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New Japan Radio Co.,Ltd.

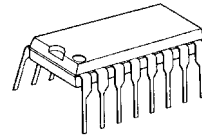
<http://www.njr.com/>

## 2-INPUT 3CHANNEL VIDEO SWITCH

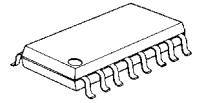
### ■ GENERAL DESCRIPTION

**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).

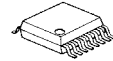
### ■ PACKAGE OUTLINE



**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

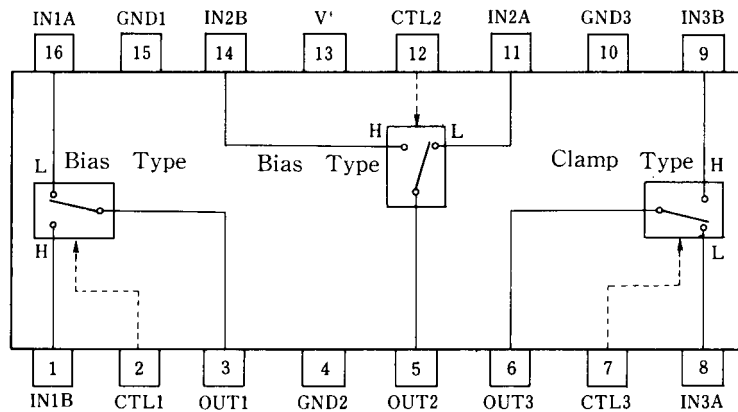
### ■ RECOMMENDED OPERATING CONDITION

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

### ■ APPLICATIONS

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

### ■ BLOCK DIAGRAM



**NJM2284D**  
**NJM2284M**  
**NJM2284V**

# NJM2284

## ■ MAXIMUM RATINGS

(T<sub>a</sub> = 25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	14	V
Power Dissipation	P <sub>D</sub>	(DIP16) 700 (DMP16) 350 (SSOP16) 300	mW mW 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 CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I <sub>CC1</sub>	V <sup>+</sup> = 5V (Note1)	8.1	11.6	15.1	mA
Operating Current (2)	I <sub>CC2</sub>	V <sup>+</sup> = 9V (Note1)	10.2	14.6	19.0	mA
Voltage Gain	G <sub>V</sub>	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 Phasa	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

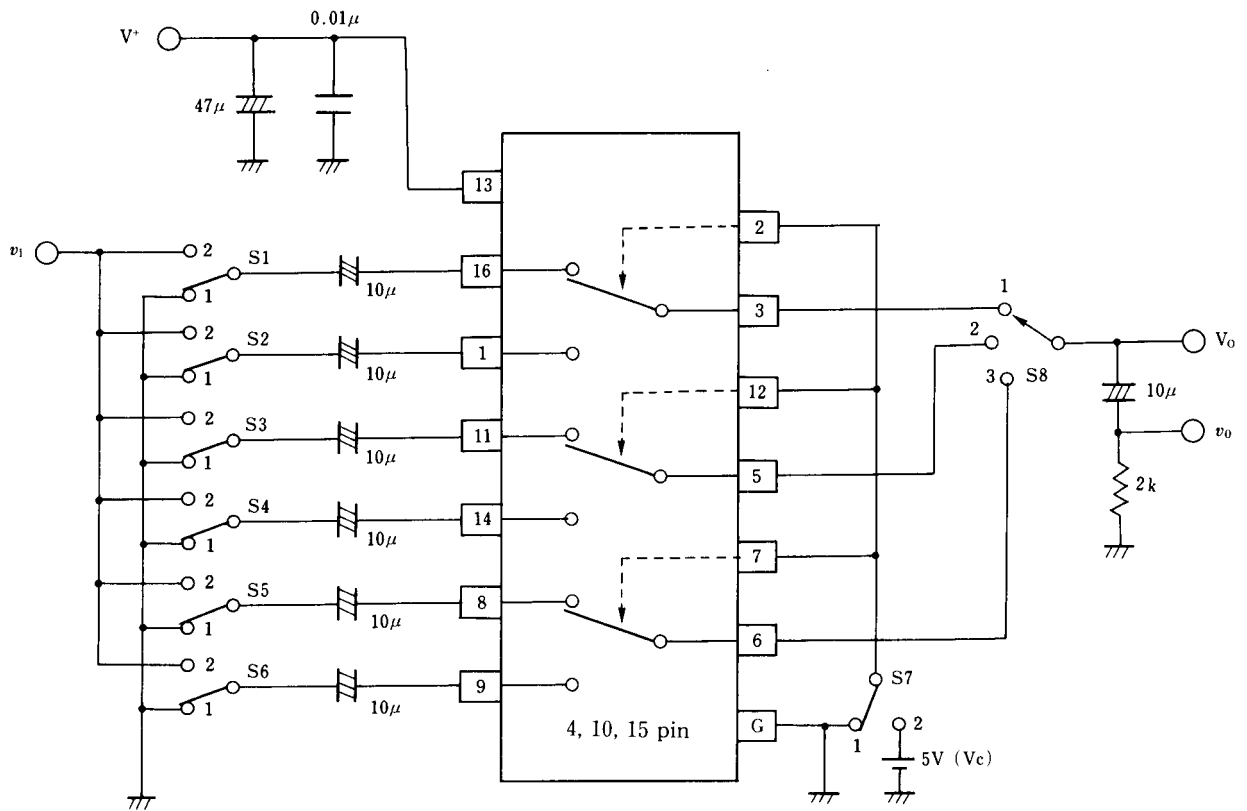
(Note2) S1 = S2 = S3 = S4 = S5 = S6 = 1, S7 = 1→2 Measure the output DC voltage difference

## ■ TERMINAL EXPLANATION

PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1 11 14	IN 1 A IN 1 B IN 2 A IN 2 B [Input]	2.5V	
8 9	IN 3 A IN 3 B [Input]	1.5V	
2 12 7	CTL 1 CTL 2 CTL 3 [Switching]		
3 5	OUT1 OUT2	1.8V	
6	OUT3 [Output]	0.8V	
13	V <sup>+</sup>	5V	
15 4 10	GND 1 GND 2 GND 3		

# NJM2284

## TEST CIRCUIT

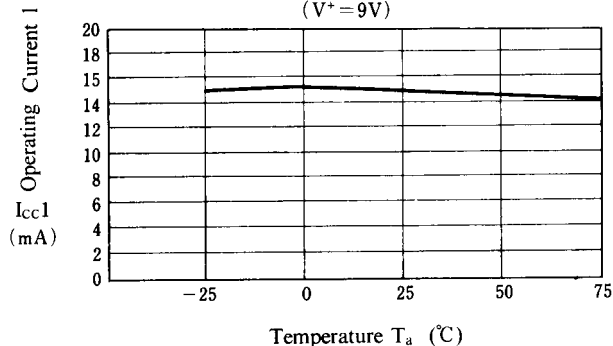


Parameter	S1	S2	S3	S4	S5	S6	S7	S8	Test Part
$I_{CC1}$	1	1	1	1	1	1	1	1	$V^+$
$I_{CC2}$	1	1	1	1	1	1	1	1	
$G_{v1}$	2	1	1	1	1	1	1	1	$v_o$
$G_{F1}$	2	1	1	1	1	1	1	1	
$DG_1$	2	1	1	1	1	1	1	1	
$DP_1$	2	1	1	1	1	1	1	1	
CT1	2	1	1	1	1	1	2	1	$v_o$
CT2	1	2	1	1	1	1	1	1	
CT3	1	1	2	1	1	1	2	2	
CT4	1	1	1	2	1	1	1	2	
CT5	1	1	1	1	2	1	2	3	
CT6	1	1	1	1	1	2	1	3	
$V_{OS1}$	1	1	1	1	1	1	1/2	1	$V_o$
$V_{C1}$	1/2	2/1	1	1	1	1	$V_c$	1	$V_c$
THD	2	1	1	1	1	1	1	1	$v_o$

## ■ TYPICAL CHARACTERISTICS

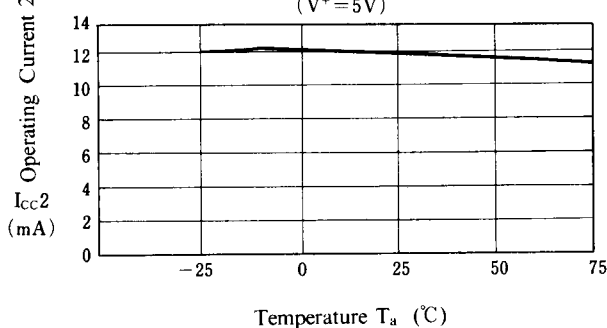
**Operating Current 1 vs. Temperature**

( $V^+ = 9V$ )



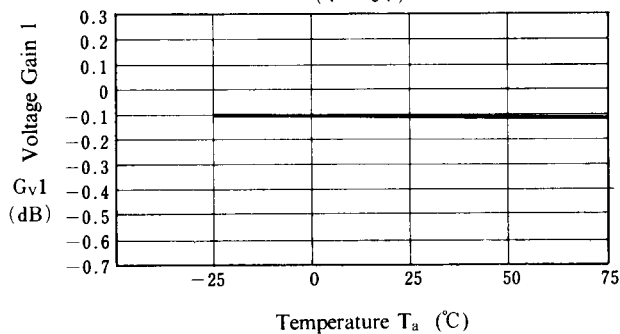
**Operating Current 2 vs. Temperature**

( $V^+ = 5V$ )



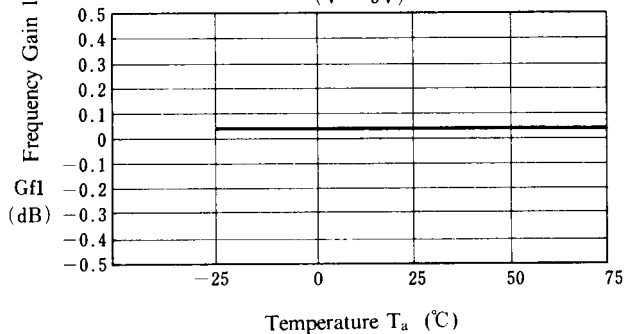
**Voltage Gain 1 vs. Temperature**

( $V^+ = 5V$ )



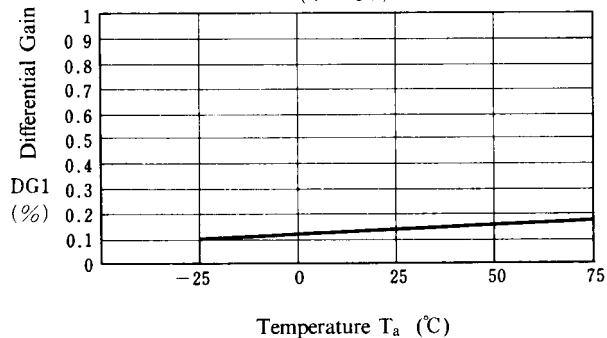
**Frequency Gain 1 vs. Temperature**

( $V^+ = 5V$ )



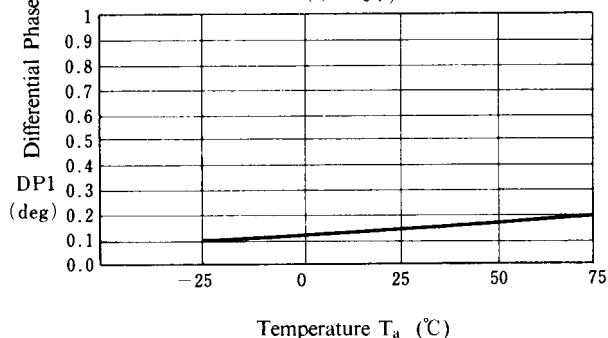
**Differential Gain 1 vs. Temperature**

( $V^+ = 5V$ )



**Differential Phase 1 vs. Temperature**

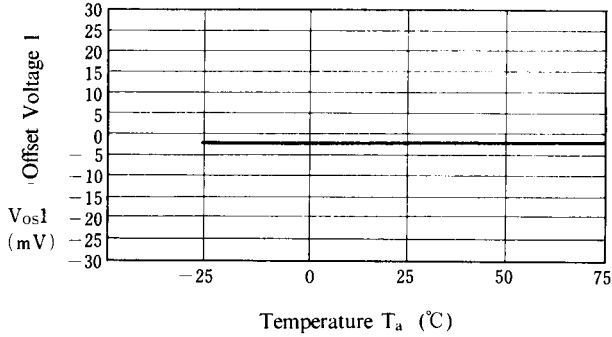
( $V^+ = 5V$ )



## ■ TYPICAL CHARACTERISTICS

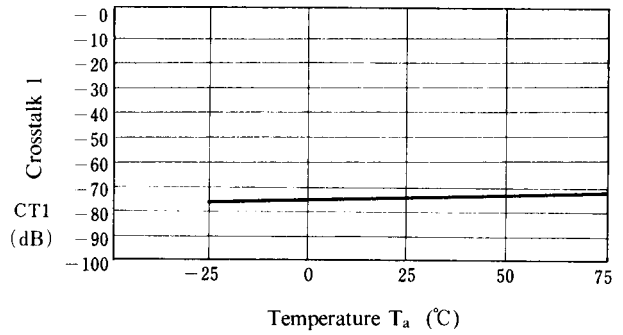
**Offset Voltage 1 vs. Temperature**

( $V^+ = 5V$ )



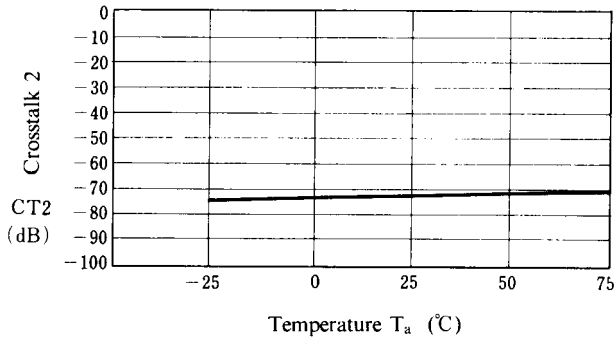
**Crosstalk 1 vs. Temperature**

( $V^+ = 5V$ )



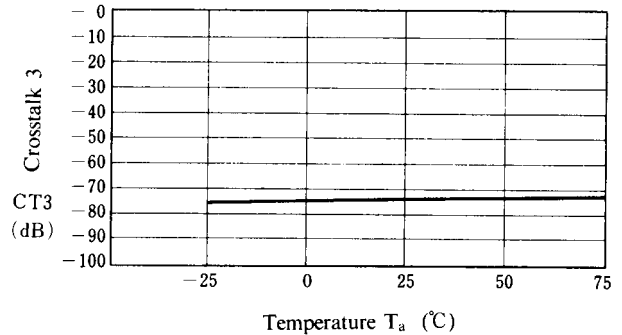
**Crosstalk 2 vs. Temperature**

( $V^+ = 5V$ )



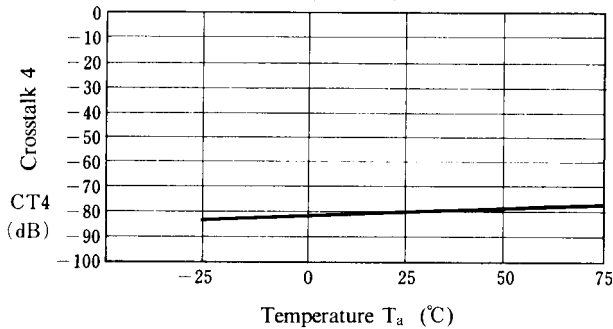
**Crosstalk 3 vs. Temperature**

( $V^+ = 5V$ )



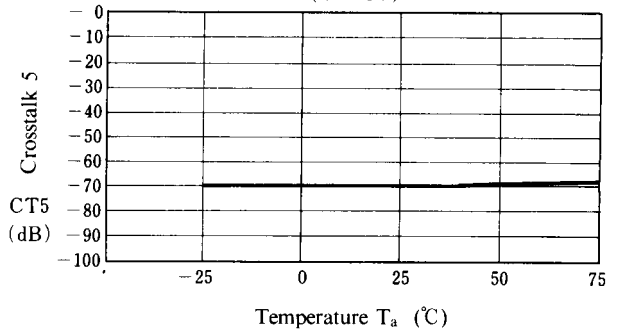
**Crosstalk 4 vs. Temperature**

( $V^+ = 5V$ )



**Crosstalk 5 vs. Temperature**

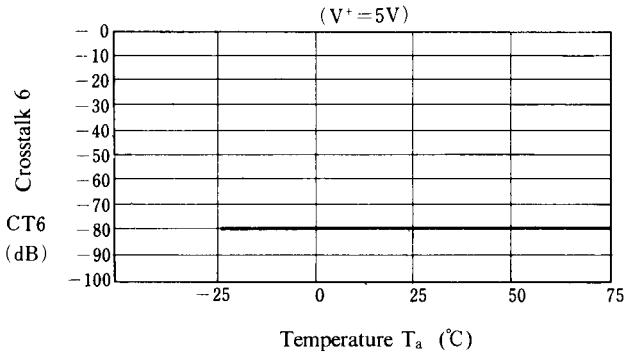
( $V^+ = 5V$ )



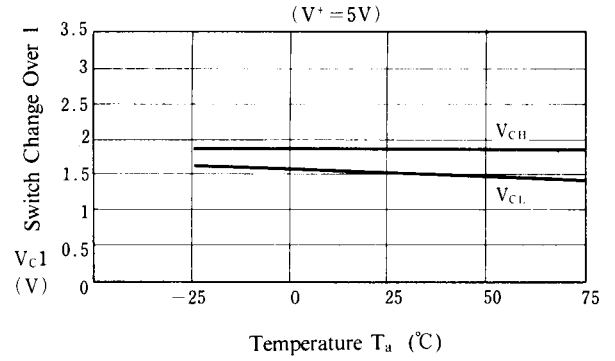


## ■ TYPICAL CHARACTERISTICS

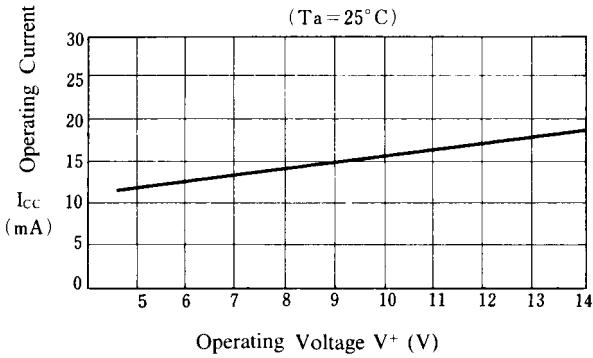
### Crosstalk 6 vs. Temperature



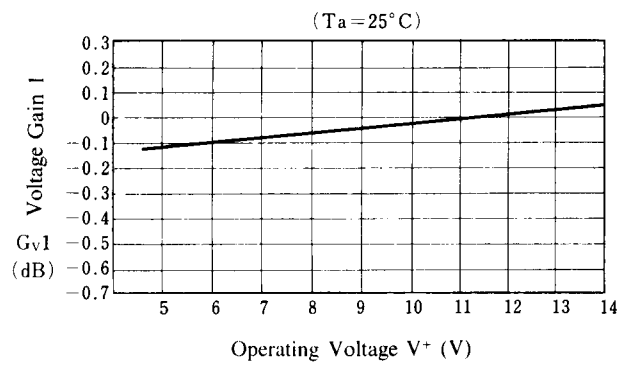
### Switch Change Over 1 vs. Temperature



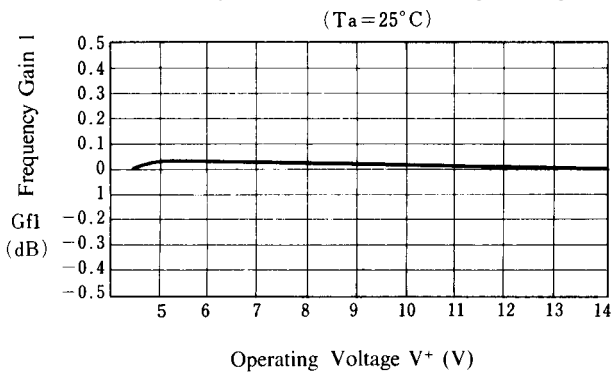
### Operating Current vs. Operating Voltage



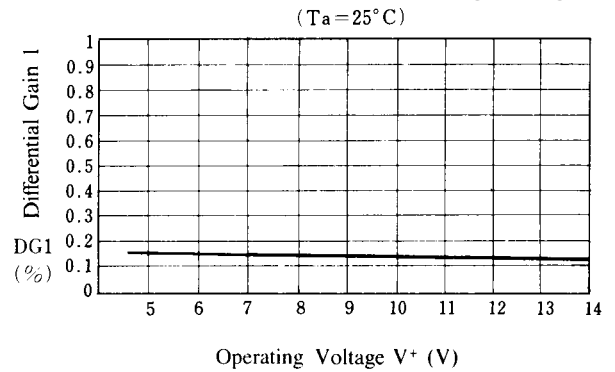
### Voltage Gain 1 vs. Operating Voltage



### Frequency Gain 1 vs. Operating Voltage



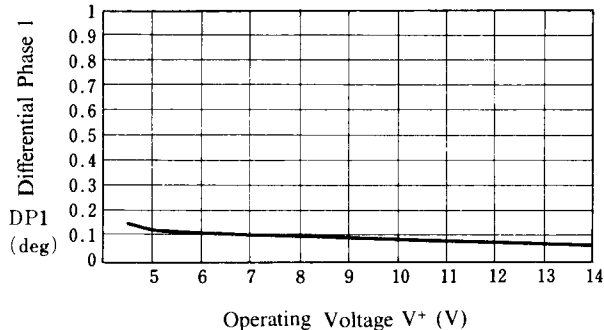
### Differential Gain 1 vs. Operating Voltage



## ■ TYPICAL CHARACTERISTICS

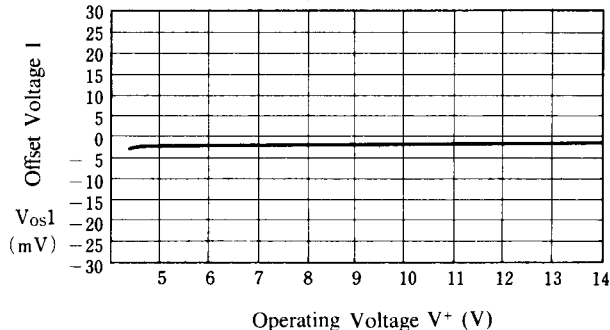
**Differential Phase 1 vs. Operating Voltage**

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



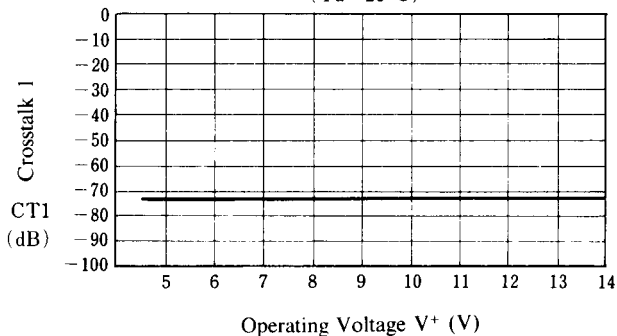
**Offset Voltage 1 vs. Operating Voltage**

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



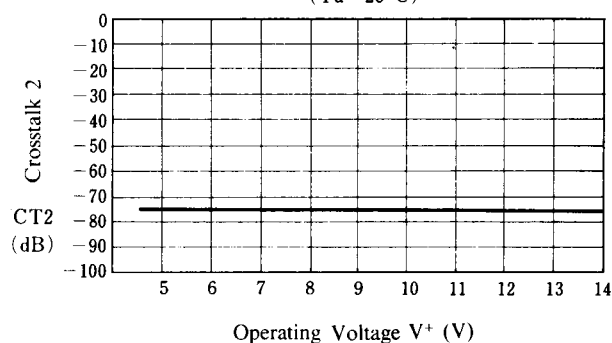
**Crosstalk 1 vs. Operating Voltage**

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



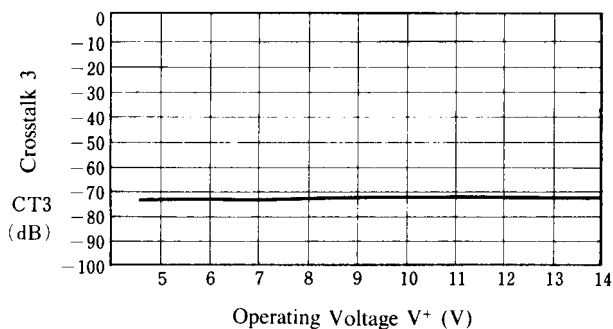
**Crosstalk 2 vs. Operating Voltage**

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



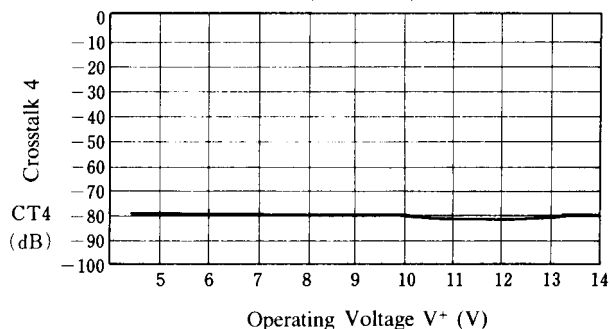
**Crosstalk 3 vs. Operating Voltage**

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



**Crosstalk 4 vs. Operating Voltage**

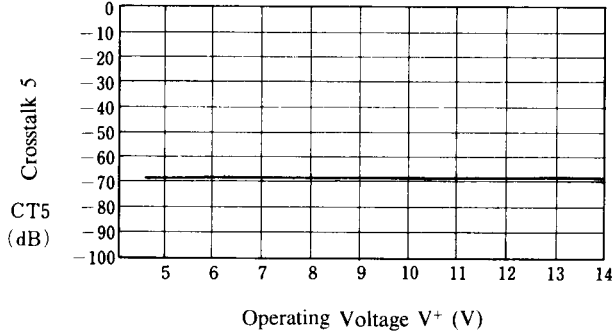
( $T_a = 25^\circ\text{C}$ )



## ■ TYPICAL CHARACTERISTICS

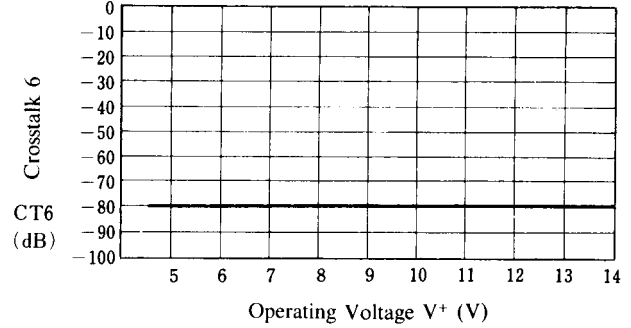
### Crosstalk 5 vs. Operating Voltage

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



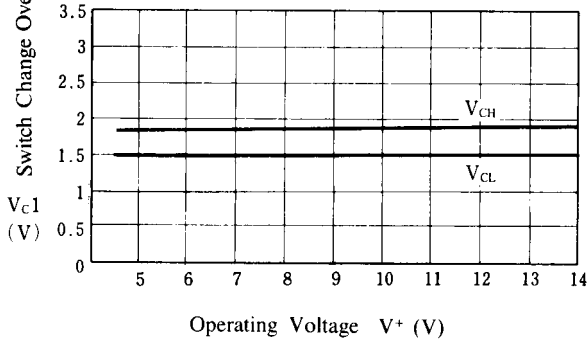
### Crosstalk 6 vs. Operating Voltage

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



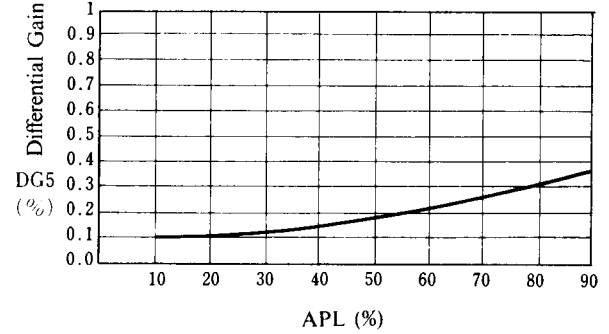
### Switch Change Over 1 vs. Operating Voltage

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



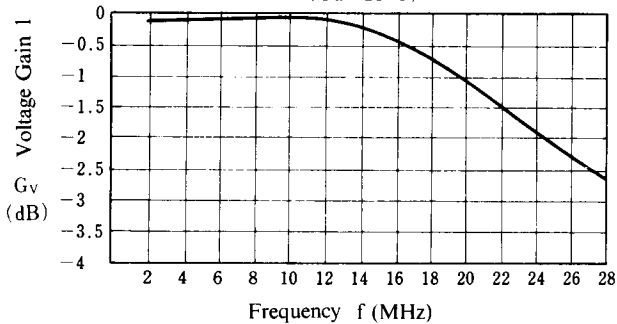
### Differential Gain vs. APL

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



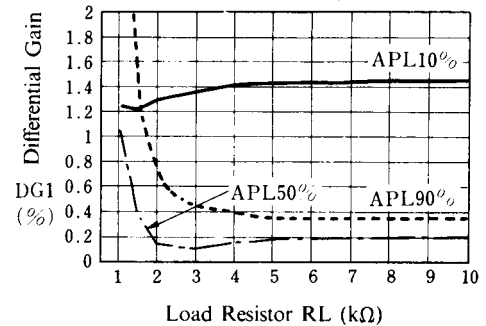
### Voltage Gain 1 vs. Frequency Feature

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



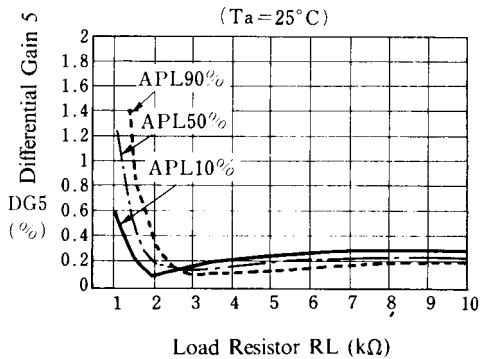
### Differential Gain 1 vs. Load Resistor

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

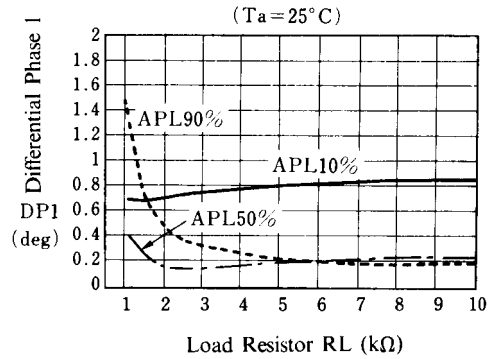


## ■ TYPICAL CHARACTERISTICS

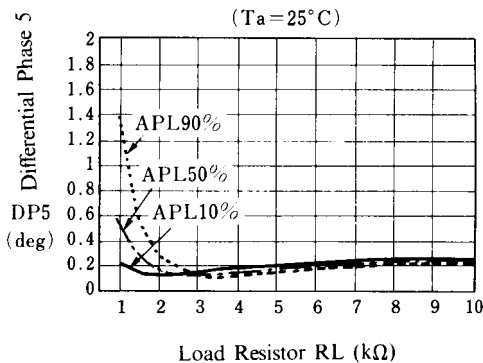
### Differential Gain 5 vs. Load Resistor



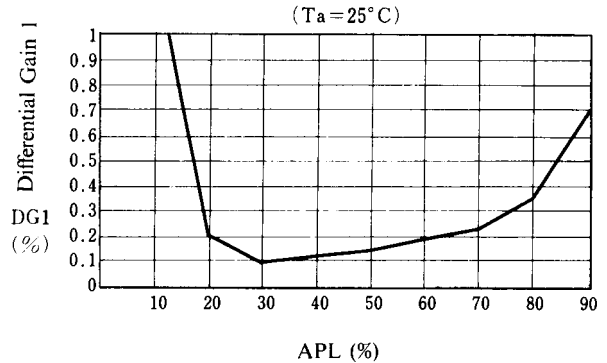
### Differential Phase 1 vs. Load Resistor



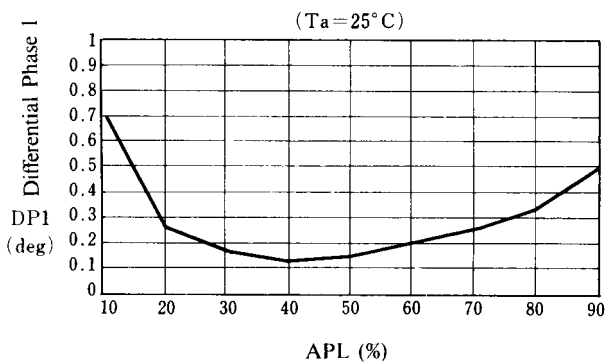
### Differential Phase 5 vs. Load Resistor



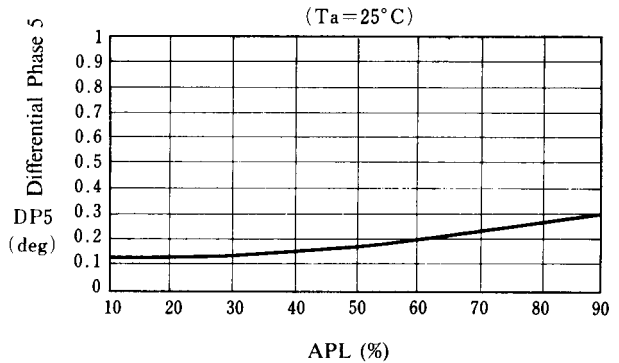
### Differential Gain 1 vs. APL



### Differential Phase 1 vs. APL



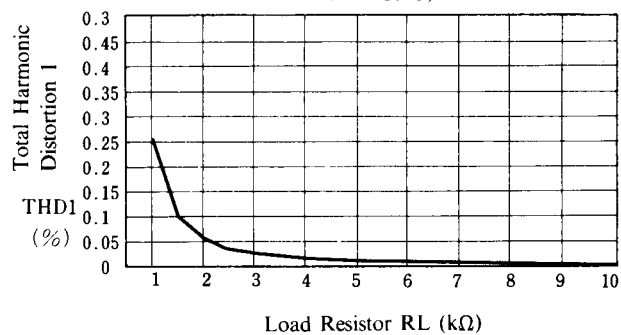
### Differential Phase 5 vs. APL



## ■ TYPICAL CHARACTERISTICS

### Total Harmonic Distortion 1 vs. Load Resistor

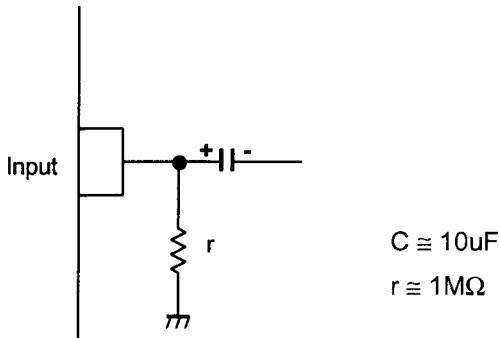
( $T_a = 25^\circ\text{C}$ )



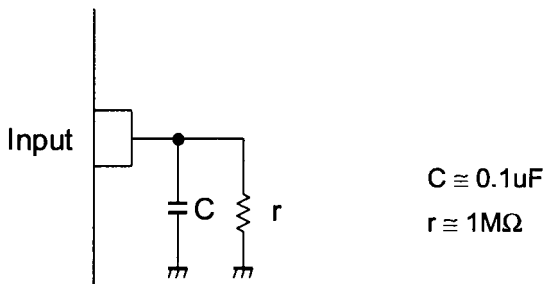
# NJM2284

## ■ APPLICATION

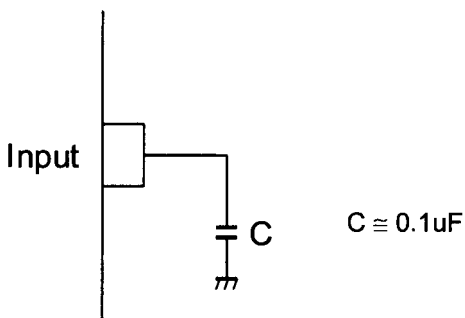
This IC requires  $1M\Omega$  resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



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]  
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