUT TERMINAL | TEST TERMINAL | TEST CONDITION |
|---|---|---|---|---|---|
| Operating Current | $I_{CC}$ | mA | - | 8 pin | $V_{in}$1 to 3 = 0V, SW1/2·MUTE1/2 = $V_{CL}$ |
| | $I_{EE}$ | mA | - | 14 pin | $V_{in}$1 to 3 = 0V, SW1/2·MUTE1/2 = $V_{CL}$ |
| Voltage Gain | $G_V$ | dB | 1, 3,12 pin | 5, 10 pin | MUTE1/2 = $V_{CL}$ |
| Frequency Characteristic | $G_f$ | dB | 1, 3,12 pin | 5, 10 pin | MUTE1/2 = $V_{CL}$ |
| Differential Gain | DG | % | 1, 3,12 pin | 5, 10 pin | MUTE1/2 = $V_{CL}$ |
| Differential Phase | DP | deg | 1, 3,12 pin | 5, 10 pin | MUTE1/2 = $V_{CL}$ |
| Offset output Voltage 1 | $V_{OS}$1 | mV | 1, 3,12 pin | 5, 10 pin | $V_{in}$1 to 3 = 0V |
| Offset output Voltage 2 | $V_{OS}$2 | mV | - | 5, 10 pin | $V_{in}$1 to 3 = 0V |
| Input / Output Crosstalk | CT | dB | - | 5, 10 pin | MUTE1/2 = $V_{CL}$ |
| MUTE Crosstalk | $CT_M$ | dB | 1, 3,12 pin | 5, 10 pin | MUTE1/2 = $V_{CL}$ |
| Switch Change Voltage | $V_{CH}$ | V | 1, 3,12 pin | 5, 10 pin | |
| | $V_{CL}$ | V | - | - | |
| Total Harmonic Distortion | THD | % | 1, 3,12 pin | 5, 10 pin | |

## ■ APPLICATION

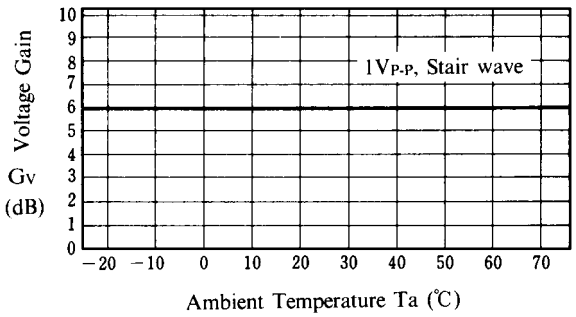


## ■ TYPICAL CHARACTERISTICS

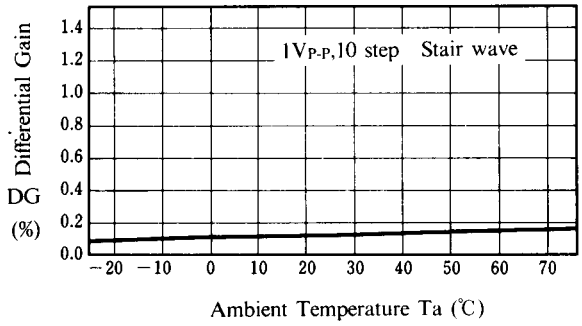
### Operating Current vs. Temperature



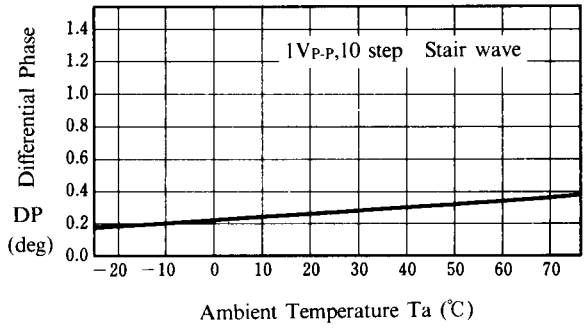

### Voltage Gain vs. Temparature



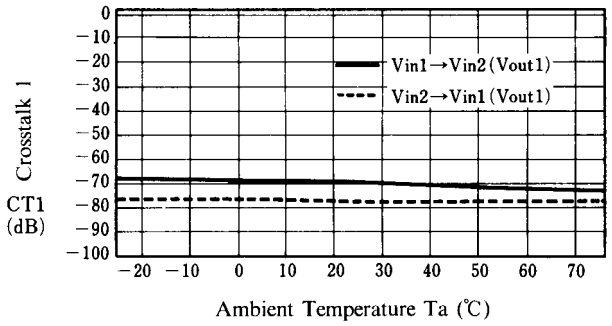

### Differential Gain vs. Temperature



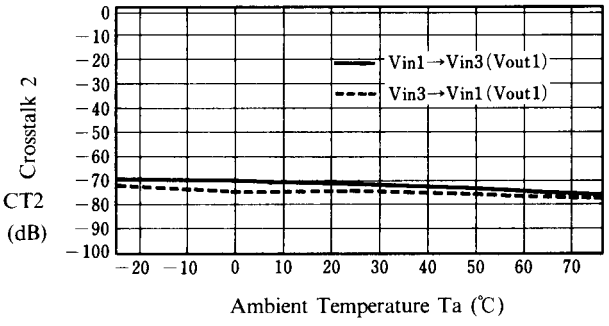

### Differential Phase vs. Temperature




### Crosstalk 1 vs. Temperature

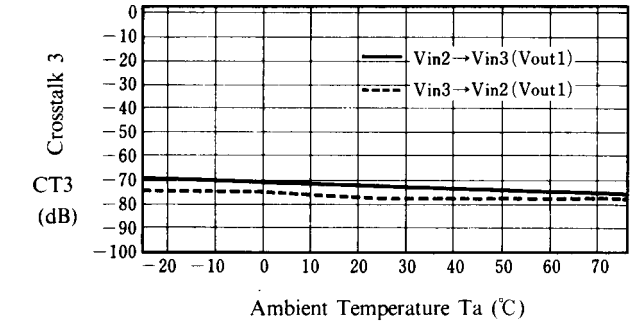



### Crosstalk 2 vs. Temperature

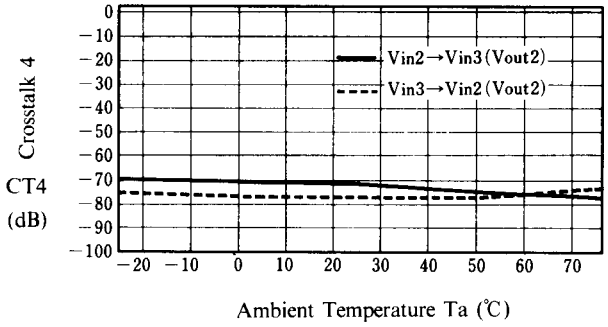


## ■ TYPICAL CHARACTERISTICS

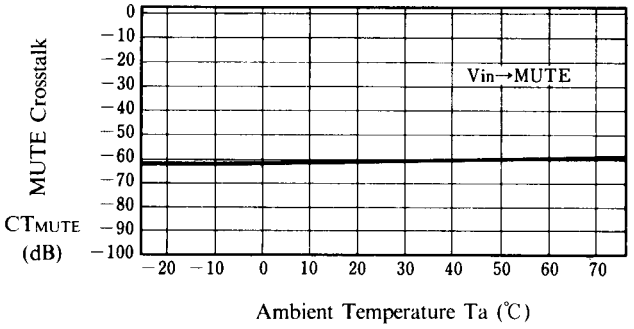
### Crosstalk 3 vs. Temperature



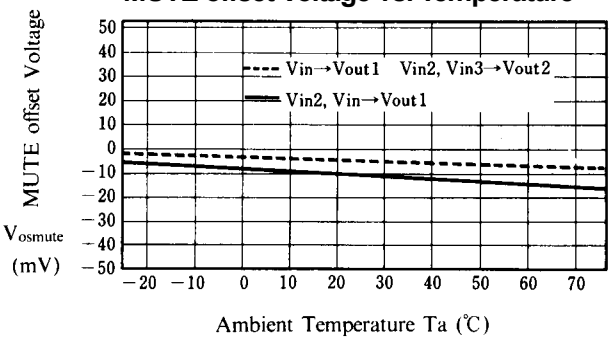

### Crosstalk 4 vs. Temperature



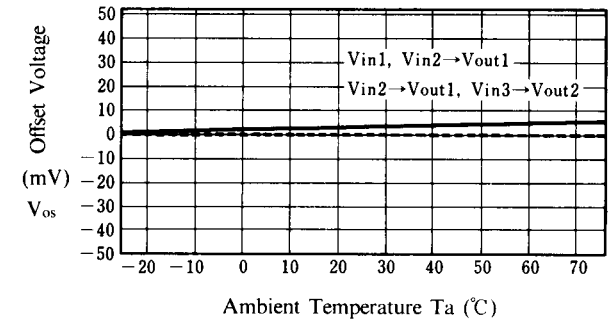

### MUTE Crosstalk vs. Temperature



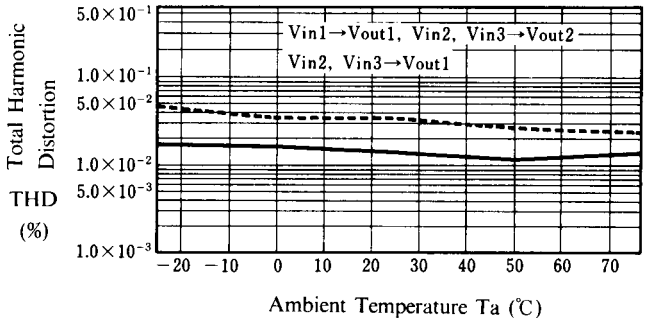

### MUTE offset Voltage vs. Temperature




### Channel offset Voltage vs. Temperature

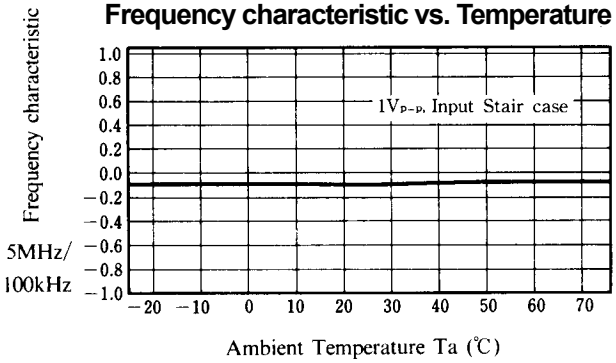



### Total Harmonic Distortion vs. Temperature

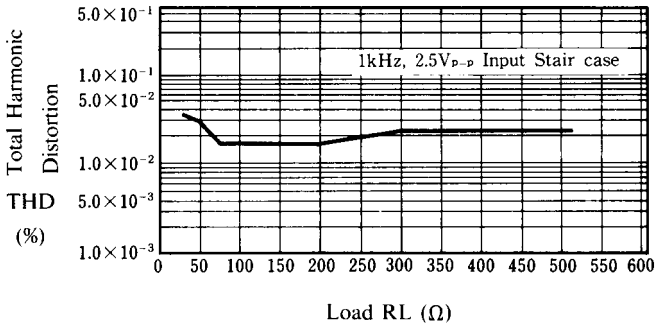


## ■ TYPICAL CHARACTERISTICS

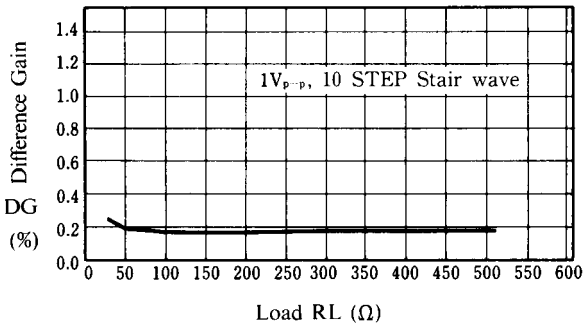
### Frequency characteristic vs. Temperature



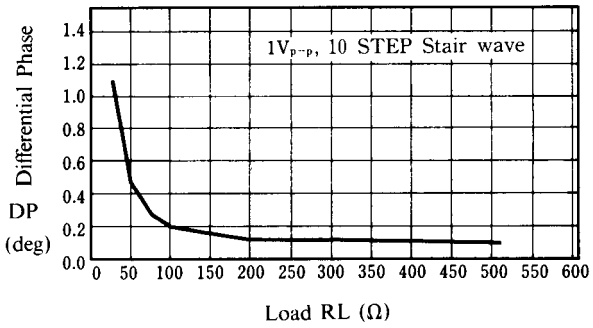

### THD vs. RL



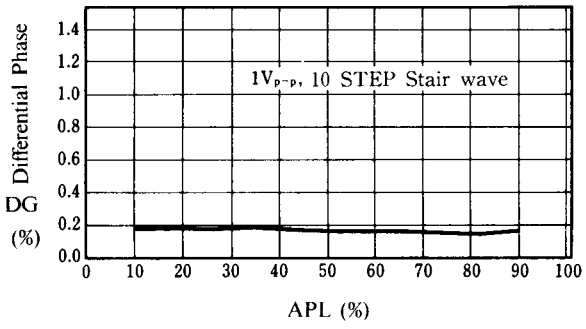

### Differential Gain vs. RL



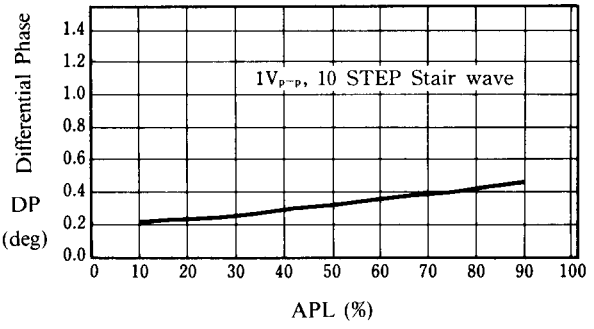

### Differential Phase vs. RL




### Differential Phase vs. APL

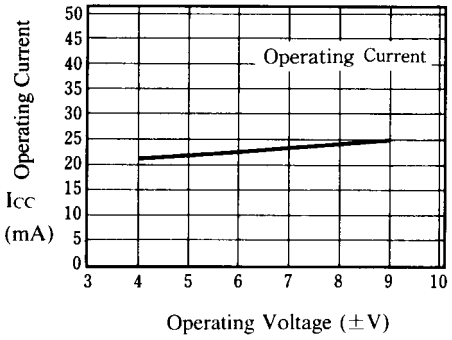



### Differential Phase vs. APL

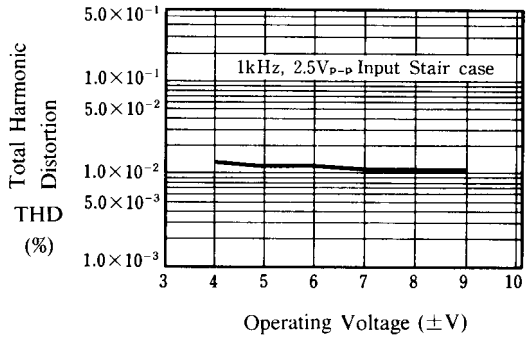


## ■ TYPICAL CHARACTERISTICS

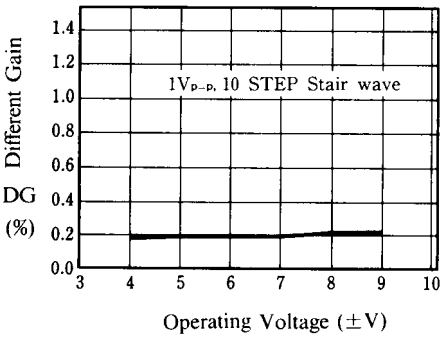
### Operating Current vs. Operating Voltage



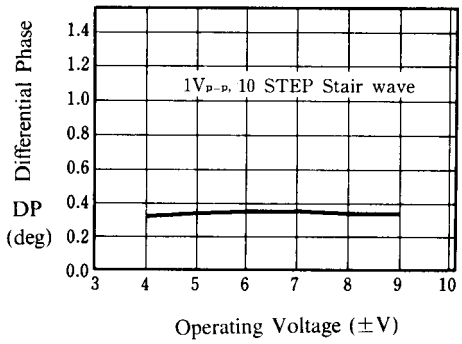

### THD vs. Operating Voltage



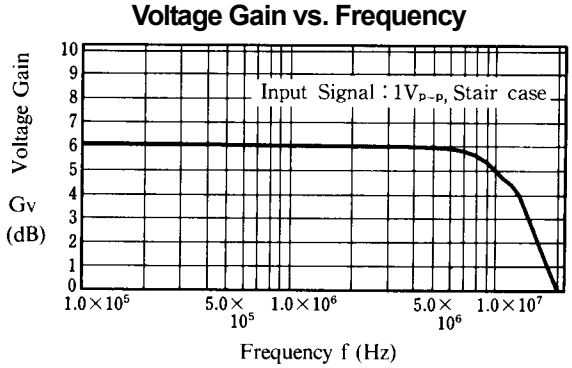

### Different Gain vs. Operating Voltage



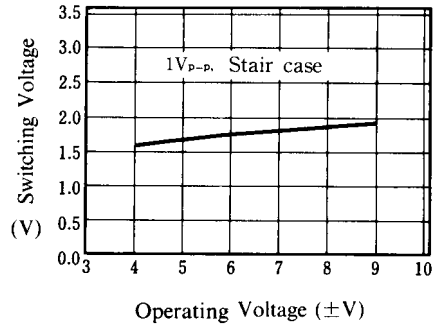

### Differential Phase vs. Operating Voltage




### Voltage Gain vs. Frequency




### Swiching Voltage vs. Operating Voltage



## ■ TYPICAL CHARACTERISTICS

**Switching Speed vs. Signal Amplitude**