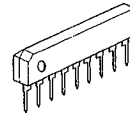


3-INPUT 1MUTE VIDEO SWITCH

■ GENERAL DESCRIPTION

NJM2273 is a switching IC for switching over from one audio or video input signal to another. Internalizing the mute function which can be operated by 3 inputs. It is a higher performance video switch, with the operating supply voltage 4.75 to 13V, frequency bandwidth 7MHz, crosstalk 75dB (at 4.43MHz).

■ PACKAGE OUTLINE



NJM2273S

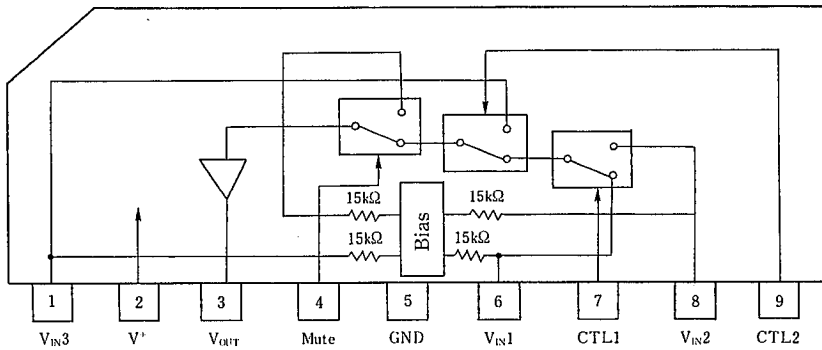
■ FEATURES

- 3 Input, 1 - Output
- Internalizing Mute Function
- Operating Voltage (4.75~13.0V)
- Crosstalk 75 dB(at 4.43MHz)
- Wide Bandwidth Frequency 7MHz(2V_{r-p} Input)
- Package Outline SIP9
- Bipolar Technology

■ APPLICATIONS

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

■ BLOCK DIAGRAM



NJM2273S

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■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	14	V
Power Dissipation	P _D	(SIP9) 500	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)	4.5	6.5	8.5	mA
Operating Current (2)	I _{CC2}	V*=9V (Note1)	5.8	8.3	10.8	mA
Voltage Gain	G _V	V _I = 100kHz, 2V _{P-P} , V _O /V _I	-0.7	-0.2	+0.3	dB
Frequency Gain (1)	G _{F1}	V _I = 2V _{P-P} , V _O (7MHz)/V _O (100kHz)	-1.0	0	+1.0	dB
Frequency Gain (2)	G _{F2}	V _I = 1V _{P-P} , V _O (10MHz)/V _O (100kHz)	—	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)	-30	0	+30	mV
Crosstalk	CT	V _I = 2V _{P-P} , 4.43MHz, V _O /V _I	—	-75	—	dB
Muting Crosstalk	C _{TM}	V _I = 2V _{P-P} , 4.43MHz, V _O /V _I	—	-60	—	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=1

(Note2) Measure the output DC voltage difference between the following modes at S1=S2=S3=1

a) S4=S5=S6=1 b) S4=2, S5=S6=1 c) S5=2, S6=1 d) S6=2

■ CONTROL INPUT - OUTPUT SIGNAL

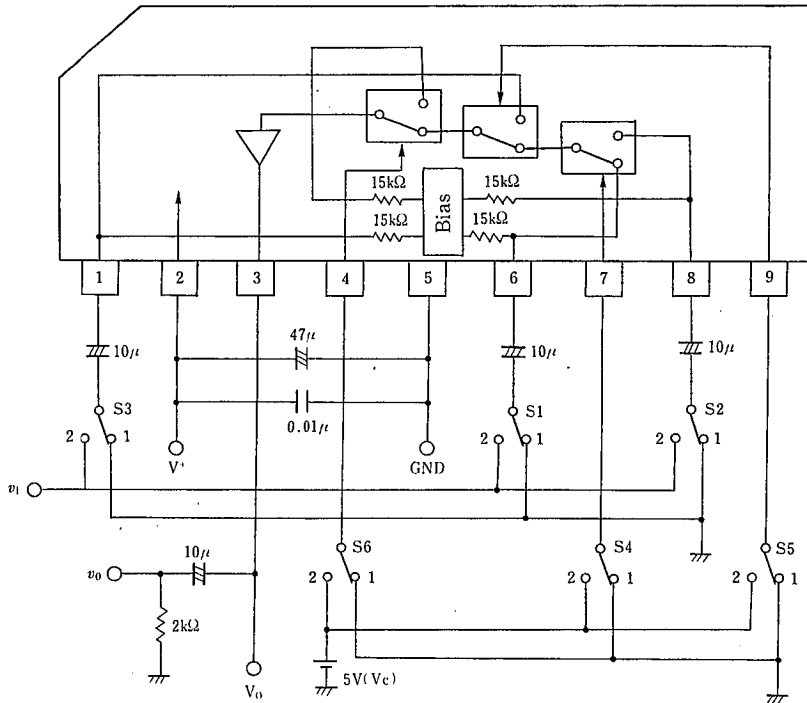
CTL1	CTL2	MUTE	OUTPUT SIGNAL
L	L	L	V _{IN1}
H	L	L	V _{IN2}
L/H	H	L	V _{IN3}
L/H	L/H	H	Inside DC

■ TERMINAL EXPLANATION

PIN NO.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
6 8 1	V _{IX1} V _{IX2} V _{IX3} (Input)	2.5V	
7 9 4	CTL1 CTL2 Mute (Switching)		
3	V _{OUT} (Output)	1.8V	
2	V ⁺	5V	
5	GND		

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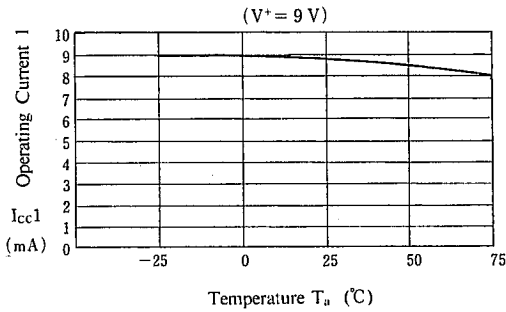
■ TEST CIRCUIT



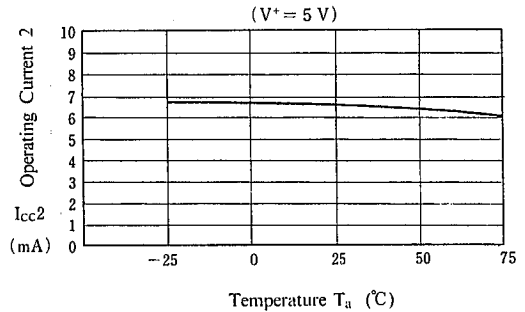
PARAMETER	S 1	S 2	S 3	S 4	S 5	S 6	TEST PART
I _{cc1}	1	1	1	1	1	1	V ⁺
I _{cc2}	1	1	1	1	1	1	
G _{v1}	2	1	1	1	1	1	v ₀
G _{t1}	2	1	1	1	1	1	
DG ₁	2	1	1	1	1	1	
DP ₁	2	1	1	1	1	1	
V _{OS1}	1	1	1	2	1	1	V ₀
CT ₁	2	1	1	2	1	1	v ₀
CT ₂	2	1	1	1	2	1	
CT ₃	1	2	1	1	1	1	
CT ₄	1	2	1	2	2	1	
CT ₅	1	1	2	1/2	1	1	
CT _{M1}	2	1	1	1	1	2	v ₀
CT _{M2}	1	2	1	2	1	2	
CT _{M3}	1	1	2	1/2	2	2	
V _{OS1}	1	1	1	2	1	1	V ₀
V _{C1}	2	1	1	V _C	1	1	V _C
THD	2	1	1	1	1	1	v ₀

■ TYPICAL CHARACTERISTICS

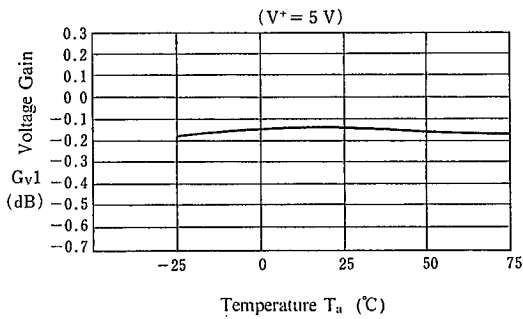
Operating Current 1 vs. Temperature



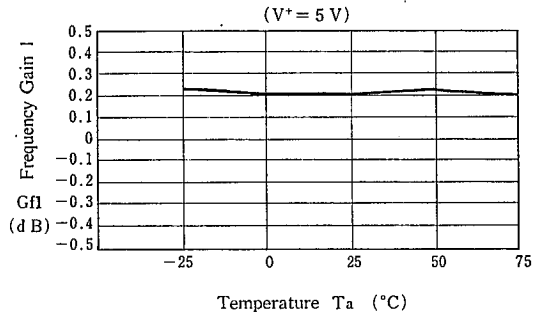
Operating Current 2 vs. Temperature



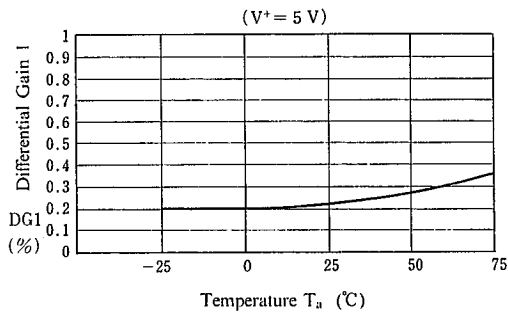
Voltage Gain 1 vs. Temperature



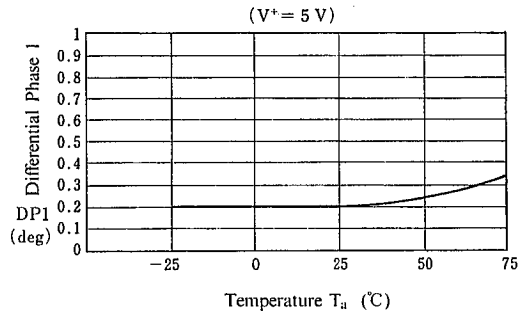
Frequency Gain 1 vs. Temperature T_a (°C)



Differential Gain 1 vs. Temperature

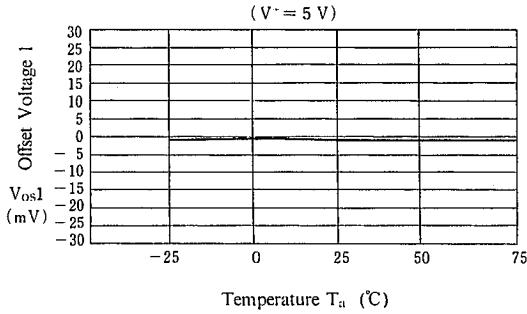


Differential Phase 1 vs. Temperature

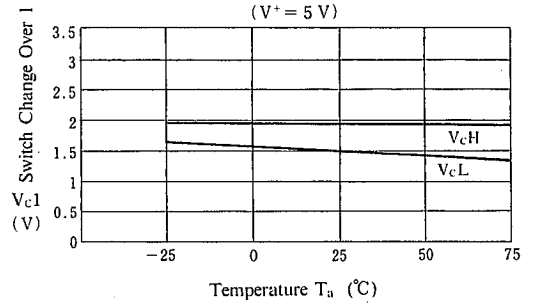


TYPICAL CHARACTERISTICS

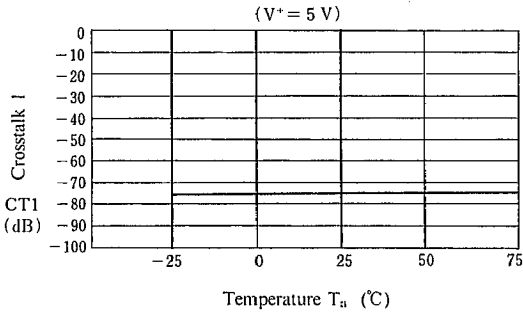
Offset Voltage 1 vs. Temperature



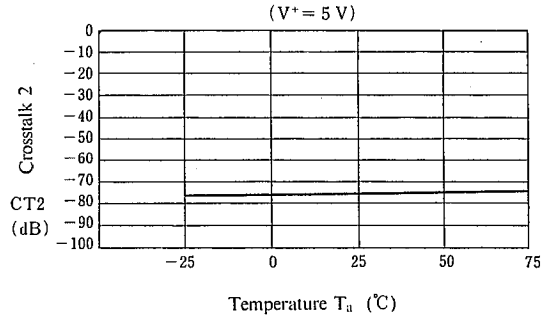
Switch Change Over 1 vs. Temperature



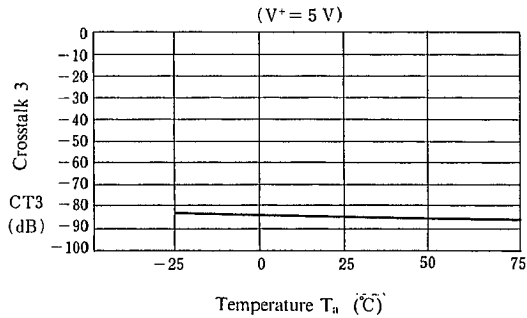
Crosstalk 1 vs. Temperature



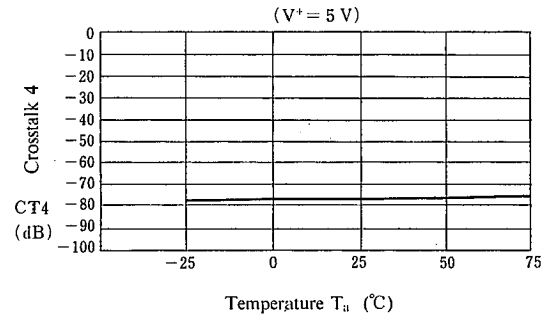
Crosstalk 2 vs. Temperature



Crosstalk 3 vs. Temperature



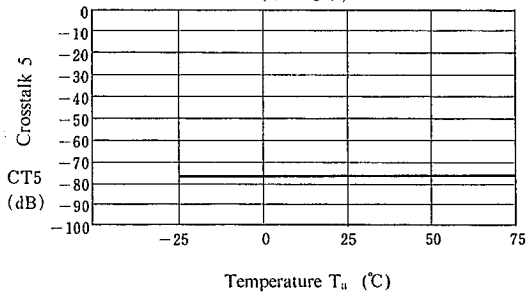
Crosstalk 4 vs. Temperature



■ TYPICAL CHARACTERISTICS

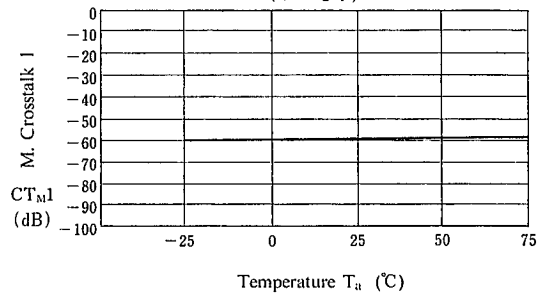
Crosstalk 5 vs. Temperature

($V^+ = 5\text{ V}$)



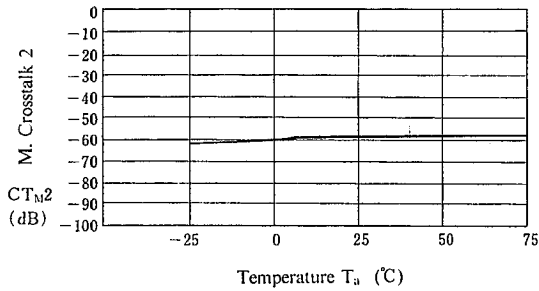
M. Crosstalk 1 vs. Temperature

($V^+ = 5\text{ V}$)



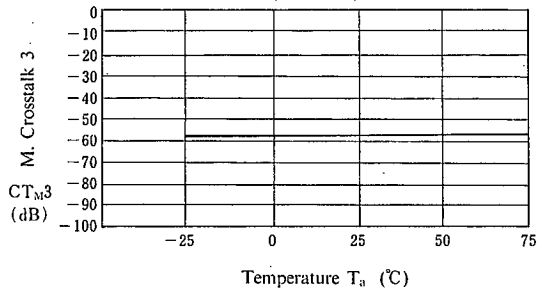
M. Crosstalk 2 vs. Temperature

($V^+ = 5\text{ V}$)



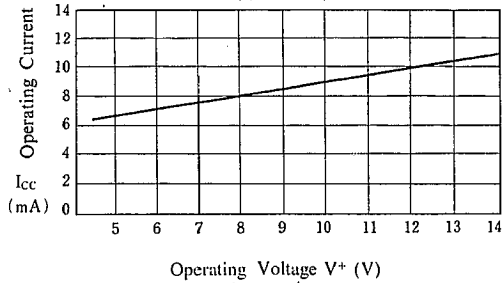
M. Crosstalk 3 vs. Temperature

($V^+ = 5\text{ V}$)



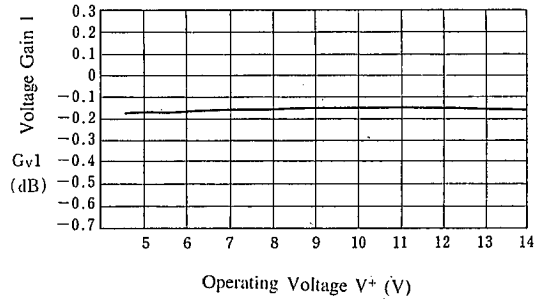
Operating Current vs. Operating Voltage

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



Voltage Gain 1 vs. Operating Voltage

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

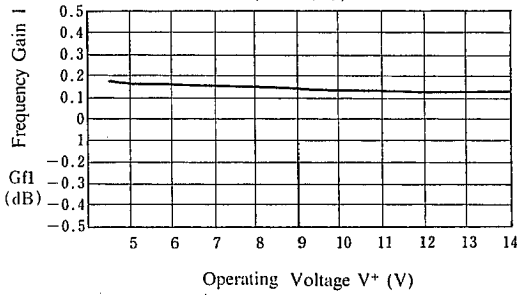


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TYPICAL CHARACTERISTICS

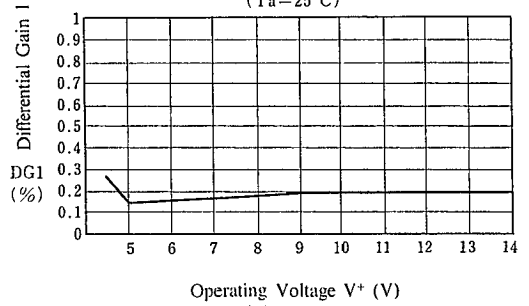
Frequency Gain 1 vs. Operating Voltage

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



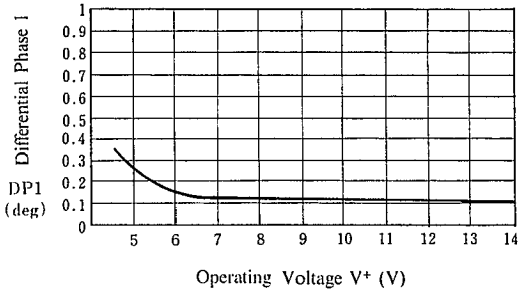
Differential Gain 1 vs. Operating Voltage

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



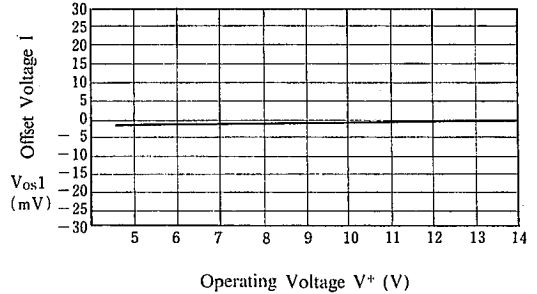
Differential Phase 1 vs. Operating Voltage

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



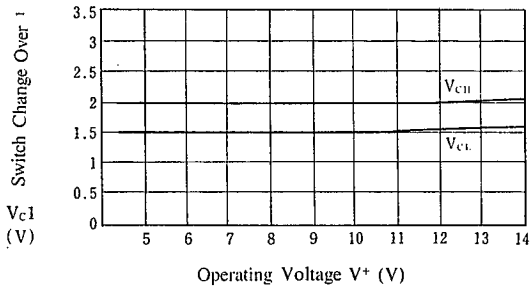
Offset Voltage 1 vs. Operating Voltage

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



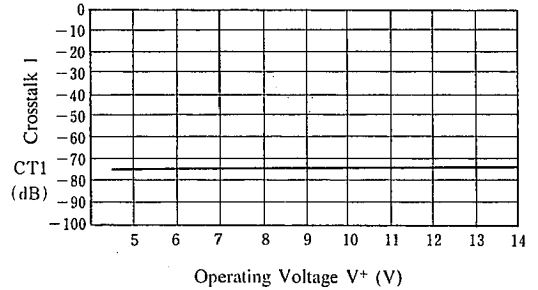
Switch Change Over 1 vs. Operating Voltage

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



Crosstalk 1 vs. Operating Voltage

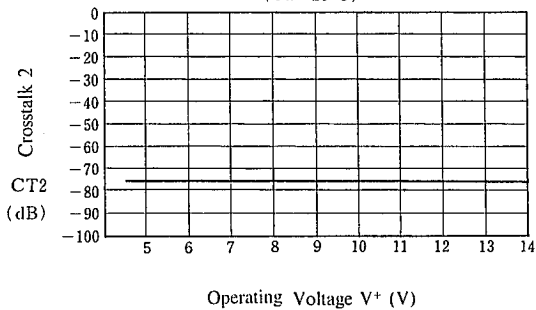
($T_a = 25^\circ\text{C}$)



■ TYPICAL CHARACTERISTICS

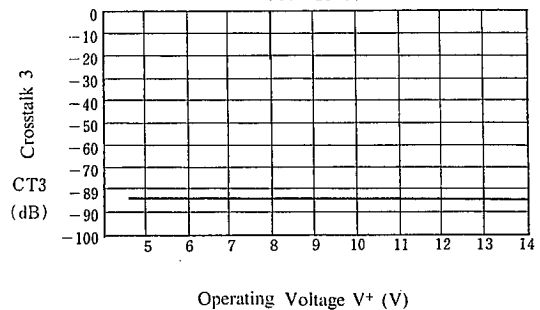
Crosstalk 2 vs. Operating Voltage

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



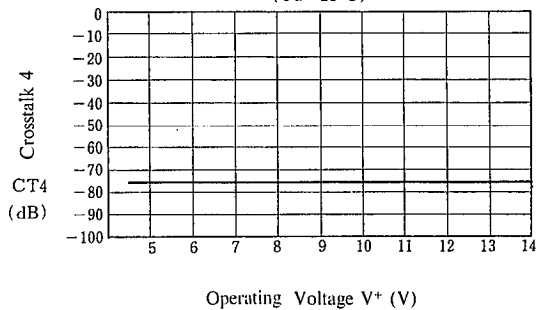
Crosstalk 3 vs. Operating Voltage

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



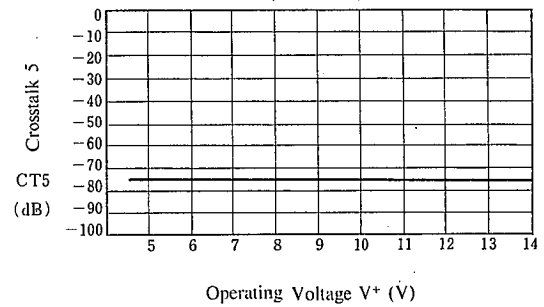
Crosstalk 4 vs. Operating Voltage

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



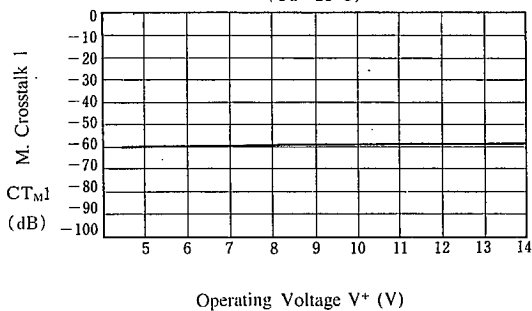
Crosstalk 5 vs. Operating Voltage

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



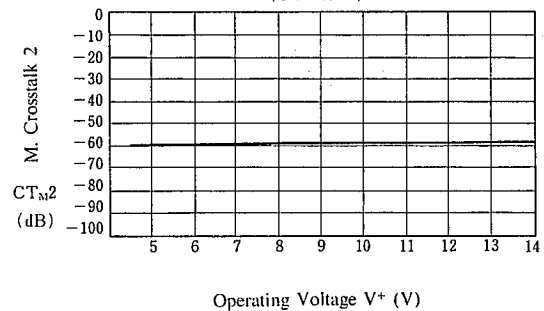
M. Crosstalk 1 vs. Operating Voltage

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



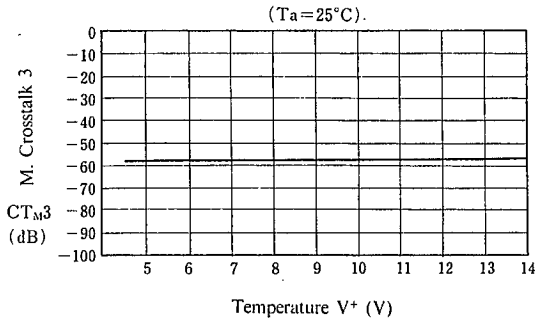
M. Crosstalk 2 vs. Operating Voltage

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

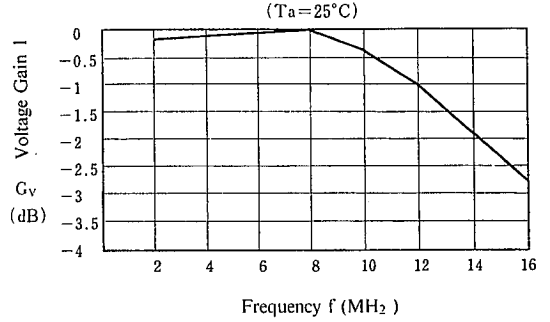


■ TYPICAL CHARACTERISTICS

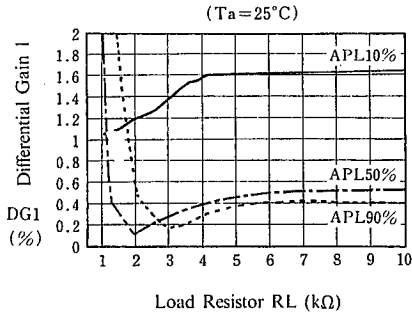
M. Crosstalk 3 vs. Temperature



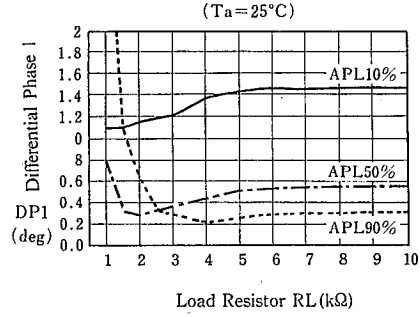
Voltage Gain 1 vs. Frequency



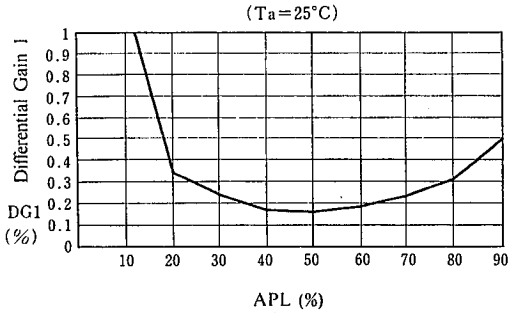
Differential Gain 1 vs. Load Resistor



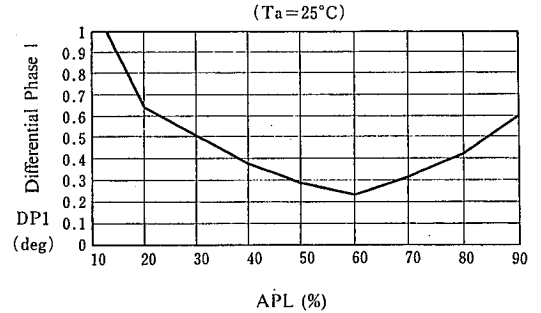
Differential Phase 1 vs. APL



Differential Gain 1 vs. APL



Differential Phase 1 vs. APL

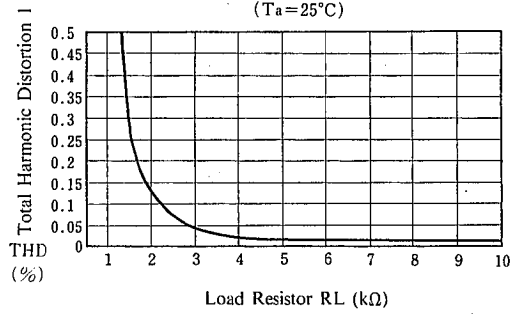


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■ TYPICAL CHARACTERISTICS

Total Harmonic Distortion 1 vs. Load Resistor

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



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MEMO

[CAUTION]

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