

### 3-INPUT VIDEO SWITCH

■ GENERAL DESCRIPTION

The NJM2235 is 3-input video switch for video and audio signal. It has clamp function and so is applied to fixed DC level of video signal. Its operating supply voltage range is 5 to 12V and bandwidth is 10MHz. Crosstalk is 70dB (at 4.43MHz).

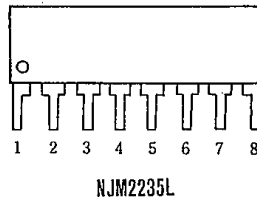
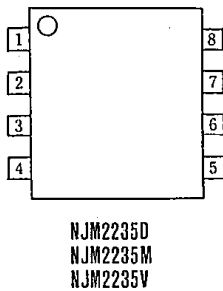
■ FEATURES

- Operating Voltage (+4.75V~+13V)
- 3 Input-1 Output
- Internal Clamp Function
- Wide Operating Supply Voltage Range 4.75~13V
- Cross-talk 70dB (at 4.43MHz)
- Wide Frequency Range 10MHz
- Muting Function available
- Package Outline DIP-8, DMP-8, SIP-8, SSOP-8
- Bipolar Technology

■ APPLICATION

- VCR: Video Camera AV-TV Video Disc Player

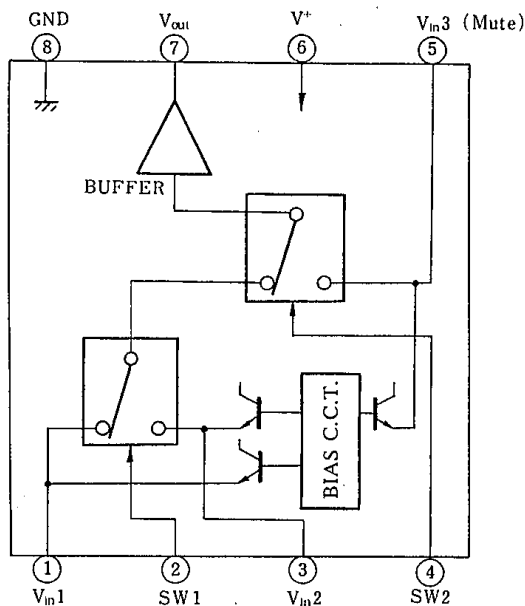
■ PIN CONFIGURATION



PIN FUNCTION

1.  $V_{in1}$
2. SW1
3.  $V_{in2}$
4. SW2
5.  $V_{in3}$
6.  $V^+$
7.  $V_{out}$
8. GND

■ BLOCK DIAGRAM



■ INPUT CONTROL SIGNAL - OUTPUT SIGNAL

SW 1	SW 2	OUTPUT SIGNAL
L	L	$V_{in1}$
H	L	$V_{in2}$
L/H	H	$V_{in3}$

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V*	15	V
Power Dissipation	P <sub>D</sub>	(DIP8) 500	mW
		(DMP8) 300	mW
		(SSOP8) 250	mW
		(SIP8) 800	mW
Operating Temperature Range	T <sub>opr</sub>	-20~+75	°C
Storage Temperature Range	T <sub>stg</sub>	-40~+125	°C

## ■ ELECTRICAL CHARACTERISTICS

(V\*=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Recommended Supply Voltage	V*		4.75	—	13.0	V
Operating Current	I <sub>CC</sub>	S1=S2=S3=S4=S5=1	—	10.5	14.0	mA
Frequency Characteristics	G <sub>fz</sub>	V <sub>i</sub> =2.0V <sub>pp</sub> V <sub>o</sub> (10Hz)/V <sub>o</sub> (100kHz)	-1.0	—	+1.0	dB
Voltage Gain	G <sub>v</sub>	V <sub>i</sub> =2.5V <sub>pp</sub> , 100kHz V <sub>o</sub> /V <sub>i</sub>	-0.5	—	+0.5	dB
Differential Gain	DG	V <sub>i</sub> =2V <sub>pp</sub> Staircase signal	—	0	—	%
Differential Phase	DP	V <sub>i</sub> =2V <sub>pp</sub> Staircase signal	—	0	—	deg
Output Offset Voltage	V <sub>off'</sub>	(note 2)	-30	0	+30	mV
Input Clamp Voltage	V <sub>ic</sub>	(note 5)	—	2.0	—	V
Crosstalk (1)	CT1	V <sub>i</sub> =2.0V <sub>pp</sub> , 4.43MHz, V <sub>o</sub> /V <sub>i</sub> (note 3)	—	-70	—	dB
Crosstalk (2)	CT2	V <sub>i</sub> =2.0V <sub>pp</sub> , 4.43MHz, V <sub>o</sub> /V <sub>i</sub> (note 4)	—	-70	—	dB
Switch Change Voltage	V <sub>ch</sub>	All inside SW : ON	2.4	—	—	V
	V <sub>cl</sub>	All inside SW : OFF	—	—	0.8	V
Output Impedance	R <sub>O</sub>		—	10	—	Ω

(note 1): If it is not shown about switch condition, it is tested on three conditions below.

a) S1=2, S2=S3=S4=S5=1 b) S2=S4=2, S1=S3=S5=1, c) S1=S2=1, S3=S5=2, S4=1 or 2.

(note 2): S1=S2=S3=1, Output DC voltage difference of three mode below.

a) S4=S5=1 b) S4=2, S5=1 c) S4=1 or 2, S5=2

(note 3): S5=1, Tested on all combination of S1~S4 except two below.

a) S1=2, S4=1 b) S2=S4=2

(note 4): Tested on all combination of S1~S4 except one.

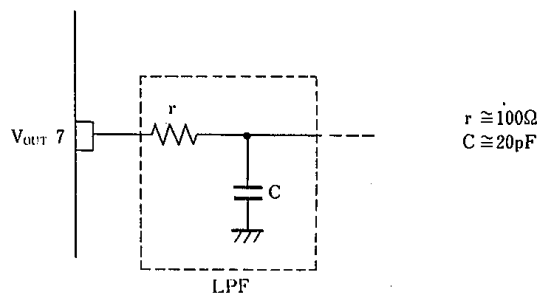
a) S5=2, S3=2

(note 5): Input clamp voltage is about 2/5 of supply voltage.

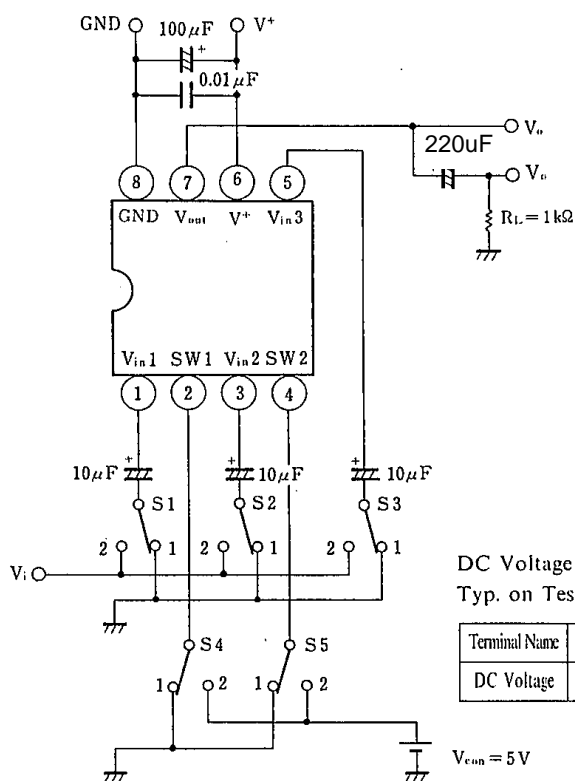
## ■ APPLICATION

Oscillation Prevention on light loading conditions  
Recommended under circuit

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



## ■ TEST CIRCUIT



DC Voltage Each Terminal  
Typ. on Test Circuit  $T_a = 25^\circ\text{C}$

Terminal Name	V <sub>IN1</sub>	SW1	V <sub>IN2</sub>	SW2	V <sub>IN3</sub>	V <sup>+</sup>	V <sub>OUT</sub>	GND
DC Voltage	$\frac{2}{5} V^+$	—	$\frac{2}{5} V^+$	—	$\frac{2}{5} V^+$	—	$\frac{2}{5} V^+ - 0.7$	—

$V_{cc} = 5V$

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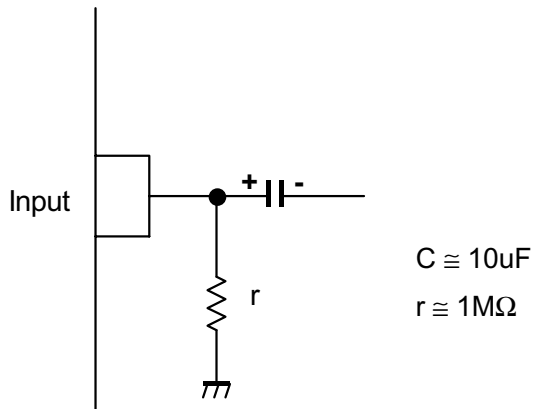
## ■ EQUIVALENT CIRCUIT

PIN NO.	PIN FUNCTION	INSIDE EQUIVALENT CIRCUIT	PIN NO.	PIN FUNCTION	INSIDE EQUIVALENT CIRCUIT
1	V <sub>IN1</sub>		5	V <sub>IN3</sub> (Mute)	
2	SW1		6	V+	
3	V <sub>IN2</sub>		7	V <sub>OUT</sub>	
4	SW2		8	GND	

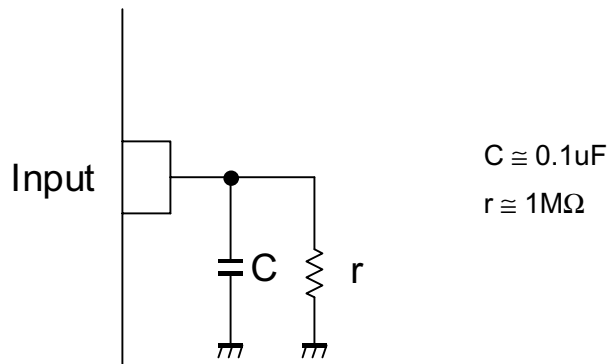
# NJM2235

## ■APPLICATION

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



[CAUTION]  
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