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## 3-INPUT VIDEO SWITCH

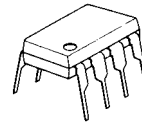
### ■ GENERAL DESCRIPTION

The **NJM2235** is 3-input video switch for video 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 70 dB (at 4.43MHz).

### ■ FEATURES

- Operating Voltage (+4.75V to +13V)
- 3 Input-1 Output
- Internal Clamp Function
- Wide Operating Supply voltage Range 4.75V to 13V
- Crosstalk 70dB (at 4.43MHz)
- Wide Frequency Range 10MHz
- Muting Function available
- Package Outline DIP-8, DMP-8, SIP-8, SSOP8
- Bipolar Technology

### ■ PACKAGE OUTLINE



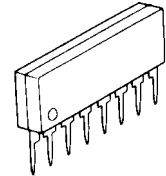
**NJM2235D**



**NJM2235M**



**NJM2235V**

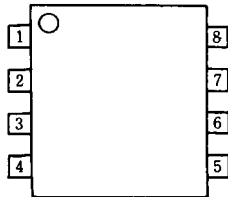


**NJM2235L**

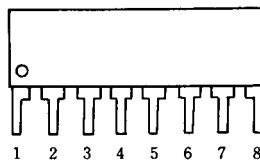
### ■ APPLICATION

- VCR Video Camera AV-TV Video Disc Player

### ■ PIN CONFIGURATION



**NJM2235D**  
**NJM2235M**  
**NJM2235V**

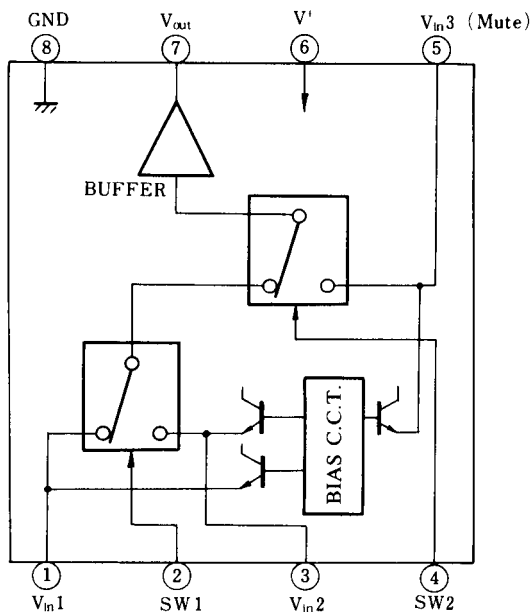


**NJM2235L**

### 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	$V_{in3}$

# NJM2235

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

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

## ■ ELECTRICAL CHARACTERISTICS

(V<sup>+</sup>=5V, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Recommended Supply Voltage	V <sup>+</sup>		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> =2.0Vpp Vo (10Hz)/Vo (100kHz)	-1.0	-	+1.0	dB
Voltage Gain	G <sub>v</sub>	V <sub>i</sub> =2.5Vpp, 100kHz, Vo/V <sub>i</sub>	-0.5	-	+0.5	dB
Differential Gain	DG	V <sub>i</sub> =2Vpp Staircase signal	-	0	-	%
Differential Phase	DP	V <sub>i</sub> =2Vpp Staircase signal	-	0	-	deg
Output Offset Voltage	V <sub>off</sub>	(note 2)	-30	-	+30	mV
Input Clamp Voltage	V <sub>IC</sub>	(note 5)	-	2.0	-	V
Crosstalk (1)	CT1	V <sub>i</sub> =2.0Vpp, 4.43MHz, Vo/V <sub>i</sub> (note 3)	-	-70	-	dB
Crosstalk (2)	CT2	V <sub>i</sub> =2.0Vpp, 4.43MHz, Vo/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 condition 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 to S4 except two below.

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

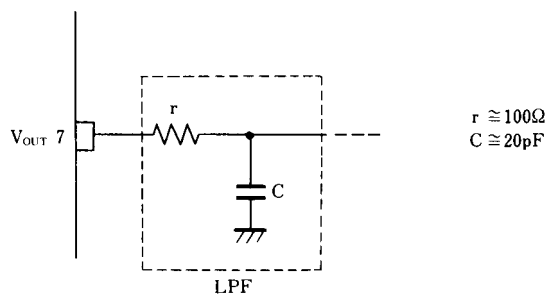
(note 4): Tested on all combination of S1 to S4 except one.

a) S5=2, S3=2

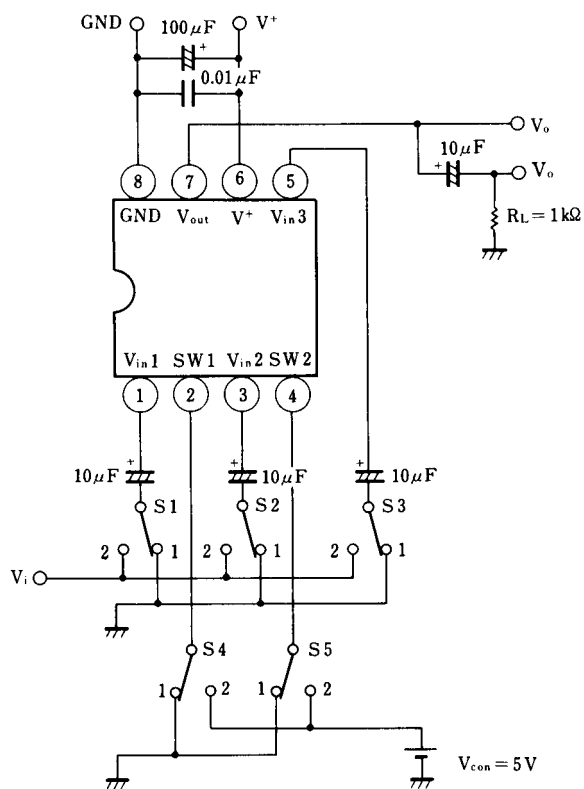
(note 5): Input clamp voltage is about 2/5 of supply voltage.

## APPLICATION

Oscillation Prevention on light loading conditions  
 Recommended under circuit



## TEST CIRCUIT



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

Terminal Name	$V_{IN1}$	SW 1	$V_{IN2}$	SW 2	$V_{IN3}$	$V^+$	$V_{OUT}$	GND
DC Voltage	$\frac{2}{5} V^+$	-	$\frac{2}{5} V^+$	-	$\frac{2}{5} V^+$	-	$\frac{2}{5} V^+ - 0.7$	-

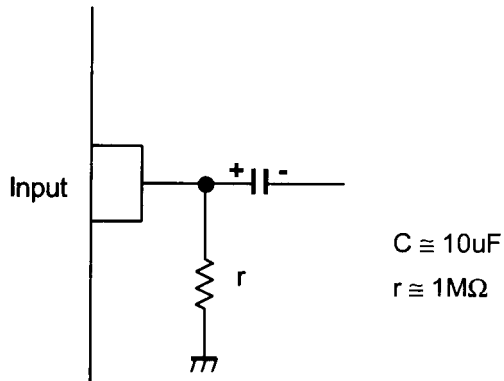
# NJM2235

## ■ EQUIVALENT CIRCUIT

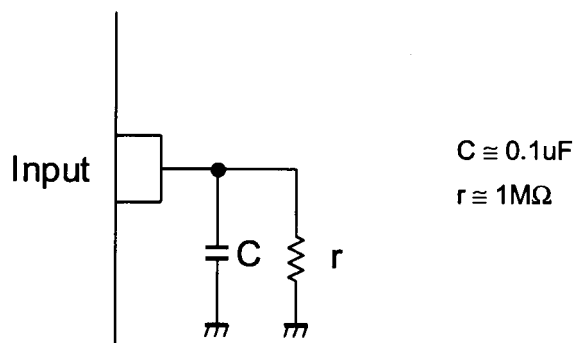
PIN NO.	PIN FUNCTION	INSIDE EQUIVALENT CIRCUIT	PIN NO.	PIN FUNCTION	INSIDE EQUIVALENT CIRCUIT
1	V <sub>IN1</sub>		5	V <sub>IN3</sub> (Mute)	
2	SW 1		6	V <sup>+</sup>	
3	V <sub>IN2</sub>		7	V <sub>OUT</sub>	
4	SW 2		8	GND	

## ■ APPLICATION

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



This IC requires 0.1μF capacitor between INPUT and GND, 1MΩ resistance between INPUT and GND for clamp type input at mute mode.



**[CAUTION]**

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