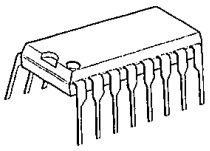
2-INPUT 3CHANNEL VIDEO SWITCH

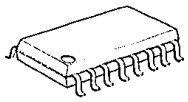
■ GENERAL DESCRIPTION

NJM2286 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. They are 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).

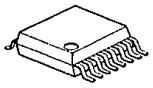
■ PACKAGE OUTLINE



NJM2286D



NJM2286M



NJM2286V

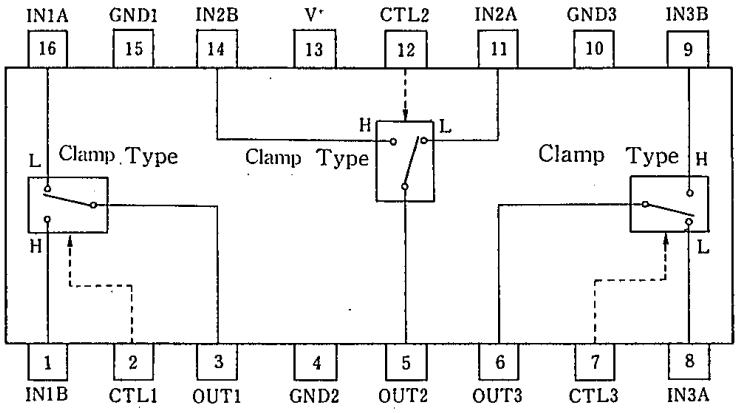
■ FEATURES

- 2 Input-1 Output Internalizing 3 Circuits (Clamp type).
- Wide Operating Voltage (4.75～13.0V)
- Crosstalk 75dB(at 4.43MHz)
- Wide Bandwidth Frequency Feature 10MHz($2V_{P-P}$ Input)
- Package Outline DIP16, DMP16, SSOP16
- Bipolar Technology

■ APPLICATIONS

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

■ BLOCK DIAGRAM



NJM2286D
NJM2286M

■ MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	14	V
Power Dissipation	P_D	(DIP16) 700	mW
		(DMP16) 350	mW
Operating Temperature Range	T_{opr}	−40～+85	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

(V^+=5V, Ta=25℃)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I_{CC1}	V^+=5V (Note1)	7.9	11.3	14.7	mA
Operating Current (2)	I_{CC2}	V^+=9V (Note1)	9.8	14.1	18.4	mA
Voltage Gain	G_V	V_I =100kHz, $2V_{P-P}$, V_O/V_I	−0.6	−0.1	+0.4	dB
Frequency Gain	G_F	V_I =$2V_{P-P}$, V_O(10MHz)/V_O(100kHz)	−1.0	0	+1.0	dB
Differential Gain	DG	V_I =$2V_{P-P}$, Standard Staircase Signal	—	0.3	—	%
Differential Phasa	DP	V_I =$2V_{P-P}$, Standard Staircase Signal	—	0.3	—	deg
Output Offset Voltage	V_{OS}	(Note2)	−15	0	+15	mV
Crosstalk	CT	V_I =$2V_{P-P}$, 4.43MHz, V_O/V_I	—	−75	—	dB
Switch Change Over Voltage	V_{CH}	All inside Switch ON	2.5	—	—	V
Switch Change Over Voltage	V_{CL}	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

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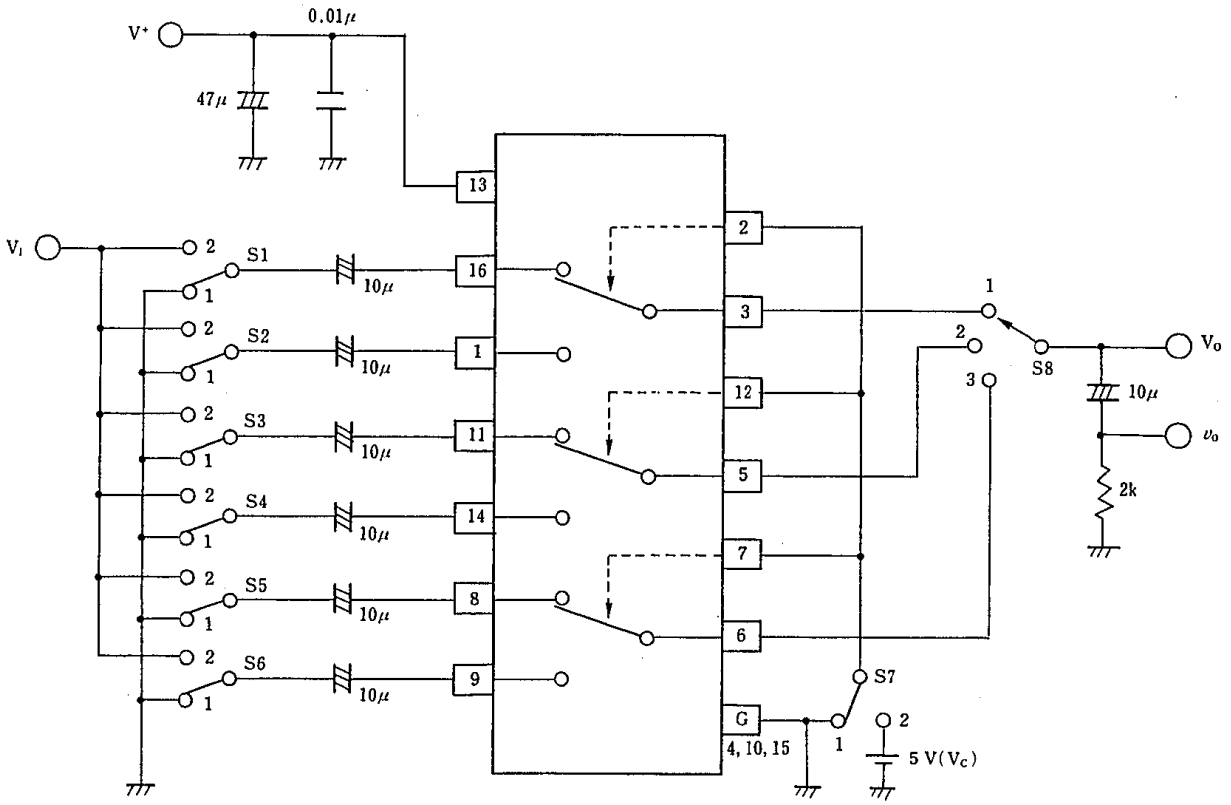
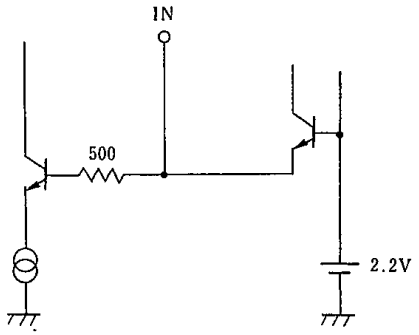
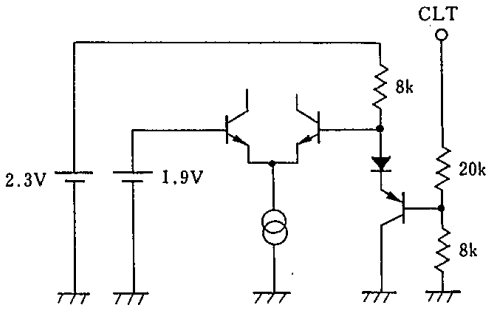
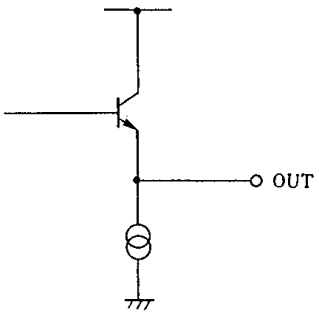
■ TEST CIRCUIT



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

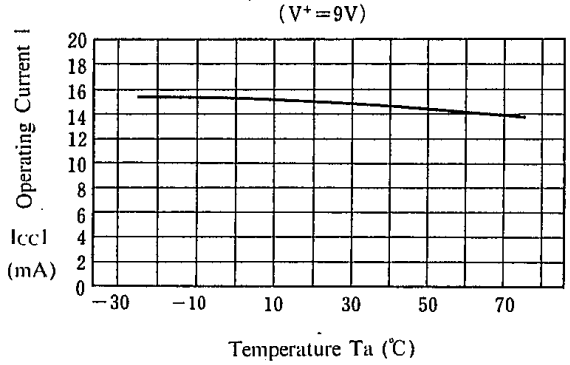
PARAMETER	S1	S2	S3	S4	S5	S6	S7	S8	TEST PART
I_{CC1}	1	1	1	1	1	1	1	1	V^+
I_{CC2}	1	1	1	1	1	1	1	1	
G_{v1}	2	1	1	1	1	1	1	1	v_0
G_{f1}	2	1	1	1	1	1	1	1	
DG_1	2	1	1	1	1	1	1	1	
DP_1	2	1	1	1	1	1	1	1	
CT1	2	1	1	1	1	1	2	1	v_0
CT2	1	2	1	1	1	1	1	1	
CT3	1	1	2	1	1	1	2	2	
CT4	1	1	1	2	1	1	1	2	
CT5	1	1	1	1	2	1	2	3	
CT6	1	1	1	1	1	2	1	3	
V_{OS1}	1	1	1	1	1	1	1/2	1	Vo
V_{C1}	1/2	2/1	1	1	1	1	Vc	1	Vc
THD	2	1	1	1	1	1	1	1	v_0

■ TERMINAL EXPLANATION

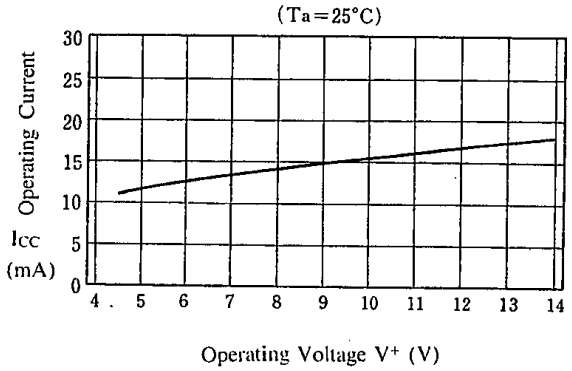
PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1 11 14 8 9	IN 1 A IN 1 B IN 2 A IN 2 B IN 3 A IN 3 B (Input)	1.5V	
2 12 7	CTL 1 CTL 2 CTL 3 (Switching)		
3 5 6	OUT 1 OUT 2 OUT 3 (Output)	0.8V	
13	V+	5 V	
15 4 10	GND 1 GND 2 GND 3		

■ TYPICAL CHARACTERISTICS

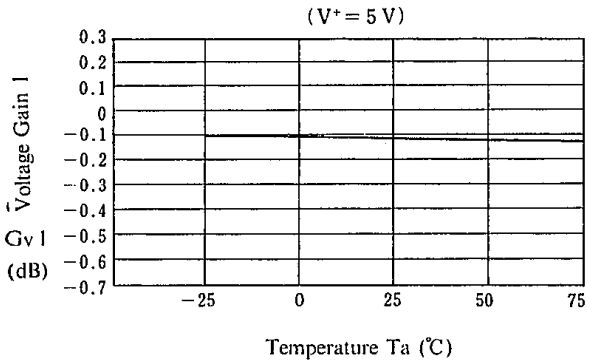
Operating Current 1 vs. Temperature



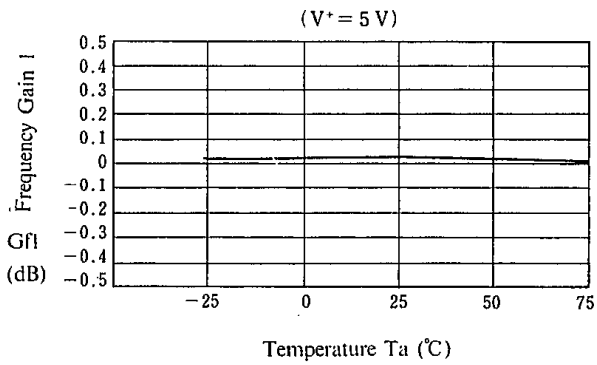
Operating Current vs. Operating Voltage



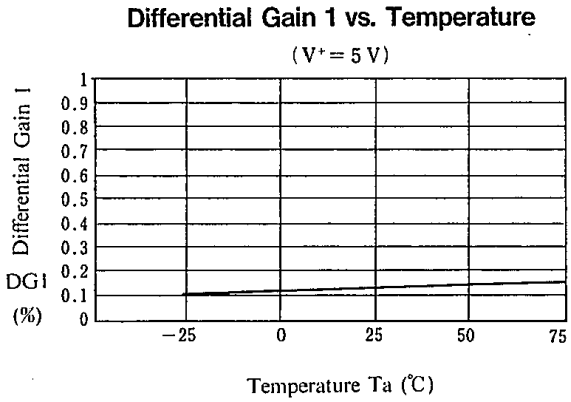
Voltage Gain 1 vs. Temperature



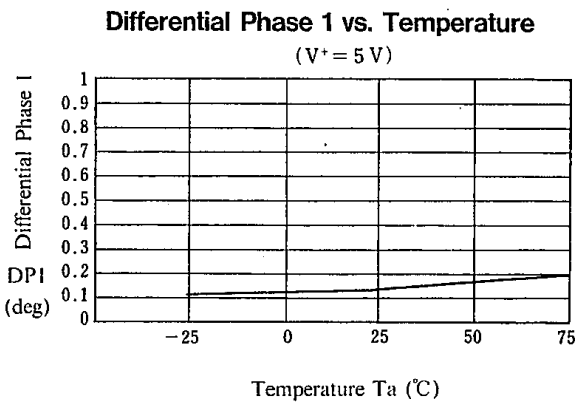
Frequency Gain 1 vs. Temperature



Differential Gain 1 vs. Temperature

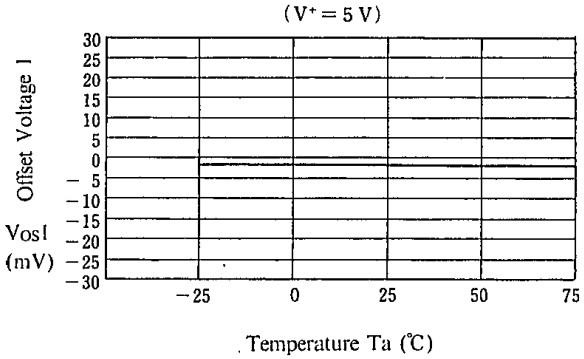


Differential Phase 1 vs. Temperature

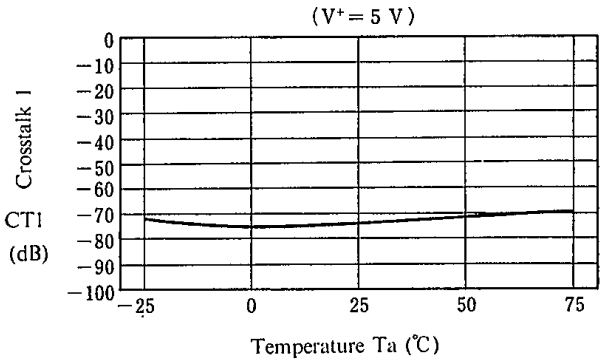


■ TYPICAL CHARACTERISTICS

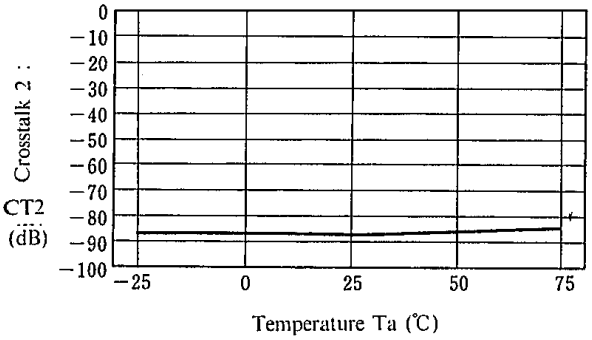
Offset Voltage vs. Temperature



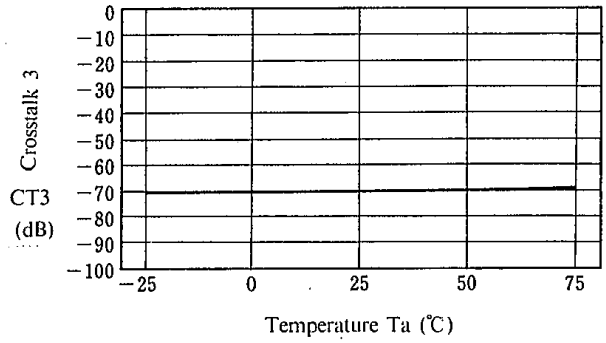
Crosstalk 1 vs. Temperature



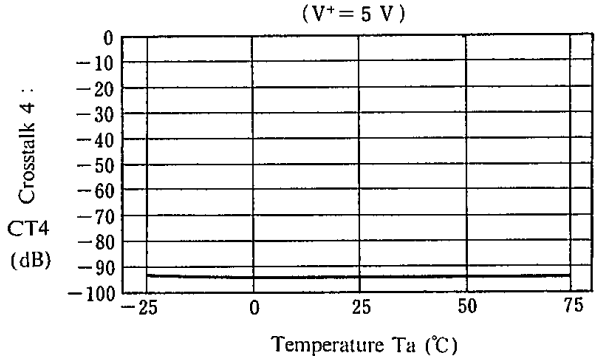
Crosstalk 2 vs. Temperature



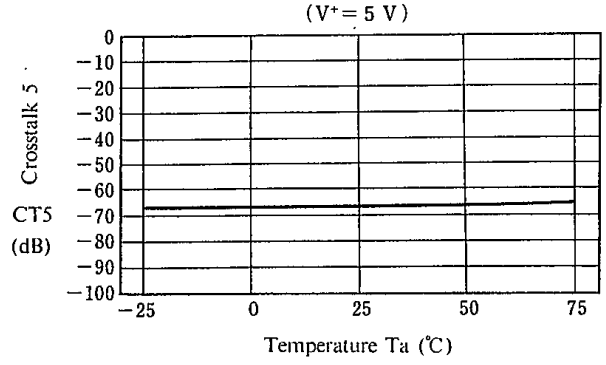
Crosstalk 3 vs. Temperature



Crosstalk 4 vs. Temperature

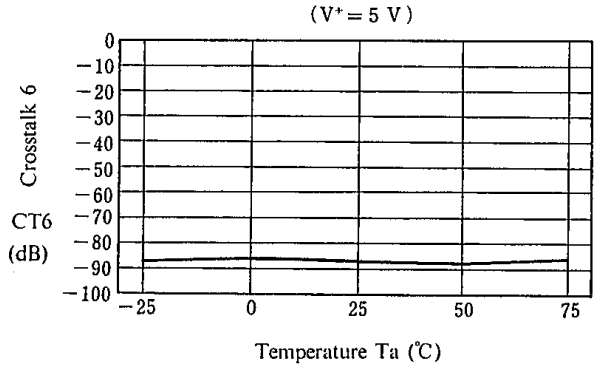


Crosstalk 5 vs. Temperature

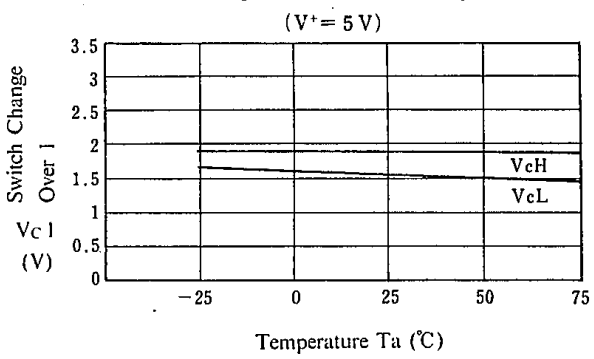


■ TYPICAL CHARACTERISTICS

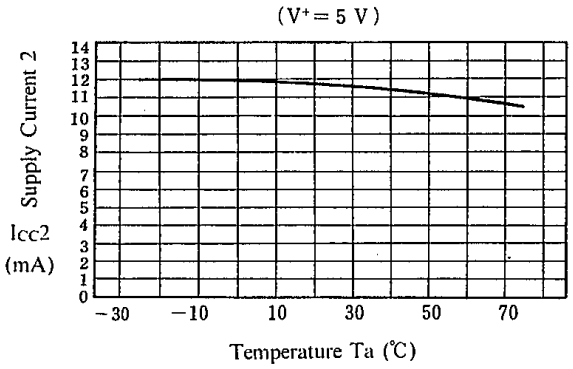
Crosstalk 6 vs. Temperature



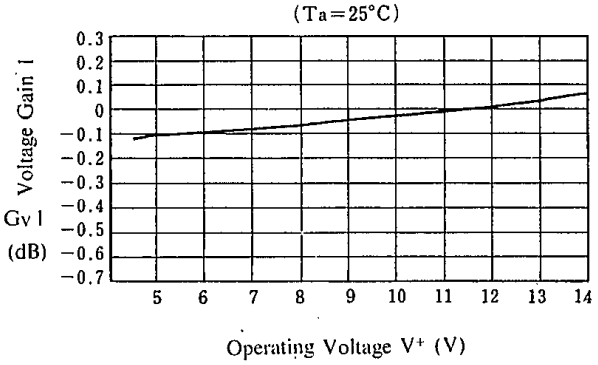
Switch Change Over 1 vs. Temperature



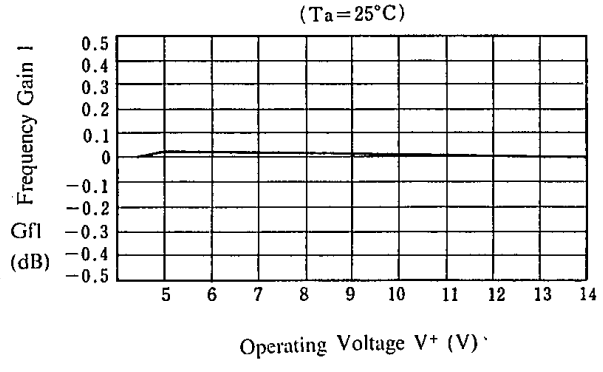
Supply Current 2 vs. Temperature



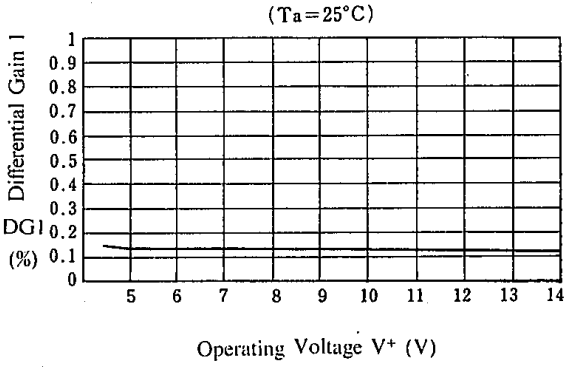
Voltage Gain 1 vs. Operating Voltage



Frequency Gain 1 vs. Operating Voltage



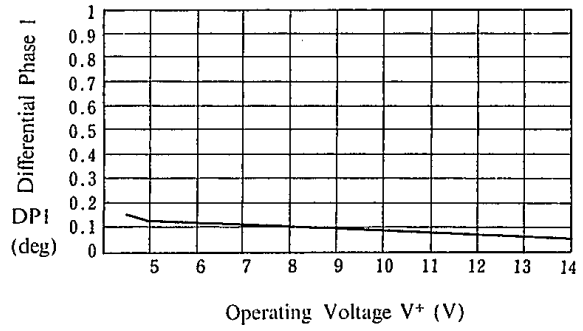
Differential Gain 1 vs. Operating Voltage



■ TYPICAL CHARACTERISTICS

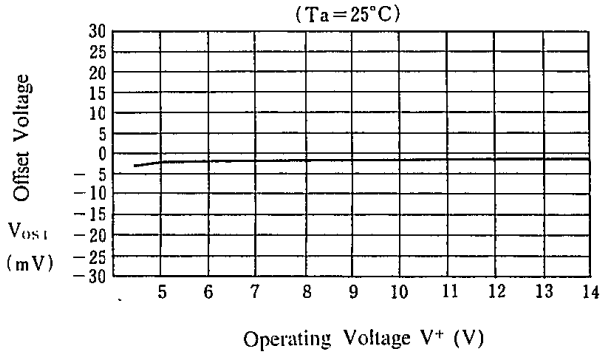
Differential Phase 1 vs. Operating Voltage

(Ta=25°C)



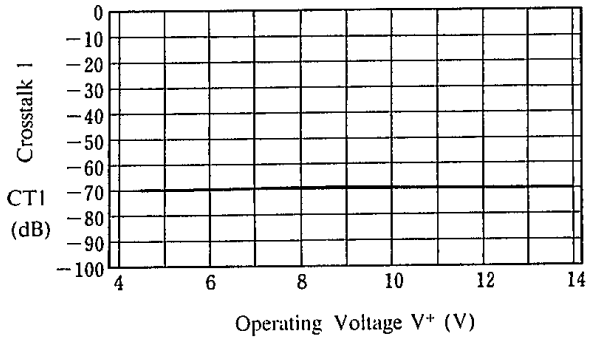
Offset Voltage 1 vs. Operating Voltage

(Ta=25°C)



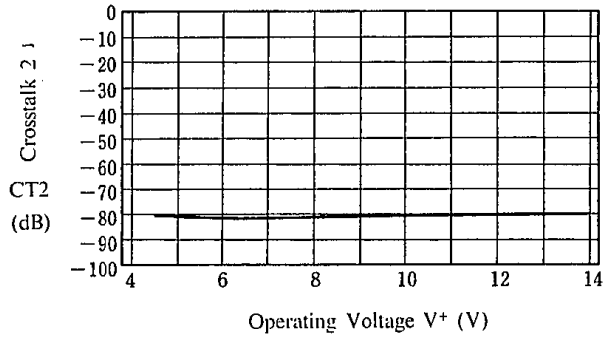
Crosstalk 1 vs. Operating Voltage

(Ta=25°C)



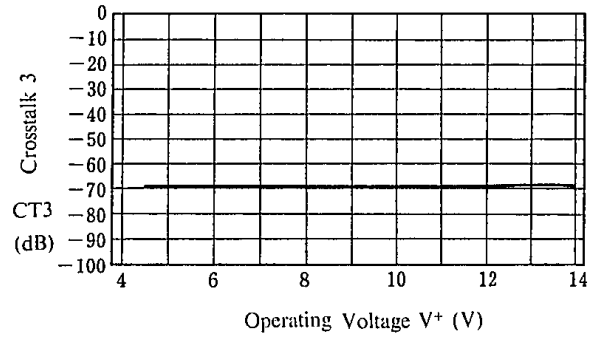
Crosstalk 2 vs. Operating Voltage

(Ta=25°C)



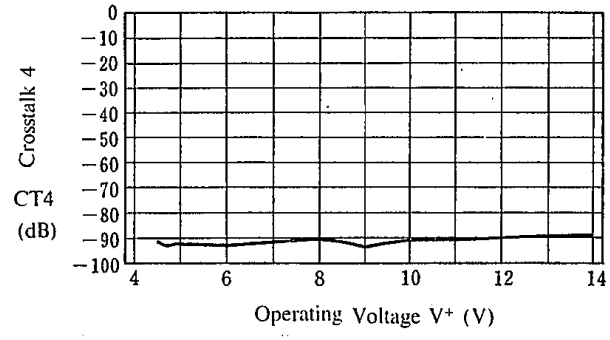
Crosstalk 3 vs. Operating Voltage

(Ta=25°C)



Crosstalk 4 vs. Operating Voltage

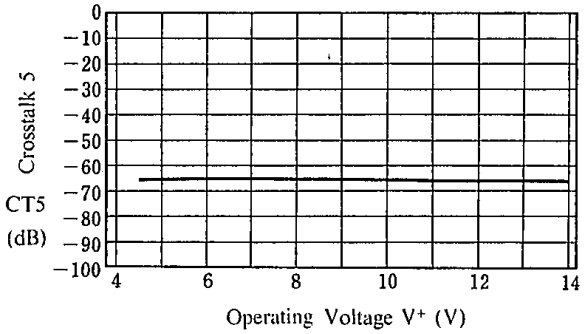
(Ta=25°C)



■ TYPICAL CHARACTERISTICS

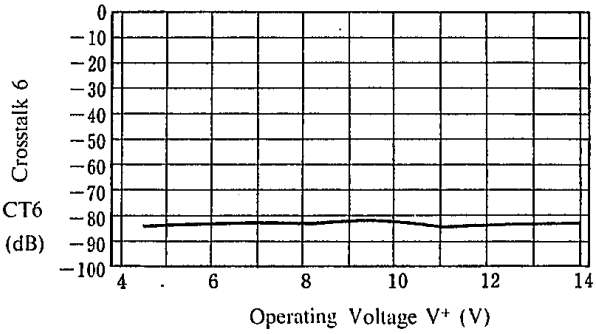
Crosstalk 5 vs. Operating Voltage

(Ta=25°C)



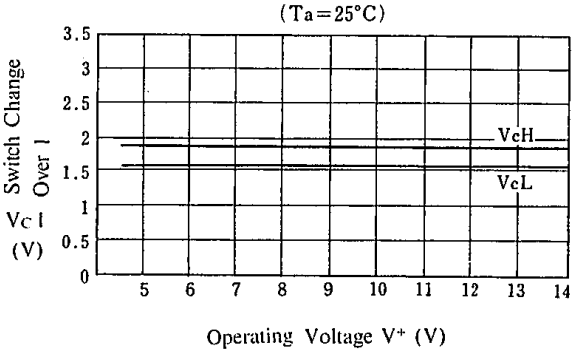
Crosstalk 6 vs. Operating Voltage

(Ta=25°C)



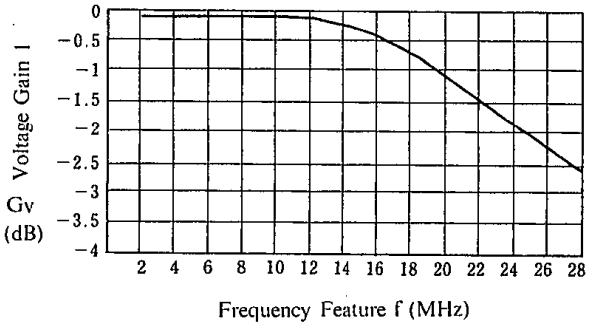
Switch Change Over 1 vs. Operating Voltage

(Ta=25°C)



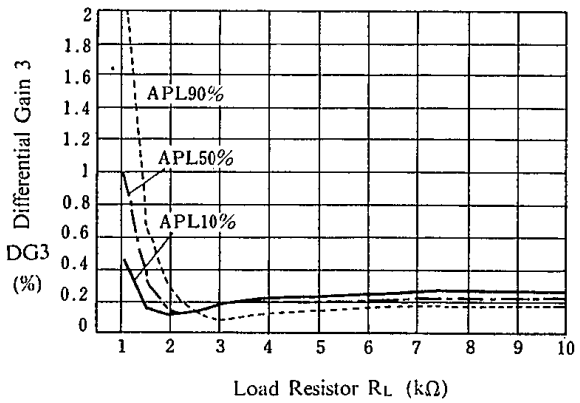
Voltage Gain 1 vs. Frequency Feature

(Ta=25°C)



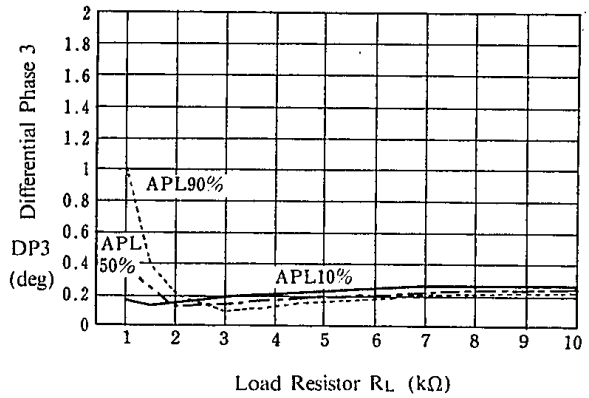
Differential Gain 3 vs. Load Resistor

(Ta=25°C)



Differential Phase 3 vs. Load Resistor

(Ta=25°C)



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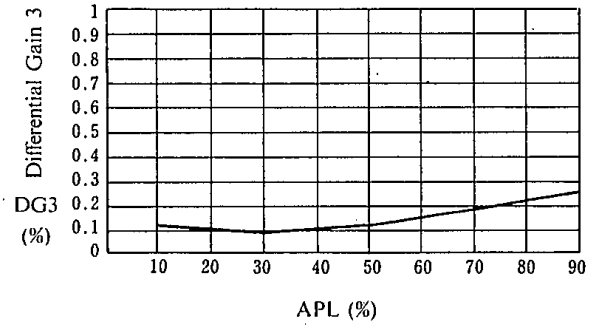
■ TYPICAL CHARACTERISTICS

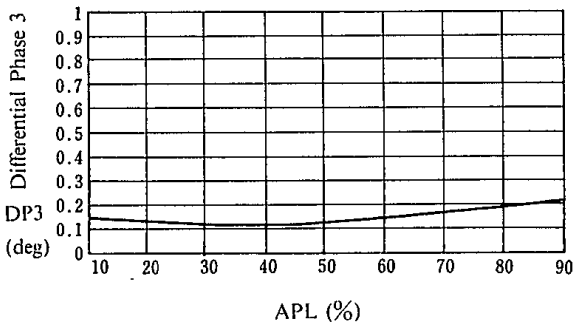
Differential Gain 3 vs. APL

(Ta=25°C)



Differential Phase 3 vs. APL

(Ta=25°C)



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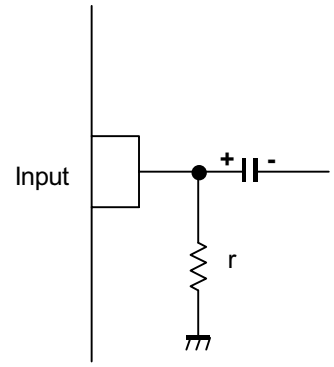
■APPLICATION

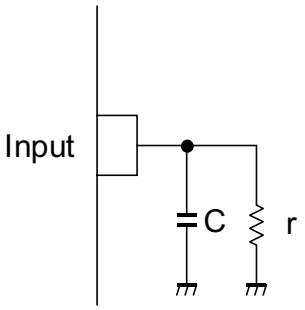
This IC requires 1MΩ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



C ≅ 10uF

r ≅ 1MΩ

This IC requires 0.1uF capacitor between INPUT and GND, 1MΩ resistance between INPUT and GND for clamp type input at mute mode.



C ≅ 0.1uF

r ≅ 1MΩ