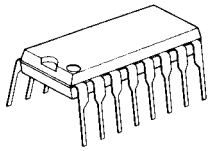
3-INPUT / 2-INPUT VIDEO SWITCH

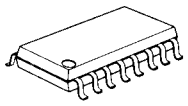
■ GENERAL DESCRIPTION

The **NJM2506** is video switch for video and audio signal. It contains 3 input-1 output and 2 input-1 output video switch. 3 input-1 output switch has clamp function and so is applied to fixed DC level of video signal. Its operating voltage is 4.75 to 13V and bahdwidth is 10MHz. Crosstalk is 75dB (at f = 4.43MHz)

■ PACKAGE OUTLINE



NJM2506D



NJM2506M

■ FEATURES

- Wide Operating Supply Range (+4.75V to +13V)
- 3 Input-1 Output and 2 Input-1 Output
- Internal Clamp Function
- Crosstalk 75dB (at 4.43MHz)
- Wide Frequency Range 10MHz ($2V_{P-P}$ Input)
- Package Outline DIP16, DMP16
- Bipolar Technology

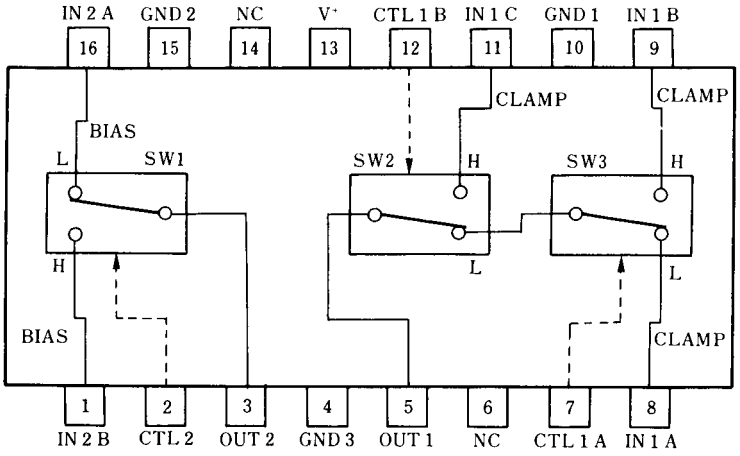
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage V^+ 4.75V to 13.0V

■ APPLICATION

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

■ BLOCK DIAGRAM



NJM2506D
NJM2506M

■ ABSOLUTE 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)

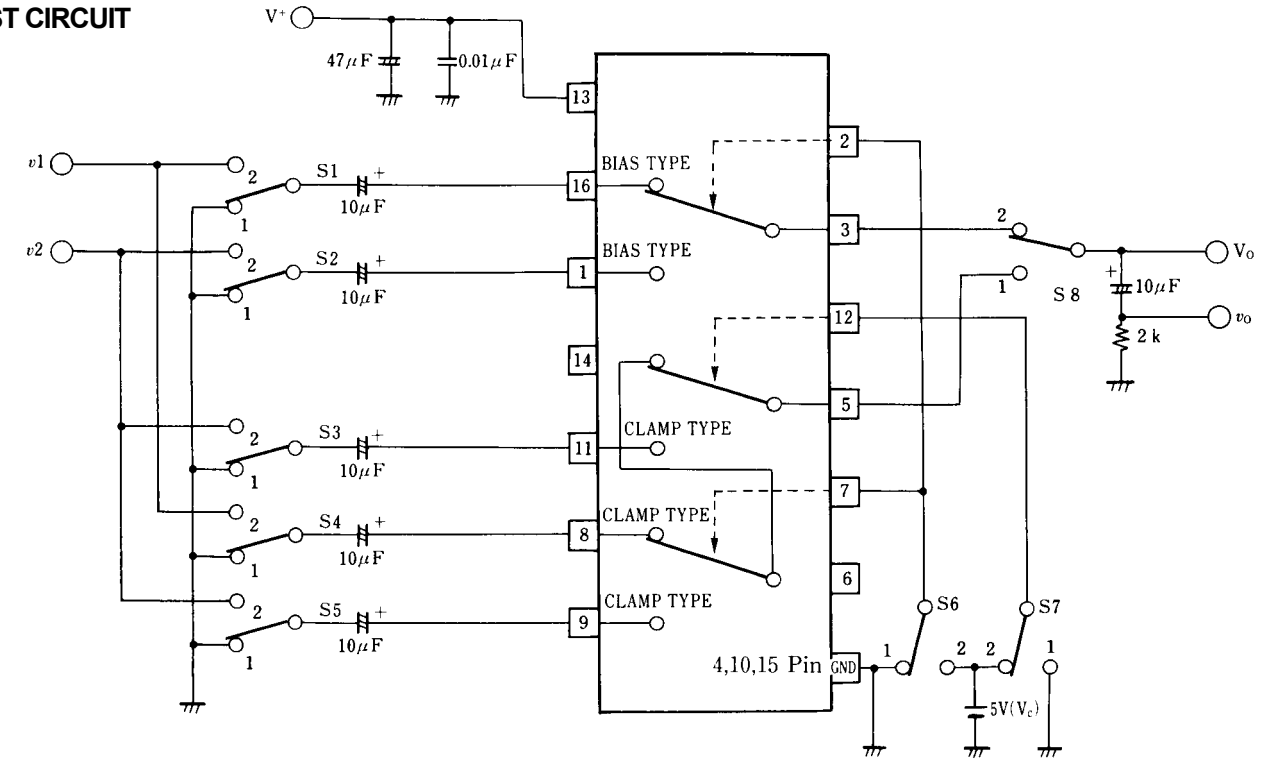
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I_{CC1}	V^+ = 5V (Note1)	6.7	9.7	12.7	mA
Operating Current (2)	I_{CC2}	V^+ = 9V (Note1)	8.6	12.3	16.0	mA
Voltage Gain	G_V	V_I = 2V_{P-P}/ 100khz, V_O / V_I	-0.6	-0.1	+0.4	dB
Frequency Response	G_f	V_I = 2V_{P-P}, V_O (10MHz / 100kHz)	-1.0	0	+1.0	dB
Differential Gain	DG	V_I = 2V_{P-P}, Staircase Signal	-	0.3	-	%
Differential Phasa	DP	V_I = 2V_{P-P}, Staircase Signal	-	0.3	-	deg
Output offset Voltage (1)	V_{OS1}	(Note2)	-10	0	+10	mV
Output offset Voltage (2)	V_{OS2}	(Note2)	-30	0	+30	mV
Crosstalk	CT	V_I = 2V_{P-P}, 4.43MHz, V_O / V_I	-	-75	-	dB
Switch Change Voltage	V_{CH}	All inside SW : ON	-2.5	-	-	V
Switch Change Voltage	V_{CL}	All inside SW : OFF	-	-	1.0	V

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

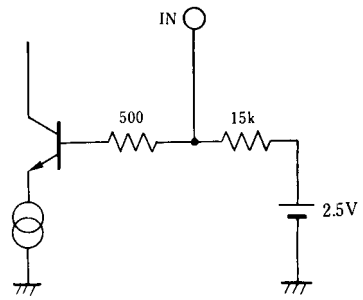
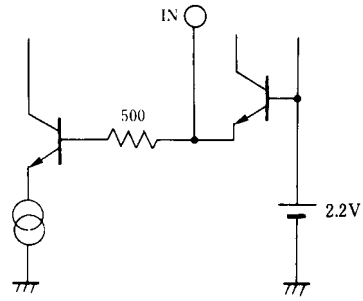
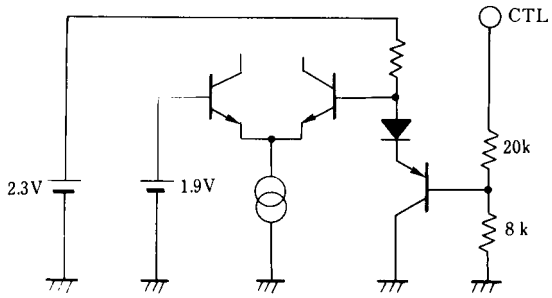
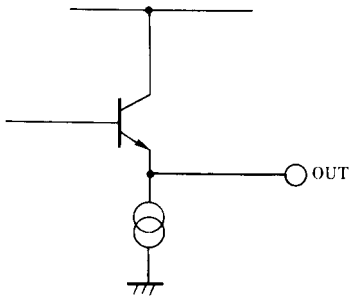
(Note2) : Output DC Voltage Difference is tested on S6 = 1→2, S1 = S2 = S3 = S4 = S5 = 1, S8 = 2 and S7 = 1

(Note3) : Output DC Voltage Difference is tested on S6 = 1→2, S7 = 1 (or S6 = 1, S7= 1→2,), S1 = S2 = S3 = S4 = S5 = 1 and S8 = 1

■ TEST CIRCUIT

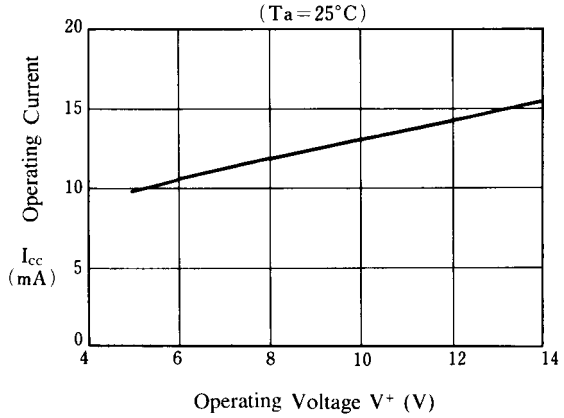


■ **PIN FUNCTION**

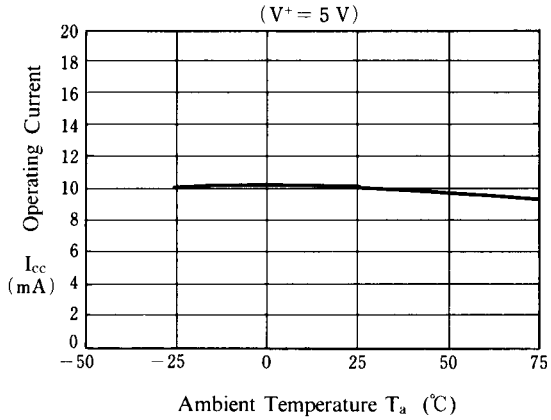
PIN No.	PIN NAME	DC VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1	IN 2 A IN 2 B [Input]	2.5V	
8 9 11	IN 1A IN 1B IN 1C [Input]	1.5V	
7 12 2	CTL 1A CTL 1B CTL 2 [Control]		
5	OUT1 [Output]	1.8V	
3	OUT2 [Output]	0.8V	
13	V^+	5V	
15 4 10	GND 1 GND 2 GND 3		

■ TYPICAL CHARACTERISTICS (Ta = +25°C)

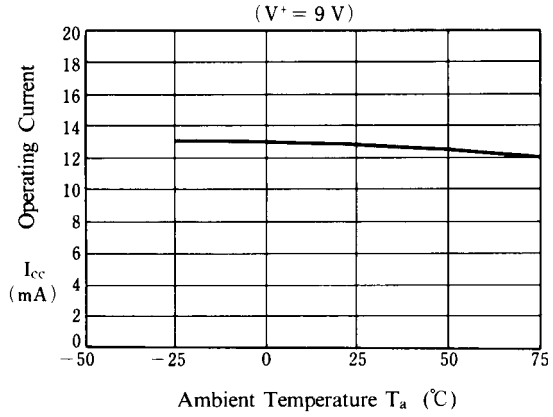
Operating Current vs. Operating Voltage



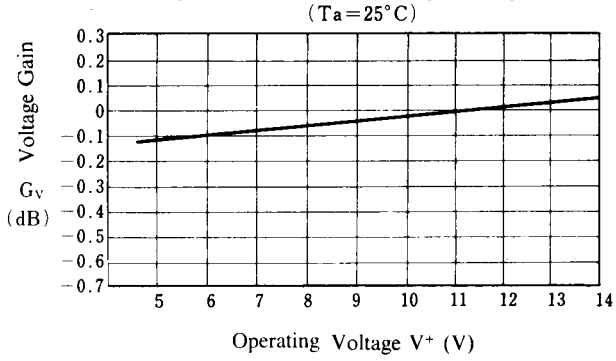
Operating Current vs. Ambient Temperature



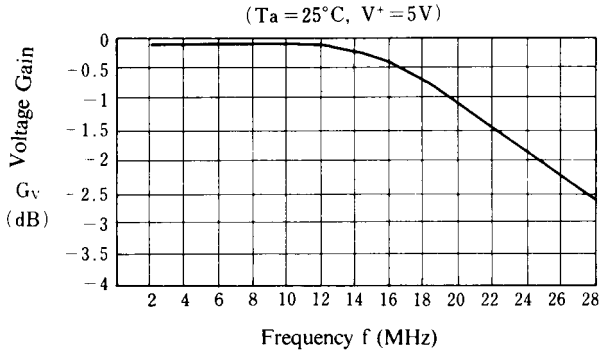
Operating Current vs. Ambient Temperature



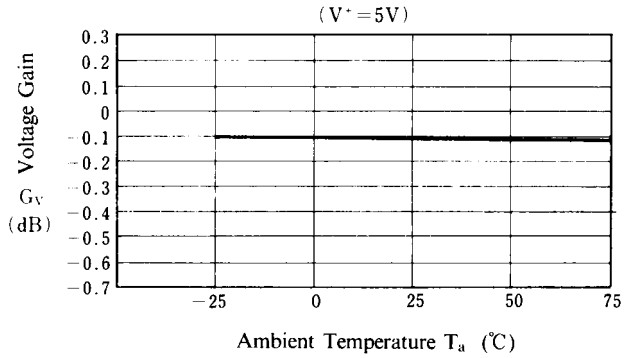
Voltage Gain vs. Operating Voltage



Voltage Gain vs. Frequency

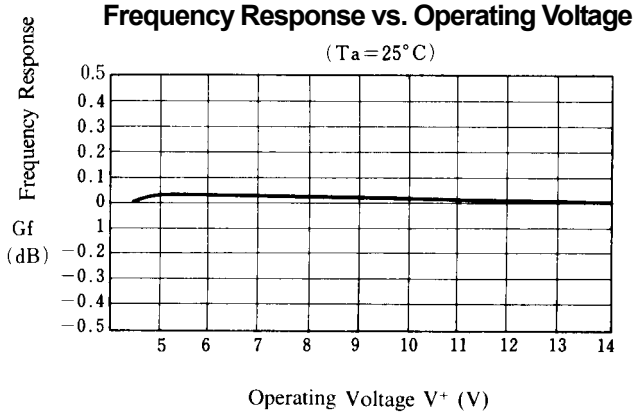


Voltage Gain vs. Ambient Temperature

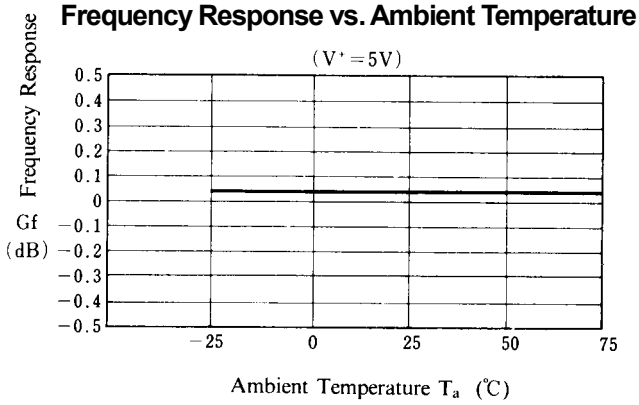


■ TYPICAL CHARACTERISTICS (Ta = +25°C)

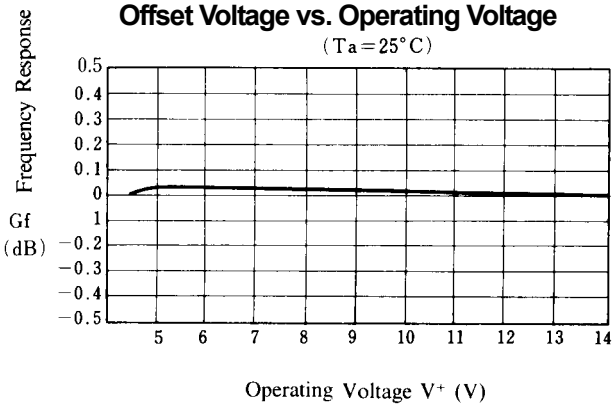
Frequency Response vs. Operating Voltage



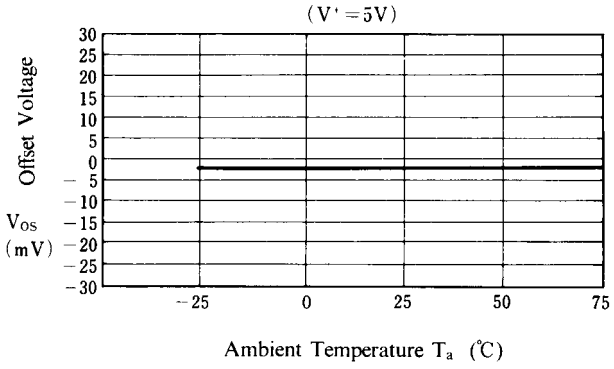
Frequency Response vs. Ambient Temperature



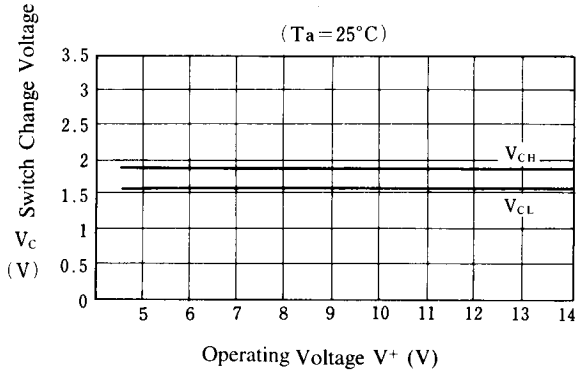
Offset Voltage vs. Operating Voltage



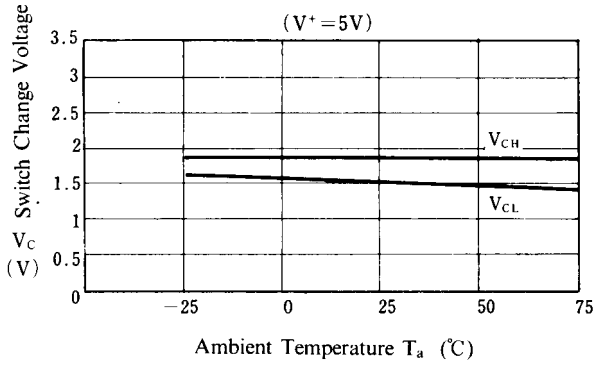
Offset Voltage vs. Ambient Temperature



Switch Change Voltage vs. Operating Voltage

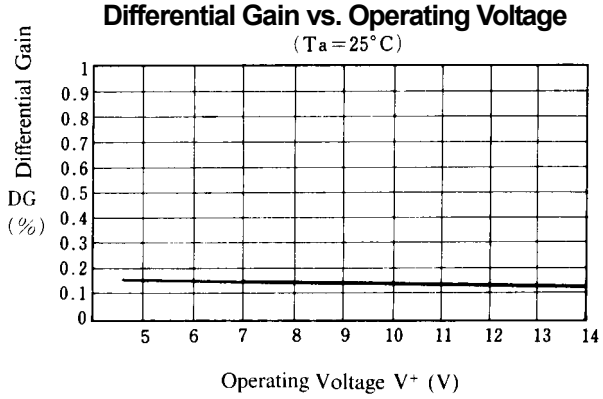


Switch Change Voltage vs. Ambient Temperature

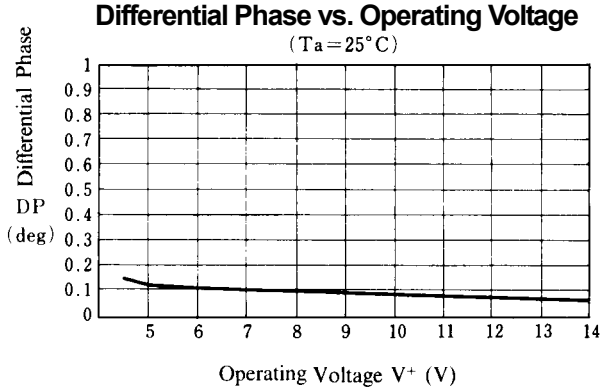


■ **TYPICAL CHARACTERISTICS** (Ta = +25°C)

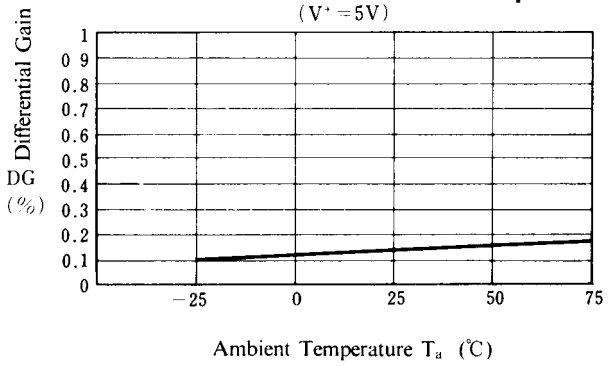
Differential Gain vs. Operating Voltage



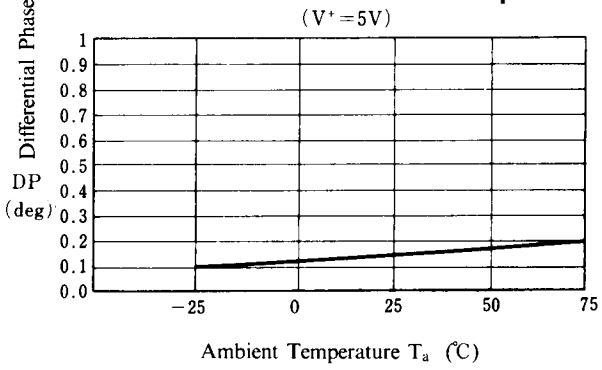
Differential Phase vs. Operating Voltage



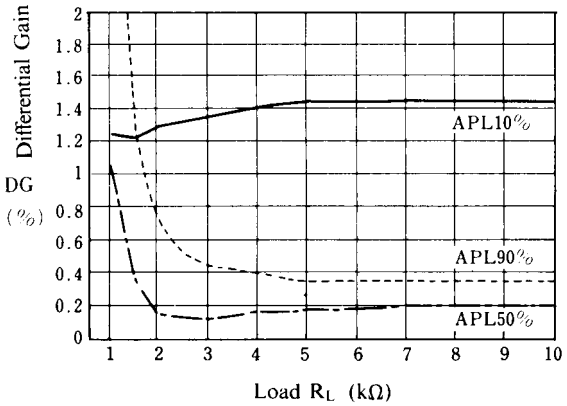
Differential Gain vs. Ambient Temperature



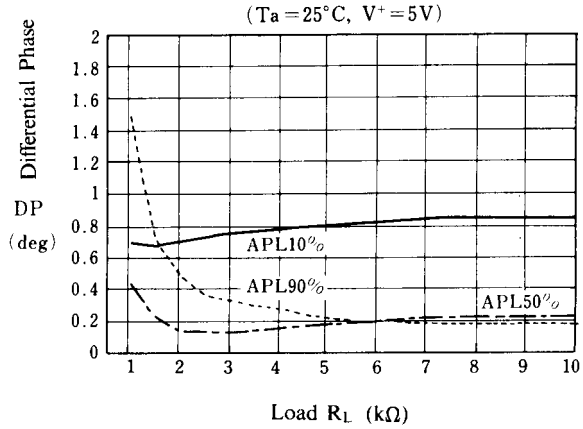
Differential Phase vs. Ambient Temperature



Differential Gain vs. Load

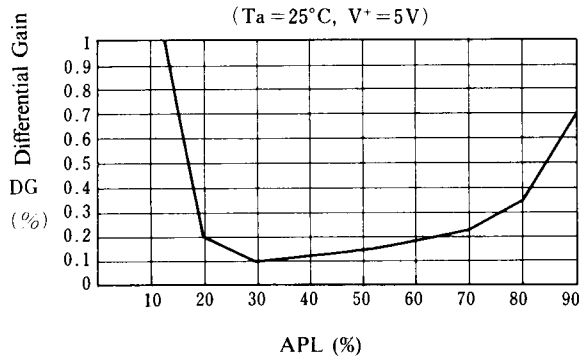


Differential Phase vs. Load

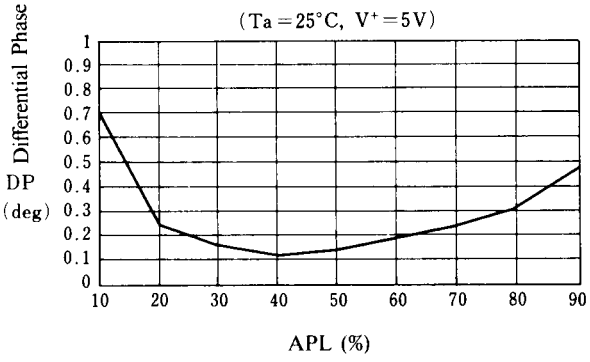


■ **TYPICAL CHARACTERISTICS** (Ta = +25°C)

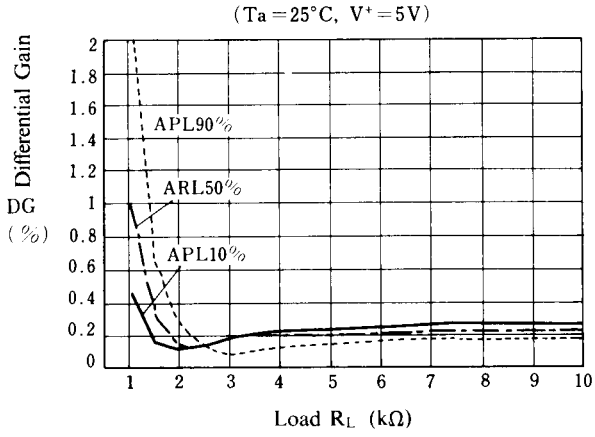
Differential Gain vs. APL



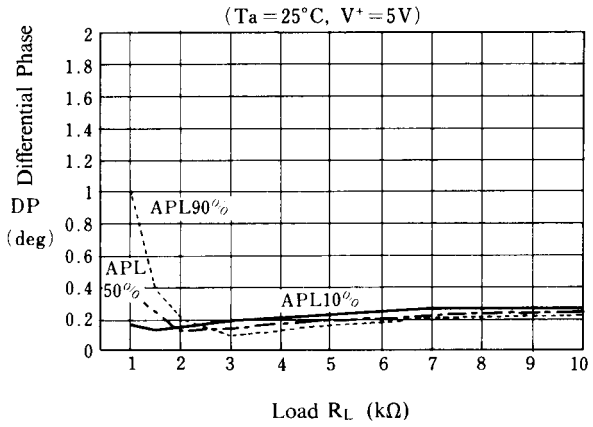
Differential Phase vs. APL



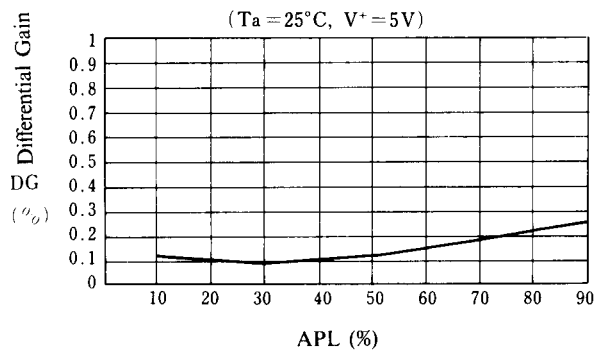
Differential Gain vs. Load



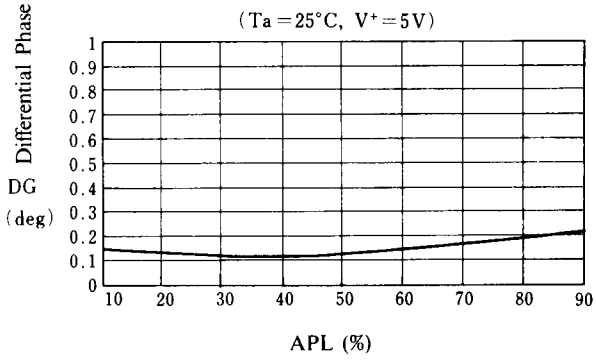
Differential Phase vs. Load



Differential Gain vs. APL

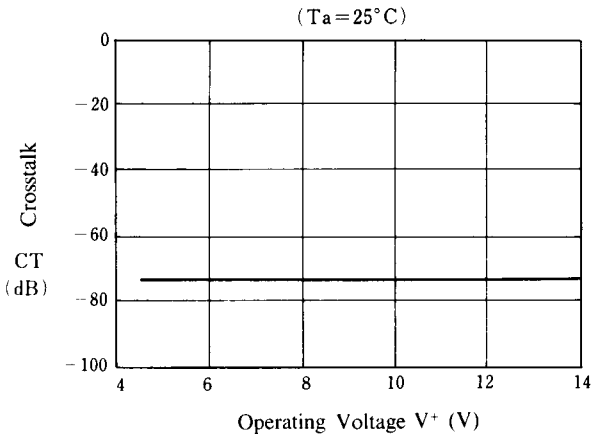


Differential Phase vs. APL

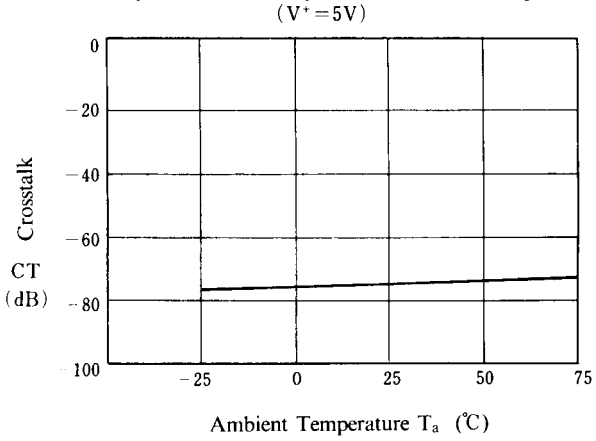


■ TYPICAL CHARACTERISTICS (Ta = +25°C)

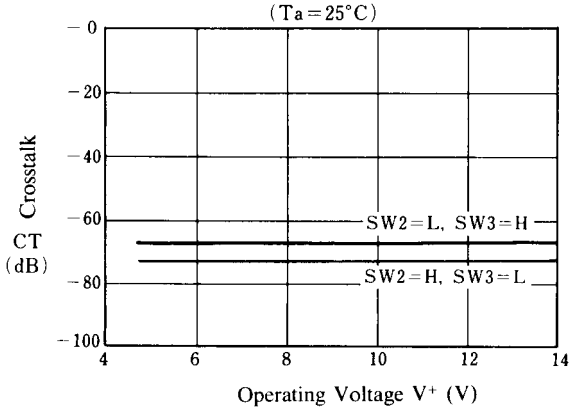
Crosstalk (IN2A to OUT2) vs. Operating Voltage



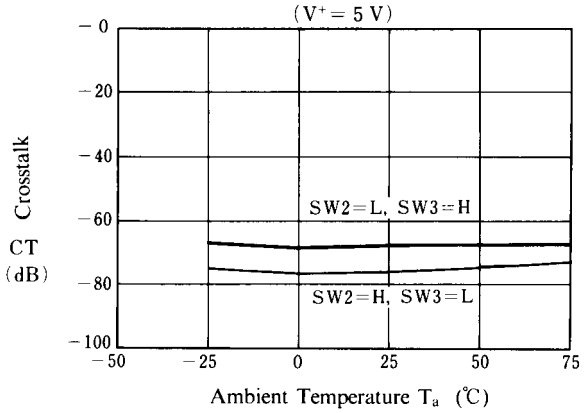
Crosstalk (IN2A to OUT2) vs. Ambient Temperature



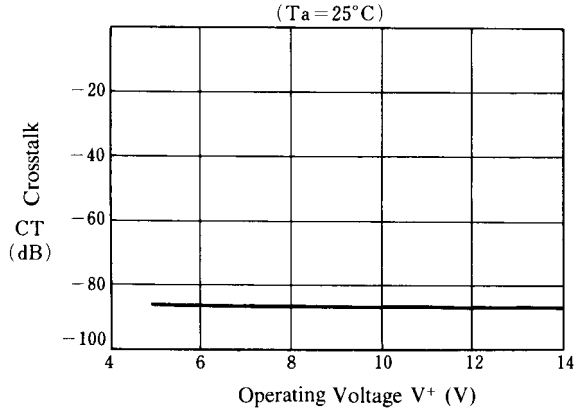
Crosstalk (IN1B to OUT1) vs. Operating Voltage



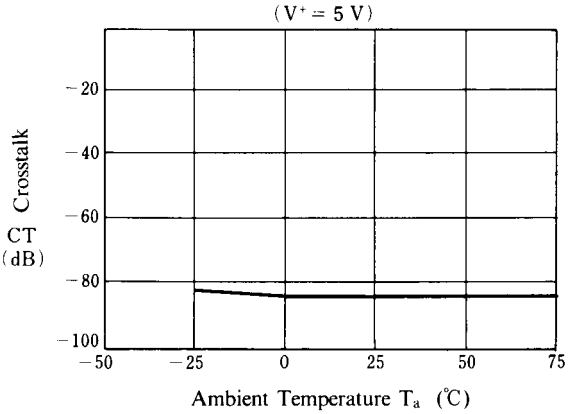
Crosstalk (IN1B to OUT1) vs. Ambient Temperature



Crosstalk (IN1B to OUT1) vs. Operating Voltage

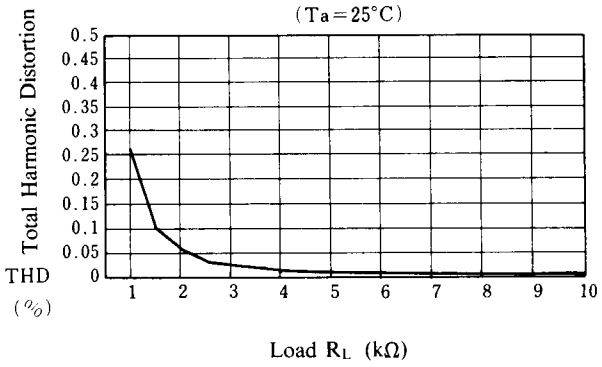


Crosstalk (IN1B to OUT1) vs. Ambient Temperature



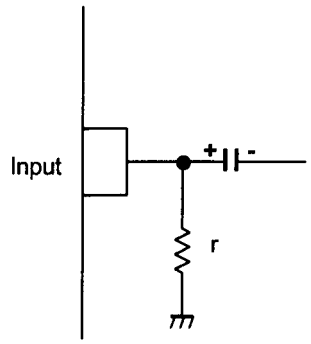
■ **TYPICAL CHARACTERISTICS** (Ta = +25°C)

Total Harmonic Distortion vs. Load



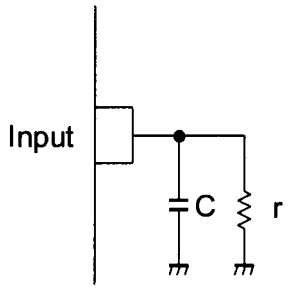
■ APPLICATION

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



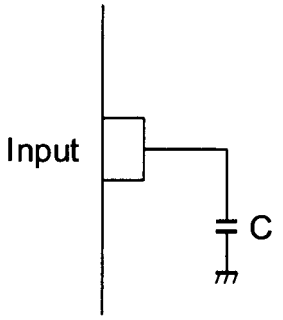
C ≅ 10uF
r ≅ 1MΩ

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