

2-INPUT 3CHANNEL VIDEO SWITCH

■ GENERAL DESCRIPTION

NJM2284 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. One of them is 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).

■ FEATURES

- 2 Input-1 Output Internalizing 3 Circuits (one of them is a Clamp type).
- Wide Operating Voltage
- Crosstalk 75dB(at 4.43MHz)
- Wide Bandwidth Frequency Feature 10MHz(2V_{PP} Input)
- Package Outline DIP-16, DMP-16, SSOP-16

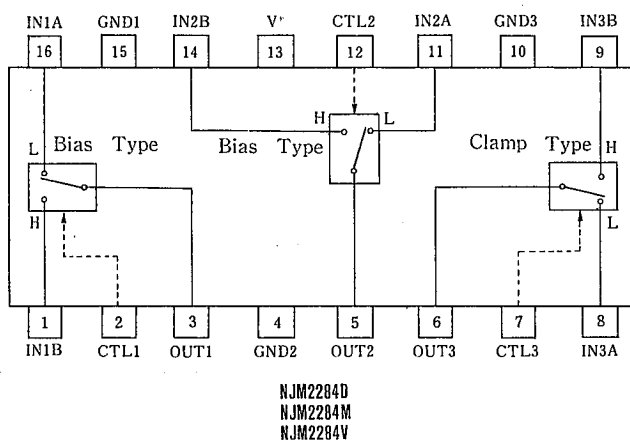
■ RECOMMENDED OPERATING CONDITION

- Supply Voltage V^+ 4.75~13.0V

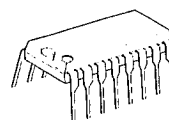
■ APPLICATIONS

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

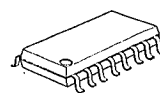
■ BLOCK DIAGRAM



■ PACKAGE OUTLINE



NJM2284D



NJM2284M



NJM2284V

■ MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	14	V
Power Dissipation	Pd	(DIP16) 700	mW
		(DMP16) 350	mW
		(SSOP16) 300	mW
Operating Temperature Range	T _{opr}	−40~+85	°C
Storage Temperature Range	T _{stg}	−40~+125	°C

■ ELECTRICAL CHARACTERISTICS

(V*=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I _{CC1}	V*=5V (Note1)	8.1	11.6	15.1	mA
Operating Current (2)	I _{CC2}	V*=9V (Note1)	10.2	14.6	19.0	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 Phase	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 Switch ON	2.5	—	—	V
Switch Change Over Voltage	V _{CL}	All inside Switch OFF	—	—	1.0	V

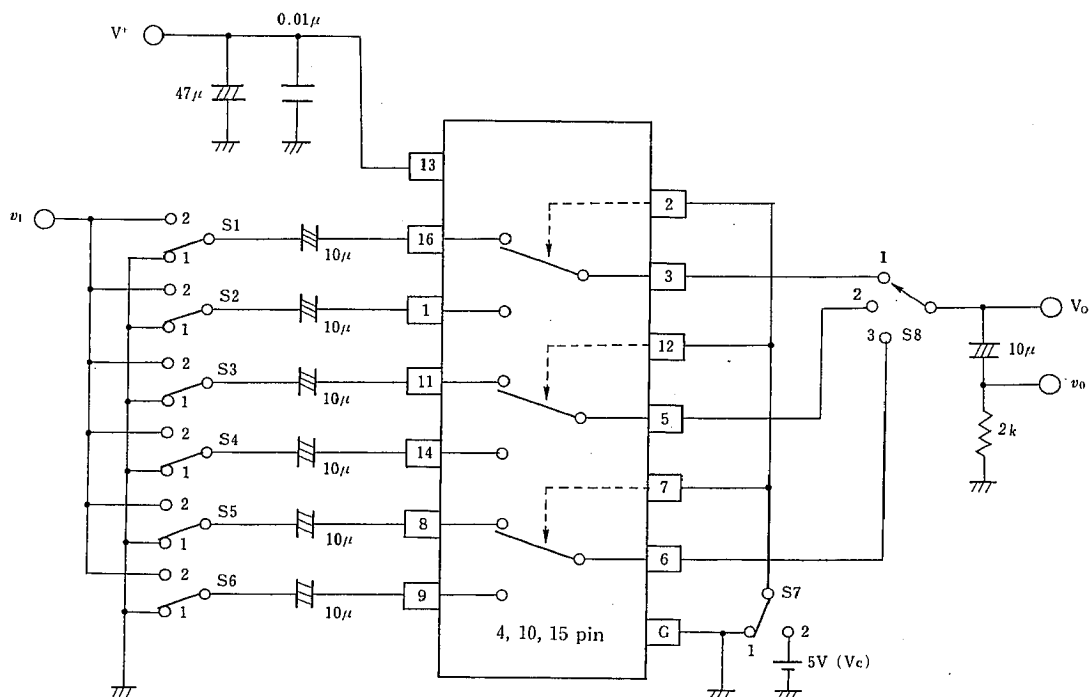
(Note1) S1=S2=S3=S4=S5=S6=S7=1

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

■ TERMINAL EXPLANATION

PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1 11 14	IN 1 A IN 1 B IN 2 A IN 2 B [Input]	2.5V	
8 9	IN 3 A IN 3 B [Input]	1.5V	
2 12 7	CTL 1 CTL 2 CTL 3 [Switching]		
3 5	OUT 1 OUT 2	1.8V	
6	OUT 3 [Output]	0.8V	
13	V+	5 V	
15 4 10	GND 1 GND 2 GND 3		

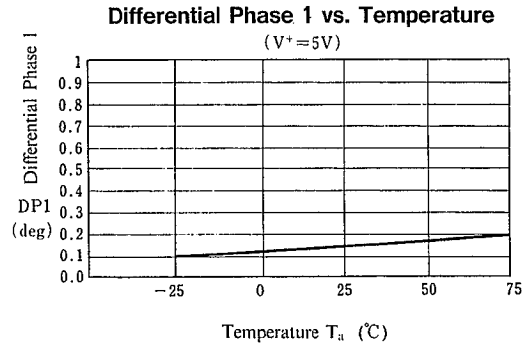
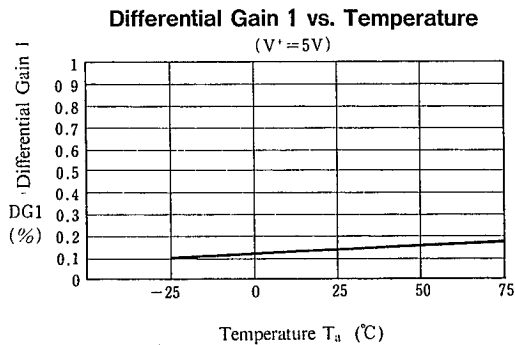
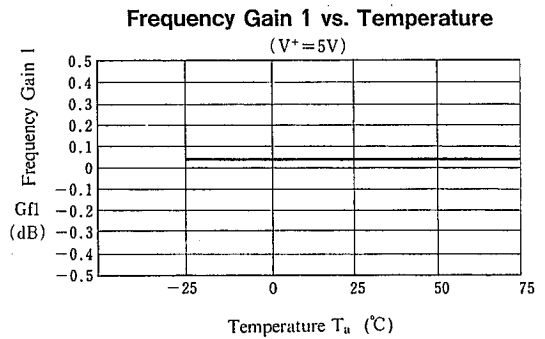
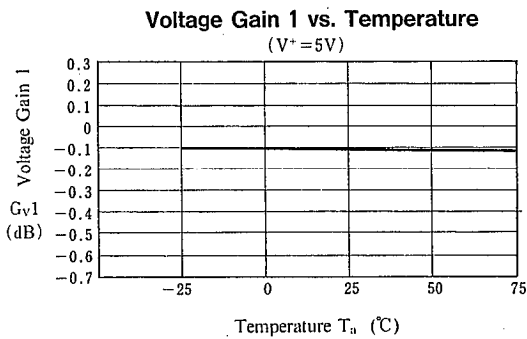
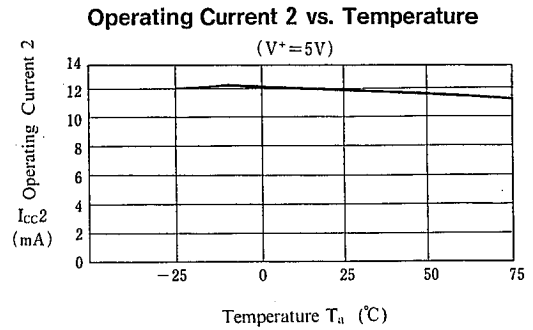
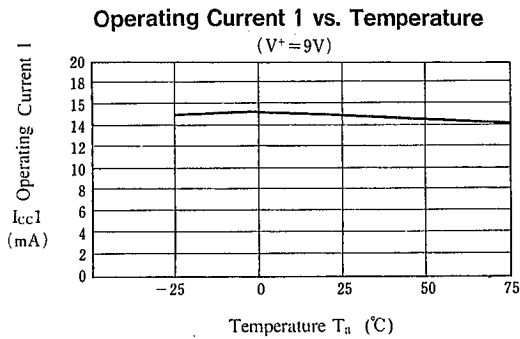
■ TEST CIRCUIT



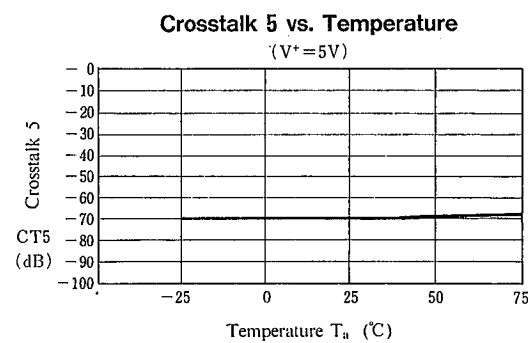
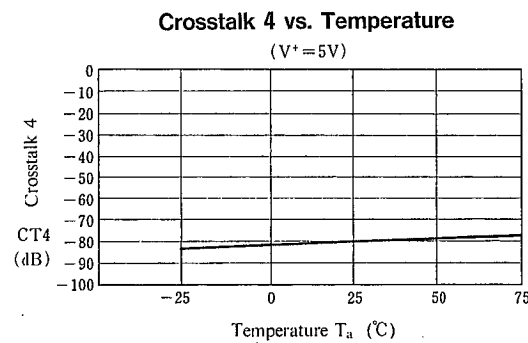
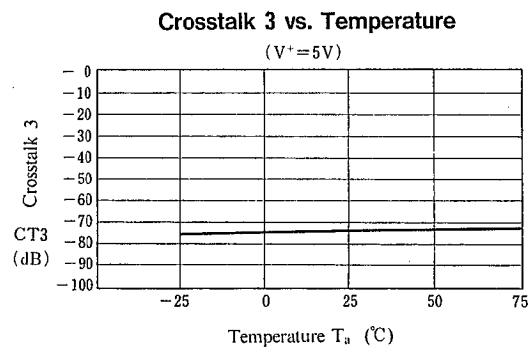
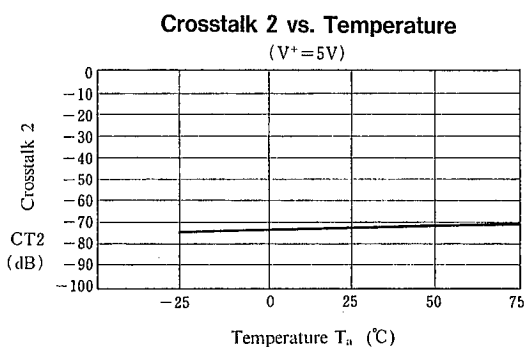
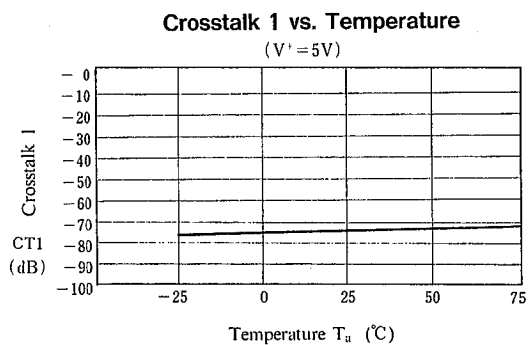
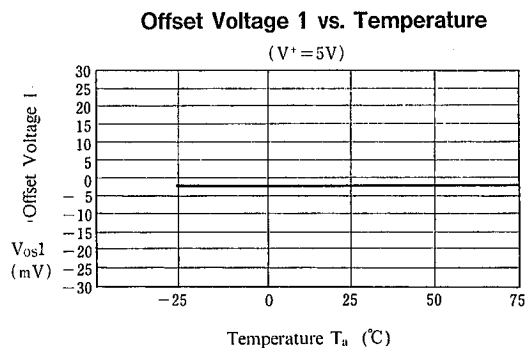
This IC requires $1M\Omega$ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.

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 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	
CT 1	2	1	1	1	1	1	2	1	
CT 2	1	2	1	1	1	1	1	1	v ₀
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 ₀
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 ₀

■ TYPICAL CHARACTERISTICS

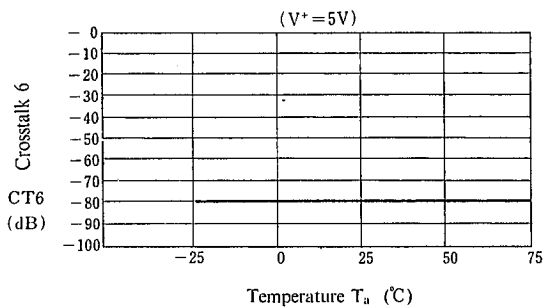


TYPICAL CHARACTERISTICS

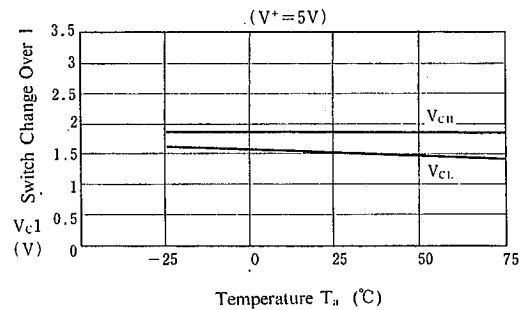


■ TYPICAL CHARACTERISTICS

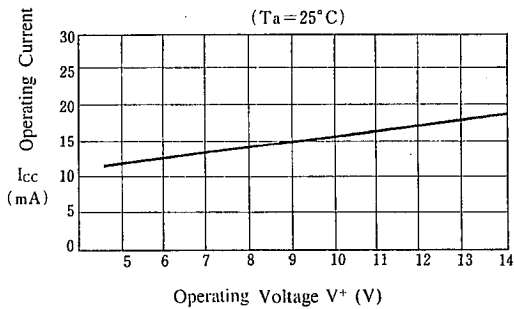
Crosstalk 6 vs. Temperature



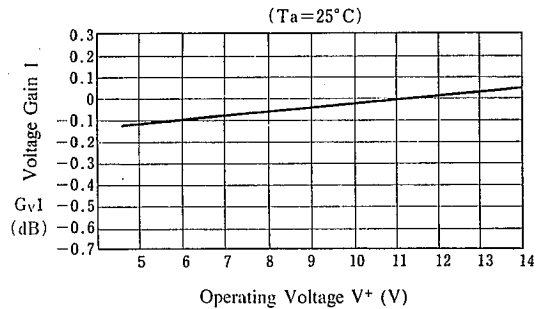
Switch Change Over 1 vs. Temperature



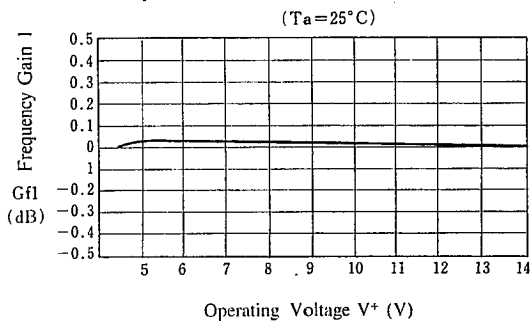
Operating Current vs. Operating Voltage



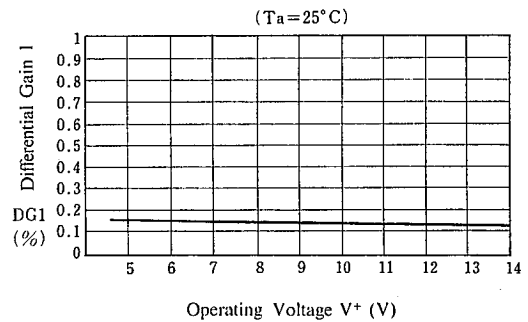
Voltage Gain 1 vs. Operating Voltage



Frequency Gain 1 vs. Operating Voltage



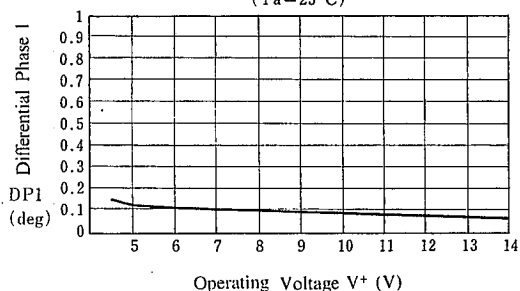
Differential Gain 1 vs. Operating Voltage



TYPICAL CHARACTERISTICS

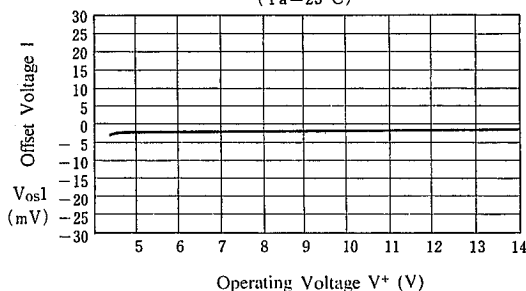
Differential Phase 1 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



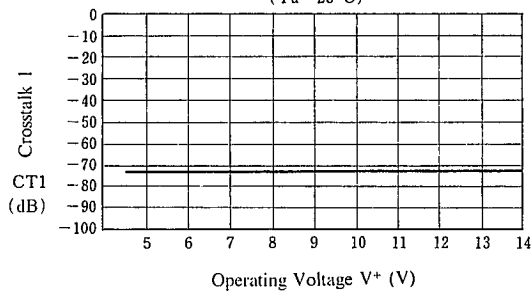
Offset Voltage 1 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



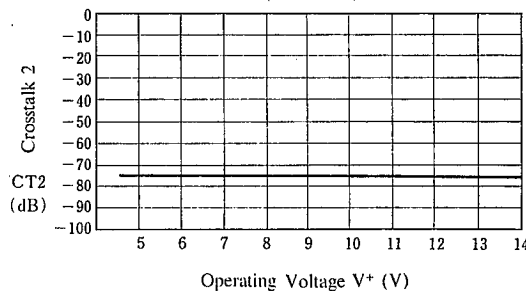
Crosstalk 1 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



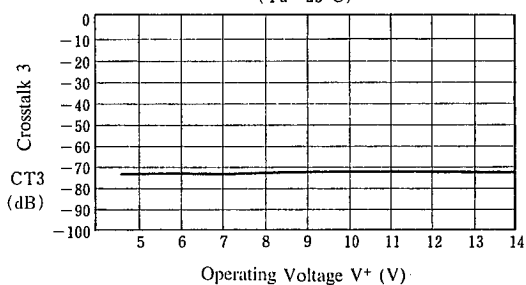
Crosstalk 2 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



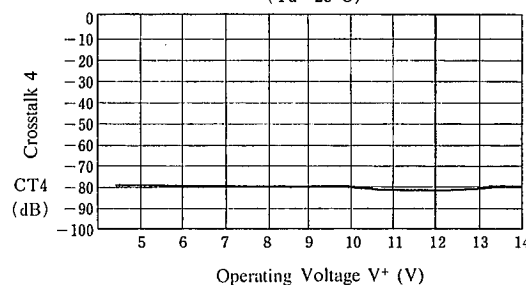
Crosstalk 3 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



Crosstalk 4 vs. Operating Voltage

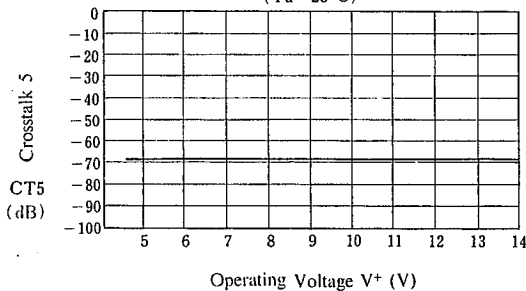
($T_a = 25^\circ\text{C}$)



■ TYPICAL CHARACTERISTICS

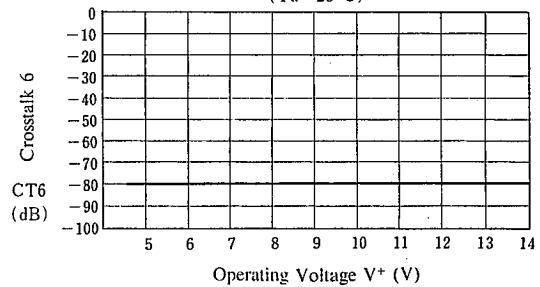
Crosstalk 5 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



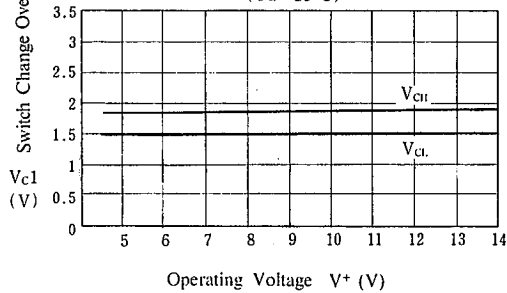
Crosstalk 6 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



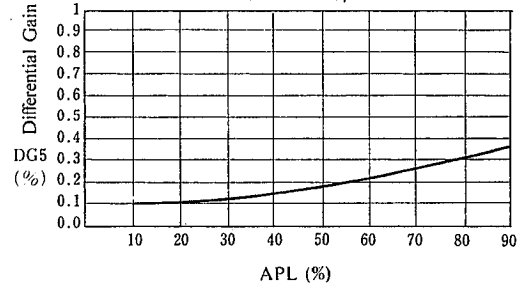
Switch Change Over 1 vs. Operating Voltage

($T_a = 25^\circ\text{C}$)



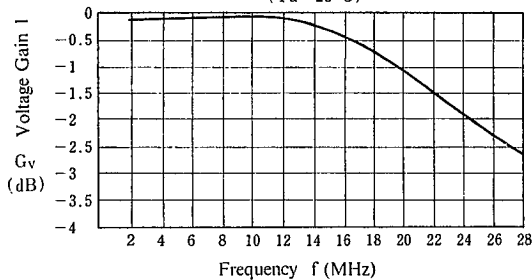
Differential Gain vs. APL

($T_a = 25^\circ\text{C}$)



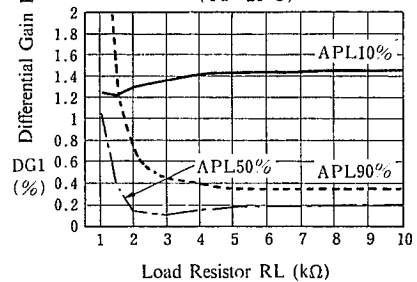
Voltage Gain 1 vs. Frequency Feature

($T_a = 25^\circ\text{C}$)



Differential Gain 1 vs. Load Resistor

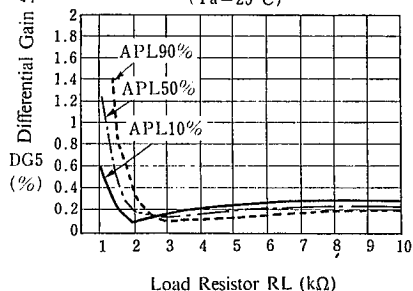
($T_a = 25^\circ\text{C}$)



TYPICAL CHARACTERISTICS

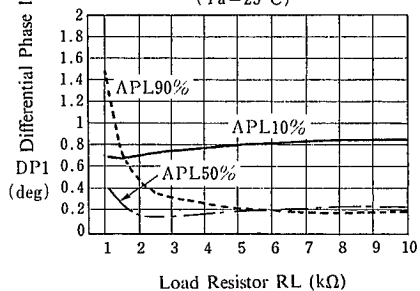
Differential Gain 5 vs. Load Resistor

($T_a = 25^\circ\text{C}$)



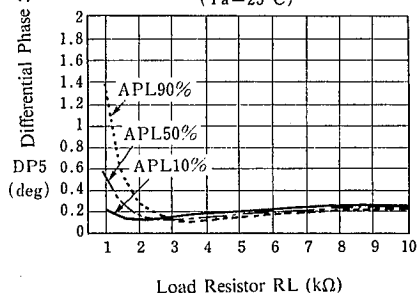
Differential Phase 1 vs. Load Resistor

($T_a = 25^\circ\text{C}$)



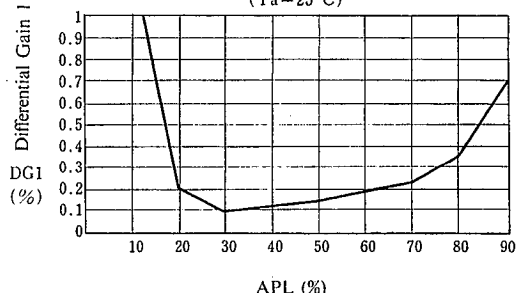
Differential Phase 5 vs. Load Resistor

($T_a = 25^\circ\text{C}$)



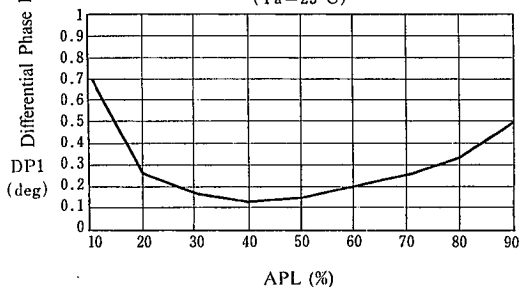
Differential Gain 1 vs. APL

($T_a = 25^\circ\text{C}$)



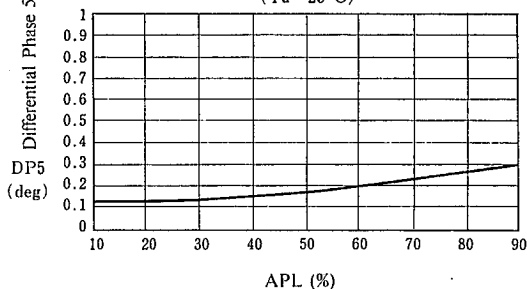
Differential Phase 1 vs. APL

($T_a = 25^\circ\text{C}$)



Differential Phase 5 vs. APL

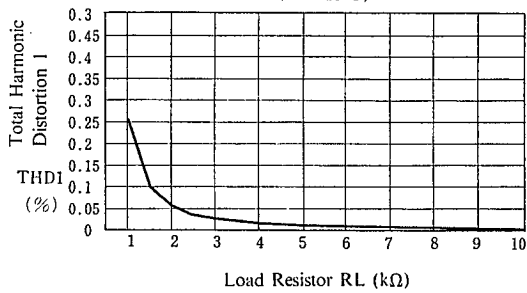
($T_a = 25^\circ\text{C}$)



■ TYPICAL CHARACTERISTICS

Total Harmonic Distortion 1 vs. Load Resistor

($T_a = 25^\circ\text{C}$)



MEMO

[CAUTION]

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