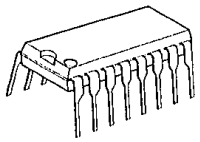
2-INPUT 3CHANNEL VIDEO SWITCH

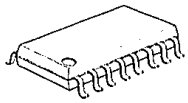
■ GENERAL DESCRIPTION

NJM2285 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. Two of them are Clamp type", and they can be operated while setting DC level fixed in position of the video signal. It is a higher efficiency video switch, featuring the operating supply voltage 5 to 12V, the frequency feature 10MHz, and then the crosstalk 75dB (at 4.43MHz).

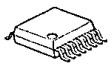
■ PACKAGE OUTLINE



NJM2285D



NJM2285M



NJM2285V

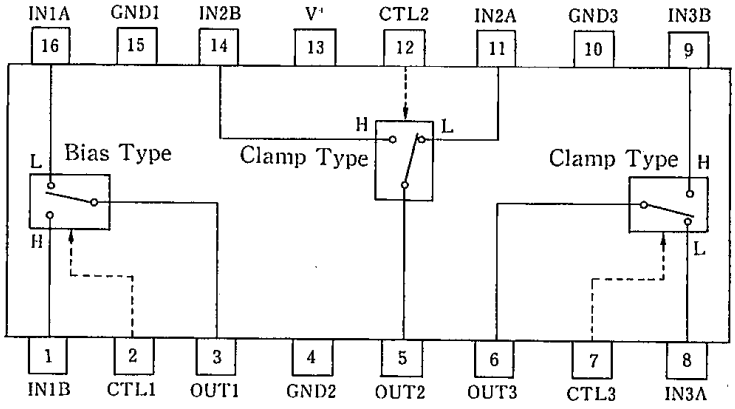
■ FEATURES

- 2 Input-1 Output
  Internalizing 3 Circuits (Two of them are Clamp type).
- Wide Operating Supply 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



NJM2285D
NJM2285M
NJM2285V

■ MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	14	V
Power Dissipation	P_D	(DIP16) 700	mW
		(DMP16) 350	mW
		(SSOP16) 300	mW
Operating Temperature Range	T_{opr}	−40～+85	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

(V^+=5V, Ta=25℃)

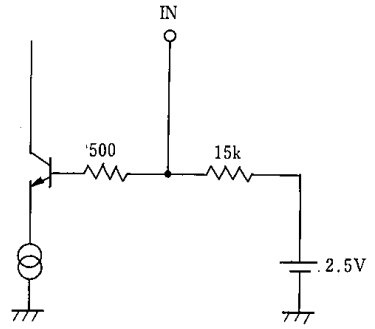
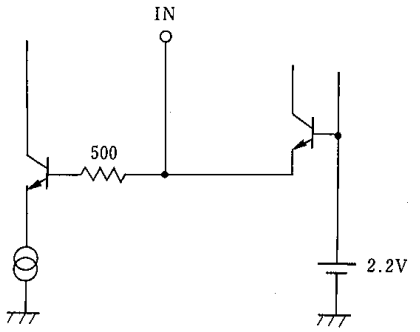
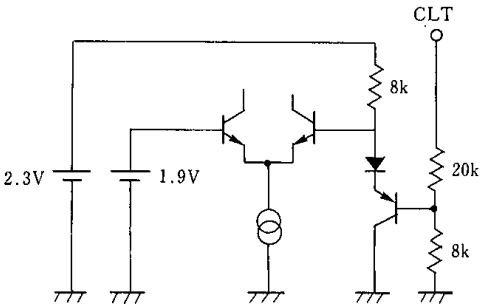
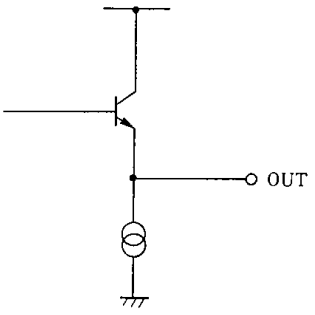
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I_{CC1}	V^+=5V (Note1)	8.0	11.4	14.8	mA
Operating Current (2)	I_{CC2}	V^+=9V (Note1)	10.0	14.3	18.6	mA
Voltage Gain	G_V	V_I =100kHz, $2V_{P-P}$, V_O/V_I	−0.6	−0.1	+0.4	dB
Frequency Gain	G_F	V_I =$2V_{P-P}$, V_O(10MHz)/V_O(100kHz)	−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)	−10	0	+10	mV
Crosstalk	CT	V_I =$2V_{P-P}$, 4.43MHz, V_O/V_I	—	−75	—	dB
Switch Change Over Voltage	V_{CH}	All inside Switches ON	2.5	—	—	V
Switch Change Over Voltage	V_{CL}	All inside Switches OFF	—	—	1.0	V

(Note1) S1=S2=S3=S4=S5=S6=S7=1

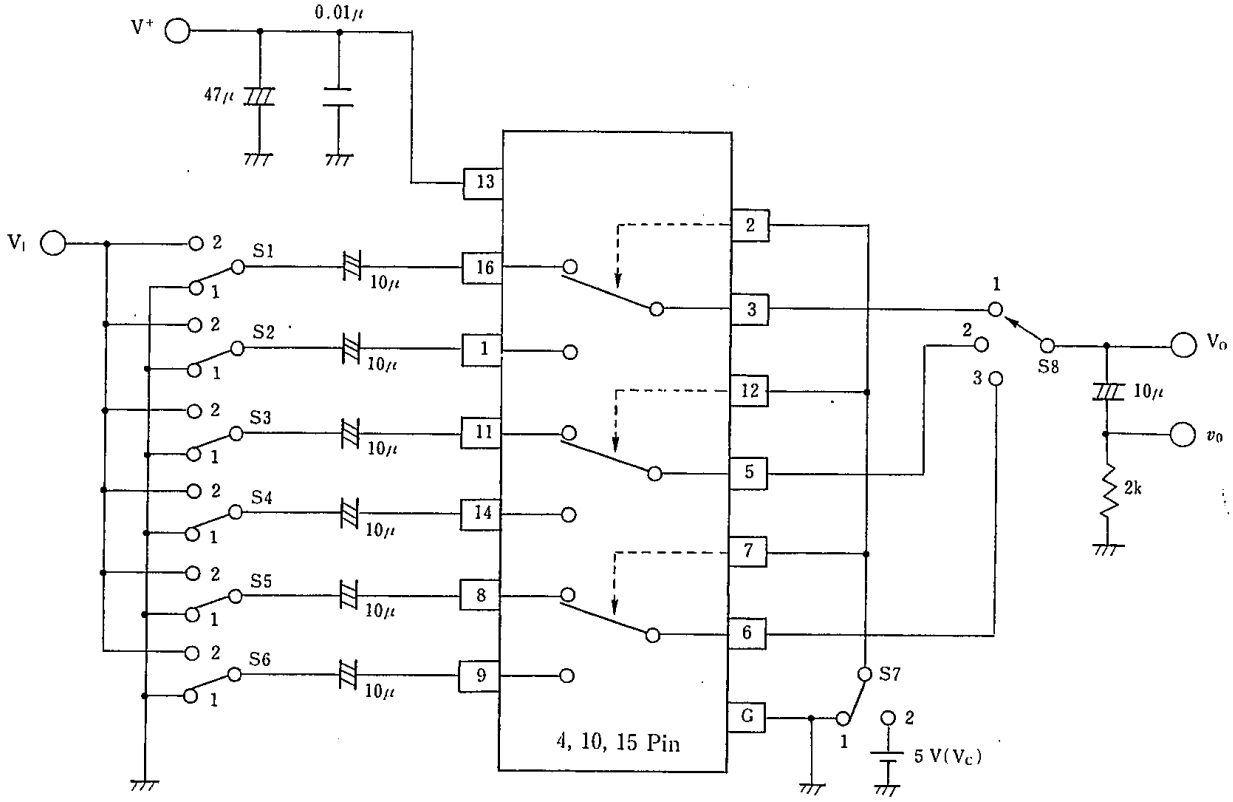
(Note2) S1=S2=S3=S4=S5=S6=1, S7=1→2 Measure the output DC voltage difference

5

■ TERMINAL EXPLANATION

PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1	IN 1 A IN 1 B 〔Input〕	2.5V	
11 14 8 9	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	OUT 1	1.8V	
5 6	OUT 2 OUT 3 〔Output〕	0.8 V	
13	V^+	5 V	
15 4 10	GND 1 GND 2 GND 3		

■ TEST CIRCUIT



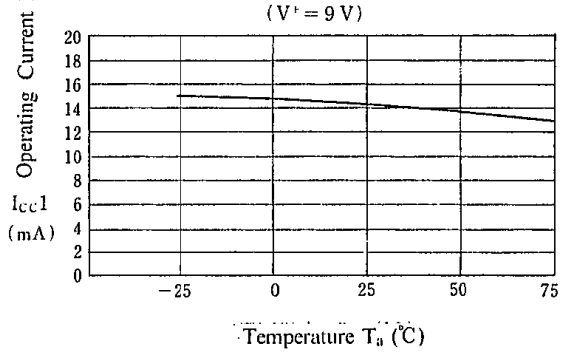
This IC requires 1MΩ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.

Parameter	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	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

■ TYPICAL CHARACTERISTICS

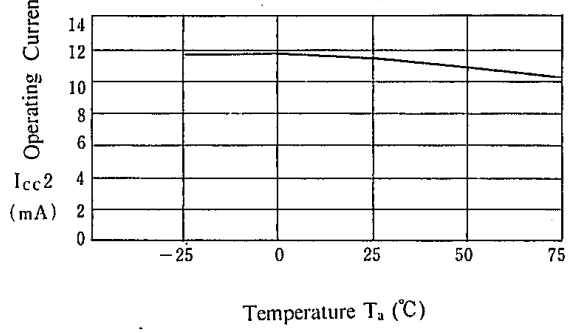
Operating Current 1 vs. Temperature

($V^+ = 9$ V)



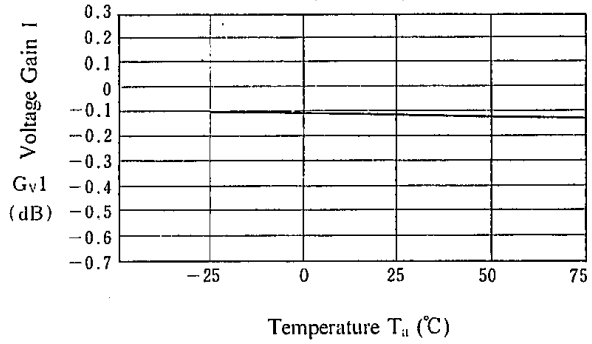
Operating Current 2 vs. Temperature

($V^+ = 5$ V)



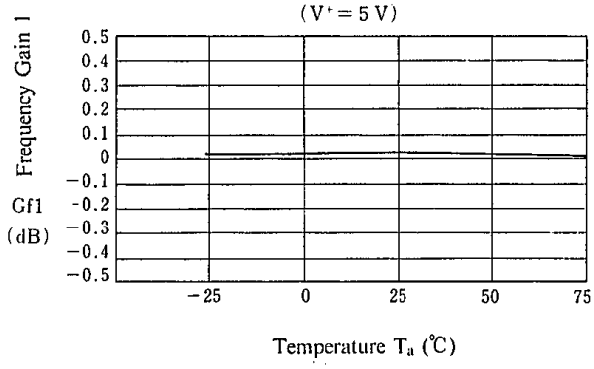
Voltage Gain 1 vs. Temperature

($V^+ = 5$ V)



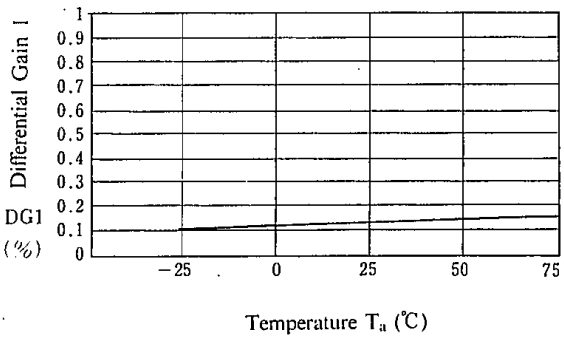
Frequency Gain 1 vs. Temperature

($V^+ = 5$ V)



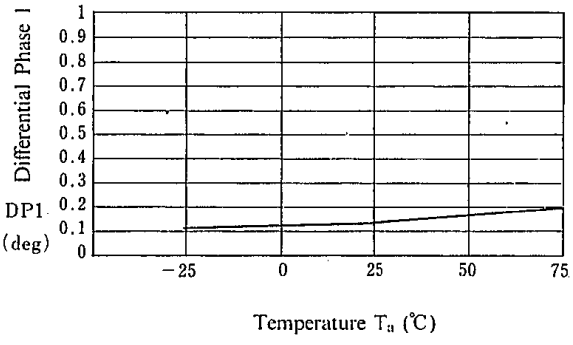
Differential Gain 1 vs. Temperature

($V^+ = 5$ V)



Differential Phase 1 vs. Temperature

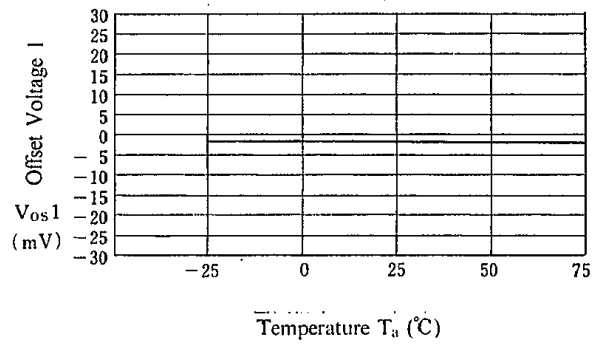
($V^+ = 5$ V)



■ TYPICAL CHARACTERISTICS

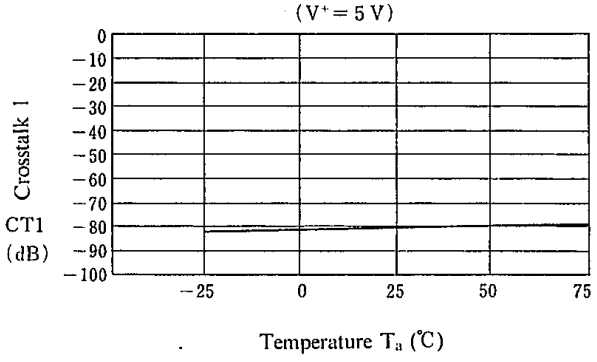
Offset Voltage 1 vs. Temperature

($V^+ = 5$ V)



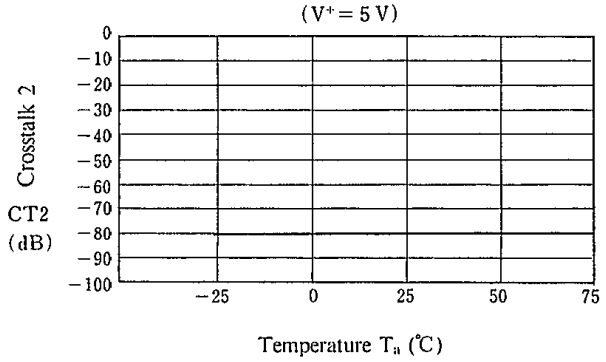
Crosstalk 1 vs. Temperature

($V^+ = 5$ V)



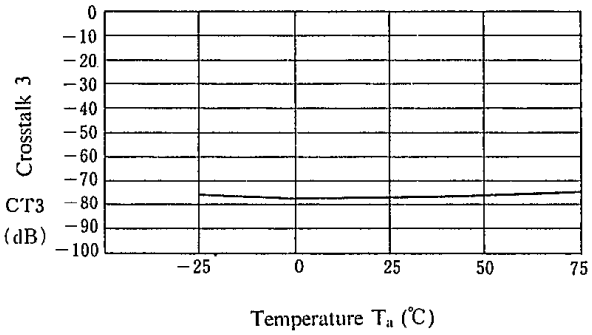
Crosstalk 2 vs. Temperature

($V^+ = 5$ V)



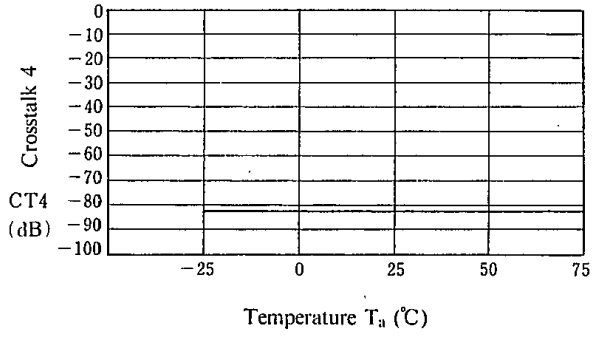
Crosstalk 3 vs. Temperature

($V^+ = 5$ V)



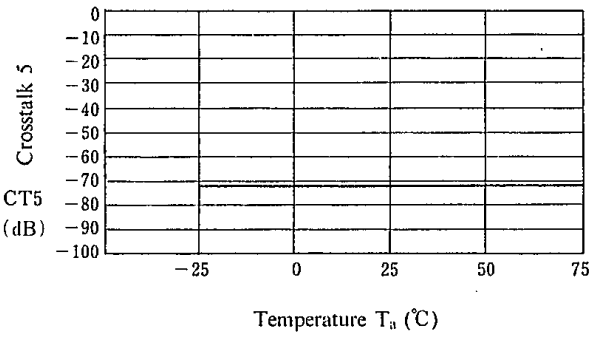
Crosstalk 4 vs. Temperature

($V^+ = 5$ V)



Crosstalk 5 vs. Temperature

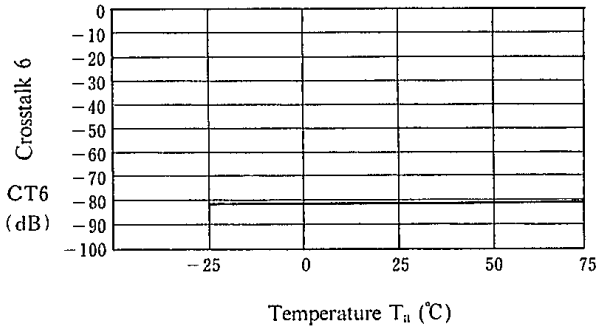
($V^+ = 5$ V)



■ TYPICAL CHARACTERISTICS

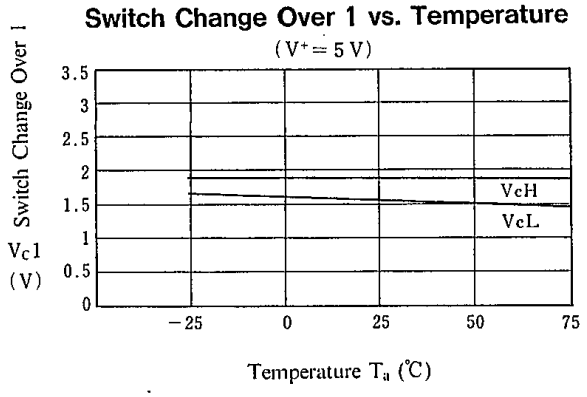
Crosstalk 6 vs. Temperature

($V^+ = 5$ V)



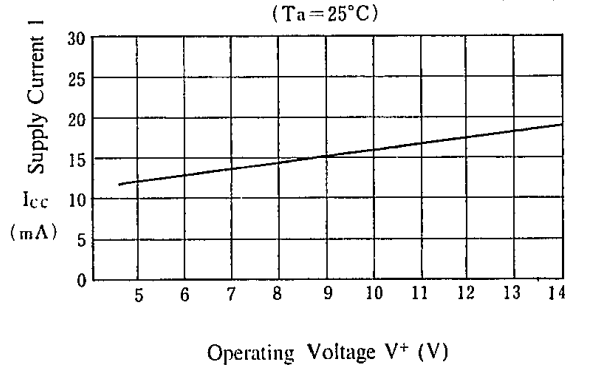
Switch Change Over 1 vs. Temperature

($V^+ = 5$ V)



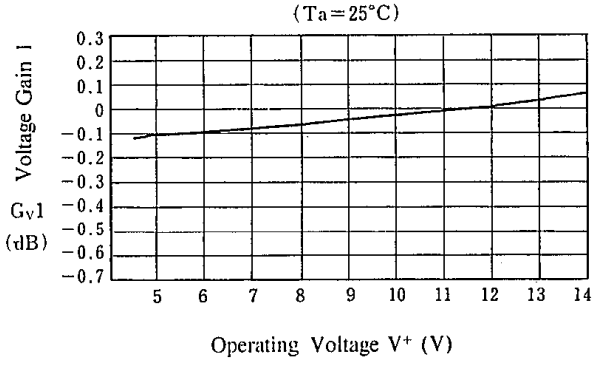
Supply Current 1 vs. Operating Voltage

($Ta = 25°C$)



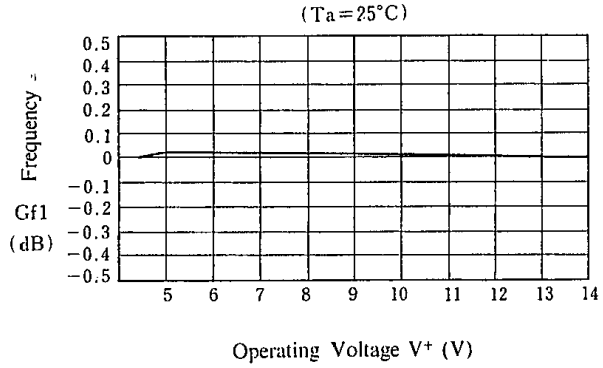
Voltage Gain 1 vs. Operating Voltage

($Ta = 25°C$)



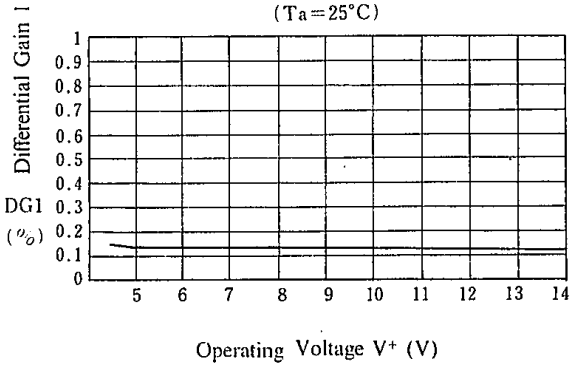
Frequency vs. Operating Voltage

($Ta = 25°C$)



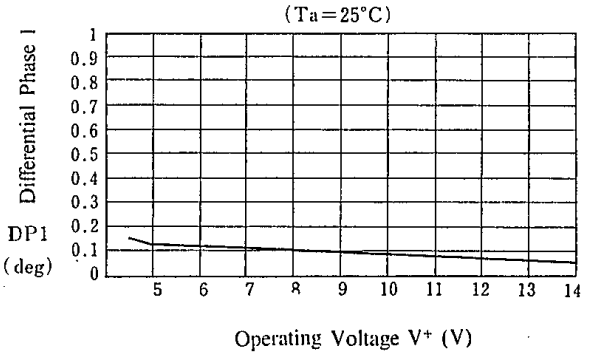
Differential Gain 1 vs. Operating Voltage

($Ta = 25°C$)

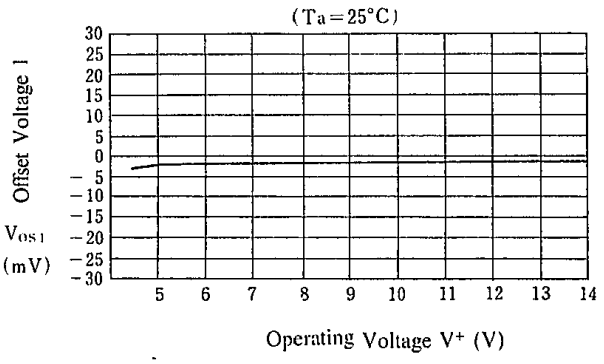


■ TYPICAL CHARACTERISTICS

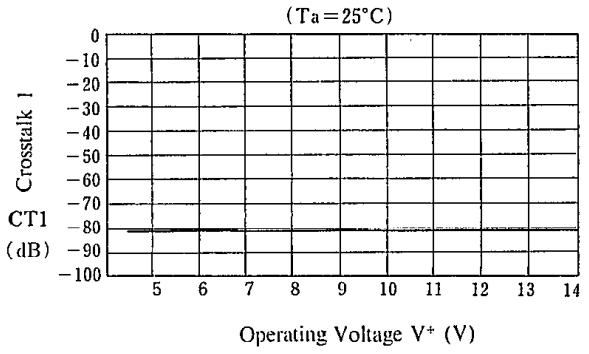
Differential Phase 1 vs. Operating Voltage



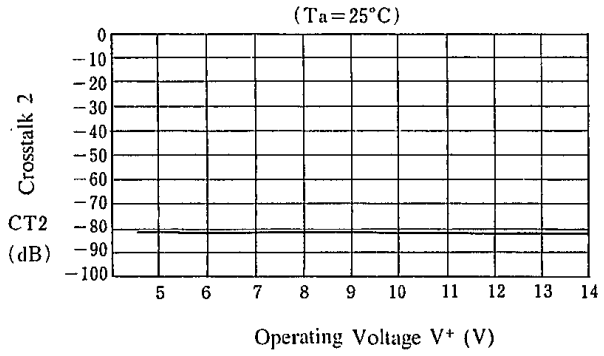
Offset Voltage 1 vs. Operating Voltage



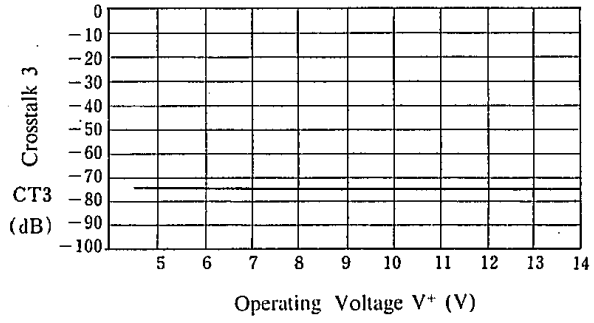
Crosstalk 1 vs. Operating Voltage



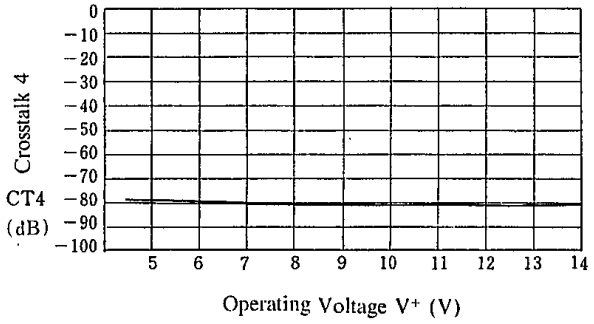
Crosstalk 2 vs. Operating Voltage



Crosstalk 3 vs. Operating Voltage



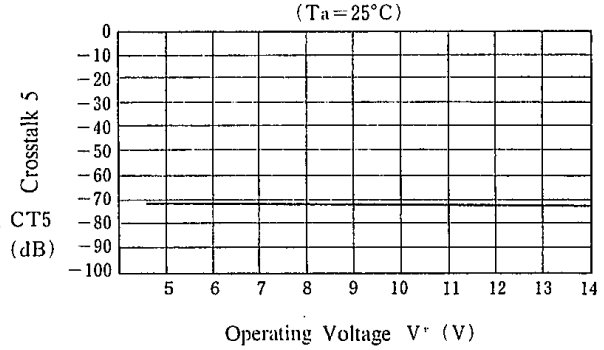
Crosstalk 4 vs. Operating Voltage



■ TYPICAL CHARACTERISTICS

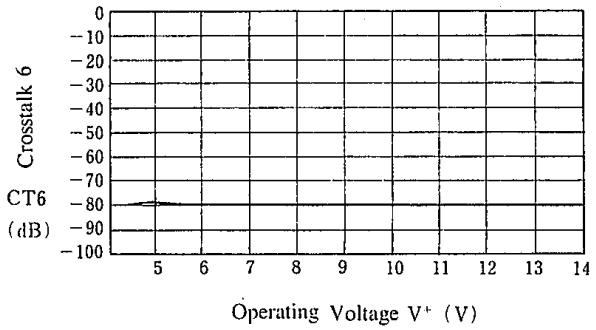
Crosstalk 5 vs. Operating Voltage V+ (V)

(Ta=25°C)



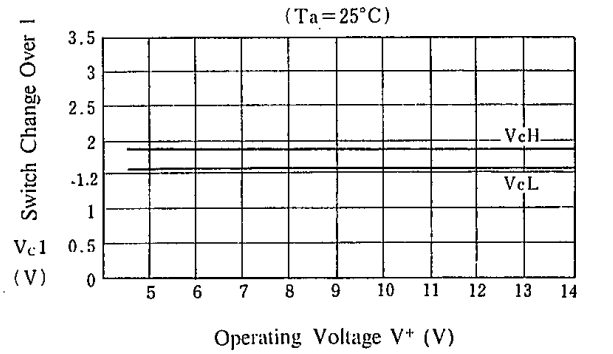
Crosstalk 6 vs. Operating Voltage V+ (V)

(Ta=25°C)



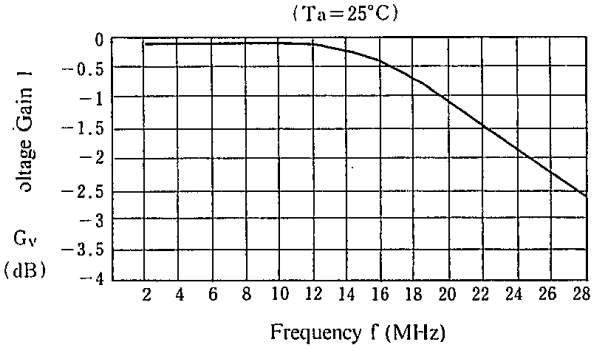
Switch Change Over 1 vs. Operating Voltage

(Ta=25°C)



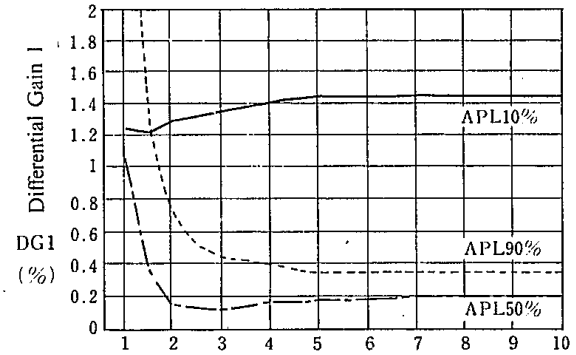
Voltage Gain 1 vs. Frequency

(Ta=25°C)



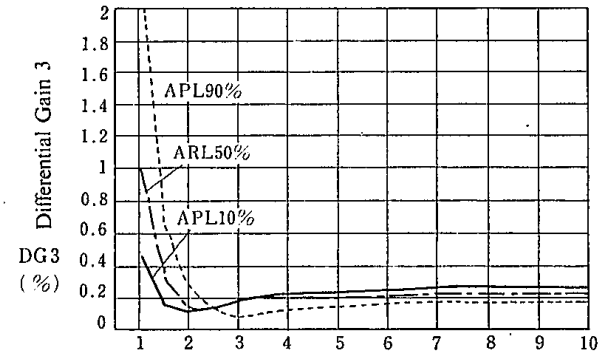
Differential Gain 1 vs. Load Resistor

(Ta=25°C)



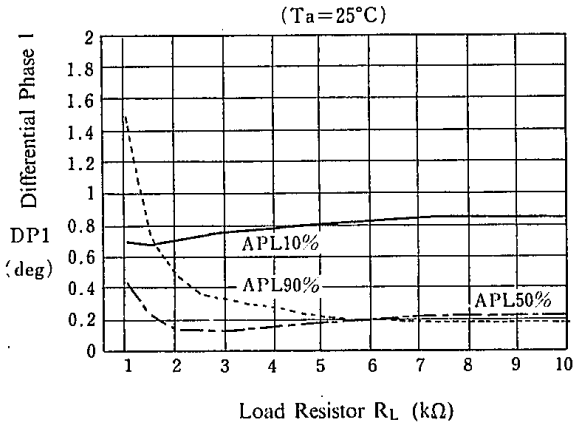
Differential Gain 3 vs. Load Resistor

(Ta=25°C)

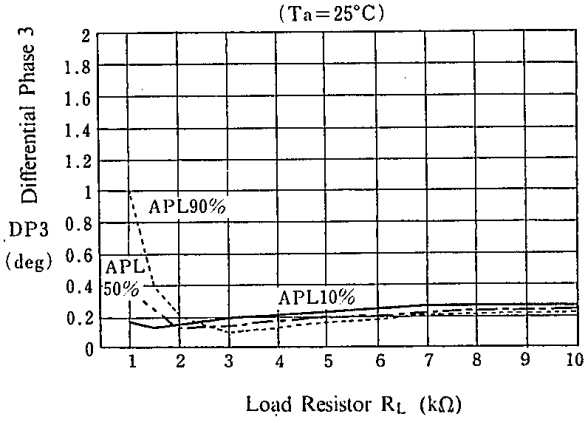


■ TYPICAL CHARACTERISTICS

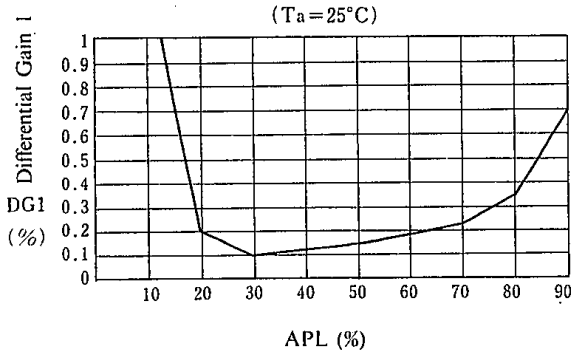
Differential Phase 1 vs. Load Resistor



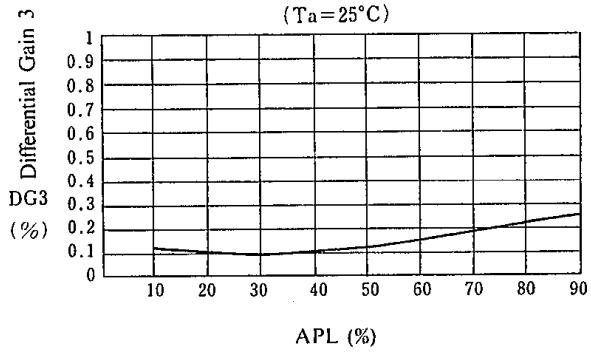
Differential Phase 3 vs. Load Resistor



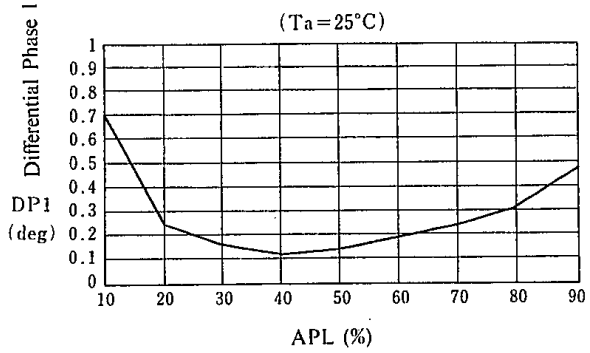
Differential Gain 1 vs. APL



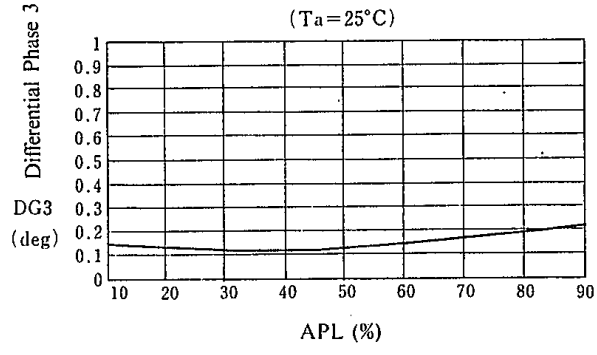
Differential Gain 3 vs. APL



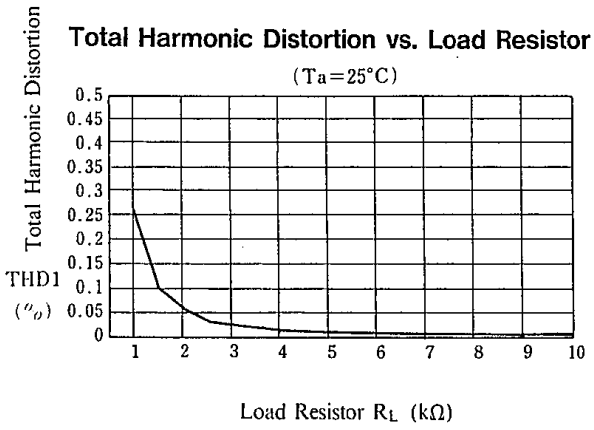
Differential Phase 1 vs. APL



Differential Phase 3 vs. APL



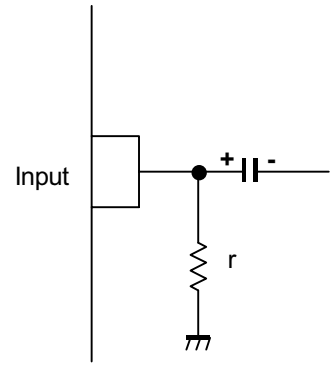
■ TYPICAL CHARACTERISTICS



5

■APPLICATION

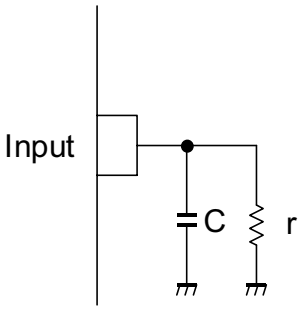
This IC requires 1MΩ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



C ≅ 10uF

r ≅ 1MΩ

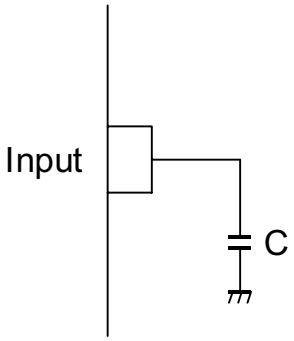
This IC requires 0.1uF capacitor between INPUT and GND, 1MΩ resistance between INPUT and GND for clamp type input at mute mode.



C ≅ 0.1uF

r ≅ 1MΩ

This IC requires 0.1uF capacitor between INPUT and GND for bias type input at mute mode.



C ≅ 0.1uF