

3-INPUT / 2-INPUT VIDEO SWITCH

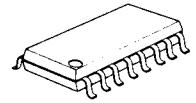
■ GENERAL DESCRIPTION

The **NJM2513** is a switching IC for switching over from one audio or video input signal to another. Internalizing 3 input-1 output, and 2 input-1 output and then each set can be operated independently. Side of 2 input-1 output 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 voltage 4.75 to 13V, the frequency feature 10MHz, and then the Crosstalk 75dB (at 4.43MHz).

■ PACKAGE OUTLINE



NJM2513D



NJM2513M

■ FEATURES

- Operating Voltage (+4.75V to +13V)
- 3 Input-1 Output/2 Input-1 output.
- Crosstalk 75dB (at 4.43MHz)
- Wide Bandwidth Frequency 10MHz (2V_{P-P} Input)
- Package Outline DIP16, DMP16
- Bipolar Technology

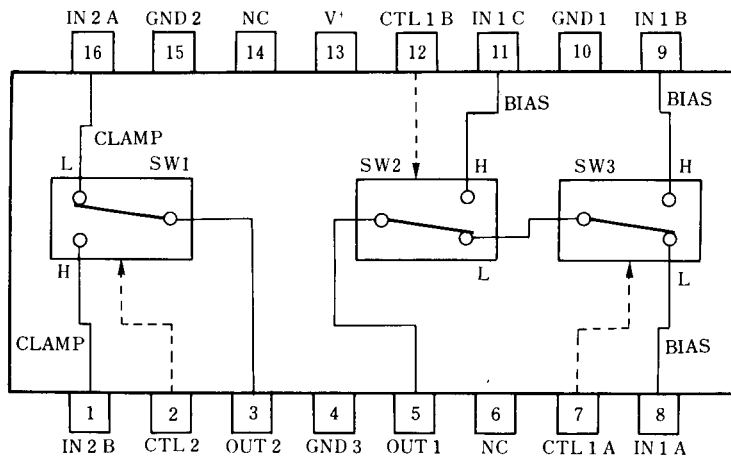
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage V⁺ 4.75V to 13.0V

■ APPLICATIONS

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

■ BLOCK DIAGRAM



NJM2513D

NJM2513M

NJM2513

■ MAXIMUM RATINGS

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	14	V
Power Dissipation	P_D	(DIP16) 700 (DMP16) 350	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

($V^+ = 5\text{V}$, $T_a = 25^\circ\text{C}$)

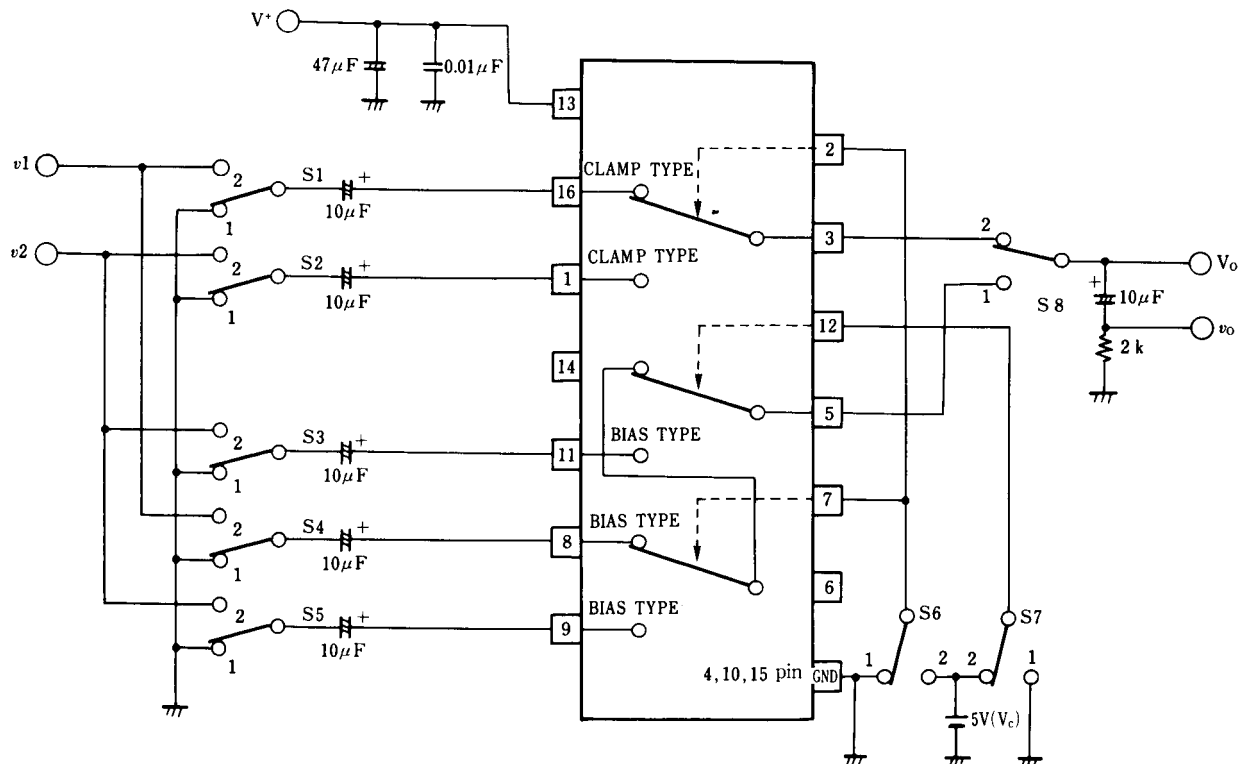
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current (1)	I_{CC1}	$V^+ = 5\text{V}$ (Note1)	6.7	9.7	12.7	mA
Operating Current (2)	I_{CC2}	$V^+ = 9\text{V}$ (Note1)	8.6	12.3	16.0	mA
Voltage Gain	G_V	$V_i = 100\text{kHz}$, $2V_{P-P}$, V_O / V_i	-0.6	-0.1	+0.4	dB
Frequency Gain	G_F	$V_i = 2V_{P-P}$, $V_O(10\text{MHz}) / V_O(100\text{kHz})$	-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 (1)	V_{OS1}	(Note2)	-15	0	+15	mV
Output offset Voltage (2)	V_{OS2}	(Note3)	-25	0	+25	mV
Crosstalk	CT	$V_i = 2V_{P-P}$, 4.43MHz, V_O / V_i	-	-75	-	dB
Switch Change Over Voltage	V_{CH}	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) $S1 = S2 = S3 = S4 = S5 = 1$, $S8 = 2$, $S7 = 1$, $S6 = 1 \rightarrow 2$ Measure the output DC voltage difference

(Note3) $S1 = S2 = S3 = S4 = S5 = 1$, $S8 = 1$, $S7 = 1$, $S6 = 1 \rightarrow 2$ ($S6 = 1$, $S7 = 1 \rightarrow 2$) Measure the output DC voltage difference

■ TEST CIRCUIT



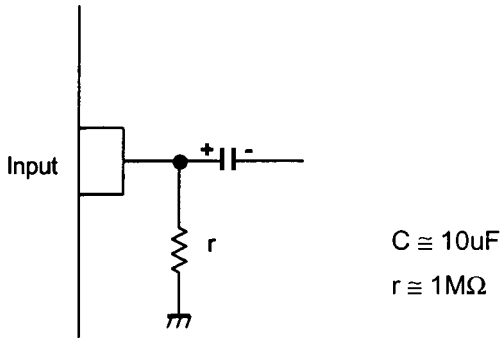
■ TERMINAL EXPLANATION

PIN No.	PIN NAME	VOLTAGE	INSIDE EQUIVALENT CIRCUIT
8 9 11	IN 1 A IN 1 B IN 1 C [Input]	2.5V $\left(\frac{1}{2}V^+\right)$	
16 1	IN 2 A IN 2 B [Input]	1.5V $\left(\frac{3}{10}V^+\right)$	
7 12 2	CTL 1A CTL 1B CTL 2 [Switching]		
5	OUT1 [Output]	1.8V $\left(\frac{1}{2}V^+ - 0.7\right)$	
3	OUT2 [Output]	0.8V $\left(\frac{3}{10}V^+ - 0.7\right)$	
13	V ⁺	5V	
15 4 10	GND 1 GND 2 GND 3		

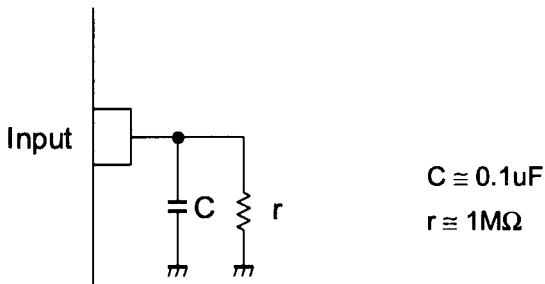
NJM2513

■ APPLICATION

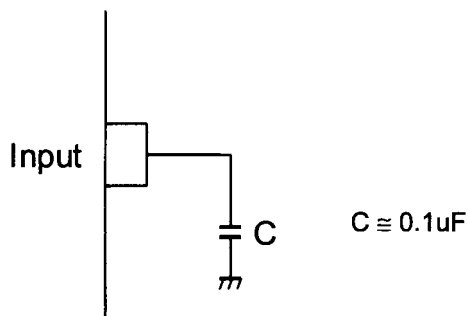
This IC requires $1M\Omega$ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



This IC requires $0.1\mu\text{F}$ capacitor between INPUT and GND, $1M\Omega$ resistance between INPUT and GND for clamp type input at mute mode.



This IC requires $0.1\mu\text{F}$ capacitor between INPUT and GND for bias type input at mute mode.



[CAUTION]
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