

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).

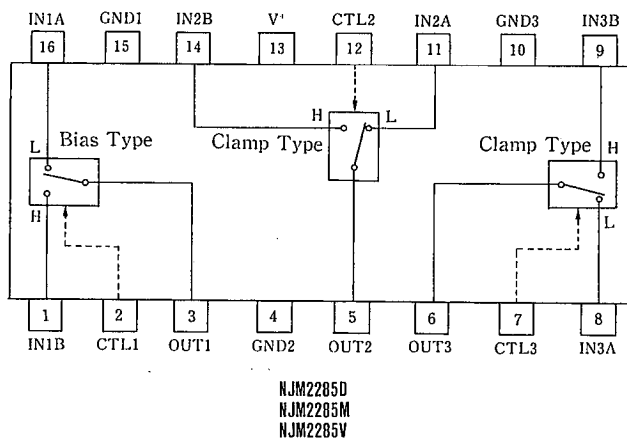
■ FEATURES

- 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

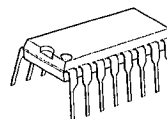
■ APPLICATIONS

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

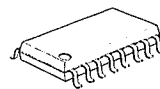
■ BLOCK DIAGRAM



■ PACKAGE OUTLINE



NJM2285D



NJM2285M



NJM2285V

■ MAXIMUM RATINGS

(Ta=25°C)

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	°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)	8.0	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 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 _{CI1}	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

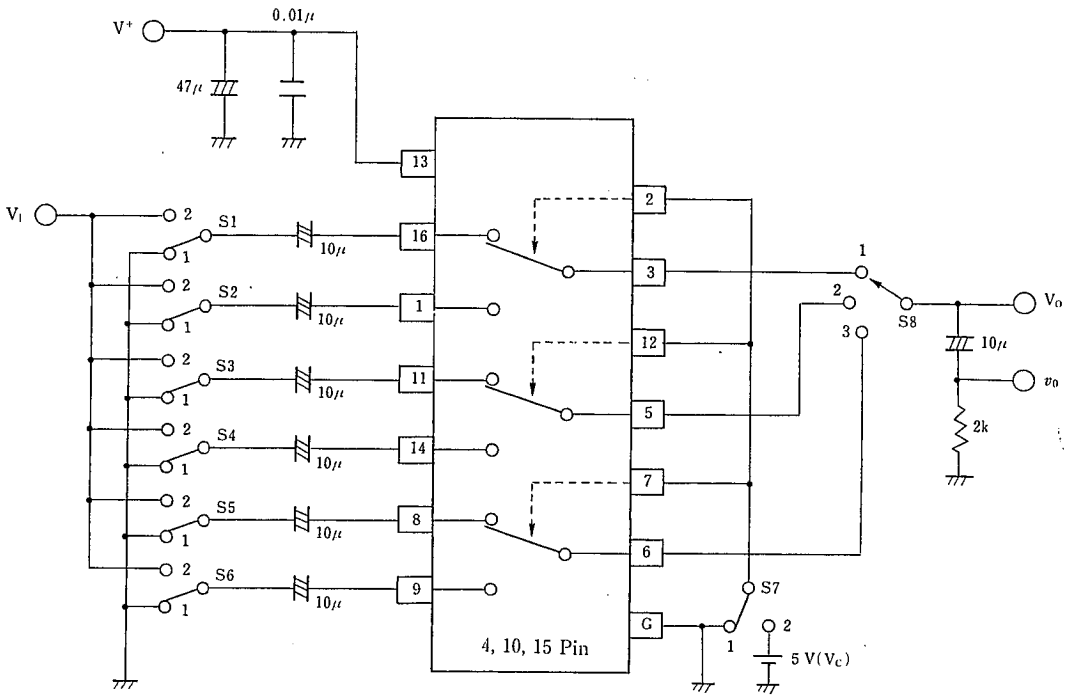
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■ TERMINAL EXPLANATION

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)	0.8V	
13	V+	5V	
15 4 10	GND 1 GND 2 GND 3		

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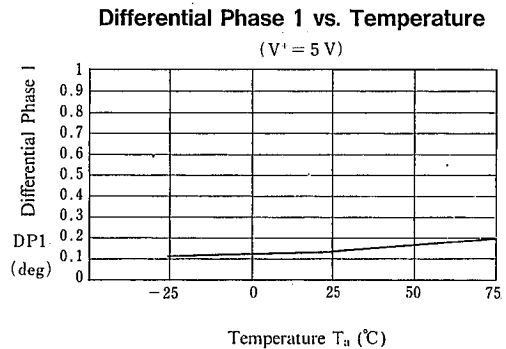
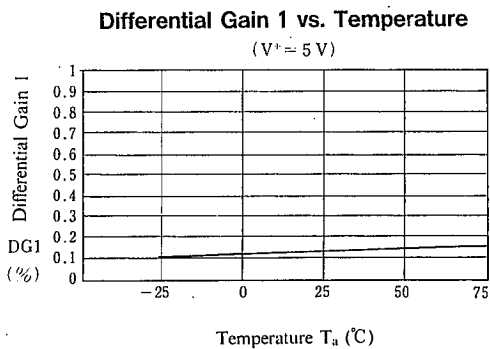
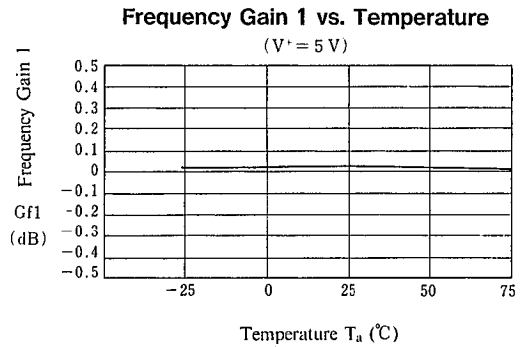
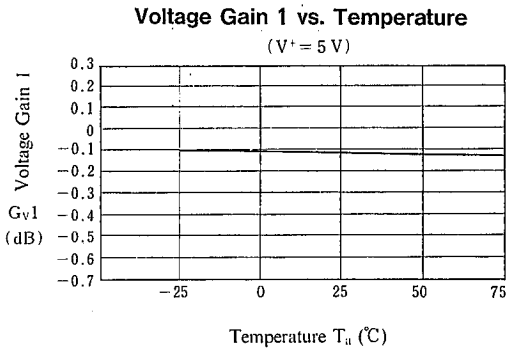
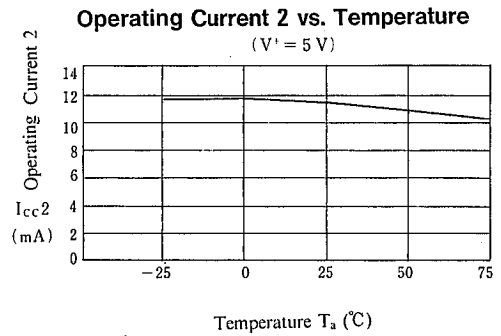
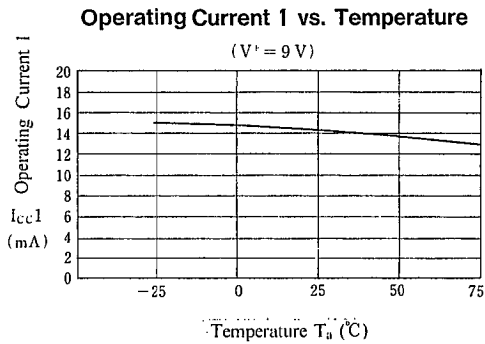
■ TEST CIRCUIT



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

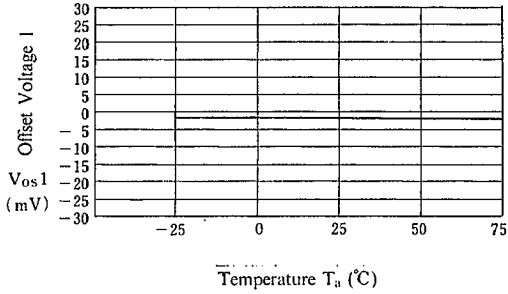
Parameter	S 1	S 2	S 3	S 4	S 5	S 6	S 7	S 8	Test Part
Icc1	1	1	1	1	1	1	1	1	V ⁺
Icc2	1	1	1	1	1	1	1	1	V ⁺
Gv1	2	1	1	1	1	1	1	1	v ₀
Gf1	2	1	1	1	1	1	1	1	v ₀
DG1	2	1	1	1	1	1	1	1	v ₀
DP1	2	1	1	1	1	1	1	1	v ₀
CT 1	2	1	1	1	1	1	2	1	v ₀
CT 2	1	2	1	1	1	1	1	1	v ₀
CT 3	1	1	2	1	1	1	2	2	v ₀
CT 4	1	1	1	2	1	1	1	2	v ₀
CT 5	1	1	1	1	2	1	2	3	v ₀
CT 6	1	1	1	1	1	2	1	3	v ₀
Vos1	1	1	1	1	1	1	1/2	1	V _O
Vc1	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

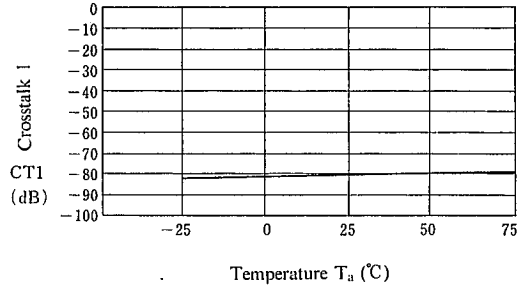


■ TYPICAL CHARACTERISTICS

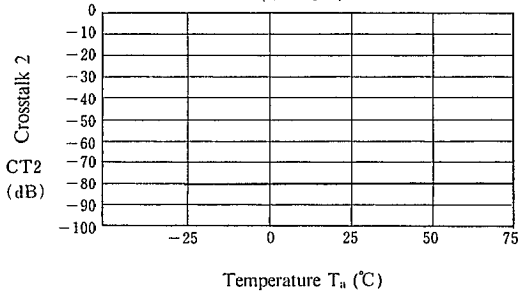
Offset Voltage 1 vs. Temperature
($V^+ = 5\text{ V}$)



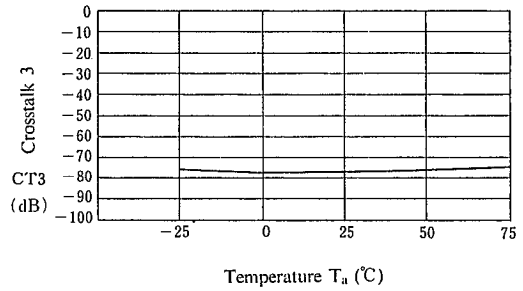
Crosstalk 1 vs. Temperature
($V^+ = 5\text{ V}$)



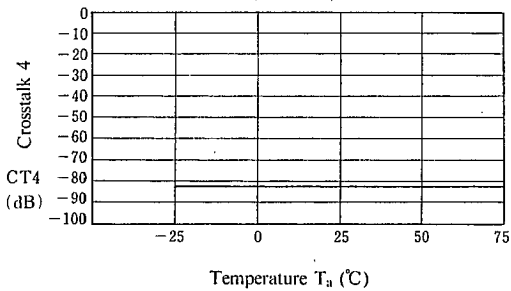
Crosstalk 2 vs. Temperature
($V^+ = 5\text{ V}$)



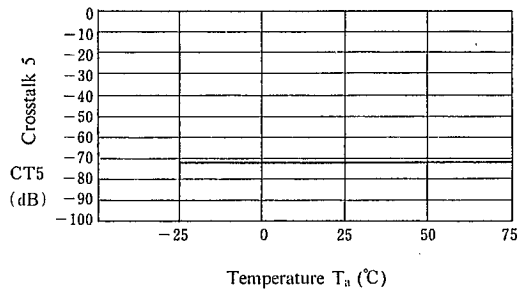
Crosstalk 3 vs. Temperature
($V^+ = 5\text{ V}$)



Crosstalk 4 vs. Temperature
($V^+ = 5\text{ V}$)



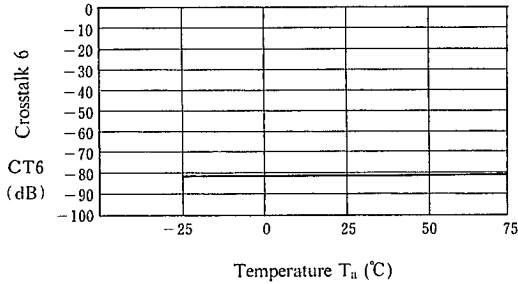
Crosstalk 5 vs. Temperature
($V^+ = 5\text{ V}$)



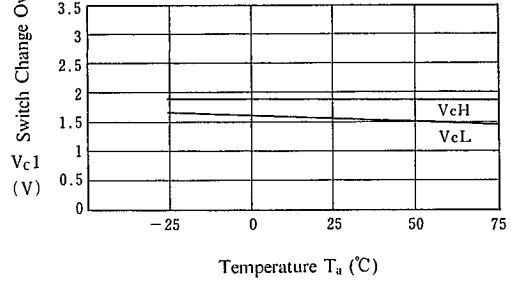
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■ TYPICAL CHARACTERISTICS

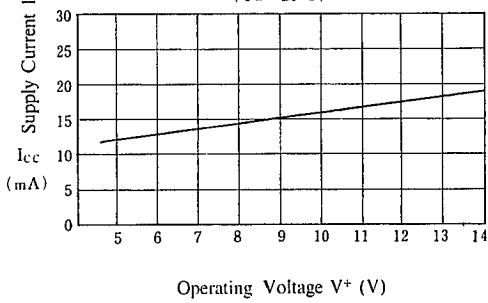
Crosstalk 6 vs. Temperature
($V^+ = 5\text{ V}$)



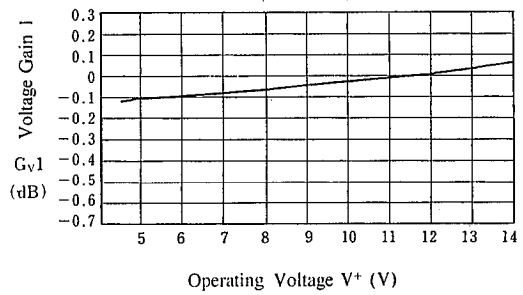
Switch Change Over 1 vs. Temperature
($V^+ = 5\text{ V}$)



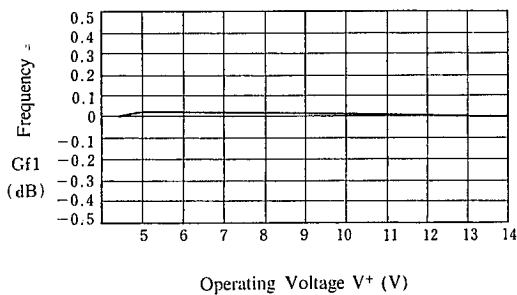
Supply Current 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



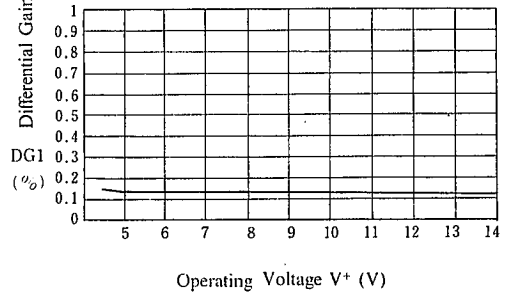
Voltage Gain 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



Frequency vs. Operating Voltage
($T_a = 25^\circ\text{C}$)

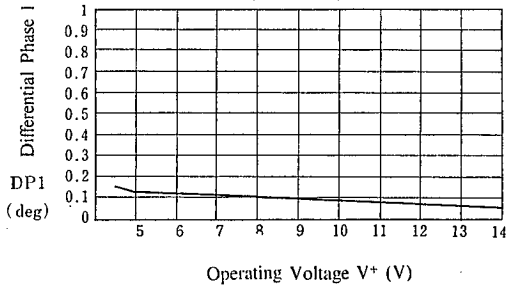


Differential Gain 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)

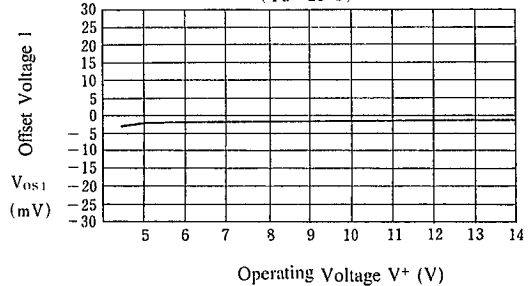


■ TYPICAL CHARACTERISTICS

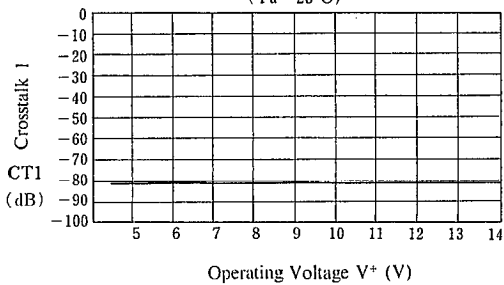
Differential Phase 1 vs. Operating Voltage
($T_a=25^\circ\text{C}$)



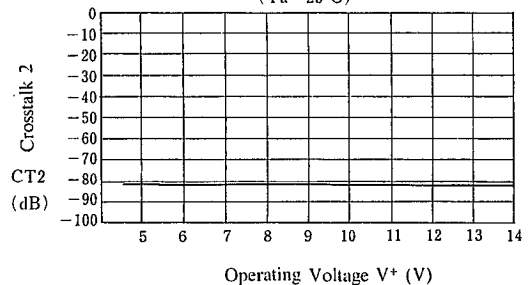
Offset Voltage 1 vs. Operating Voltage
($T_a=25^\circ\text{C}$)



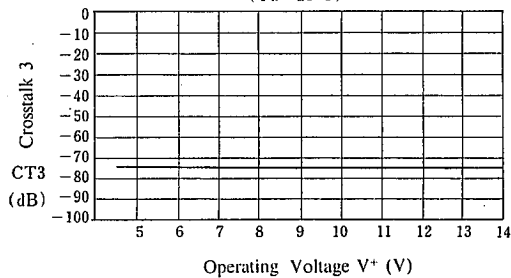
Crosstalk 1 vs. Operating Voltage
($T_a=25^\circ\text{C}$)



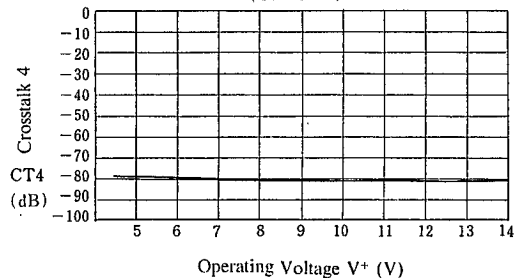
Crosstalk 2 vs. Operating Voltage
($T_a=25^\circ\text{C}$)



Crosstalk 3 vs. Operating Voltage
($T_a=25^\circ\text{C}$)



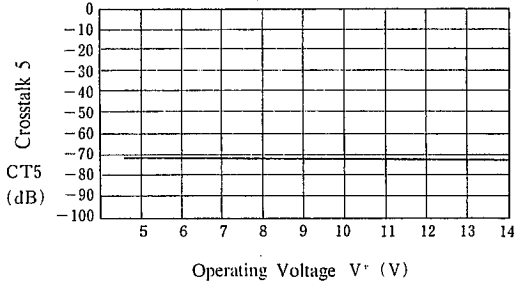
Crosstalk 4 vs. Operating Voltage
($T_a=25^\circ\text{C}$)



TYPICAL CHARACTERISTICS

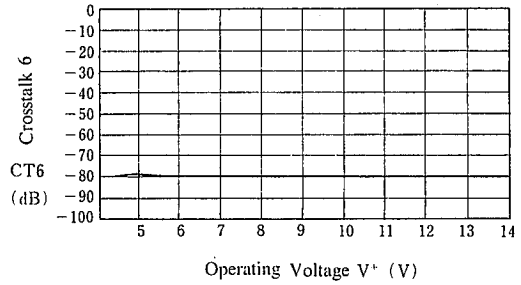
Crosstalk 5 vs. Operating Voltage V^+ (V)

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



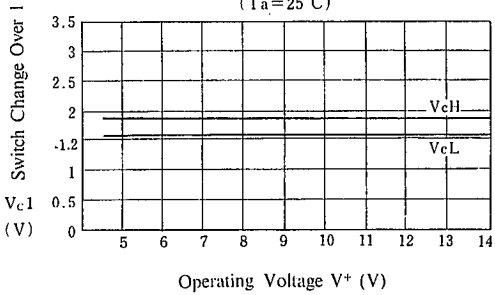
Crosstalk 6 vs. Operating Voltage V^+ (V)

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



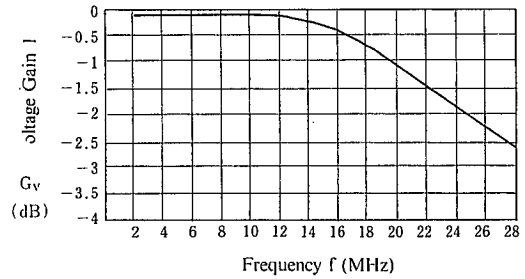
Switch Change Over 1 vs. Operating Voltage

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



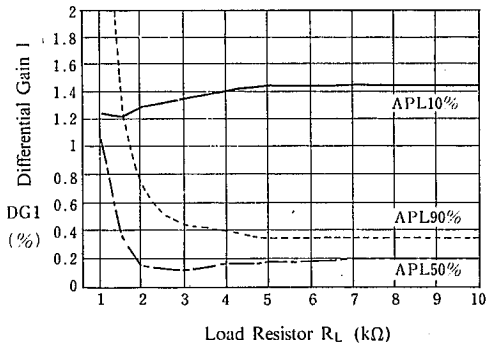
Voltage Gain 1 vs. Frequency

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



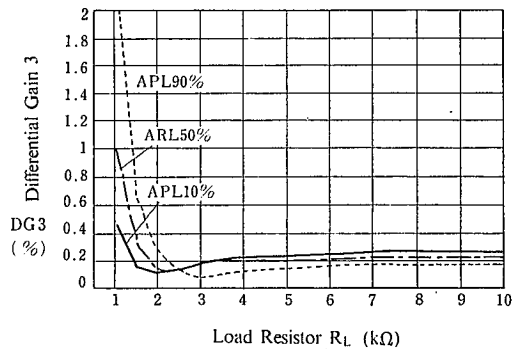
Differential Gain 1 vs. Load Resistor

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



Differential Gain 3 vs. Load Resistor

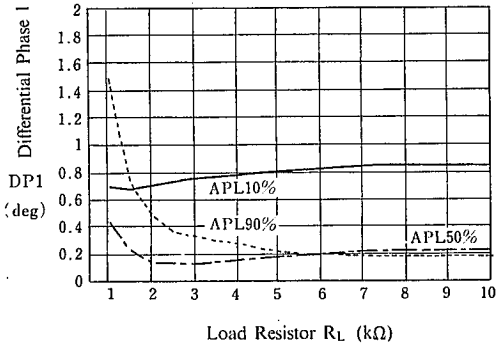
($T_a=25^\circ\text{C}$)



■ TYPICAL CHARACTERISTICS

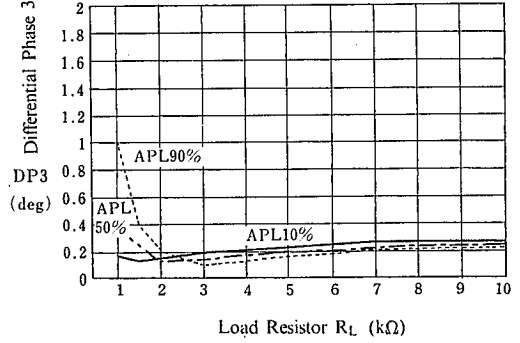
Differential Phase 1 vs. Load Resistor

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



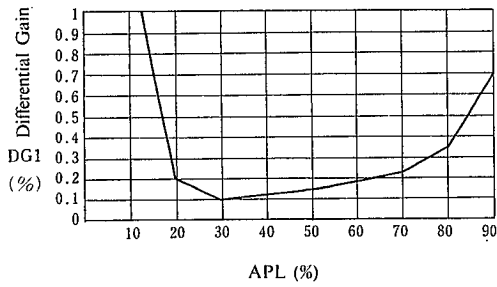
Differential Phase 3 vs. Load Resistor

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



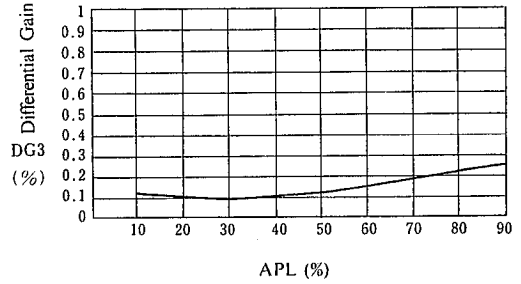
Differential Gain 1 vs. APL

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



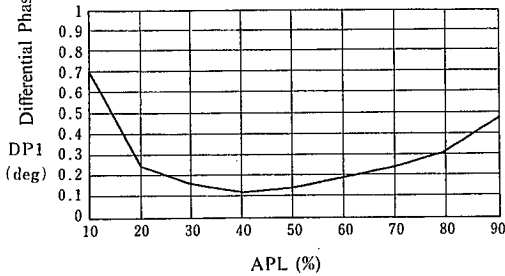
Differential Gain 3 vs. APL

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



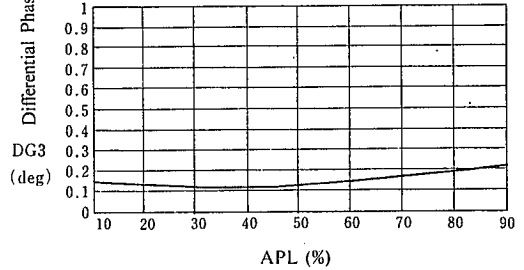
Differential Phase 1 vs. APL

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

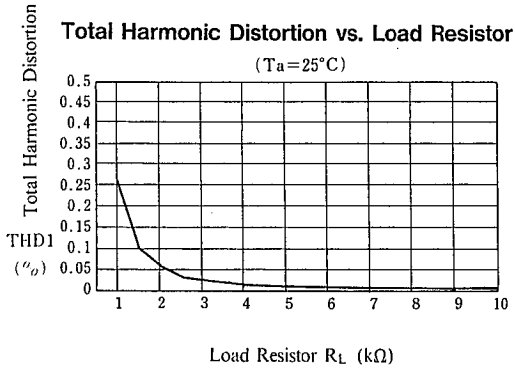


Differential Phase 3 vs. APL

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



■ TYPICAL CHARACTERISTICS



MEMO

[CAUTION]

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