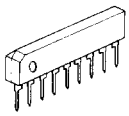
3-INPUT 1MUTE VIDEO SWITCH

■ 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

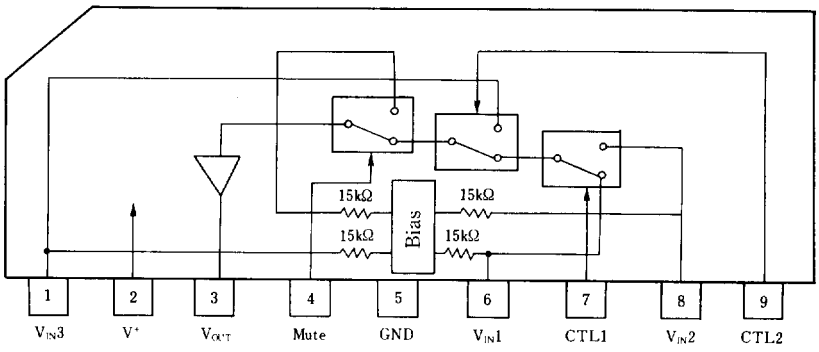
■ FEATURES

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

■ APPLICATIONS

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

■ BLOCK DIAGRAM



NJM2273S

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	14	V
Power Dissipation	P_D	(SIP9) 500	mW
Operating Temperature Range	T_{opr}	−20～+75	℃
Storage Temperature Range	T_{stg}	−40～+125	℃

■ ELECTRICAL CHARACTERISTICS

(V^+=5V, Ta=25℃)

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 Phasa	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

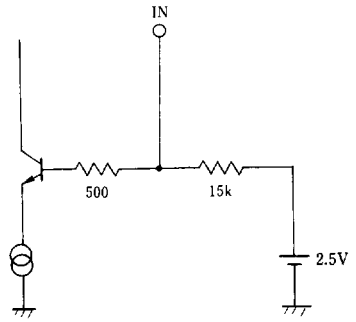
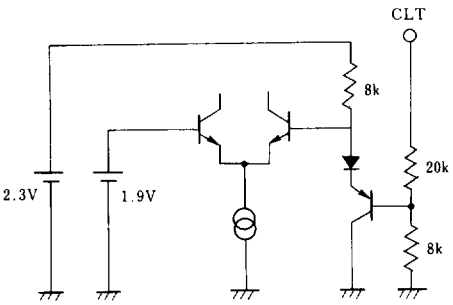
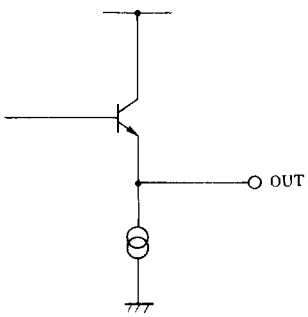
a) S4=S5=S6=1 b) S4=2, S5=S6=1 c) S5=2, S6=1 d) S6=2

5

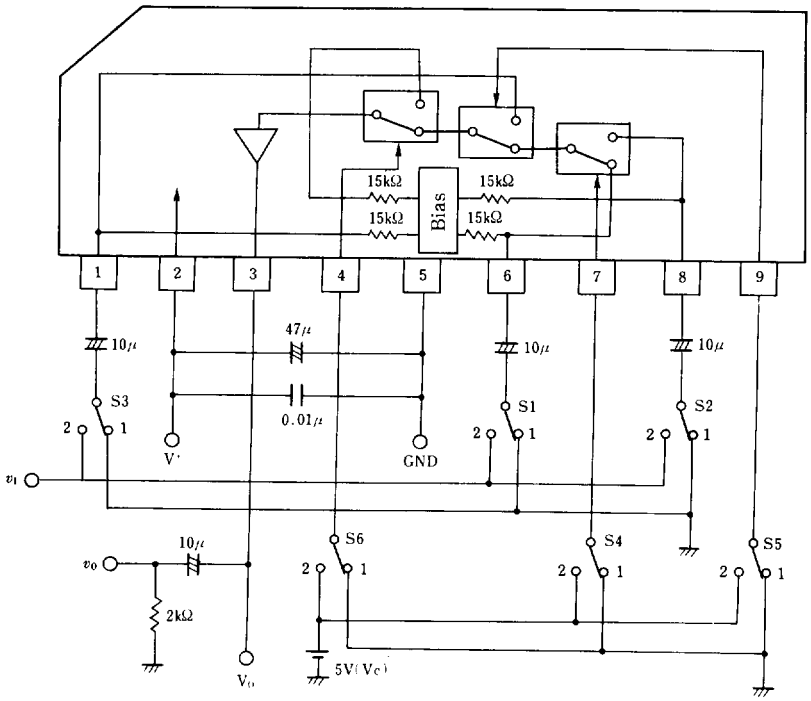
■ CONTROL INPUT - OUTPUT SIGNAL

CTL1	CTL2	MUTE	OUTPUT SIGNAL
L	L	L	$V_{IN}1$
H	L	L	$V_{IN}2$
L/H	H	L	$V_{IN}3$
L/H	L/H	H	Inside DC

■ TERMINAL EXPLANATION

PIN NO.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
6 8 1	V_{IN1} V_{IN2} V_{IN3} 〔Input〕	2.5V	
7 9 4	CTL1 CTL2 Mute 〔Switching〕		
3	V_{OUT} 〔Output〕	1.8V	
2	V^+	5 V	
5	GND		

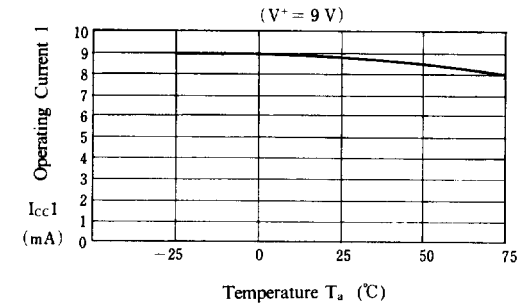
■ TEST CIRCUIT



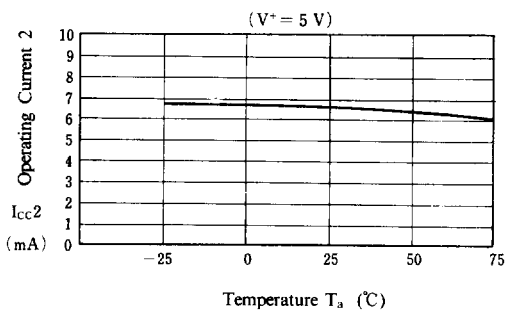
PARAMETER	S 1	S 2	S 3	S 4	S 5	S 6	TEST PART
I_{CC1}	1	1	1	1	1	1	V^+
I_{CC2}	1	1	1	1	1	1	
G_{v1}	2	1	1	1	1	1	v_0
G_{f1}	2	1	1	1	1	1	
DG_1	2	1	1	1	1	1	
DP_1	2	1	1	1	1	1	
V_{OS1}	1	1	1	2	1	1	V_O
CT 1	2	1	1	2	1	1	v_0
CT 2	2	1	1	1	2	1	
CT 3	1	2	1	1	1	1	
CT 4	1	2	1	2	2	1	
CT 5	1	1	2	1/2	1	1	
CT_{M1}	2	1	1	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_O
V_{C1}	2	1	1	V_C	1	1	V_C
THD	2	1	1	1	1	1	v_0

■ TYPICAL CHARACTERISTICS

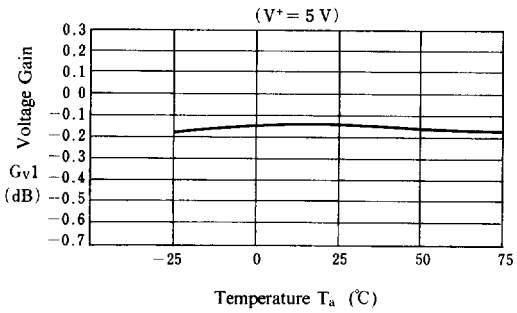
Operating Current 1 vs. Temperature



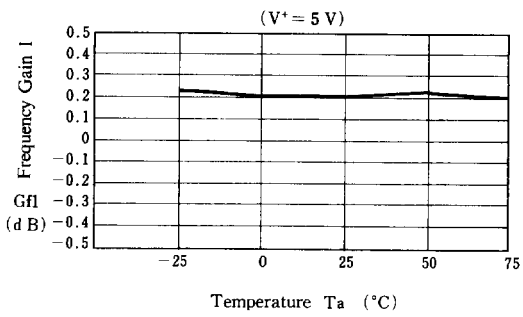
Operating Current 2 vs. Temperature



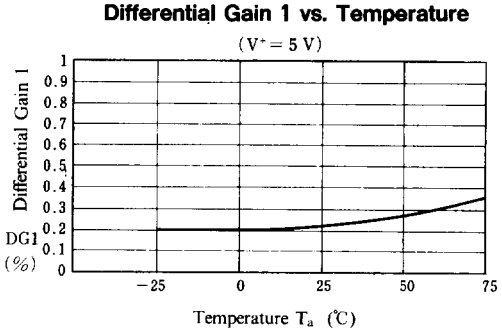
Voltage Gain 1 vs. Temperature



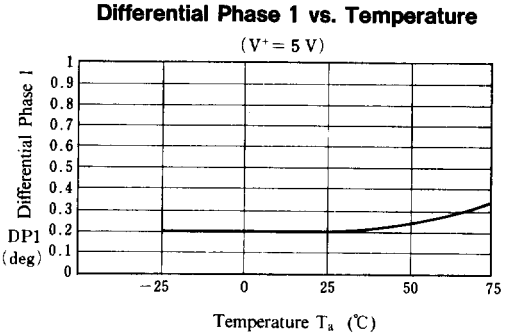
Frequency Gain 1 vs. Temperature Ta (℃)



Differential Gain 1 vs. Temperature

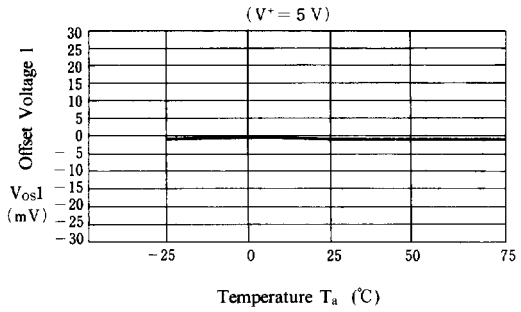


Differential Phase 1 vs. Temperature

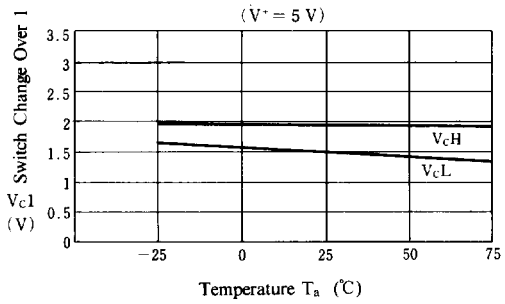


■ TYPICAL CHARACTERISTICS

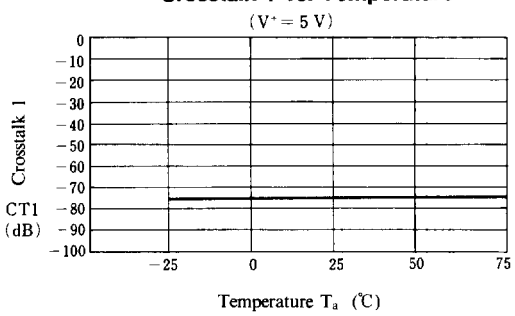
Offset Voltage 1 vs. Temperature



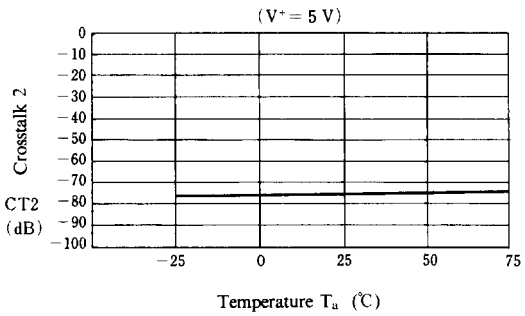
Switch Change Over 1 vs. Temperature



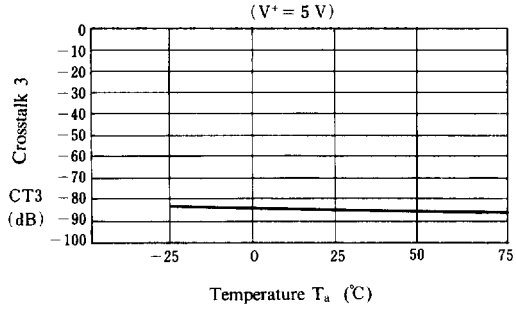
Crosstalk 1 vs. Temperature



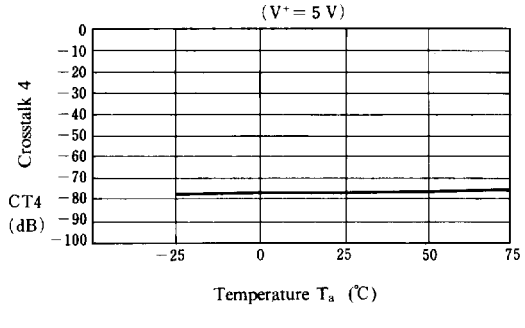
Crosstalk 2 vs. Temperature



Crosstalk 3 vs. Temperature

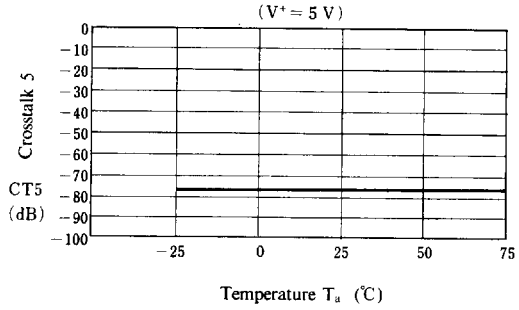


Crosstalk 4 vs. Temperature

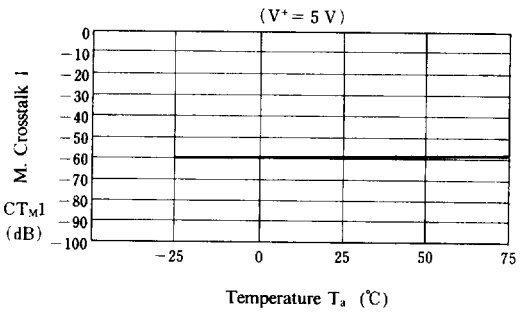


■ TYPICAL CHARACTERISTICS

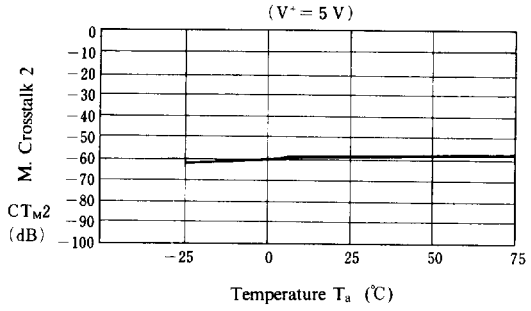
Crosstalk 5 vs. Temperature



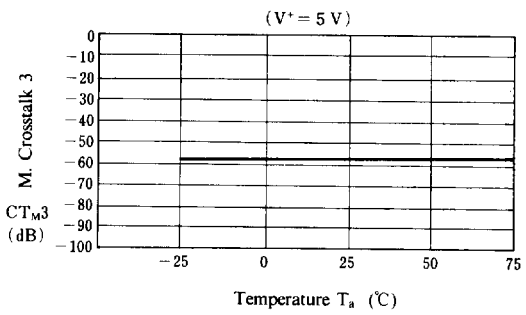
M. Crosstalk 1 vs. Temperature



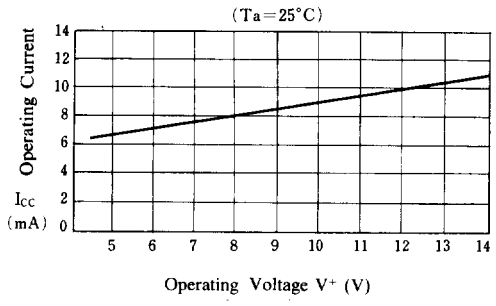
M. Crosstalk 2 vs. Temperature



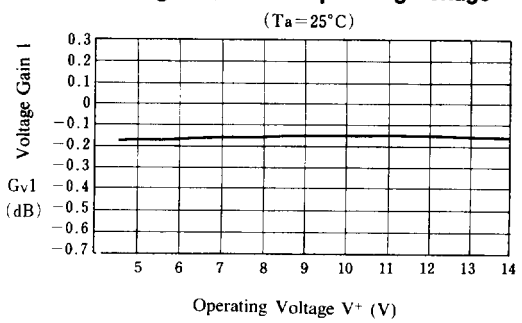
M. Crosstalk 3 vs. Temperature



Operating Current vs. Operating Voltage

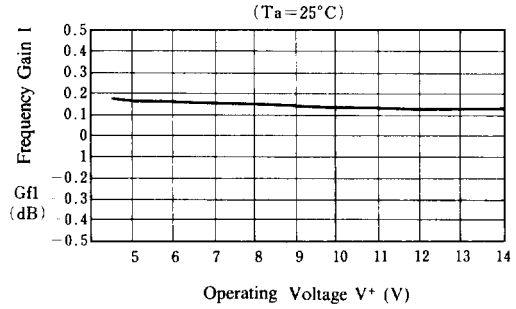


Voltage Gain 1 vs. Operating Voltage

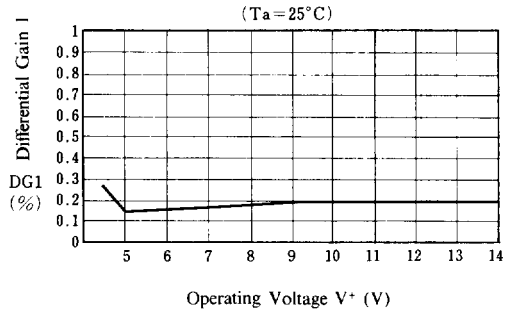


■ TYPICAL CHARACTERISTICS

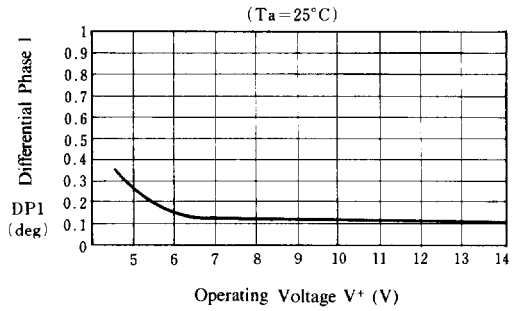
Frequency Gain 1 vs. Operating Voltage



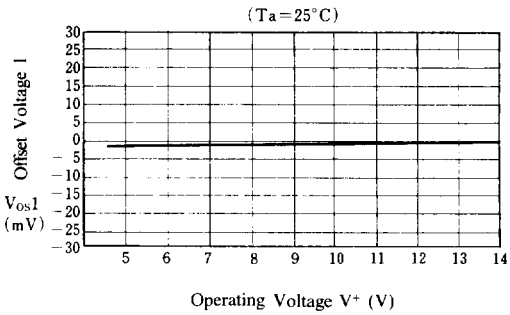
Differential Gain 1 vs. Operating Voltage



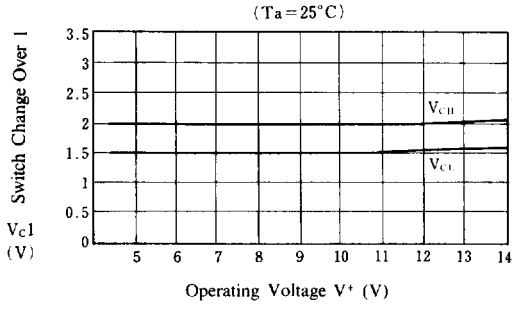
Differential Phase 1 vs. Operating Voltage



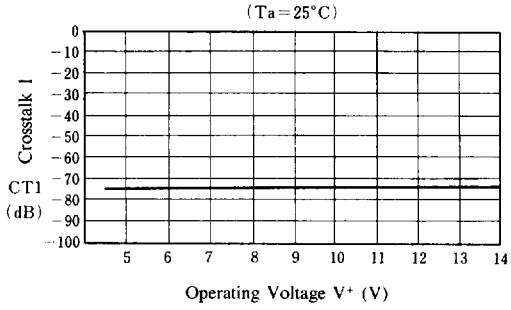
Offset Voltage 1 vs. Operating Voltage



Switch Change Over 1 vs. Operating Voltage

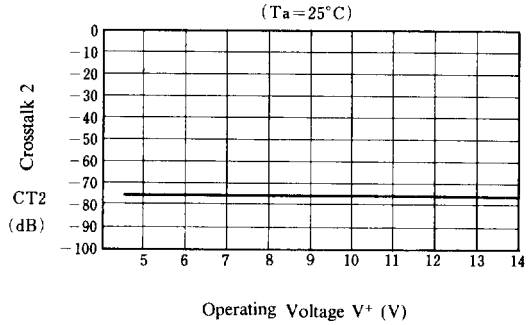


Crosstalk 1 vs. Operating Voltage

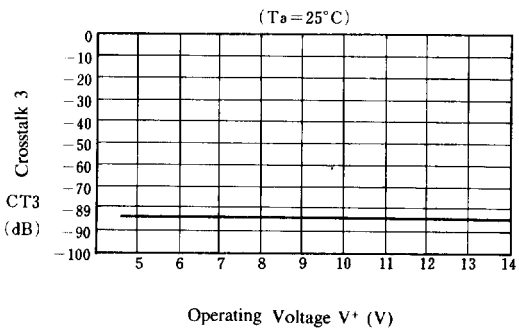


■ TYPICAL CHARACTERISTICS

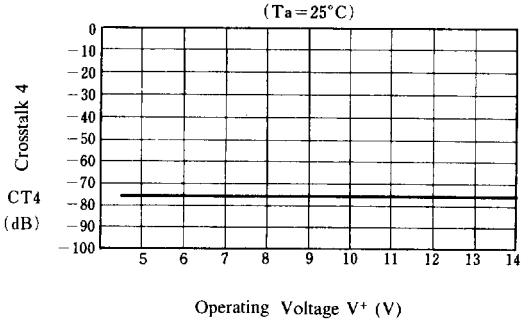
Crosstalk 2 vs. Operating Voltage



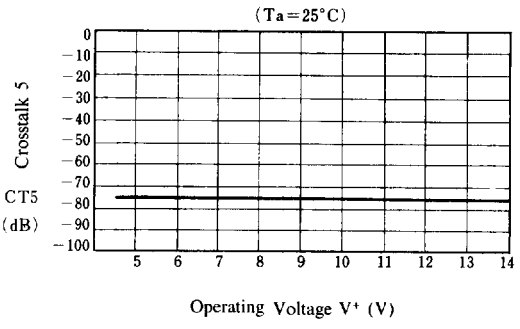
Crosstalk 3 vs. Operating Voltage



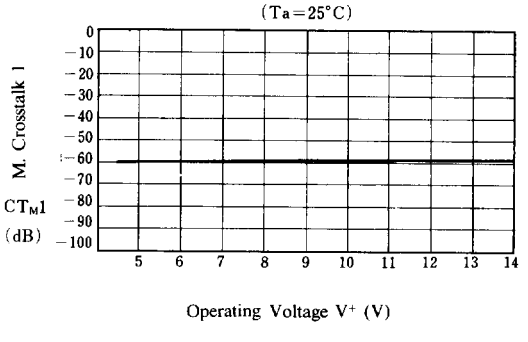
Crosstalk 4 vs. Operating Voltage



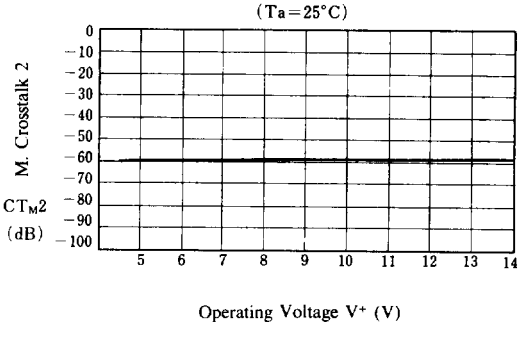
Crosstalk 5 vs. Operating Voltage



M. Crosstalk 1 vs. Operating Voltage

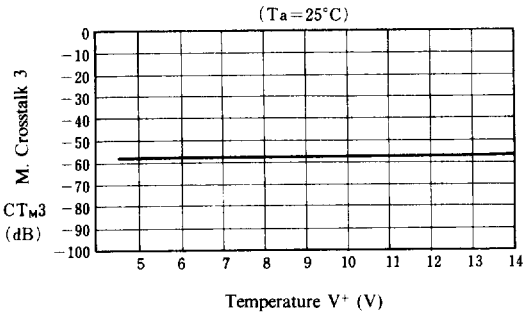


M. Crosstalk 2 vs. Operating Voltage

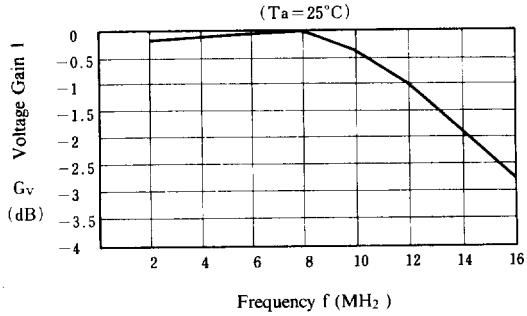


■ TYPICAL CHARACTERISTICS

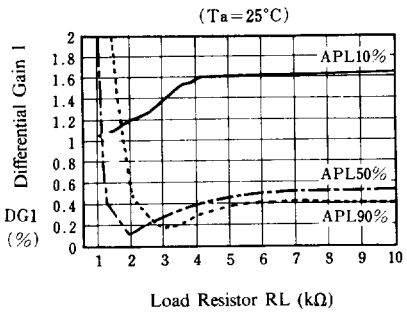
M. Crosstalk 3 vs. Temperature



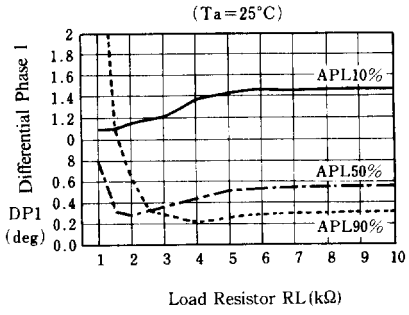
Voltage Gain 1 vs. Frequency



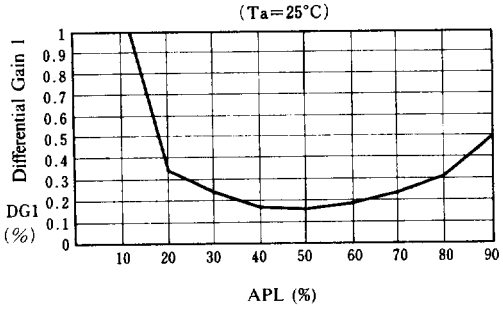
Differential Gain 1 vs. Load Resistor



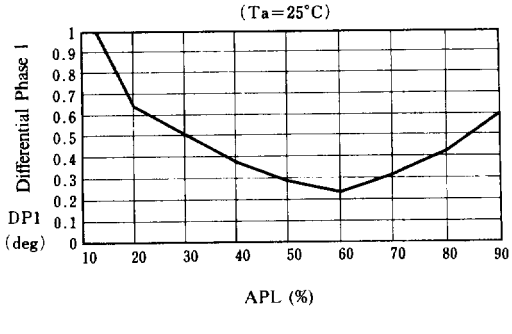
Differential Phase 1 vs. APL



Differential Gain 1 vs. APL



Differential Phase 1 vs. APL



■ TYPICAL CHARACTERISTICS

Total Harmonic Distortion 1 vs. Load Resistor