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New Japan Radio Co.,Ltd.

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3-INPUT 2-OUTPUT VIDEO SWITCH

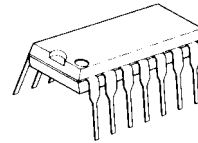
■ GENERAL DESCRIPTION

The NJM2279 is 3-input 2-output video switch that can be used in a single or dual power supply. It includes 6dB amplifier, 75ohm driver circuit and independent 2-Output mute.

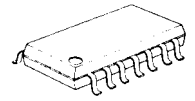
■ FEATURES

- Operating Voltage (Dual) $\pm 4.0V$ to $\pm 7.0V$ (Single) $+8.0V$ to $+14V$
- 3-input 2-output Video Switch
- Internal 6dB Amplifier
- Internal 75 Ω Driver Circuit
- Independent 2-Output Mute
- Bipolar Technology
- Package Outline DIP14, DMP14

■ PACKAGE OUTLINE



NJM2279D

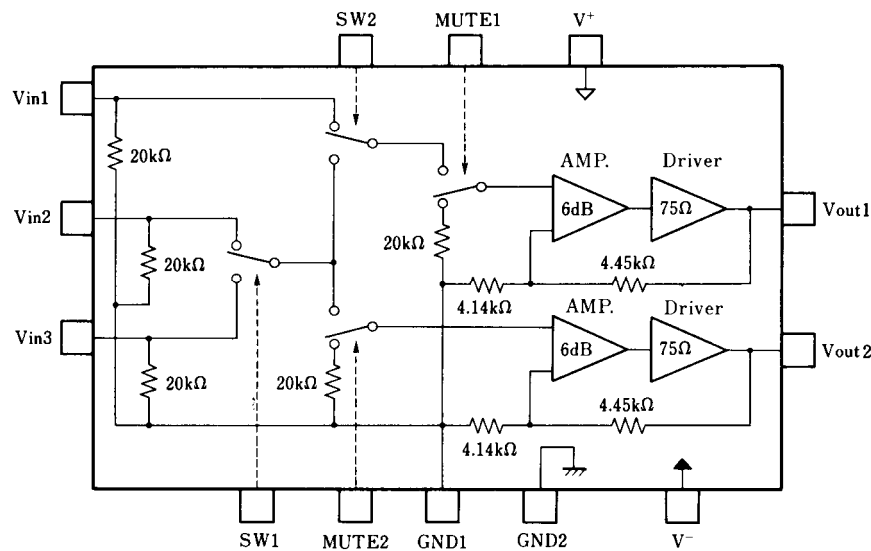


NJM2279M

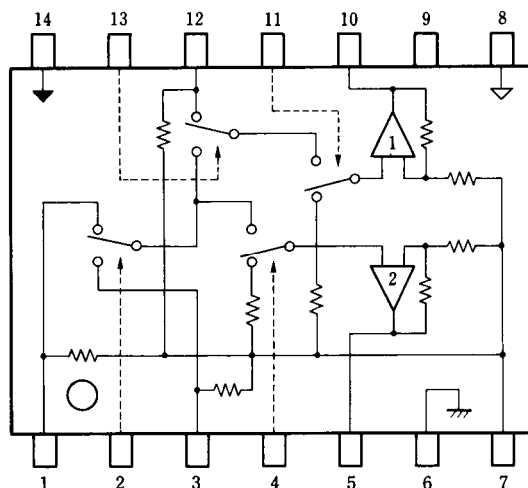
■ RECOMMENDED OPERATING CONDITION

- Supply Voltage (Dual) $\pm 4.0V$ to $\pm 7.0V$ (Single) $+8.0V$ to $+14V$

■ BLOCK DIAGRAM



■ PIN CONFIGURATION



PIN FUNCTION

1. Vin3	8. V ⁺
2. SW1	9. N.C.
3. Vin2	10. Vout1
4. MUTE2	11. MUTE1
5. Vout2	12. Vin1
6. GND2	13. SW2
7. GND1	14. V ⁻

NJM2279

■ ABSOLUTE MAXIMUM RATINGS

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+ / V^-	± 7.5	V
Power Dissipation	P_D	(DIP14) 700 (DMP14) 300	mW mW
Operating Temperature Range	T_{opr}	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +125	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS

($V^+ / V^- = \pm 5\text{V}$, $R_L = 150\Omega$, $T_a = 25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	No signal	10.0	17.3	24.6	mA
	I_{EE}	No signal	-24.6	-17.3	-10.0	mA
Voltage Gain	G_V	$V_{IN} = 100\text{kHz} / 1.0\text{V}_{P-P}$	6.0	6.3	6.8	dB
Frequency Characteristic	G_f	5MHz / 100kHz, 1.0V _{P-P}	-1.0	0.0	+1.0	dB
Differential Gain	DG	$V_{IN} = 1.0\text{V}_{P-P}$, Stair wave	-	0.2	-	%
Differential Phase	DP	$V_{IN} = 1.0\text{V}_{P-P}$, Stair wave	-	0.2	-	deg
Offset output Voltage 1	V_{OS1}	$V_{in2} - V_{in3}$: no signal	-40	0	+40	mV
Offset output Voltage 2	V_{OS2}	$V_{in1} - V_{in2} / V_{in3}$: no signal	-60	0	+60	mV
Input / Output Crosstalk	CT	$V_{IN} = 4.43\text{MHz} / 1.0\text{V}_{P-P}$, V_O / V_{IN}	-	-70	-	dB
MUTE Crosstalk	CT_M	$V_{IN} = 4.43\text{MHz} / 1.0\text{V}_{P-P}$, V_O / V_{IN}	-	-60	-	dB
Switch Change Voltage	V_{CH}		2.5	-	V^+	V
	V_{CL}		0.0	-	1.0	V
Total Harmonic Distortion	THD	$V_{IN} = 1\text{kHz} 1.25\text{V}_{P-P}$	-	0.1	-	%
Input Impedance	R_{in}		-	20	-	k Ω

■ CONTROL SIGNAL-OUTPUT SIGNAL

($L = V_{CL}$, $H = V_{CH}$, $X = L$ or H)

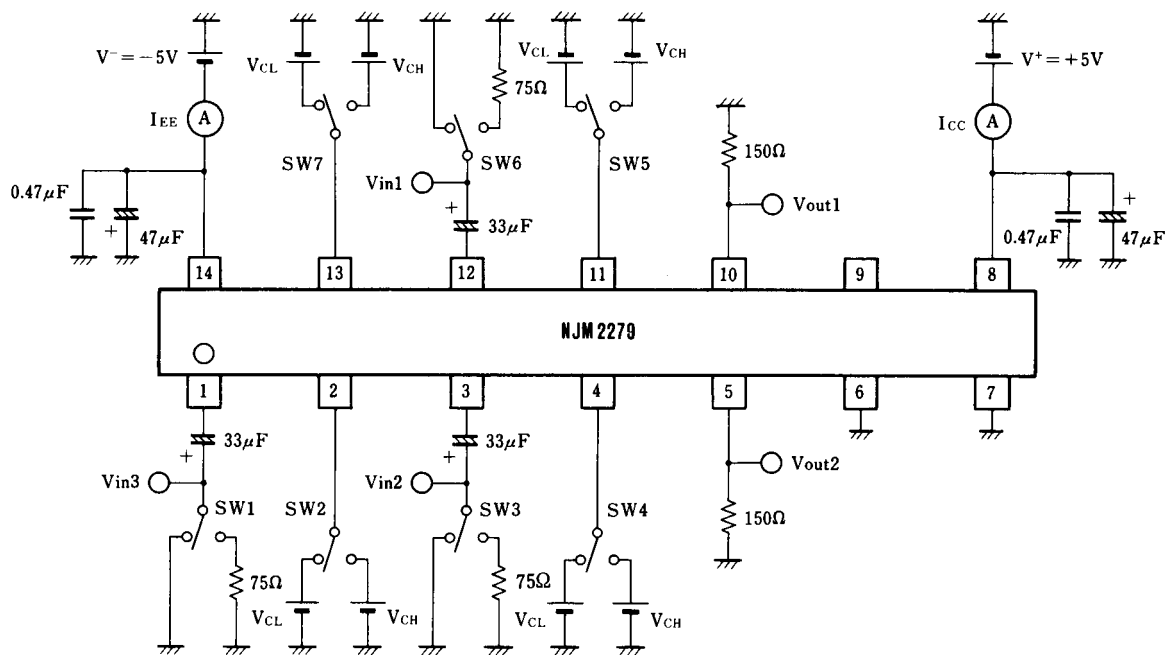
CONTROL SIGNAL				OUTPUT	
SW1 (2 pin)	SW2 (13 pin)	MUTE 1 (11 pin)	MUTE 2 (4 pin)	Vout 1 (10 pin)	Vout 2 (5 pin)
X	X	L	L	GND	GND
X	X	L	H	GND	OUT PUT
X	X	H	L	OUT PUT	GND
L	L	H	H	V_{IN1}	V_{IN2}
L	H	H	H	V_{IN2}	V_{IN2}
H	L	H	H	V_{IN1}	V_{IN3}
H	H	H	H	V_{IN3}	V_{IN3}

■ TERMINAL FUNCTION

PIN No.	PIN NAME	INSIDE EQUIVALENT CIRCUIT	NOTE
1 3 12	V _{IN3} V _{IN2} V _{IN1}		Video signal input terminal The bias is done with 20kΩ by the voltage of the terminal GND1. 1Vp-p input (0.0V = GND1)
7	GND1		GND terminal When a single power supply is used, the bias is done to 1/2V+.
2 13	SW1 SW2		Switch control terminal for input signal selection (0.0V = GND2, Uncontrolled)
4 11	MUTE2 MUTE1		Mute control terminal The output is GND1 voltage at the mute. (0.0V = GND2, Uncontrolled)
6	GND2	GND terminal Please connect it with GND regardless of dual power supplies or single power supplies.	
5 10	V _{out2} V _{out1}		Video signal output terminal The output signal level becomes 1VP-P at 75Ω terminal.
8	V ⁺	-	Power supply terminal
14	V ⁻	-	Power supply terminal When a single power supply is used, it becomes GND.

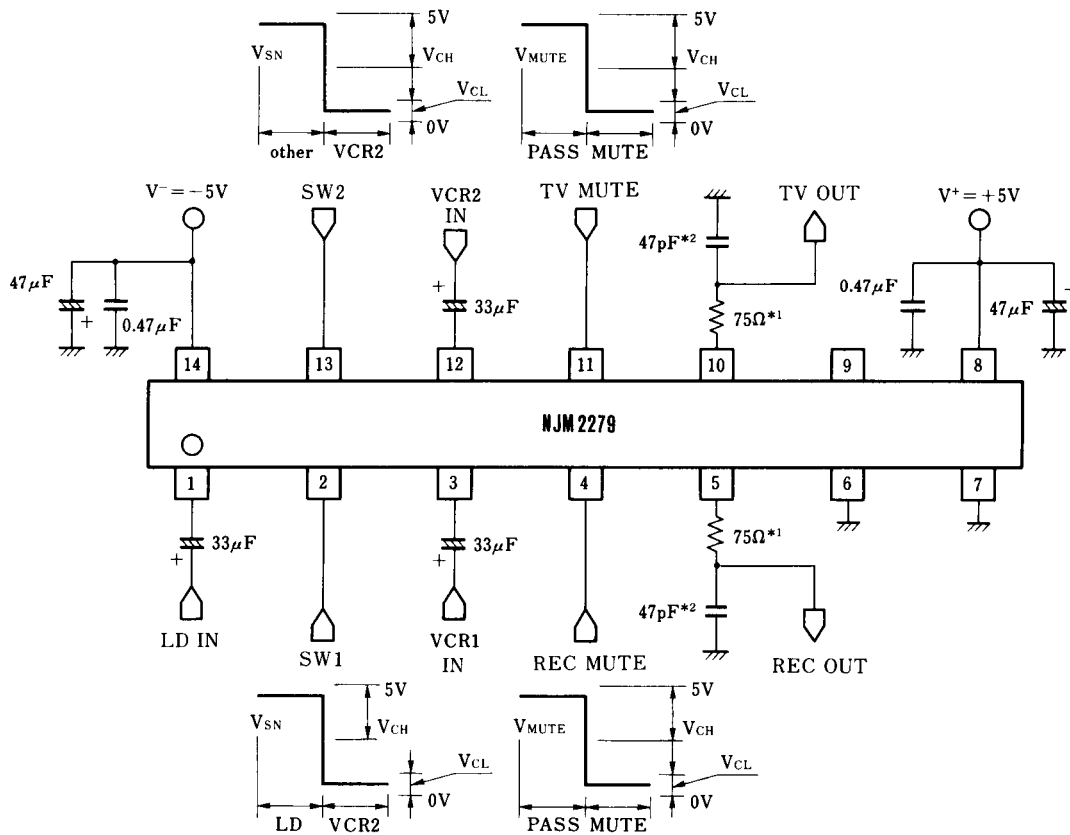
NJM2279

TEST CIRCUIT



PARAMETER	SYMBOL	UNIT	INPUT TERMINAL	TEST TERMINAL	TEST CONDITION
Operating Current	I_{CC}	mA	-	8 pin	V_{in1} to 3 = 0V, SW1/2·MUTE1/2 = V_{CL}
	I_{EE}	mA	-	14 pin	V_{in1} to 3 = 0V, SW1/2·MUTE1/2 = V_{CL}
Voltage Gain	G_V	dB	1, 3, 12 pin	5, 10 pin	MUTE1/2 = V_{CL}
Frequency Characteristic	G_f	dB	1, 3, 12 pin	5, 10 pin	MUTE1/2 = V_{CL}
Differential Gain	DG	%	1, 3, 12 pin	5, 10 pin	MUTE1/2 = V_{CL}
Differential Phase	DP	deg	1, 3, 12 pin	5, 10 pin	MUTE1/2 = V_{CL}
Offset output Voltage 1	V_{OS1}	mV	1, 3, 12 pin	5, 10 pin	V_{in1} to 3 = 0V
Offset output Voltage 2	V_{OS2}	mV	-	5, 10 pin	V_{in1} to 3 = 0V
Input / Output Crosstalk	CT	dB	-	5, 10 pin	MUTE1/2 = V_{CL}
MUTE Crosstalk	CT_M	dB	1, 3, 12 pin	5, 10 pin	MUTE1/2 = V_{CL}
Switch Change Voltage	V_{CH}	V	1, 3, 12 pin	5, 10 pin	
	V_{CL}	V	-	-	
Total Harmonic Distortion	THD	%	1, 3, 12 pin	5, 10 pin	

APPLICATION CIRCUIT (Dual Power Supply)



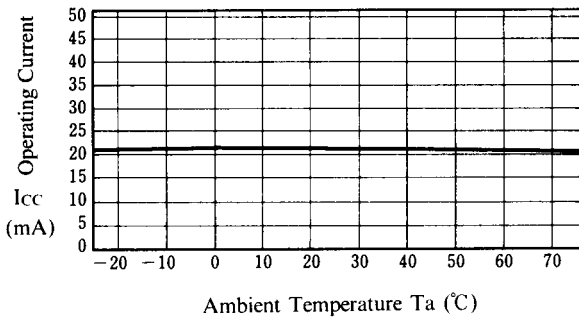
(Note) Terminal connection at single power supply

7pin : 1/2V+ bias

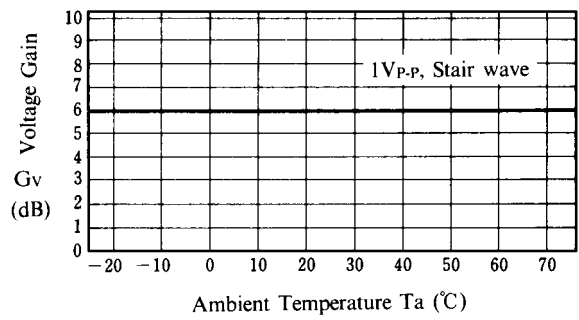
14Pin : GND

■ TYPICAL CHARACTERISTICS

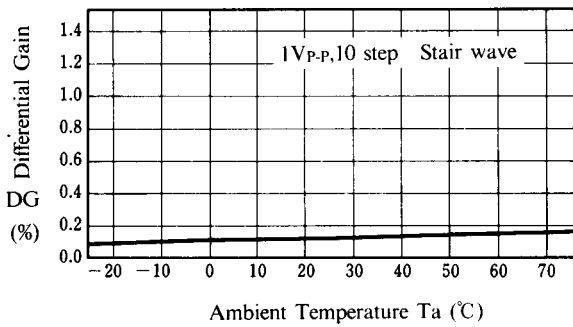
Operating Current vs. Temperature



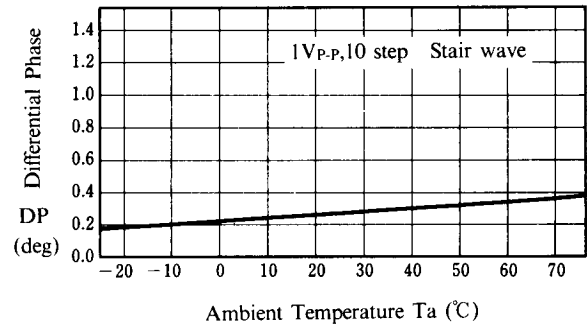
Voltage Gain vs. Temperature



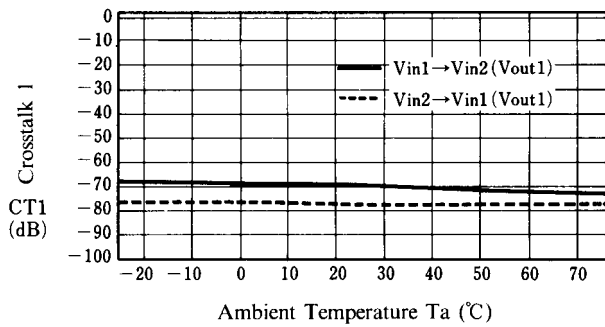
Differential Gain vs. Temperature



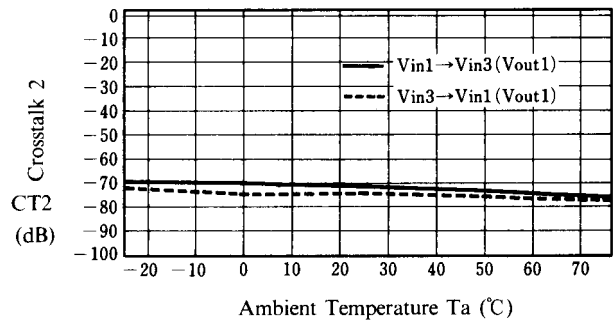
Differential Phase vs. Temperature



Crosstalk 1 vs. Temperature

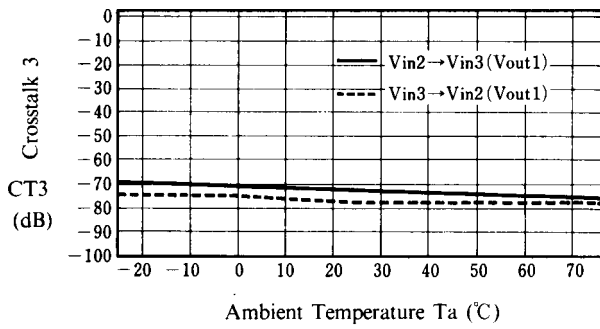


Crosstalk 2 vs. Temperature

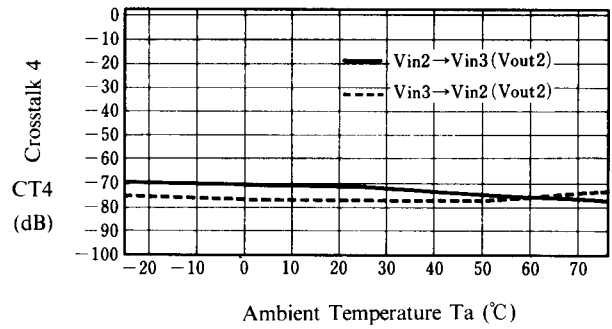


■ TYPICAL CHARACTERISTICS

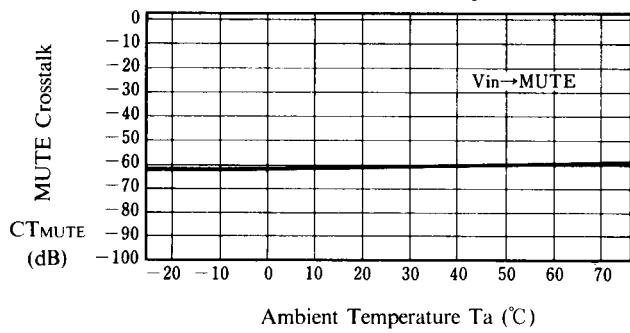
Crosstalk 3 vs. Temperature



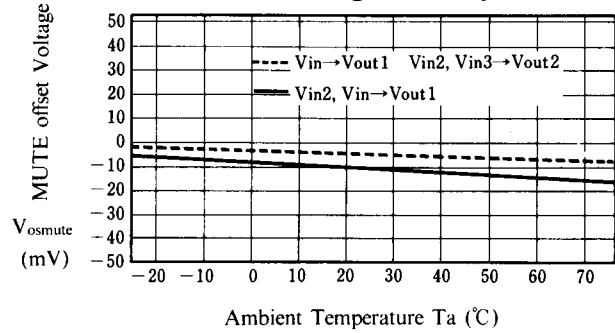
Crosstalk 4 vs. Temperature



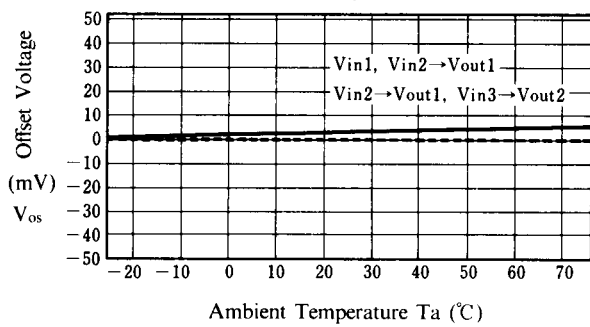
MUTE Crosstalk vs. Temperature



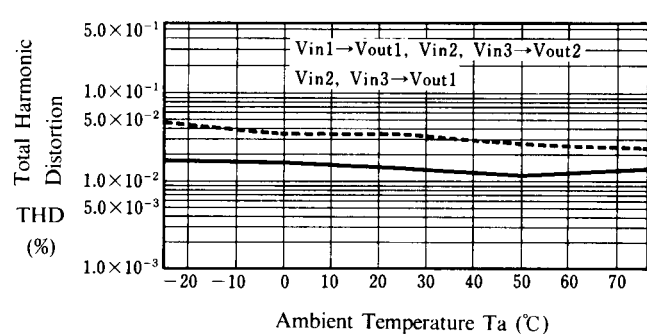
MUTE offset Voltage vs. Temperature



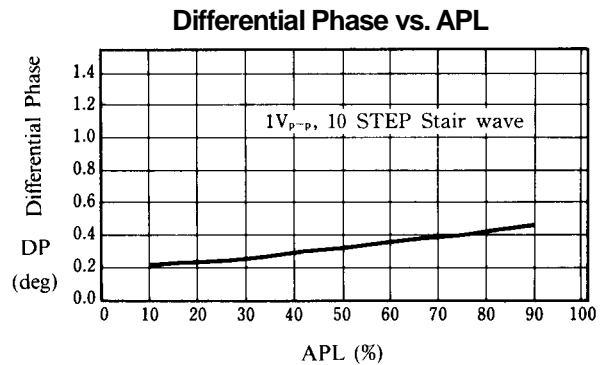
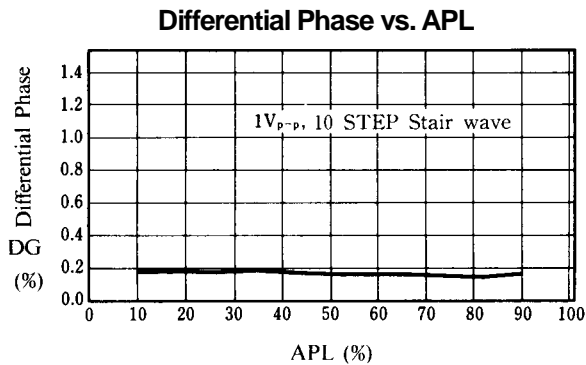
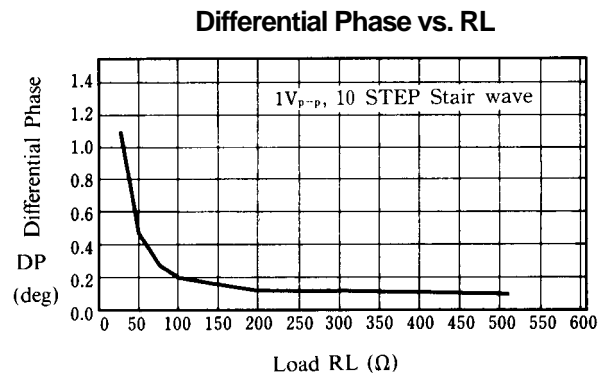
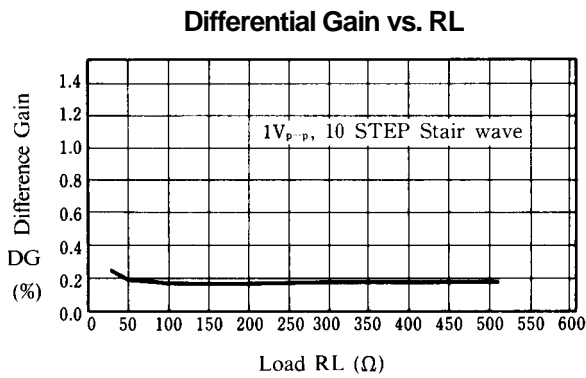
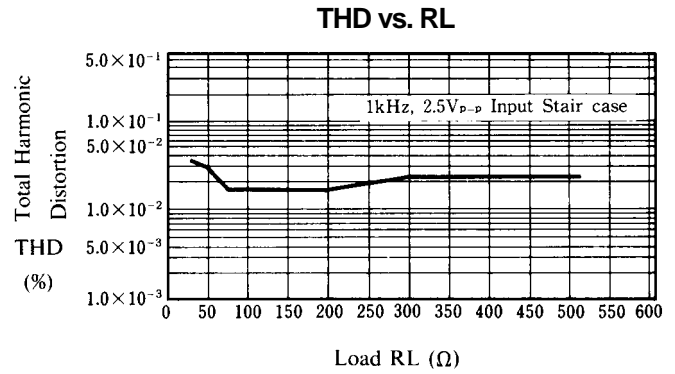
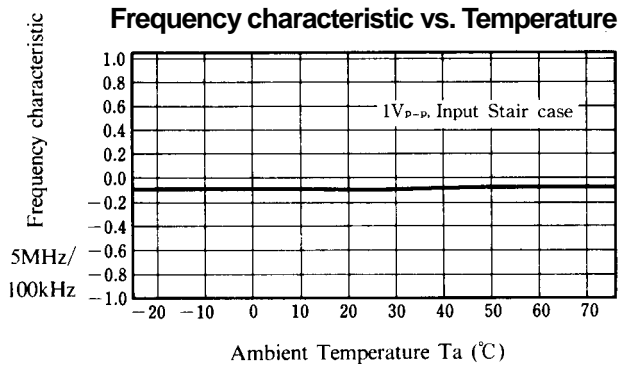
Channel offset Voltage vs. Temperature



Total Harmonic Distortion vs. Temperature

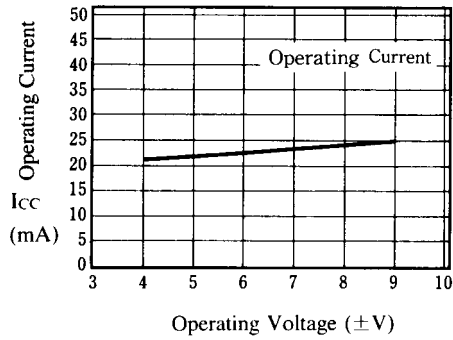


■ TYPICAL CHARACTERISTICS

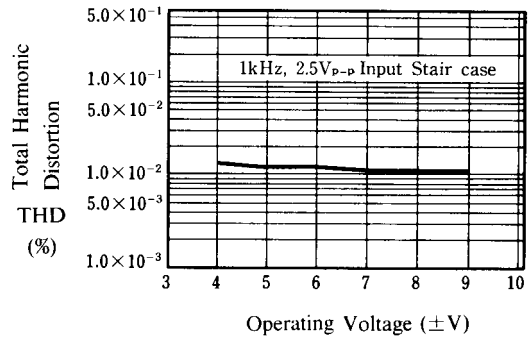


■ TYPICAL CHARACTERISTICS

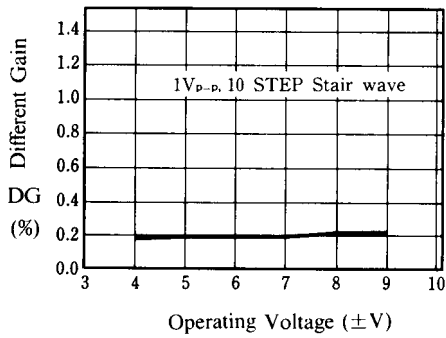
Operating Current vs. Operating Voltage



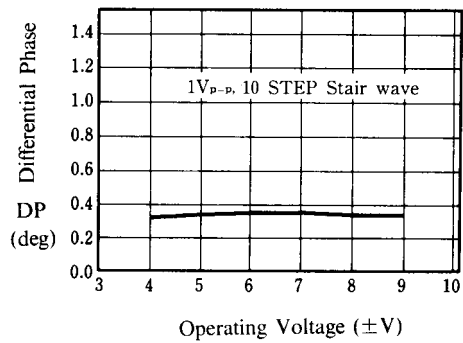
THD vs. Operating Voltage



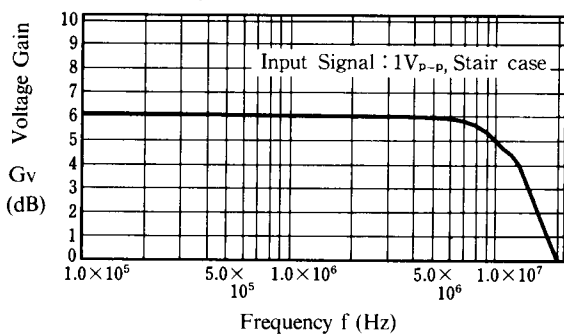
Different Gain vs. Operating Voltage



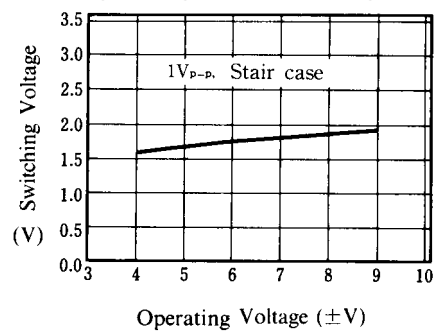
Differential Phase vs. Operating Voltage



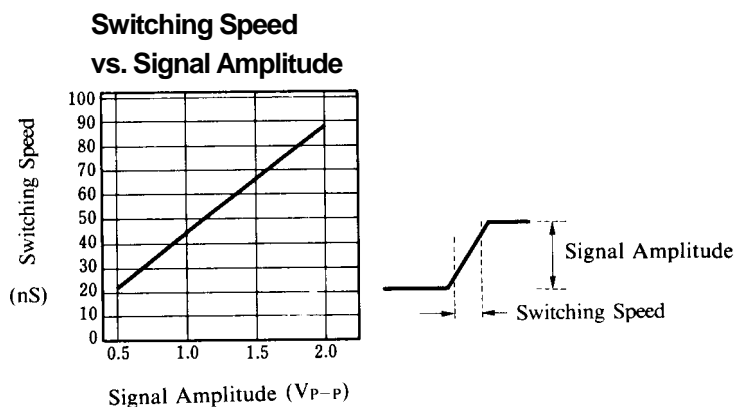
Voltage Gain vs. Frequency



Switching Voltage vs. Operating Voltage



■ TYPICAL CHARACTERISTICS



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