

## 2-INPUT 3CHANNEL VIDEO SWITCH

### ■ GENERAL DESCRIPTION

NJM2283 is a switching IC for switching over from one audio or video input signal to another. Internalizing 2 inputs and 1 output, and then each set of 3 can be operated independently. It is a higher efficiency video switch, featuring the supply voltage range 4.75 to 13.0V, the frequency feature 10MHz, and then Crosstalk 75dB (at 4.43MHz).

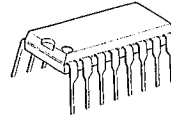
### ■ FEATURES

- 2 Input-1 Output 3 Circuits internalizing
- Wide Operating Voltage (4.75 ~ 13.0V)
- Crosstalk 75dB(at 4.43MHz)
- Wide Operating Supply Range 10MHz(2V<sub>P-P</sub> Input)
- Wide Bandwidth Frequency
- Package Outline DIP16, DMP16, SSOP16

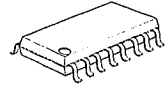
### ■ APPLICATIONS

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

### ■ PACKAGE OUTLINE



NJM2283D

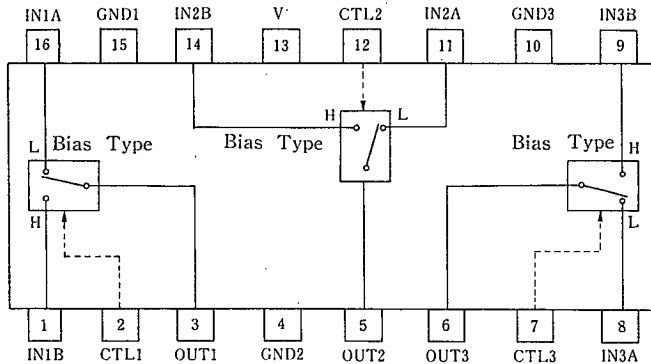


NJM2283M



NJM2283V

### ■ BLOCK DIAGRAM



NJM2283D  
NJM2283M  
NJM2283V

## ■ MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	14	V
Power Dissipation	P <sub>o</sub>	(DIP16) 700	mW
		(DMP16) 350	mW
		(SSOP16) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-40~+85	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

## ■ ELECTRICAL CHARACTERISTICS

(V<sup>+</sup>=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I <sub>CC1</sub>	V <sup>+</sup> =5V (Note1)	8.3	11.8	15.3	mA
Operating Current (2)	I <sub>CC2</sub>	V <sup>+</sup> =9V (Note1)	10.4	14.8	19.2	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 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

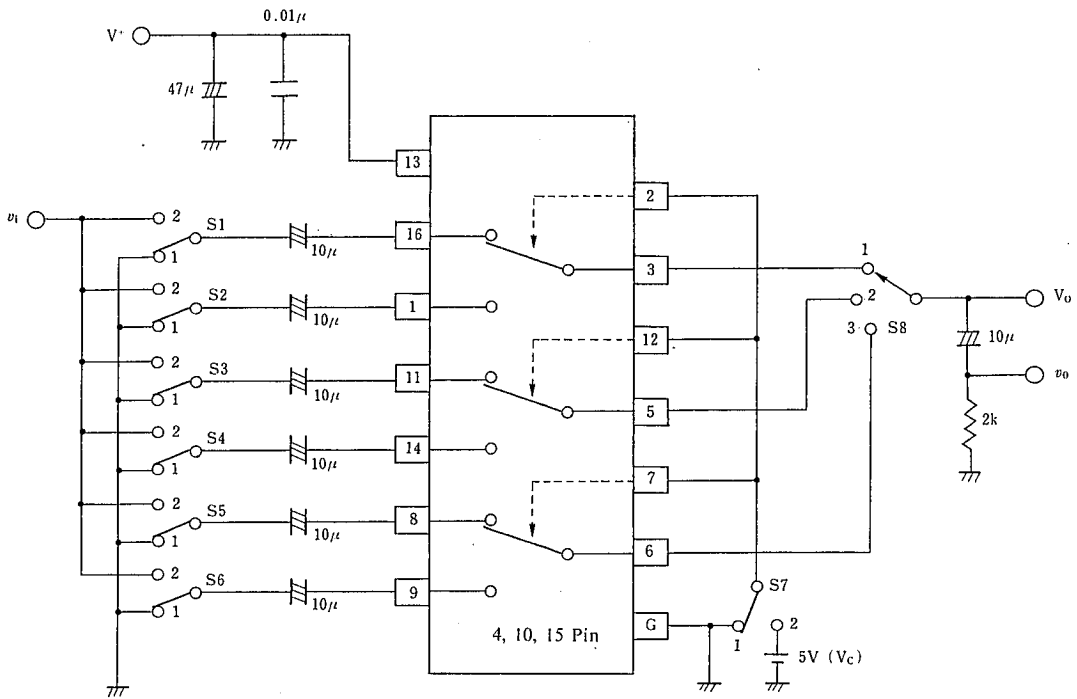
(Note2) S1=S2=S3=S4=S5=S6=1, S7=1→2 Measure the output DC voltage difference

## ■ TERMINAL EXPLANATION

PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1 11 14 8 9	IN 1 A IN 1 B IN 2 A IN 2 B IN 3 A IN 3 B (Input)	2.5V	<p>The diagram shows an input terminal 'IN' connected to a network of resistors. A 500 ohm resistor is connected between the input and a node. From this node, a 15k resistor is connected to a 2.5V supply. Another 500 ohm resistor is connected between the input and ground.</p>
2 12 7	CTL 1 CTL 2 CTL 3 (Switching)		<p>The diagram shows a switching circuit. It includes a 2.3V supply and a 1.9V supply. A transistor is driven by the 1.9V supply. The collector of this transistor is connected to a node that also receives current from a 2.3V supply through an 8k resistor. This node is connected to a terminal labeled 'CLT' through another 8k resistor. A 20k resistor is connected between 'CLT' and ground. A diode is connected in parallel with the 8k resistor to ground. A second transistor is connected to the diode's cathode and has an 8k resistor to ground.</p>
3 5 6	OUT 1 OUT 2 OUT 3 (Output)	1.8V	<p>The diagram shows a simple output stage consisting of a transistor. The emitter is connected to ground. The collector is connected to a supply rail. The base is connected to an input signal. The output terminal 'OUT' is taken from the emitter-follower configuration.</p>
13	V+	5V	
15 4 10	GND 1 GND 2 GND 3		

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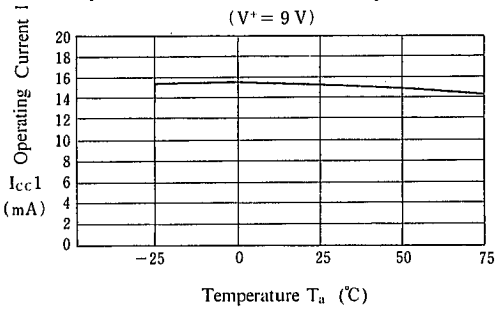
## ■ TEST CIRCUIT



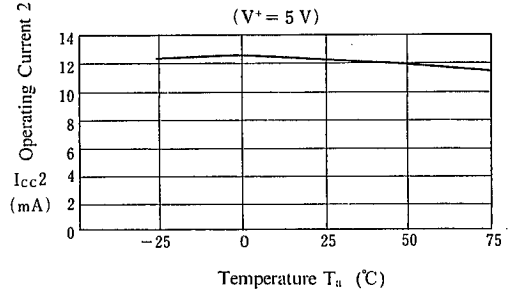
Parameter	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	Test Part
I <sub>cc1</sub>	1	1	1	1	1	1	1	1	V <sup>+</sup>
I <sub>cc2</sub>	1	1	1	1	1	1	1	1	
G <sub>v1</sub>	2	1	1	1	1	1	1	1	v <sub>0</sub>
G <sub>r1</sub>	2	1	1	1	1	1	1	1	
DG <sub>1</sub>	2	1	1	1	1	1	1	1	
DP <sub>1</sub>	2	1	1	1	1	1	1	1	
CT 1	2	1	1	1	1	1	2	1	v <sub>0</sub>
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 <sub>os1</sub>	1	1	1	1	1	1	1/2	1	V <sub>0</sub>
V <sub>c1</sub>	1/2	2/1	1	1	1	1	V <sub>c</sub>	1	V <sub>c</sub>
THD	2	1	1	1	1	1	1	1	v <sub>0</sub>

■ TYPICAL CHARACTERISTICS

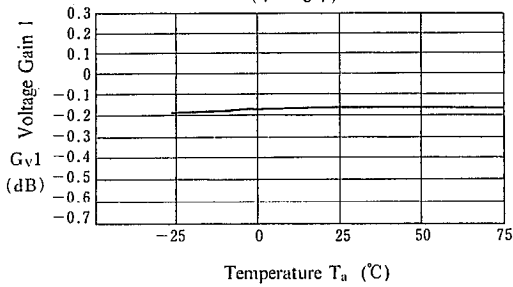
Operating Current 1 vs. Temperature  
( $V^+ = 9\text{ V}$ )



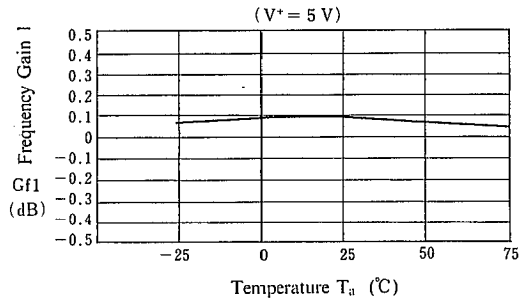
Operating Current 2 vs. Temperature  
( $V^+ = 5\text{ V}$ )



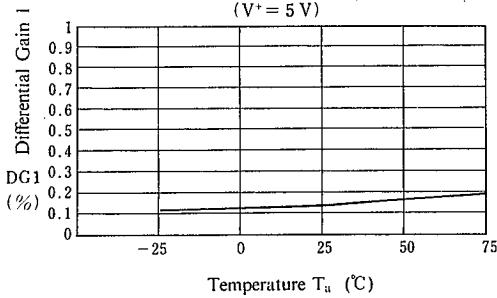
Voltage Gain 1 vs. Temperature  
( $V^+ = 5\text{ V}$ )



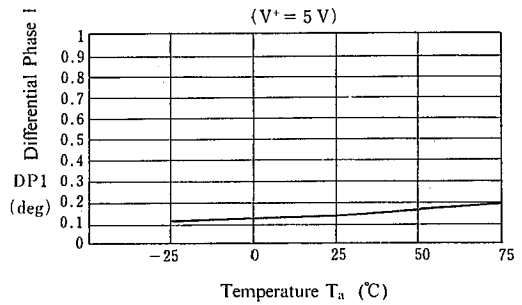
Frequency Gain 1 vs. Temperature  
( $V^+ = 5\text{ V}$ )



Differential Gain 1 vs. Temperature  
( $V^+ = 5\text{ V}$ )

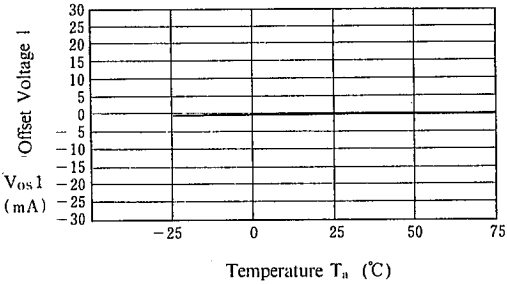


Differential Phase 1 vs. Temperature  
( $V^+ = 5\text{ V}$ )

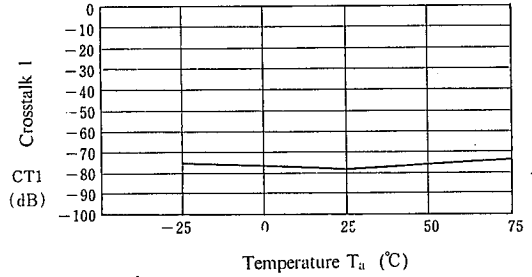


## ■ TYPICAL CHARACTERISTICS

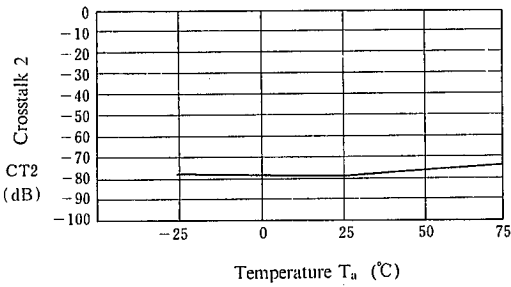
**Offset Voltage 1 vs. Temperature**  
( $V^+ = 5\text{ V}$ )



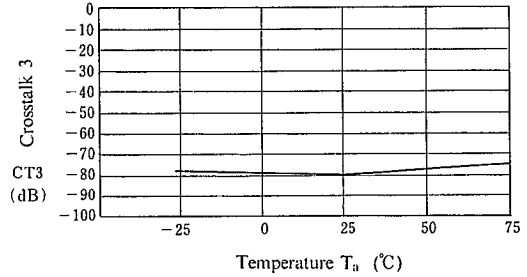
**Crosstalk 1 vs. Temperature**  
( $V^+ = 5\text{ V}$ )



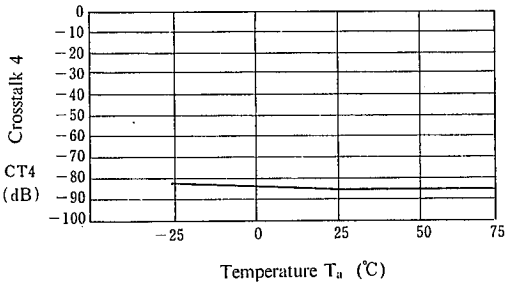
**Crosstalk 2 vs. Temperature**  
( $V^+ = 5\text{ V}$ )



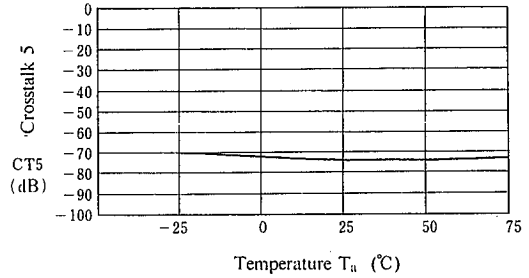
**Crosstalk 3 vs. Temperature**  
( $V^+ = 5\text{ V}$ )



**Crosstalk 4 vs. Temperature**  
( $V^+ = 5\text{ V}$ )



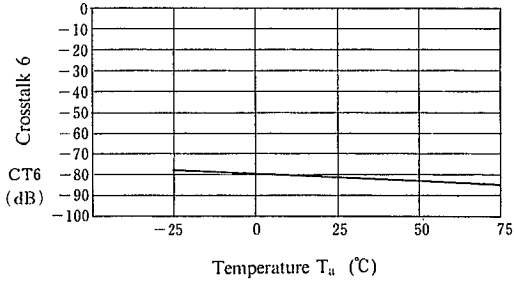
**Crosstalk 5 vs. Temperature**  
( $V^+ = 5\text{ V}$ )



■ TYPICAL CHARACTERISTICS

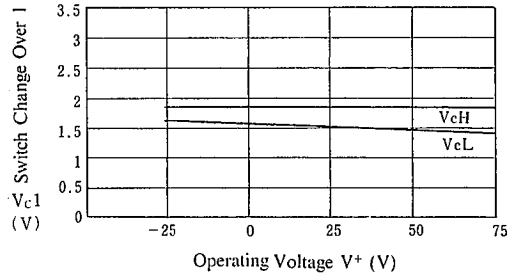
Crosstalk 6 vs. Temperature

( $V^+ = 5\text{ V}$ )



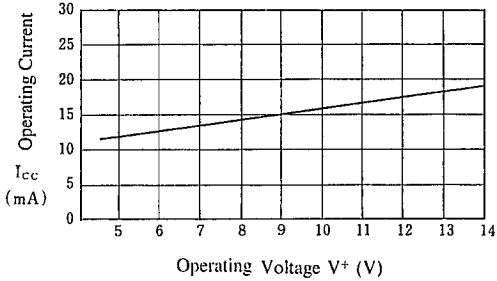
Switch Change Over 1 vs. Operating Voltage

( $V^+ = 5\text{ V}$ )



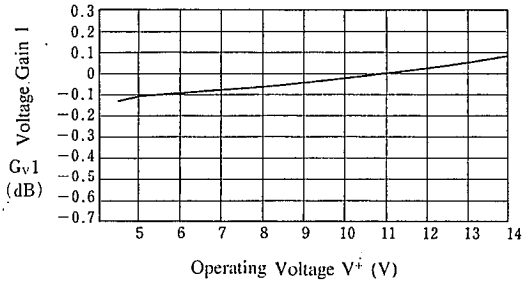
Operating Current vs. Operating Voltage

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



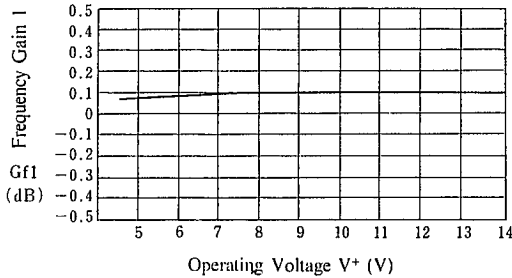
Voltage Gain 1 vs. Operating Voltage

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



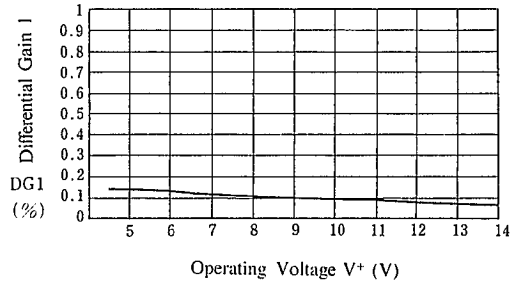
Frequency Gain 1 vs. Operating Voltage

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



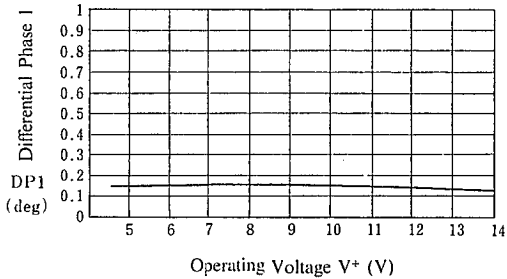
Differential Gain 1 vs. Operating Voltage

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

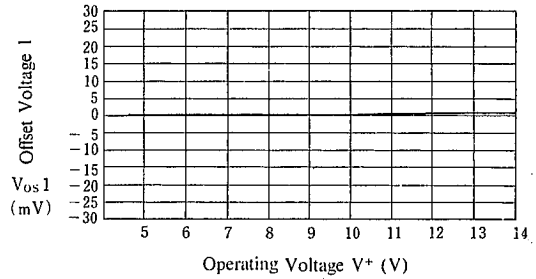


## ■ TYPICAL CHARACTERISTICS

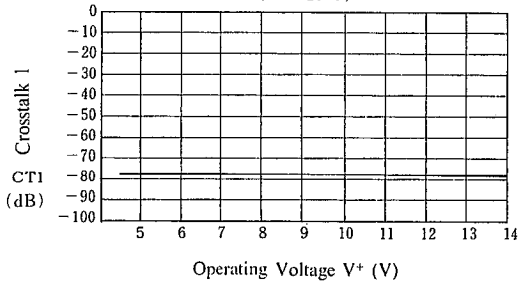
**Differential Phase 1 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



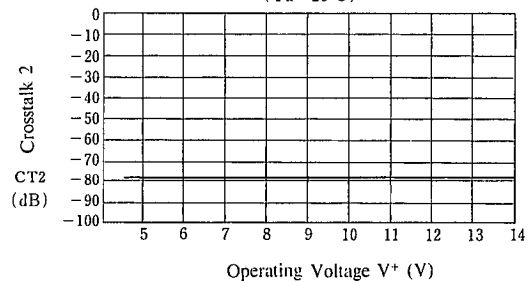
**Offset Voltage 1 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



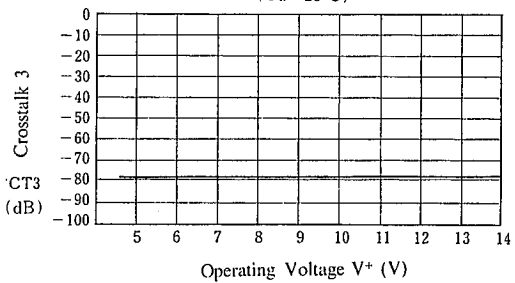
**Crosstalk 1 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



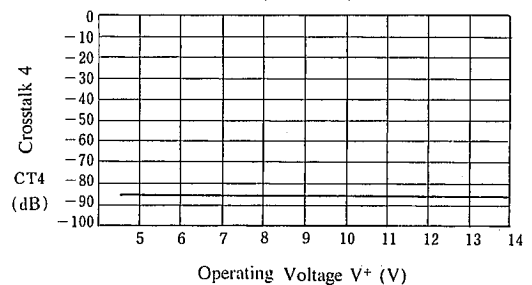
**Crosstalk 2 vs. Operating Voltage**  
( $T_a = 25^\circ\text{C}$ )



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



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

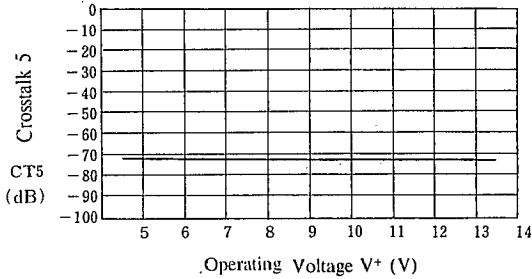


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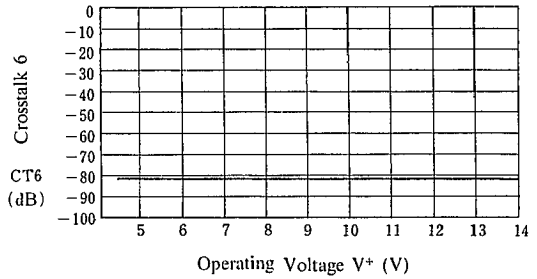


■ TYPICAL CHARACTERISTICS

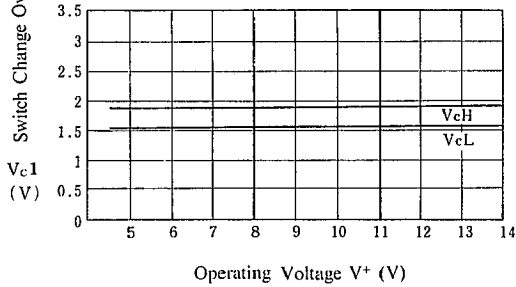
Crosstalk 5 vs. Operating Voltage  
( $T_a=25^\circ\text{C}$ )



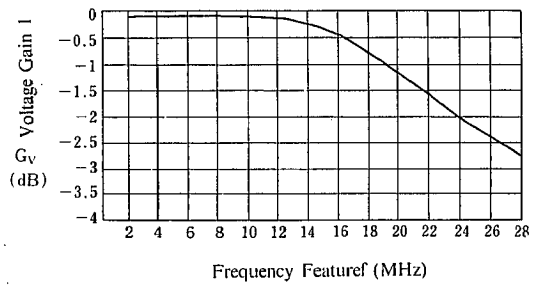
Crosstalk 6 vs. Operating Voltage  
( $T_a=25^\circ\text{C}$ )



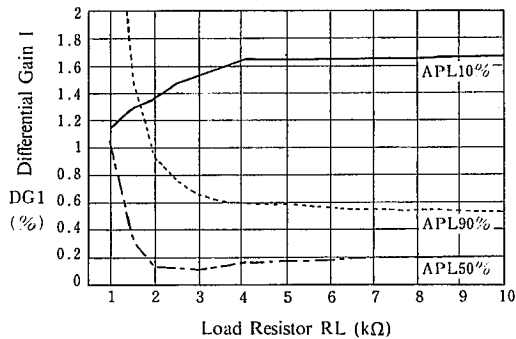
Switch Change Over 1 vs. Operating Voltage  
( $T_a=25^\circ\text{C}$ )



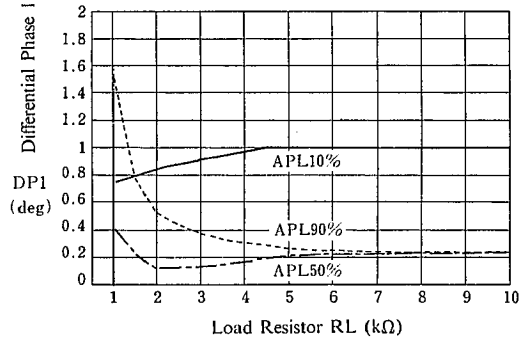
Voltage Gain 1 vs. Frequency Feature  
( $T_a=25^\circ\text{C}$ )



Differential Gain 1 vs. Load Resistor  
( $T_a=25^\circ\text{C}$ )

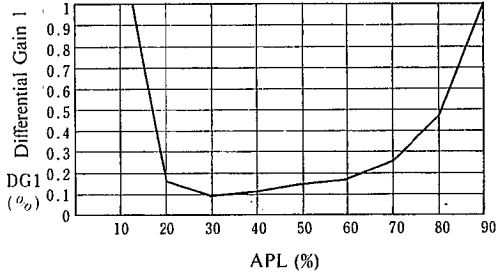


Differential Phase 1 vs. Load Resistor  
( $T_a=25^\circ\text{C}$ )

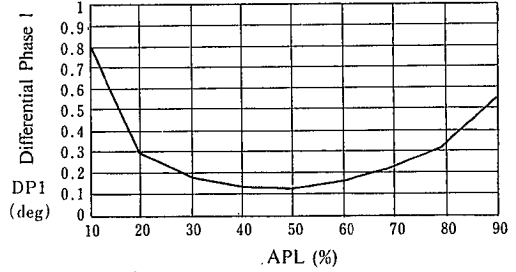


## ■ TYPICAL CHARACTERISTICS

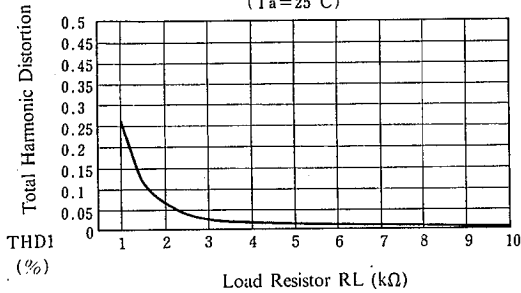
**Differential Gain 1 vs. APL**  
( $T_a = 25^\circ\text{C}$ )



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



**Total Harmonic Distortion vs. Load Resistor**  
( $T_a = 25^\circ\text{C}$ )



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## MEMO

[CAUTION]

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