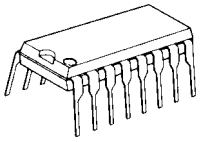
2-INPUT 3CHANNEL VIDEO SWITCH

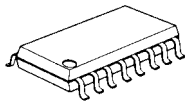
■ GENERAL DESCRIPTION

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).

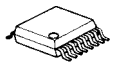
■ PACKAGE OUTLINE



NJM2285D



NJM2285M



NJM2285V

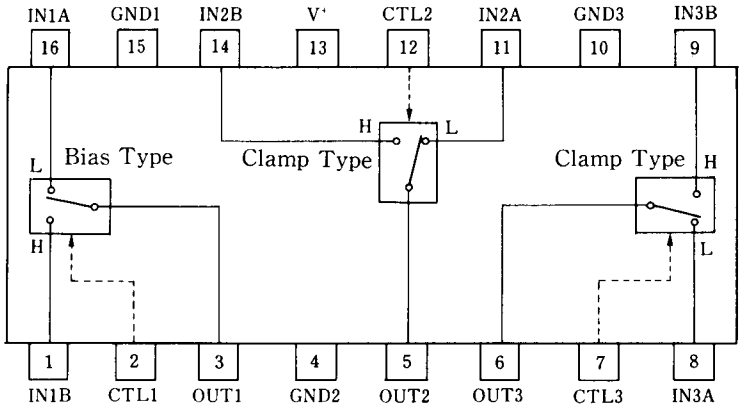
■ FEATURES

- 2 Input-1 Output
  Internalizing 3 Circuits (Two of them are Clamp type).
- Wide Operating Supply Voltage (4.75 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



NJM2285D
NJM2285M
NJM2285V

■ MAXIMUM RATINGS

(T_a = 25ºC)

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

■ ELECTRICAL CHARACTERISTICS

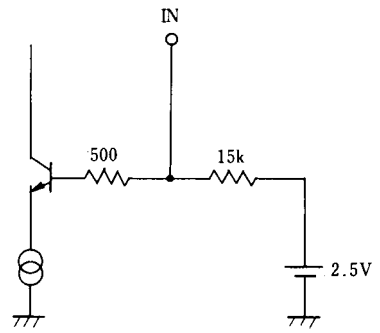
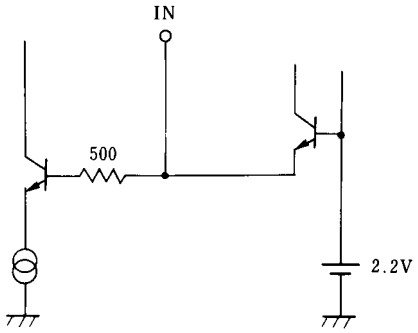
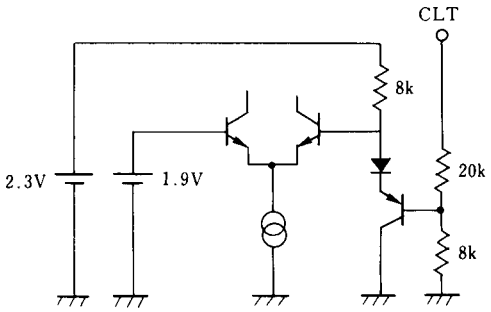
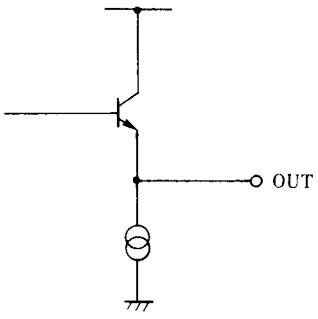
(V^+ = 5V, T_a = 25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I_{CC1}	V^+ = 5V (Note1)	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

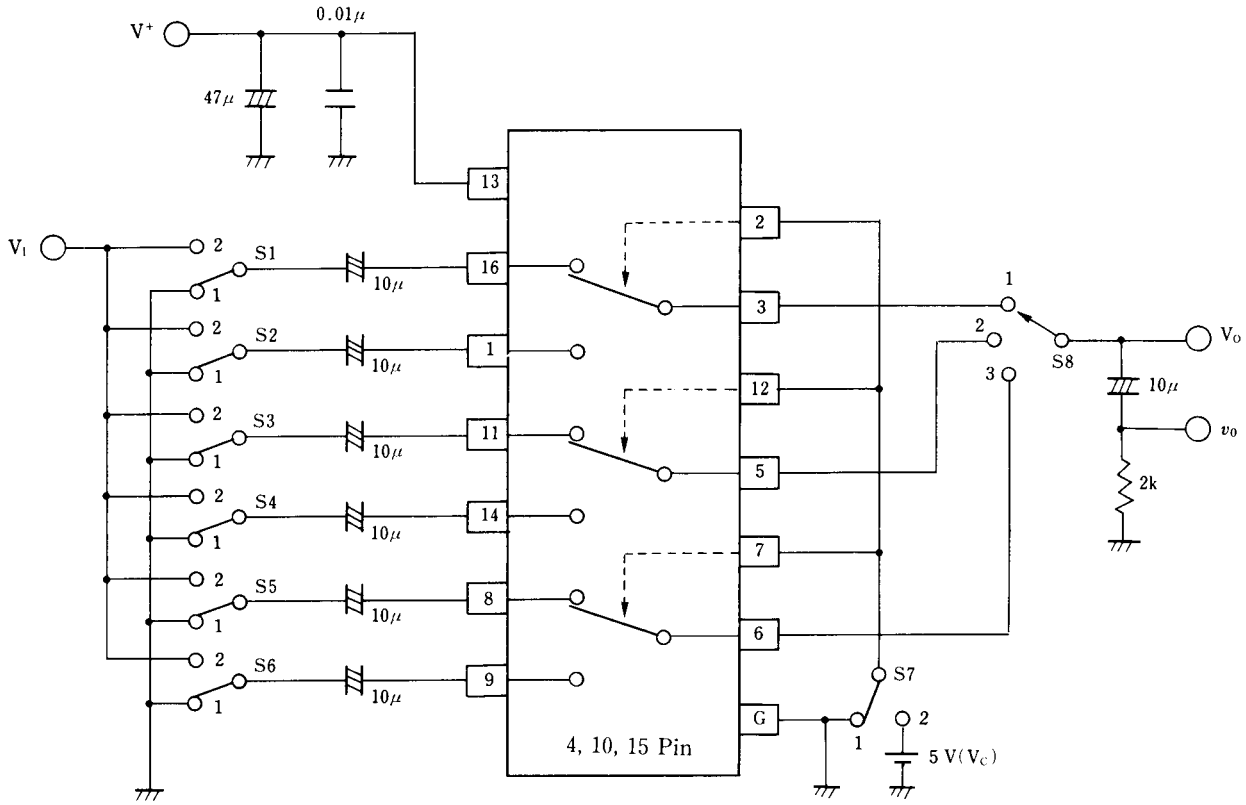
(Note1) S1 = S2 = S3 = S4 = S5 = S6 = S7 = 1

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

■ **TERMINLAL 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	OUT1	1.8V	
5 6	OUT2 OUT3 [Output]	0.8V	
13	V^+	5V	
15 4 10	GND 1 GND 2 GND 3		

■ TEST CIRCUIT

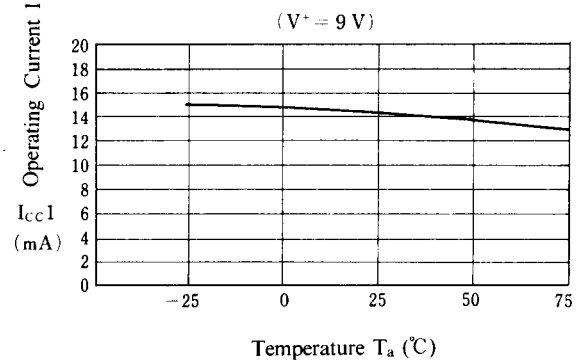


This IC requires 1MΩ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.

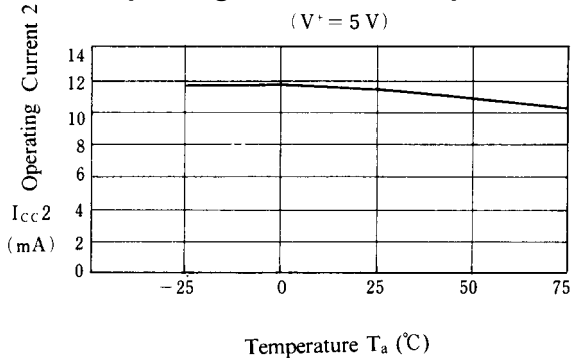
Parameter	S1	S2	S3	S4	S5	S6	S7	S8	Test Part
I_{CC1}	1	1	1	1	1	1	1	1	V^+
I_{CC2}	1	1	1	1	1	1	1	1	
G_{v1}	2	1	1	1	1	1	1	1	v_o
G_{f1}	2	1	1	1	1	1	1	1	
DG_1	2	1	1	1	1	1	1	1	
DP_1	2	1	1	1	1	1	1	1	
CT 1	2	1	1	1	1	1	2	1	v_o
CT 2	1	2	1	1	1	1	1	1	
CT 3	1	1	2	1	1	1	2	2	
CT 4	1	1	1	2	1	1	1	2	
CT 5	1	1	1	1	2	1	2	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

■ TYPICAL CHARACTERISTICS

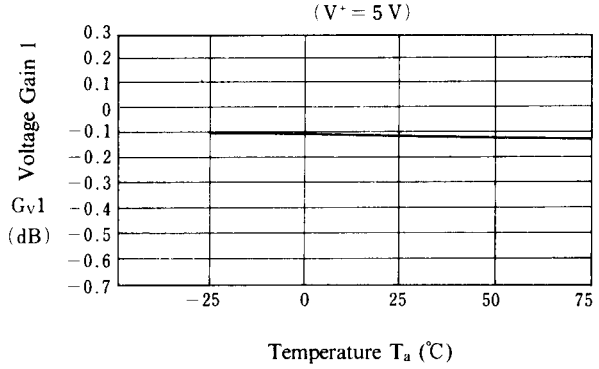
Operating Current 1 vs. Temperature



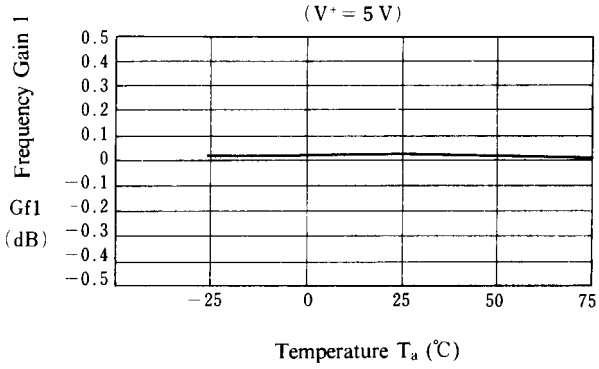
Operating Current 2 vs. Temperature



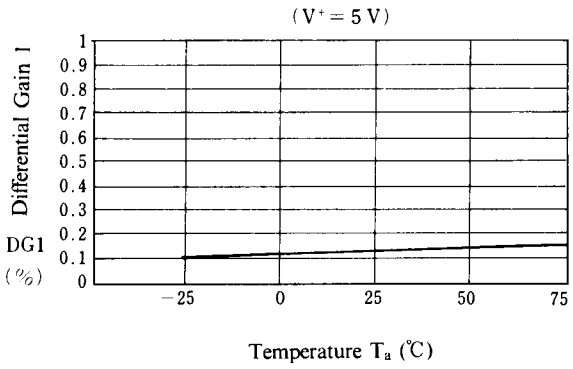
Voltage Gain 1 vs. Temperature



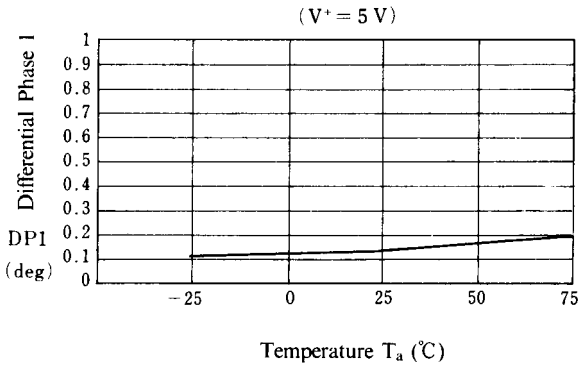
Frequency Gain 1 vs. Temperature



Differential Gain 1 vs. Temperature

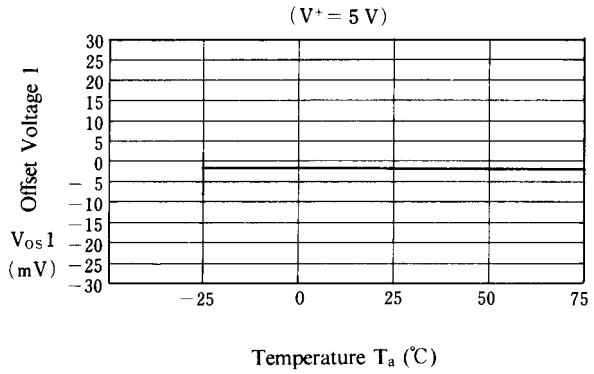


Differential Phase 1 vs. Temperature

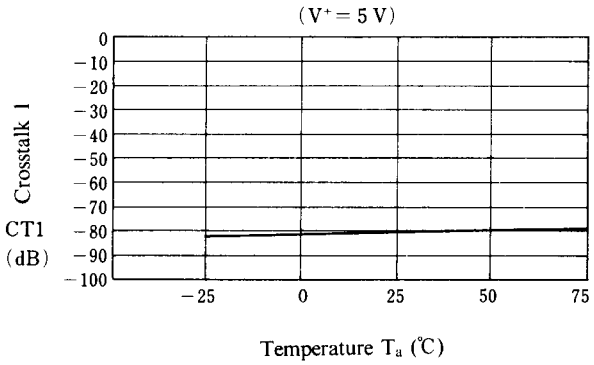


■ TYPICAL CHARACTERISTICS

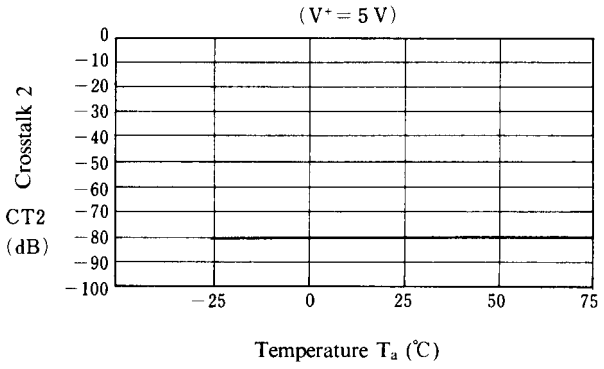
Offset Voltage 1 vs. Temperature



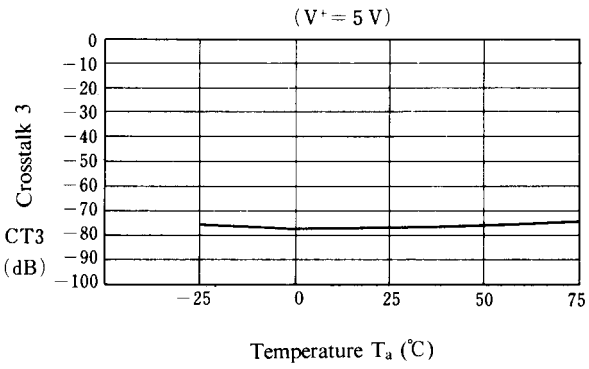
Crosstalk 1 vs. Temperature



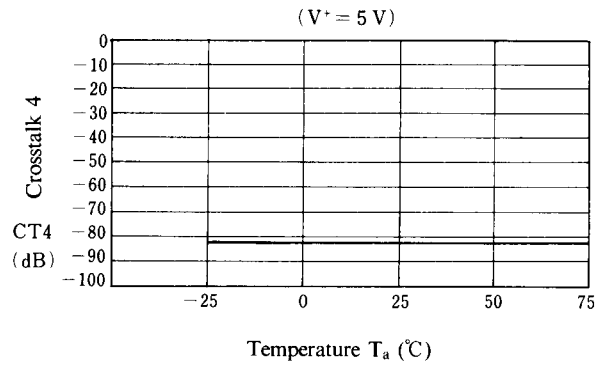
Crosstalk 2 vs. Temperature



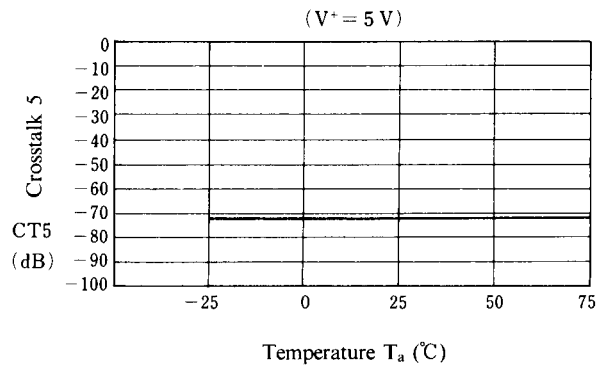
Crosstalk 3 vs. Temperature



Crosstalk 4 vs. Temperature

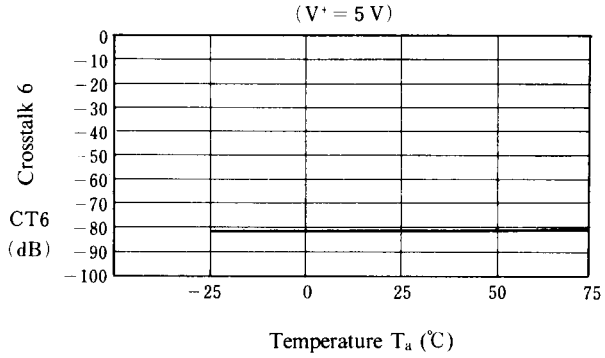


Crosstalk 5 vs. Temperature

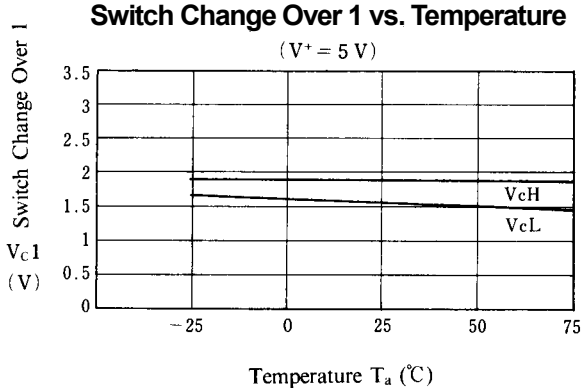


■ TYPICAL CHARACTERISTICS

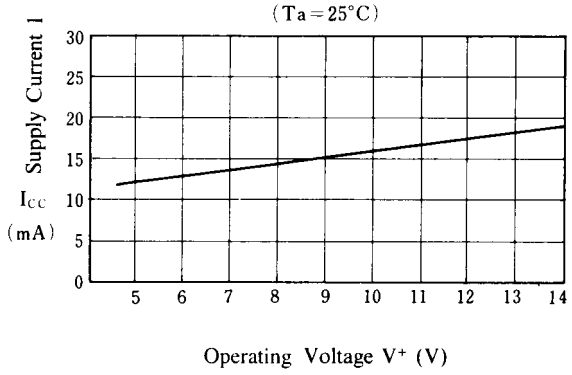
Crosstalk 6 vs. Temperature



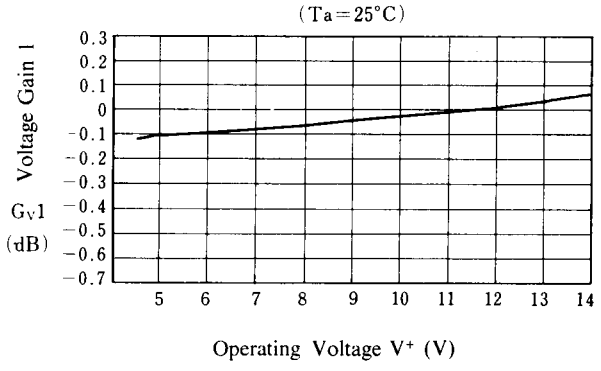
Switch Change Over 1 vs. Temperature



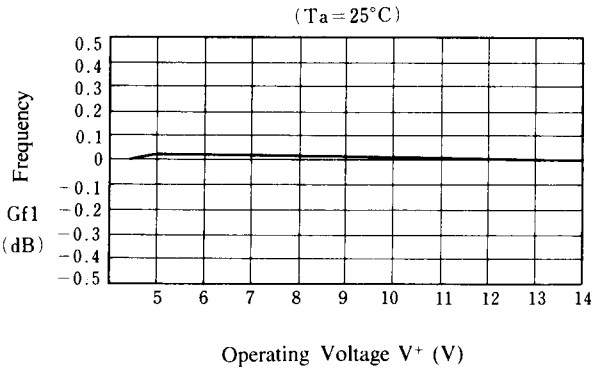
Supply Current 1 vs. Operating Voltage



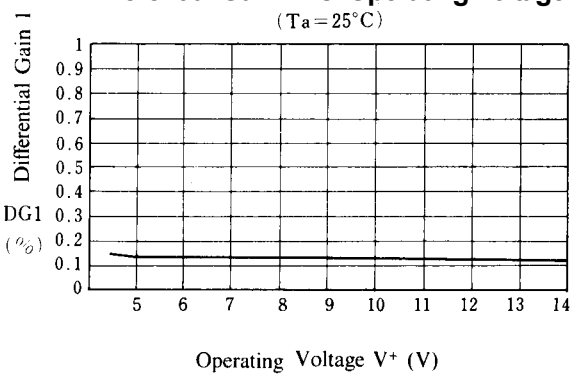
Voltage Gain 1 vs. Operating Voltage



Frequency vs. Operating Voltage

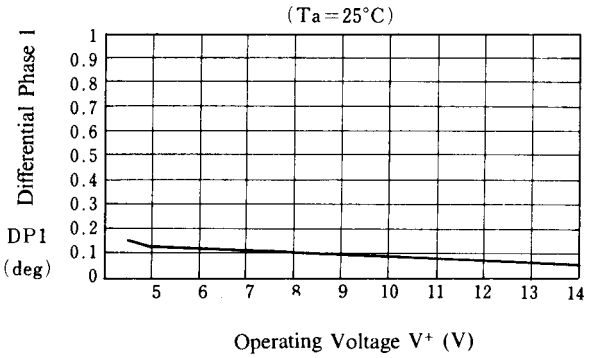


Differential Gain 1 vs. Operating Voltage

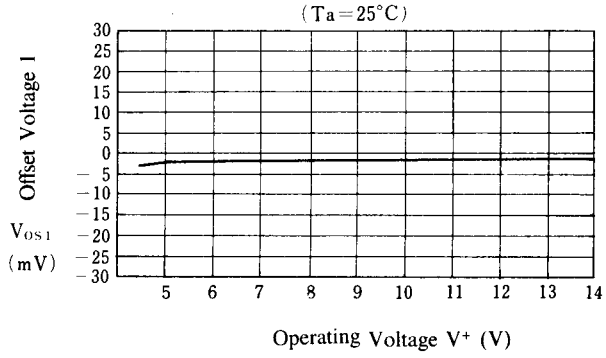


■ TYPICAL CHARACTERISTICS

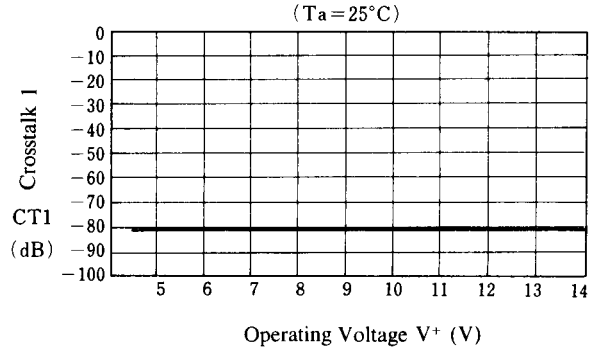
Differential Phase 1 vs. Operating Voltage



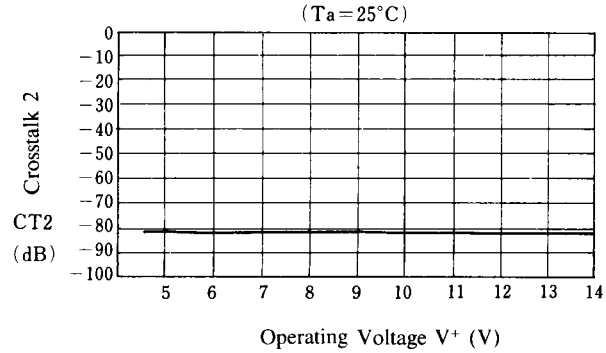
Offset Voltage 1 vs. Operating Voltage



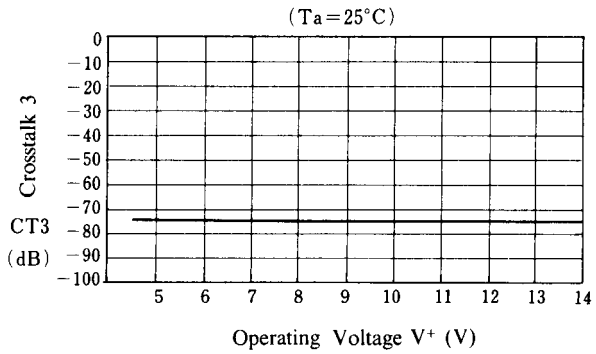
Crosstalk 1 vs. Operating Voltage



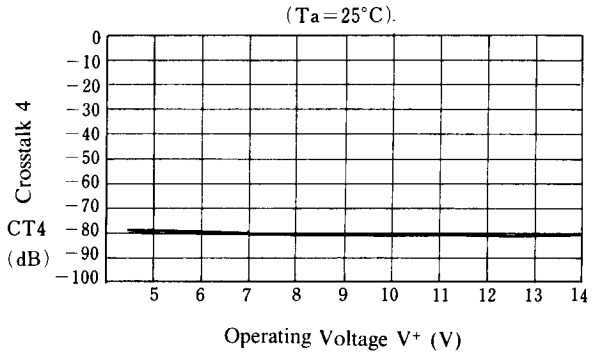
Crosstalk 2 vs. Operating Voltage



Crosstalk 3 vs. Operating Voltage

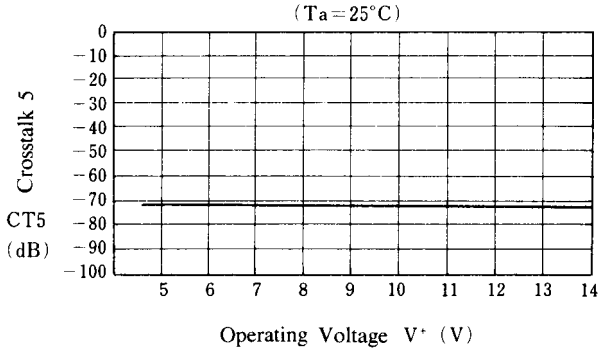


Crosstalk 4 vs. Operating Voltage

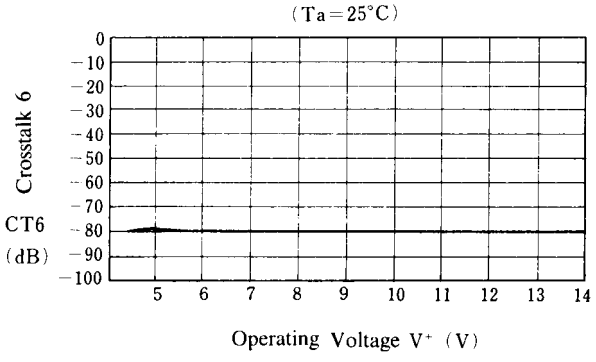


■ TYPICAL CHARACTERISTICS

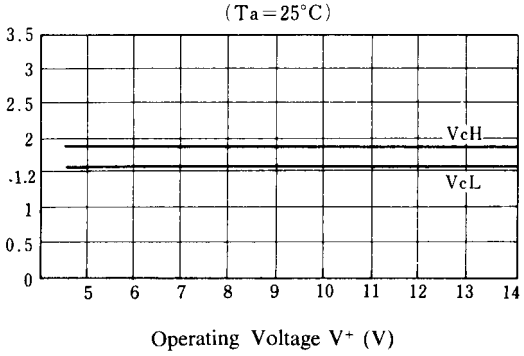
Crosstalk 5 vs. Operating Voltage V^+ (V)



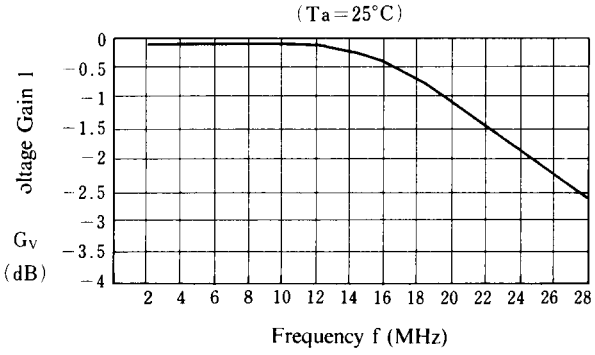
Crosstalk 6 vs. Operating Voltage V^+ (V)



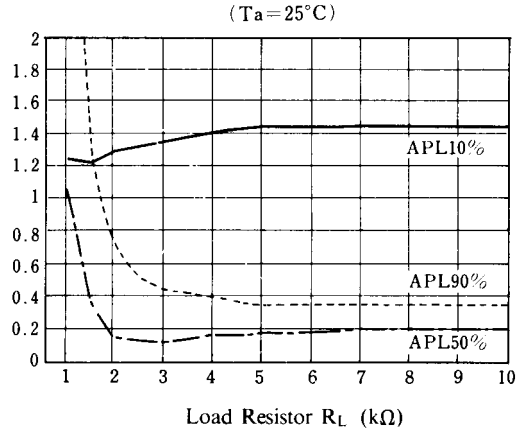
Switch Change Over 1 vs. Operating Voltage



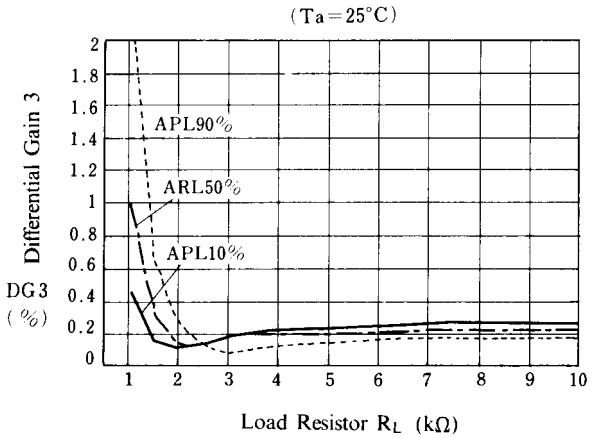
Differential Gain 1 vs. Frequency



Differential Gain 1 vs. Load Resistor

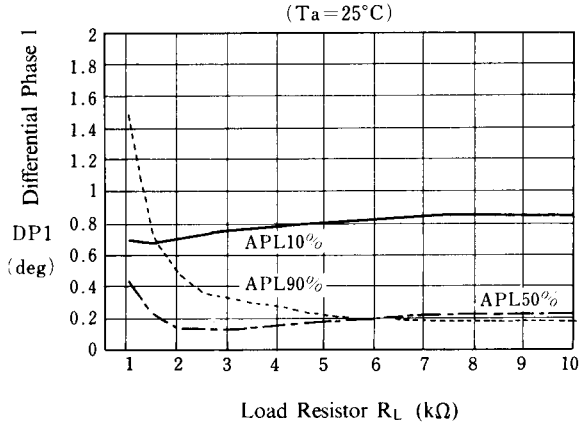


Differential Gain 3 vs. Load Resistor

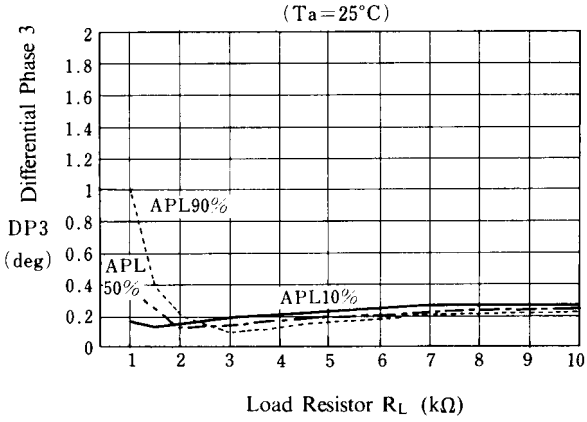


■ TYPICAL CHARACTERISTICS

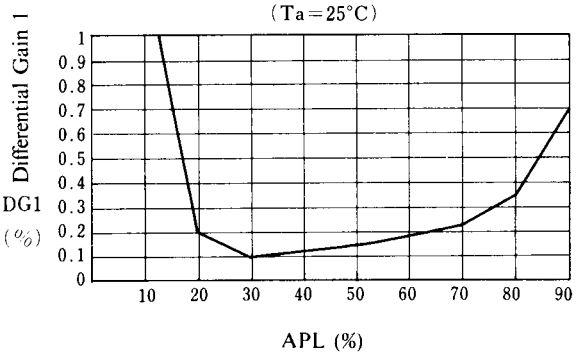
Differential Phase 1 vs. Load Resistor



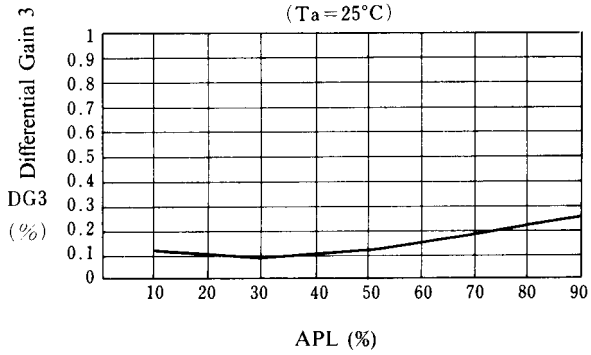
Differential Phase 3 vs. Load Resistor



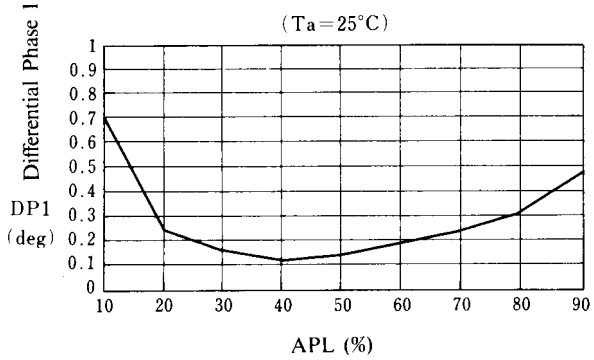
Differential Gain 1 vs. APL



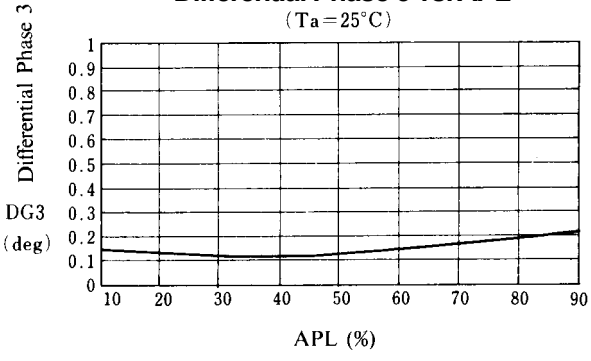
Differential Gain 3 vs. APL



Differential Phase 1 vs. APL

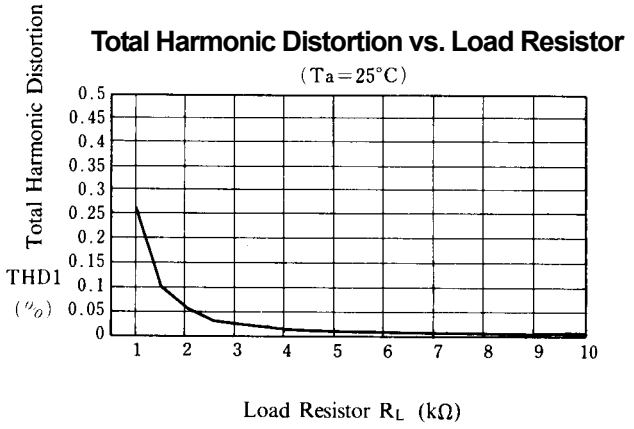


Differential Phase 3 vs. APL



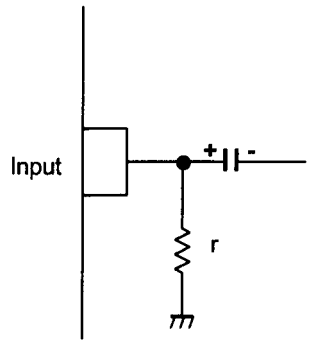
■ TYPICAL CHARACTERISTICS

Total Harmonic Distortion vs. Load Resistor



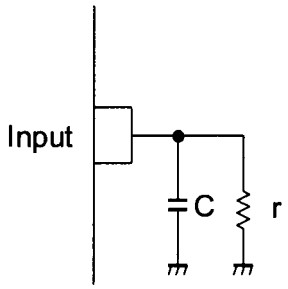
■ APPLICATION

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



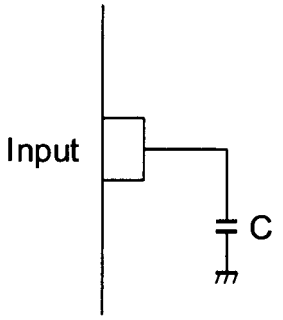
C ≅ 10uF
r ≅ 1MΩ

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

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



C ≅ 0.1uF