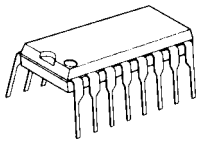
2-INPUT 3CHANNEL VIDEO SWITCH

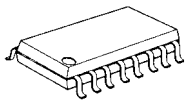
■ GENERAL DESCRIPTION

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).

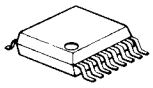
■ PACKAGE OUTLINE



NJM2286D



NJM2286M



NJM2286V

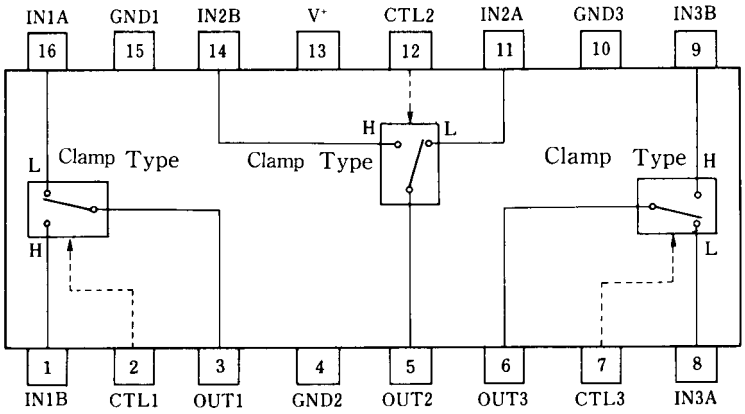
■ FEATURES

- 2 Input-1 Output Internalizing 3 Circuits (Clamp type).
- Wide Operating Voltage (4.75 to 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

(T_a = 25ºC)

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

■ ELECTRICAL CHARACTERISTICS

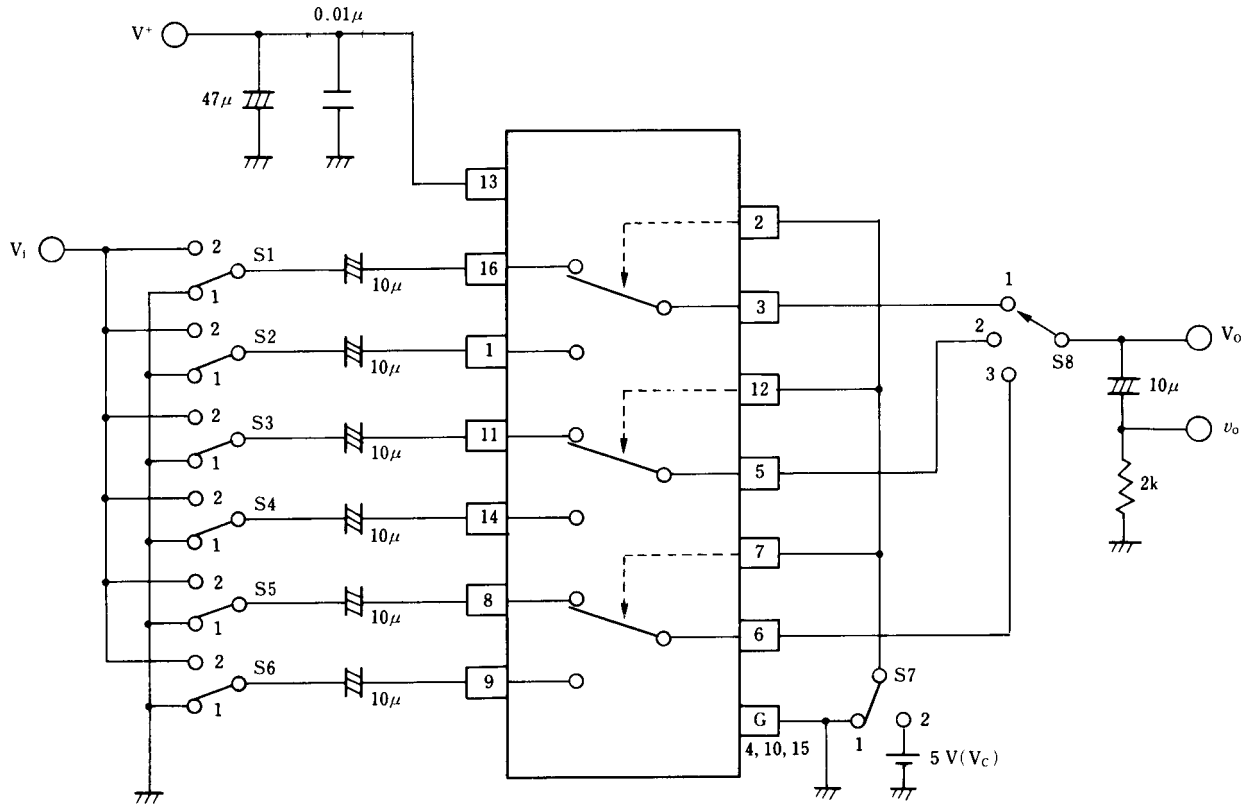
(V^+ = 5V, T_a = 25°C)

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

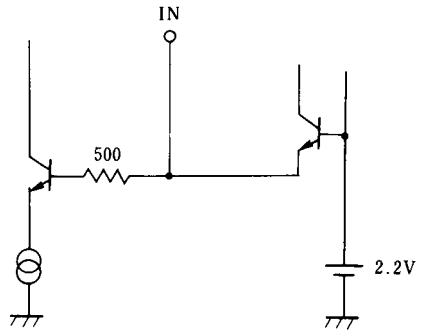
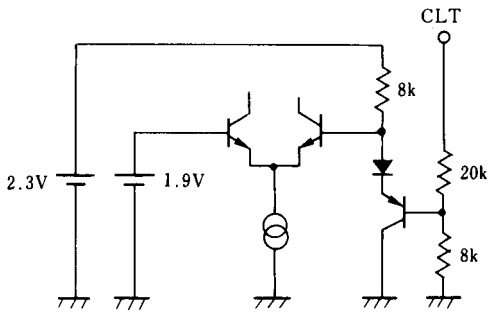
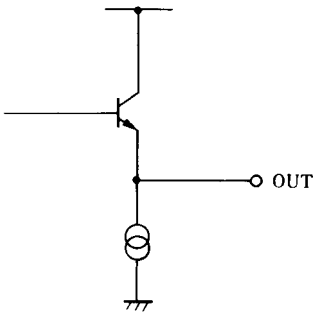
(Note2) S1 = S2 = S3 = S4 = S5 = S6 =1, S7= 1→2 Measure the output DC voltage difference

■ 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	
CT 1	2	1	1	1	1	1	2	1	v_o
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_{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

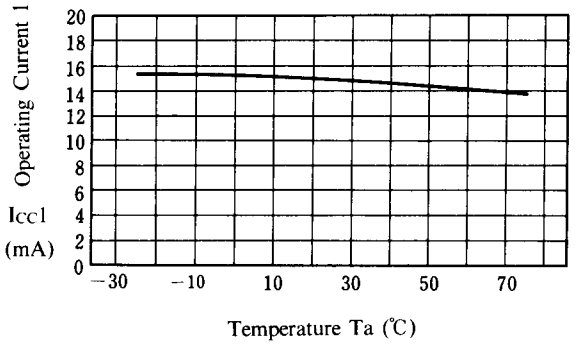
■ **TERMINLAL EXPLANATION**

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	OUT1 OUT2 OUT3 [Output]	0.8V	
13	V^+	5V	
15 4 10	GND 1 GND 2 GND 3		

■ TYPICAL CHARACTERISTICS

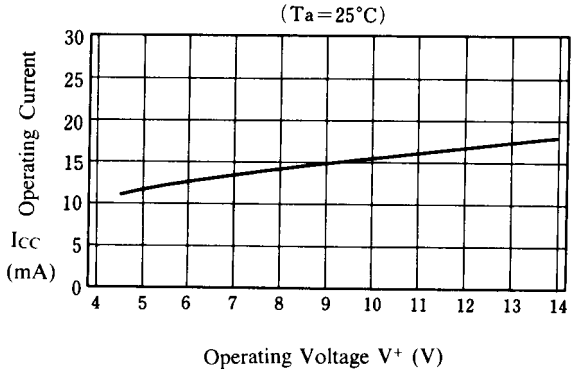
Operating Current 1 vs. Temperature

(V^+=9V)



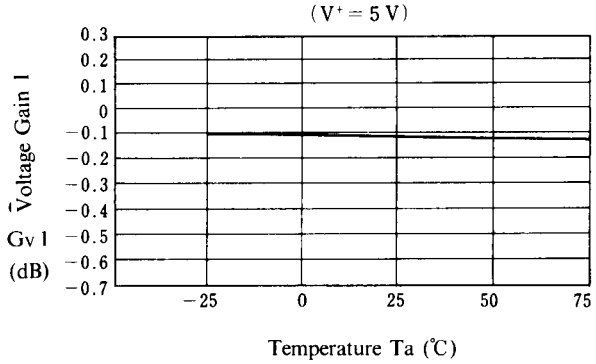
Operating Current vs. Operating Voltage

(Ta=25°C)



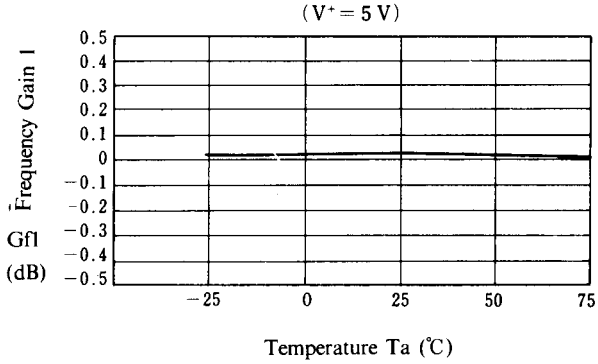
Voltage Gain 1 vs. Temperature

(V^+ = 5 V)



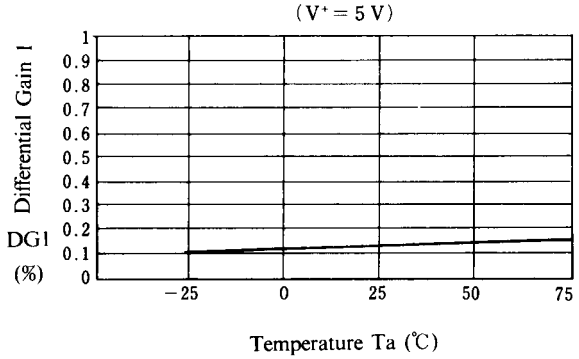
Frequency Gain 1 vs. Temperature

(V^+ = 5 V)



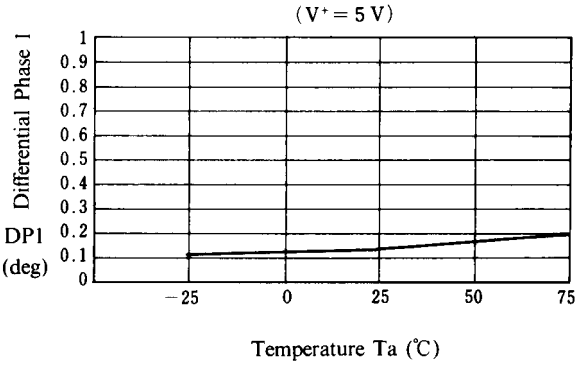
Differential Gain 1 vs. Temperature

(V^+ = 5 V)



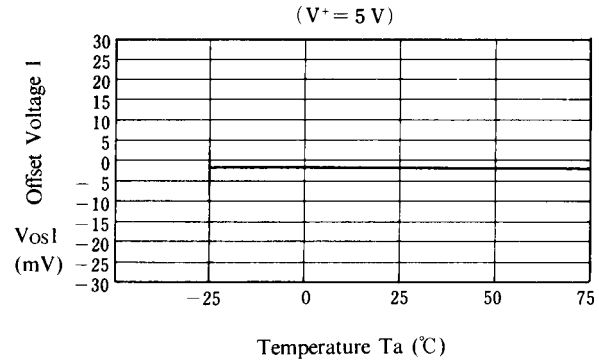
Differential Phase 1 vs. Temperature

(V^+ = 5 V)

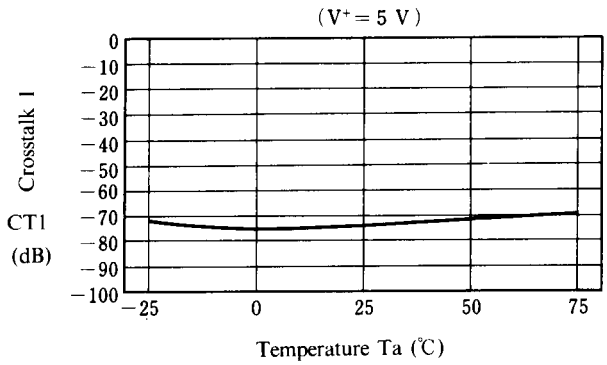


■ TYPICAL CHARACTERISTICS

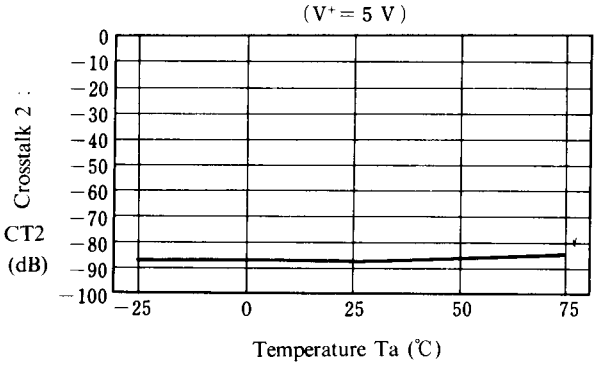
Offset Voltage vs. Temperature



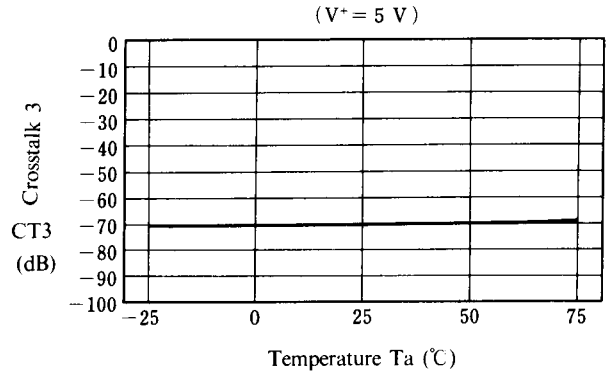
Crosstalk 1 vs. Temperature



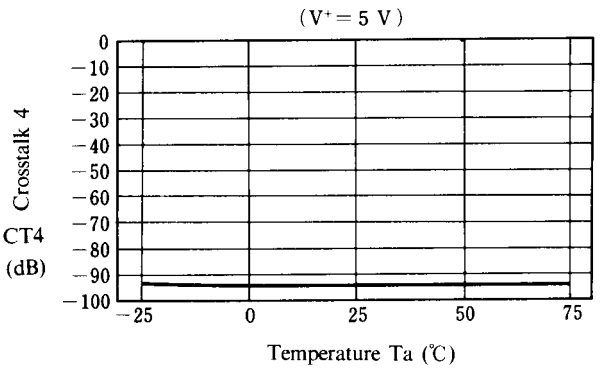
Crosstalk 2 vs. Temperature



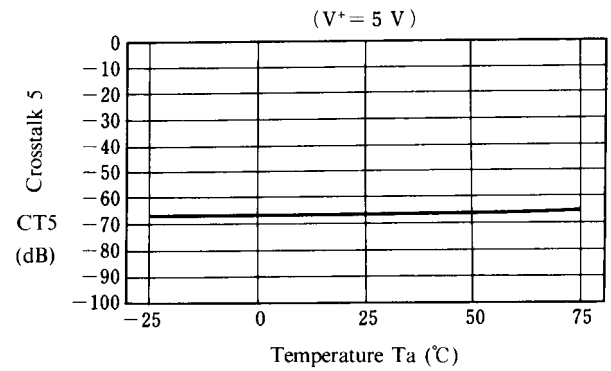
Crosstalk 3 vs. Temperature



Crosstalk 4 vs. Temperature

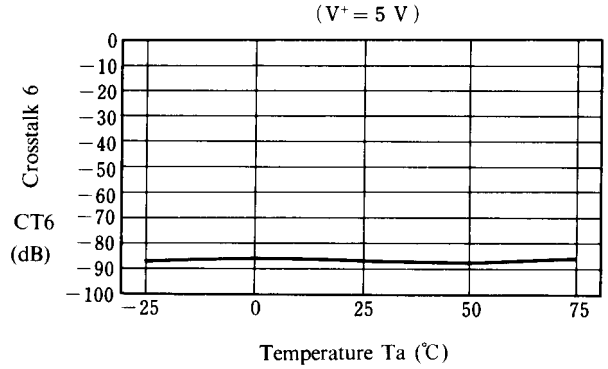


Crosstalk 5 vs. Temperature

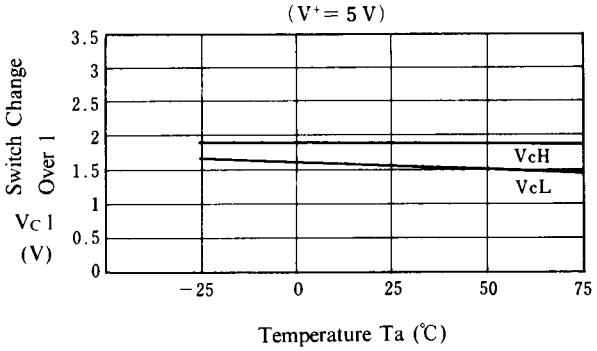


■ TYPICAL CHARACTERISTICS

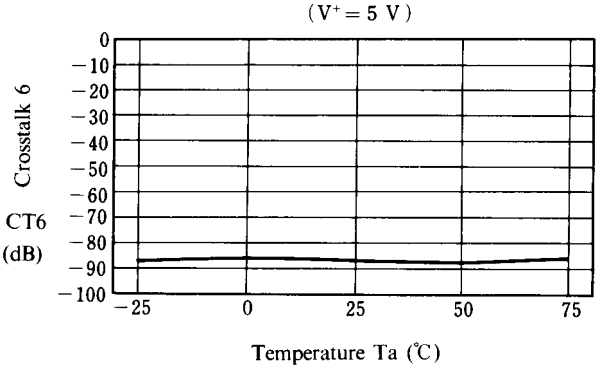
Crosstalk 6 vs. Temperature



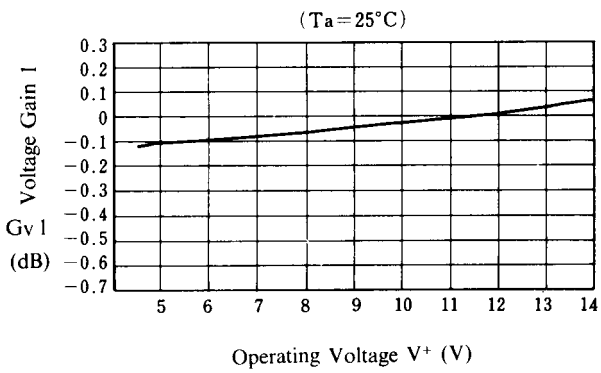
Switch Change Over 1 vs. Temperature



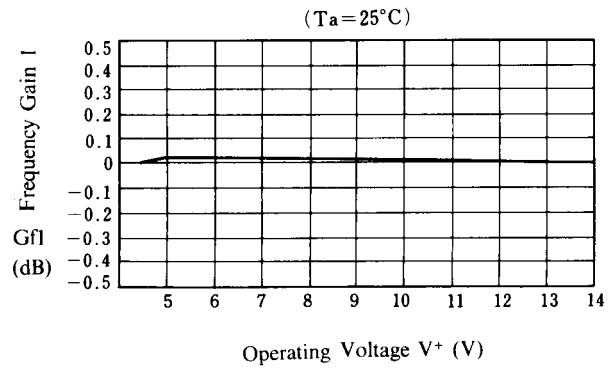
Supply Current 2 vs. Temperature



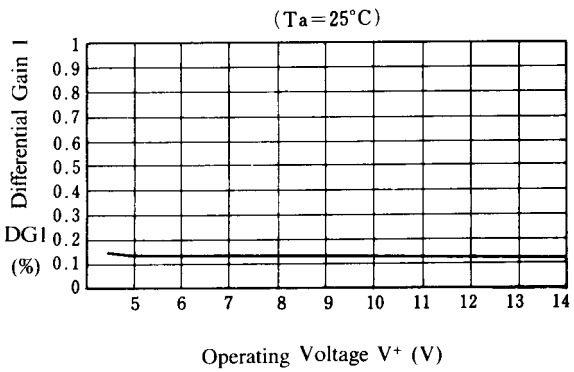
Voltage Gain 1 vs. Operating Voltage



Frequency Gain 1 vs. Operating Voltage

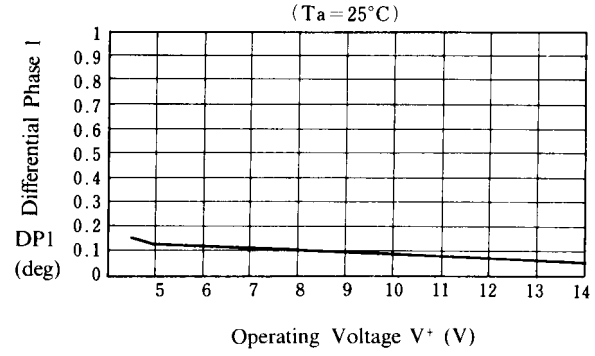


Differential Gain 1 vs. Operating Voltage

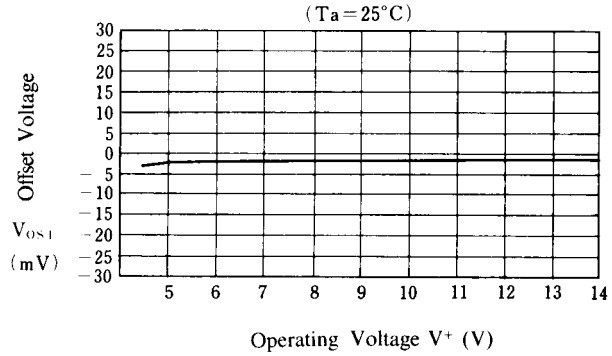


■ TYPICAL CHARACTERISTICS

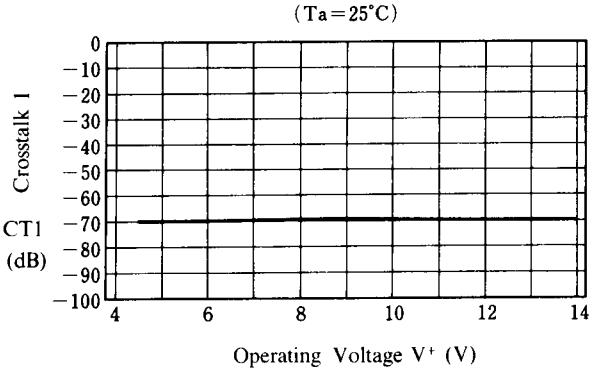
Differential Phase 1 vs. Operating Voltage



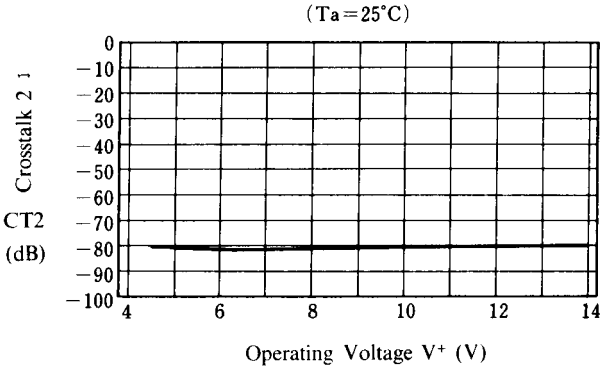
Offset Voltage 1 vs. Operating Voltage



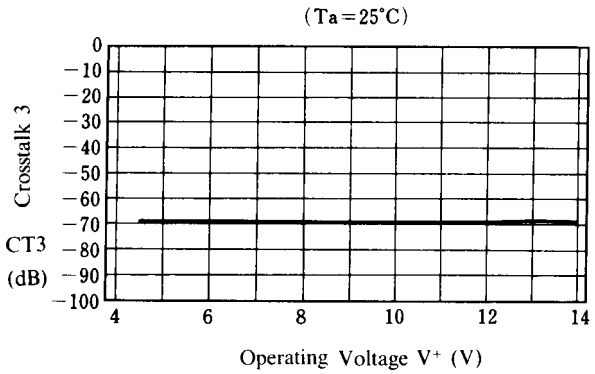
Crosstalk 1 vs. Operating Voltage



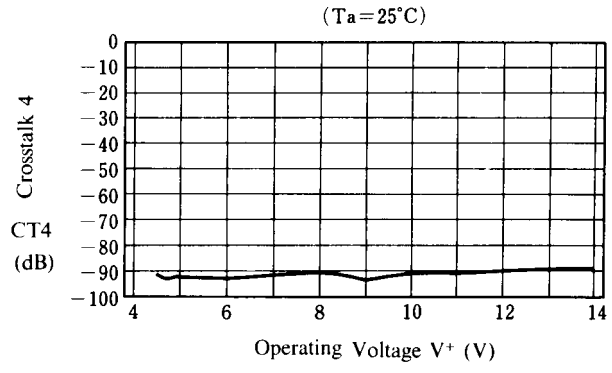
Crosstalk 2 vs. Operating Voltage



Crosstalk 3 vs. Operating Voltage



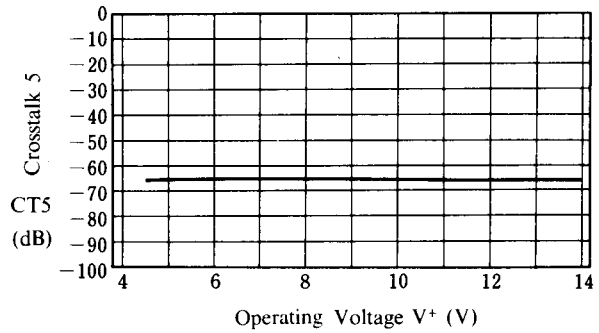
Crosstalk 4 vs. Operating Voltage



■ TYPICAL CHARACTERISTICS

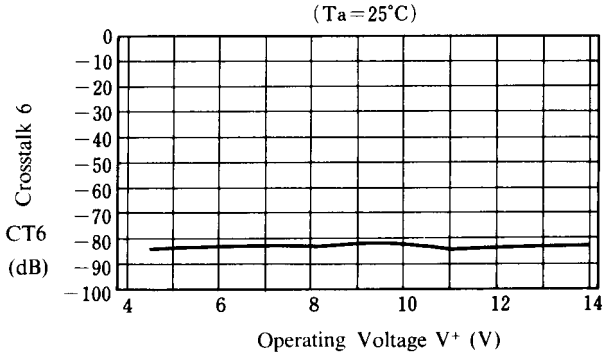
Crosstalk 5 vs. Operating Voltage

(Ta=25°C)



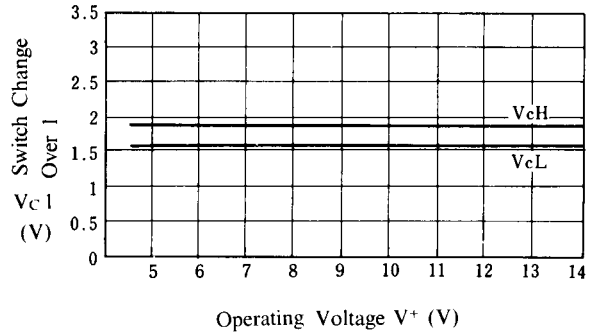
Crosstalk 6 vs. Operating Voltage

(Ta=25°C)



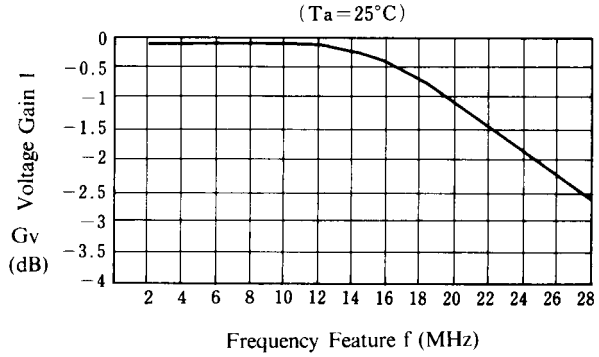
Switch Change Over 1 vs. Operating Voltage

(Ta=25°C)



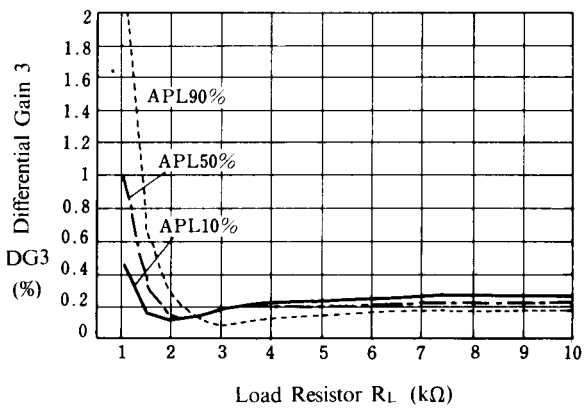
Voltage Gain 1 vs. Frequency Feature

(Ta=25°C)



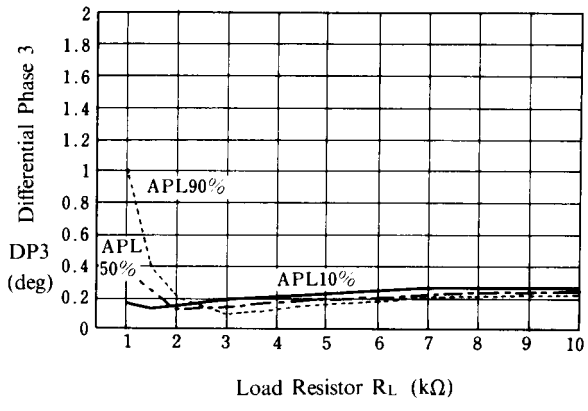
Differential Gain 3 vs. Load Resistor

(Ta=25°C)



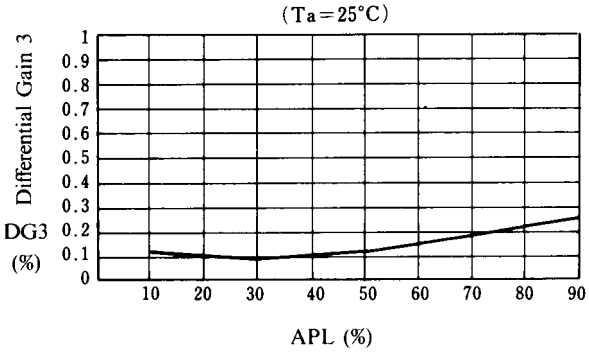
Differential Phase 3 vs. Load Resistor

(Ta=25°C)

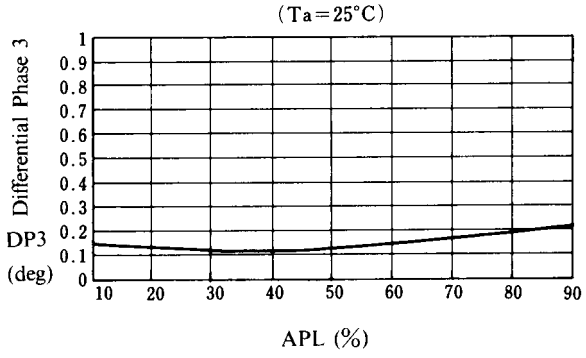


■ TYPICAL CHARACTERISTICS

Differential Gain 3 vs. APL

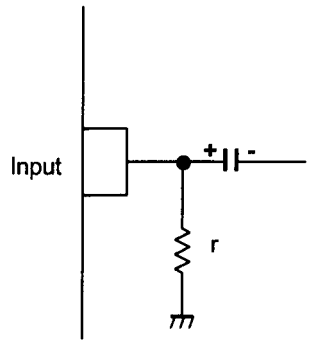


Differential Phase 3 vs. APL



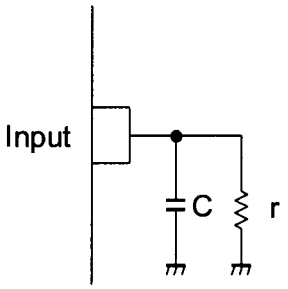
■ APPLICATION

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 0.1μF capacitor between INPUT and GND, 1MΩ resistance between INPUT and GND for clamp type input at mute mode.



C ≅ 0.1uF
r ≅ 1MΩ