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New Japan Radio Co.,Ltd.

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2-INPUT 3CHANNEL VIDEO SWITCH

■ GENERAL DESCRIPTION

NJM2283 is a switching IC for switching over from one audio or video input signal to another. Internalizing 2 inputs and 1 output, and then each set of 3 can be operated independently. It is a higher efficiency video switch, featuring the supply voltage range 4.75 to 13.0V, the frequency feature 10MHz, and then Crosstalk 75dB (at 4.43MHz).

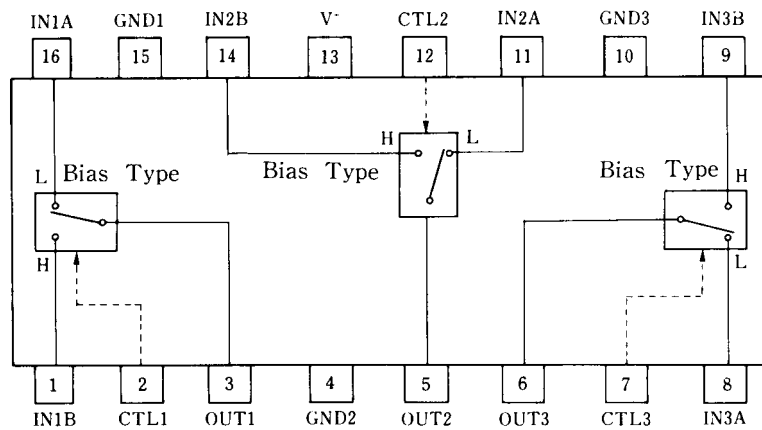
■ FEATURES

- 2 Input-1 Output 3 Circuits internalizing
- Wide Operating Voltage (4.75V to 13V)
- Crosstalk 75dB (at 4.43MHz)
- Wide Operating Supply Range 10MHz (2V_{P-P} Input)
- Wide Bandwidth Frequency
- Package Outline DIP16, DMP16, SSOP16

■ APPLICATIONS

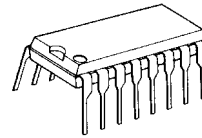
- VCR, Video Camera, AV-TV, Video Disk Player.

■ BLOCK DIAGRAM

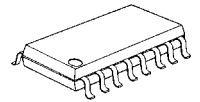


NJM2283D
NJM2283M
NJM2283V

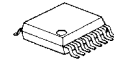
■ PACKAGE OUTLINE



NJM2283D



NJM2283M



NJM2283V

NJM2283

■ MAXIMUM RATINGS

(T_a = 25°C)

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	°C
Storage Temperature Range	T _{stg}	-40 to +125	°C

■ ELECTRICAL CHARACTERISTICS

(V⁺ = 5V, T_a = 25°C)

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I _{CC1}	V ⁺ = 5V (Note1)	8.3	11.8	15.3	mA
Operating Current (2)	I _{CC2}	V ⁺ = 9V (Note1)	10.4	14.8	19.2	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

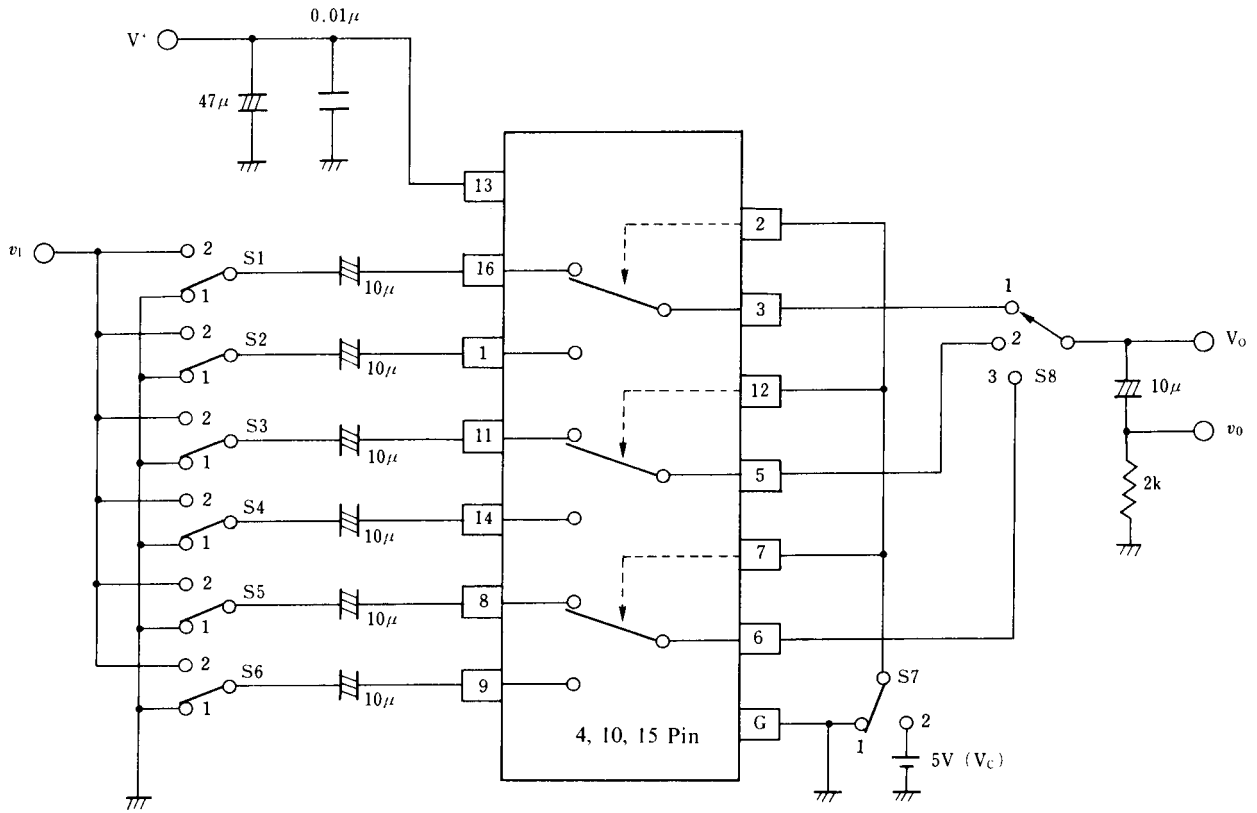
(Note2) S1 = S2 = S3 = S4 = S5 = S6 = 1, S7 = 1→2 Measure the output DC voltage difference

■ TERMINAL EXPLANATION

PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
16 1 11 14 8 9	IN 1 A IN 1 B IN 2 A IN 2 B IN 3 A IN 3 B [Input]	2.5V	
2 12 7	CTL 1 CTL 2 CTL 3 [Switching]		
3 5 6	OUT1 OUT2 OUT3 [Output]	1.8V	
13	V ⁺	5V	
15 4 10	GND 1 GND 2 GND 3		

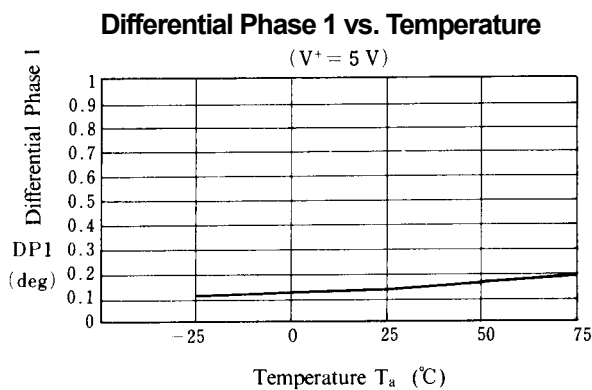
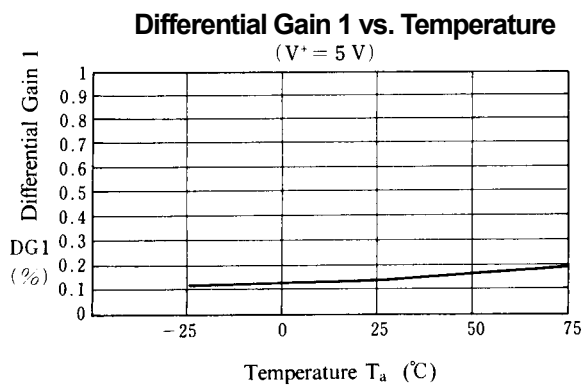
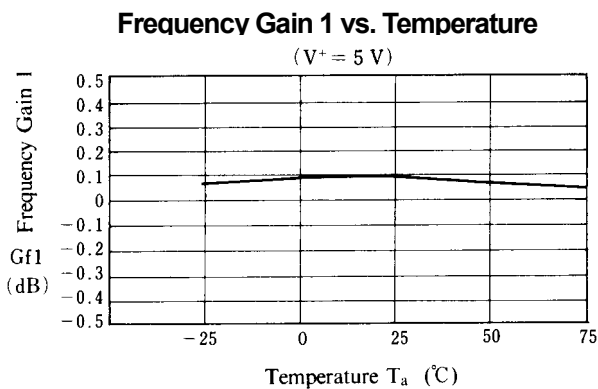
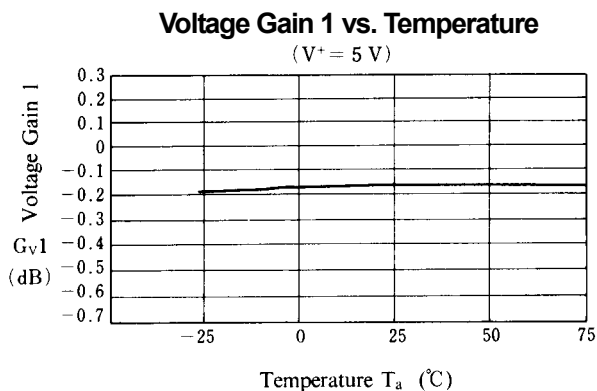
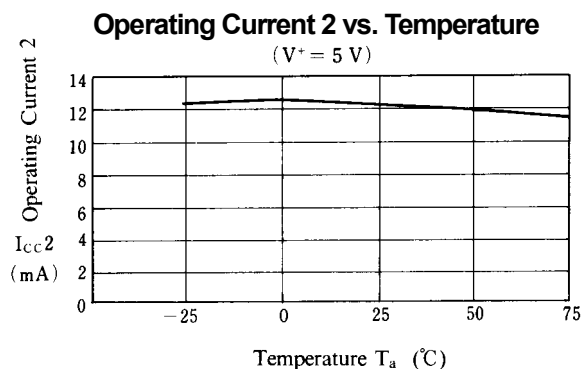
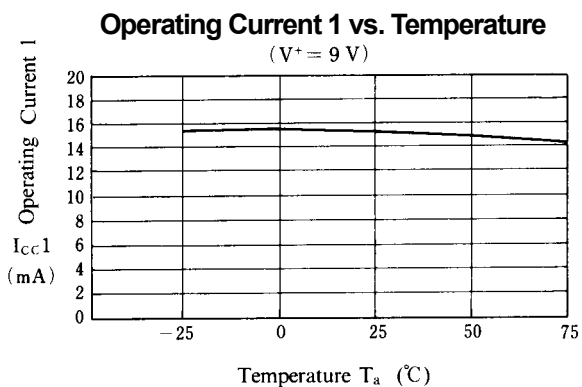
NJM2283

■ TEST CIRCUIT



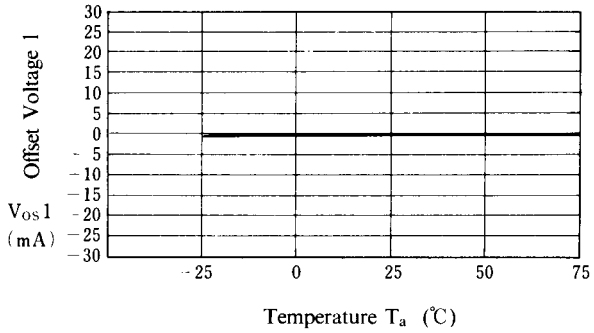
Parameter	S1	S2	S3	S4	S5	S6	S7	S8	Test Part
I_{CC1}	1	1	1	1	1	1	1	1	V^+
I_{CC2}	1	1	1	1	1	1	1	1	
G_{V1}	2	1	1	1	1	1	1	1	v_o
G_{F1}	2	1	1	1	1	1	1	1	
DG_1	2	1	1	1	1	1	1	1	
DP_1	2	1	1	1	1	1	1	1	
CT1	2	1	1	1	1	1	2	1	v_o
CT2	1	2	1	1	1	1	1	1	
CT3	1	1	2	1	1	1	2	2	
CT4	1	1	1	2	1	1	1	2	
CT5	1	1	1	1	2	1	2	3	
CT6	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

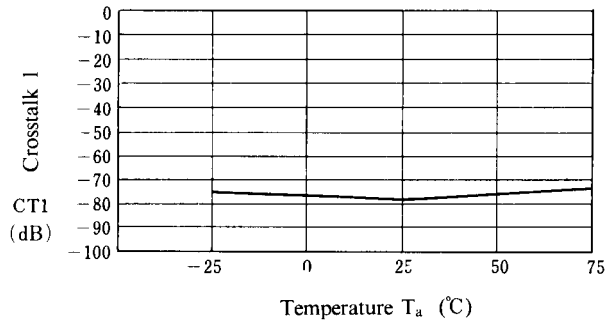


■ TYPICAL CHARACTERISTICS

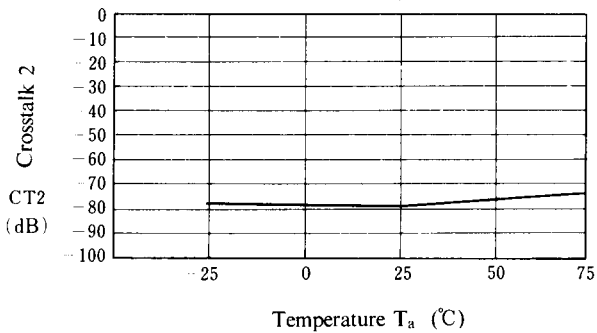
Offset Voltage 1 vs. Temperature
($V^+ = 5\text{ V}$)



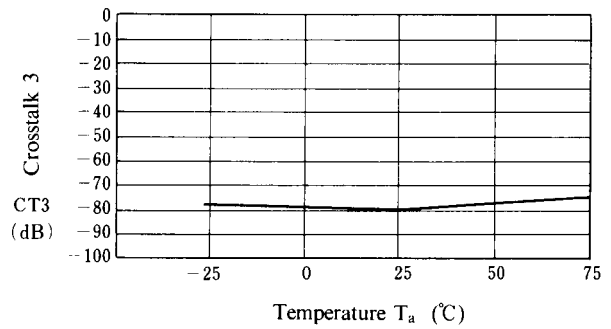
Crosstalk 1 vs. Temperature
($V^+ = 5\text{ V}$)



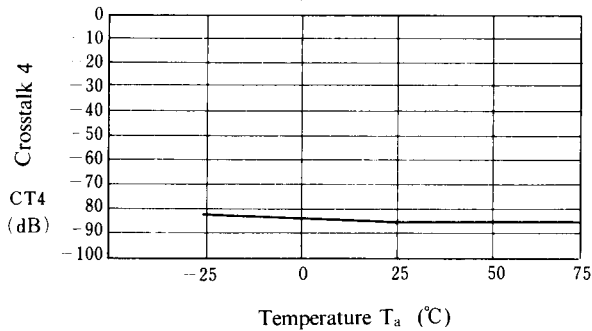
Crosstalk 2 vs. Temperature
($V^+ = 5\text{ V}$)



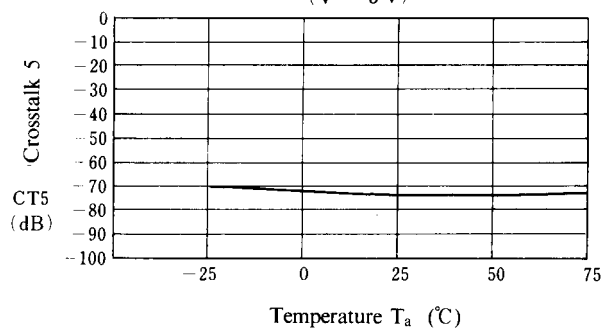
Crosstalk 3 vs. Temperature
($V^+ = 5\text{ V}$)



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

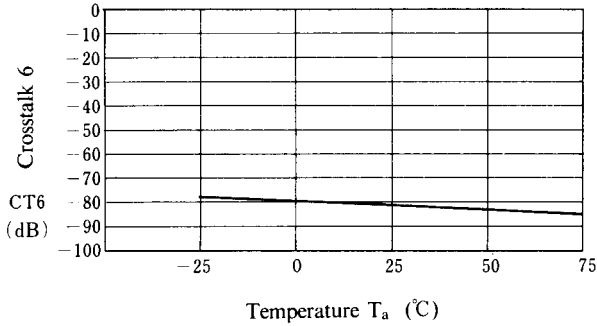


Crosstalk 5 vs. Temperature
($V^+ = 5\text{ V}$)

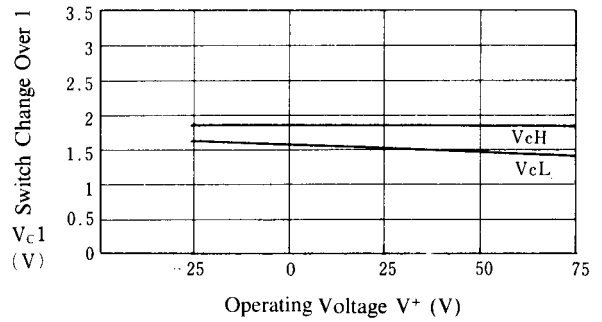


■ TYPICAL CHARACTERISTICS

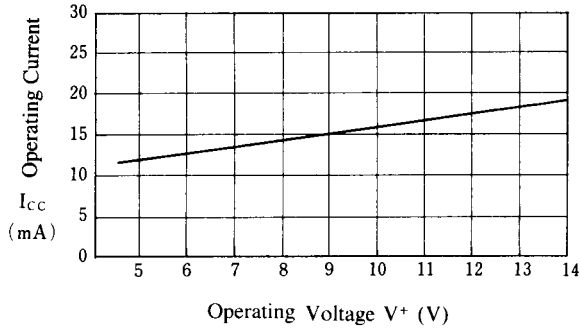
Crosstalk 6 vs. Temperature
($V^+ = 5\text{ V}$)



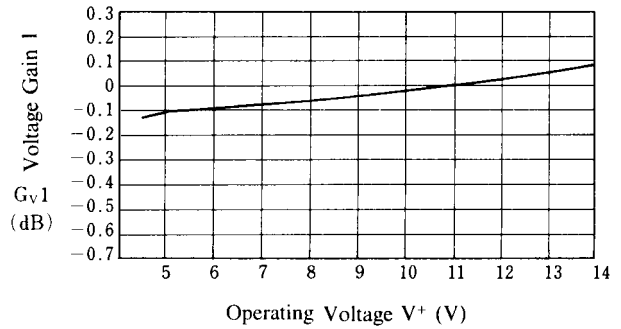
Switch Change Over 1 vs. Operating Voltage
($V^+ = 5\text{ V}$)



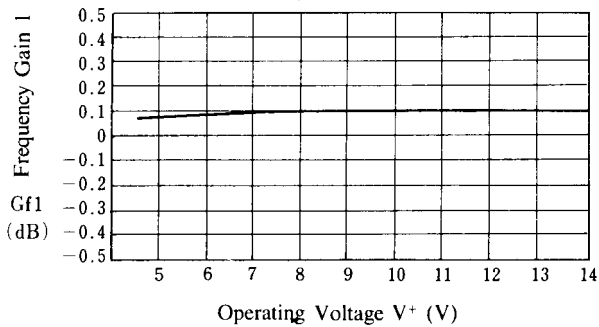
Operating Current vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



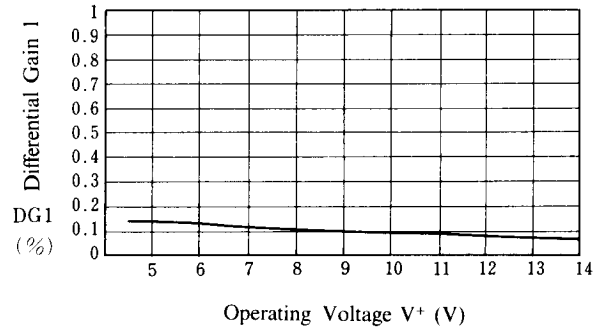
Voltage Gain 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



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

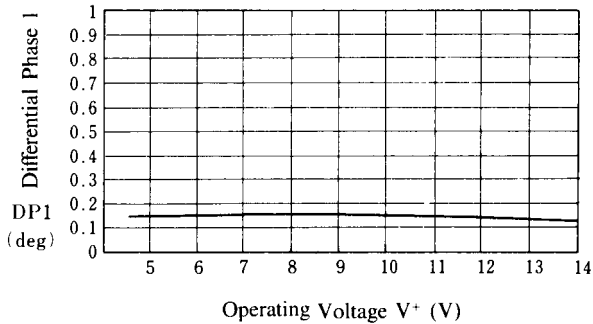


Differential Gain 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)

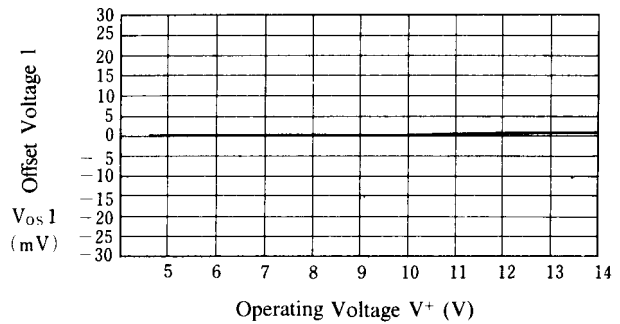


■ TYPICAL CHARACTERISTICS

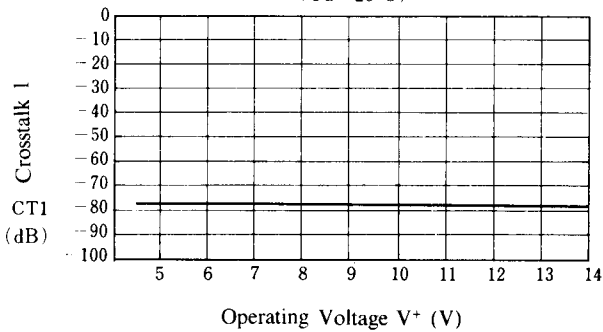
Differential Phase 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



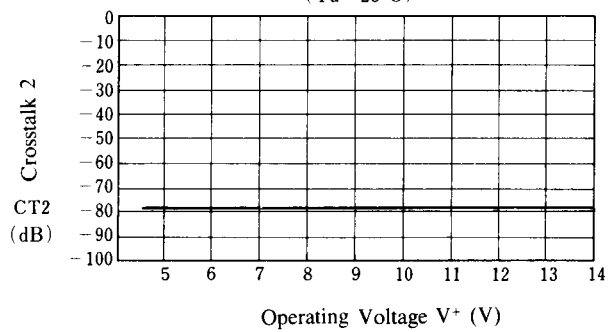
Offset Voltage 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



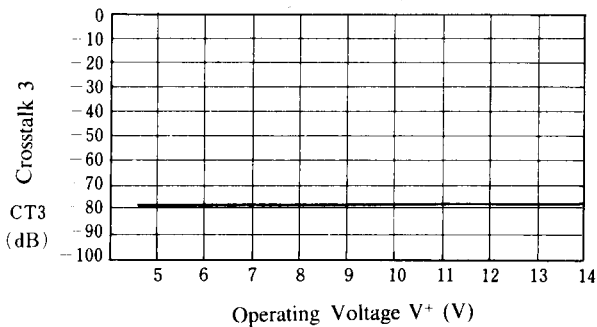
Crosstalk 1 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



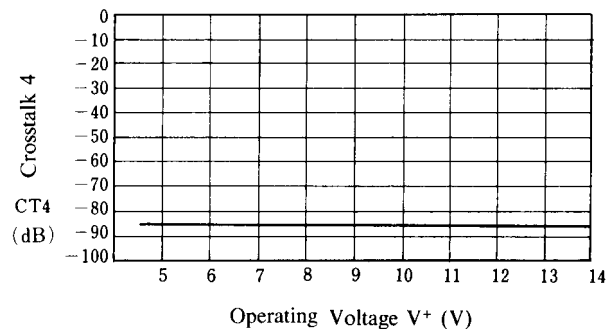
Crosstalk 2 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



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



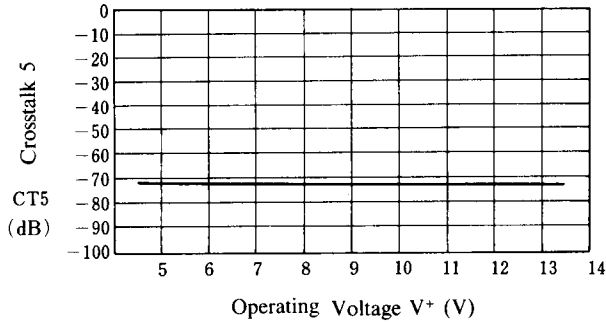
Crosstalk 4 vs. Operating Voltage
($T_a = 25^\circ\text{C}$)



■ TYPICAL CHARACTERISTICS

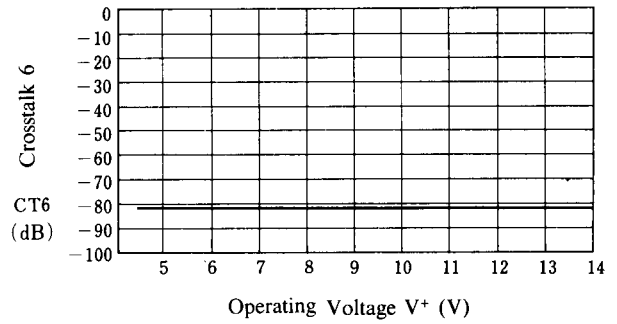
Crosstalk 5 vs. Operating Voltage

(Ta=25°C)



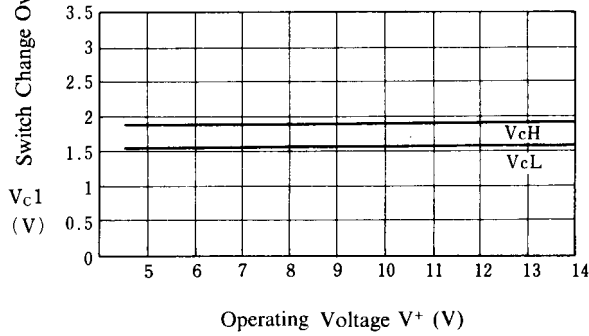
Crosstalk 6 vs. Operating Voltage

(Ta=25°C)



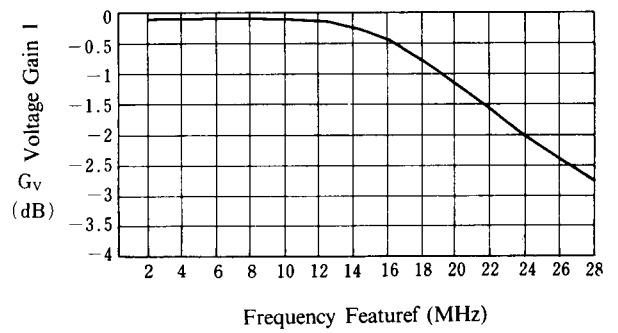
Switch Change Over 1 vs. Operating Voltage

(Ta=25°C)



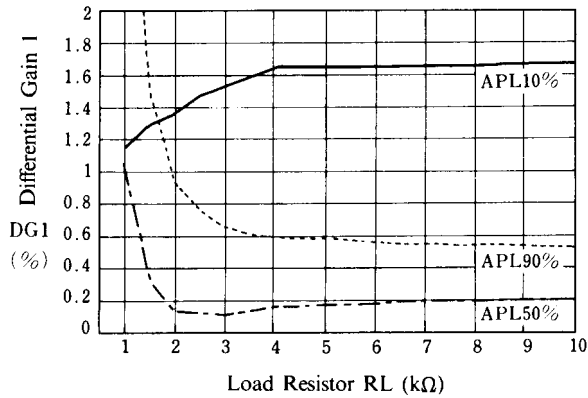
Voltage Gain 1 vs. Frequency Feature

(Ta=25°C)



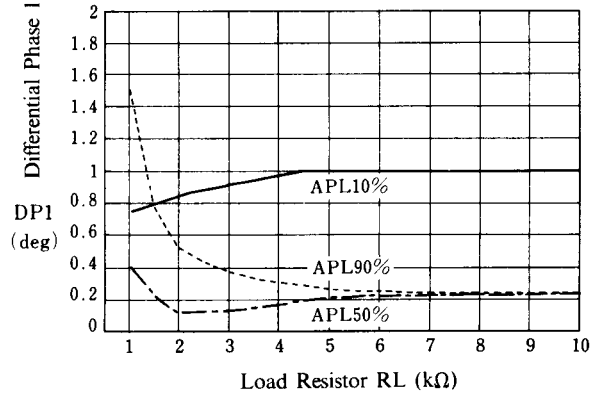
Differential Gain 1 vs. Load Resistor

(Ta=25°C)



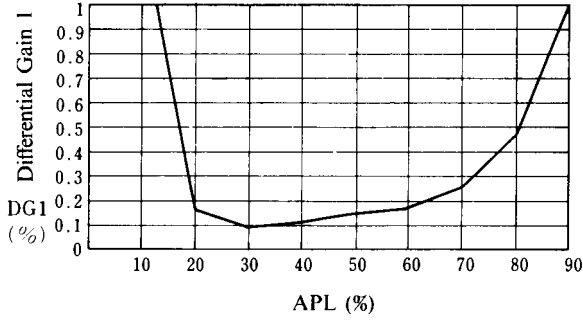
Differential Phase 1 vs. Load Resistor

(Ta=25°C)

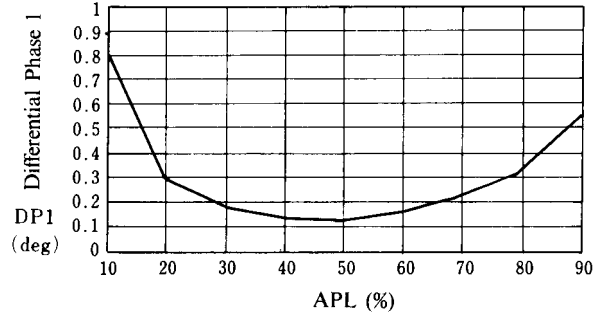


■ TYPICAL CHARACTERISTICS

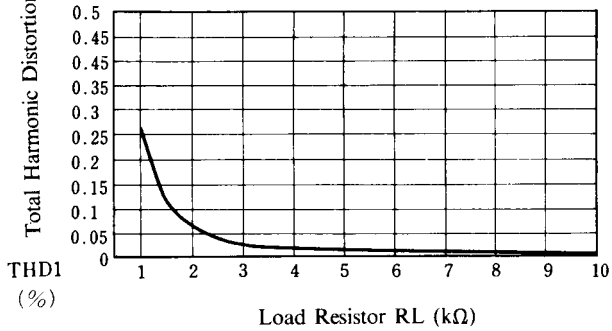
Differential Gain 1 vs. APL
($T_a = 25^\circ\text{C}$)



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

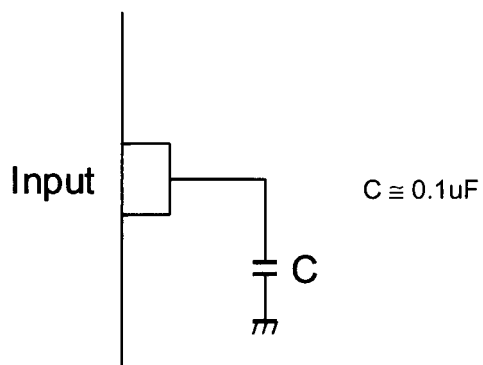


Total Harmonic Distortion vs. Load Resistor
($T_a = 25^\circ\text{C}$)



■ APPLICATION

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



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