

## 3-INPUT VIDEO SWITCH

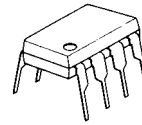
### ■ GENERAL DESCRIPTION

The **NJM2235** 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 70 dB (at 4.43MHz).

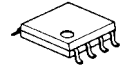
### ■ FEATURES

- 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



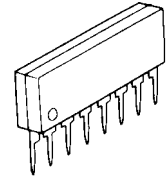
**NJM2235D**



**NJM2235M**



**NJM2235V**

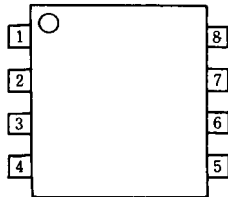


**NJM2235L**

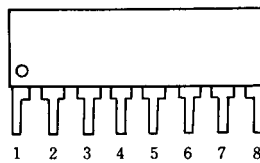
### ■ APPLICATION

- VCR Video Camera AV-TV Video Disc Player

### ■ PIN CONFIGURATION



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

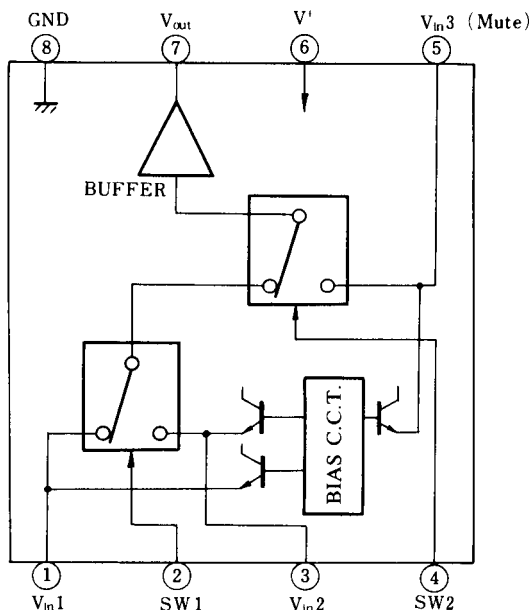


**NJM2235L**

### 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	$V_{in3}$

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## ■ 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>z</sub>	V <sub>i</sub> =2.0Vpp 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> =2.5Vpp, 100kHz, V <sub>o</sub> /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, V <sub>o</sub> /V <sub>i</sub> (note 3)	-	-70	-	dB
Crosstalk (2)	CT2	V <sub>i</sub> =2.0Vpp, 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 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

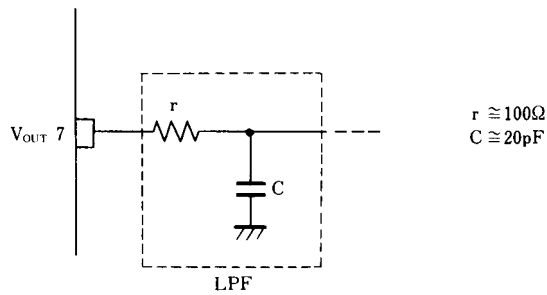
(note 4): Tested on all combination of S1 to S4 except one.

a) S5=2, S3=2

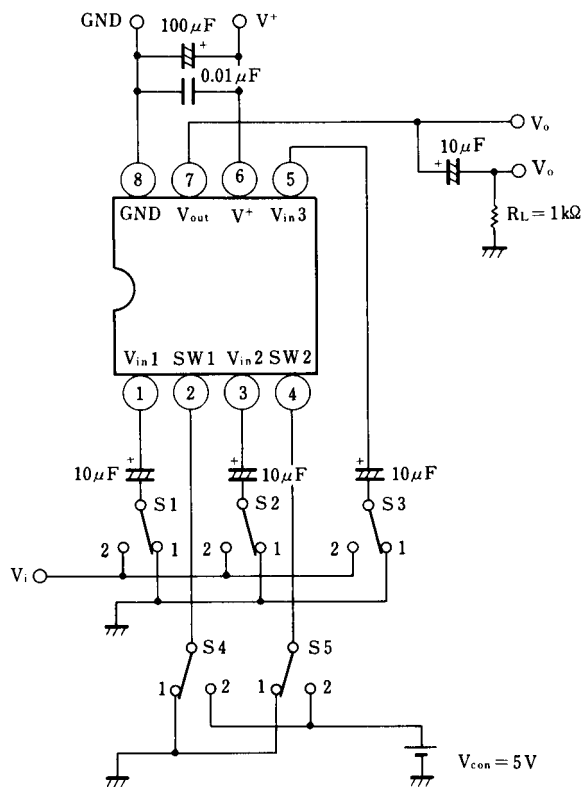
(note 5): Input clamp voltage is about 2/5 of supply voltage.

## ■ APPLICATION

Oscillation Prevention on light loading conditions  
 Recommended under circuit



## ■ TEST CIRCUIT

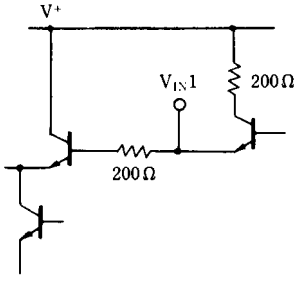
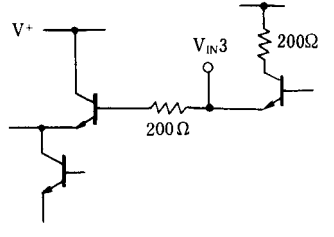
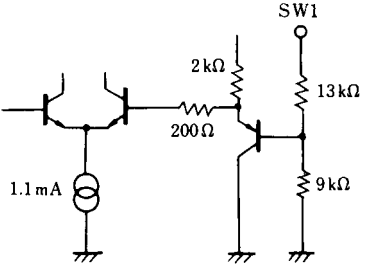

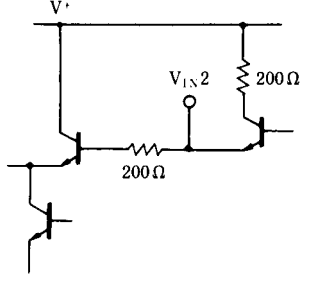
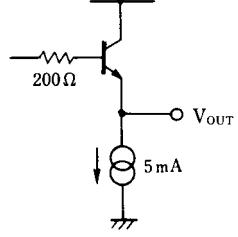
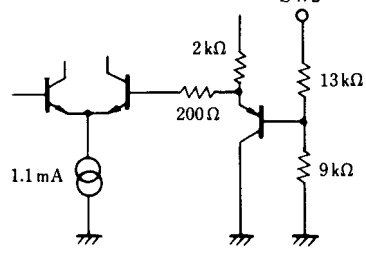
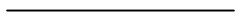


DC Voltage Each Terminal  
 Typ. on Test Circuit  $T_a=25^{\circ}\text{C}$

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

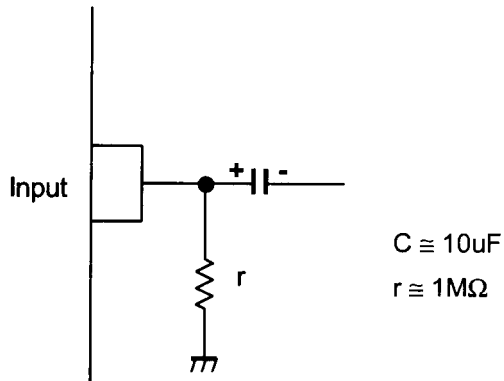
# NJM2235

## ■ EQUIVALENT CIRCUIT

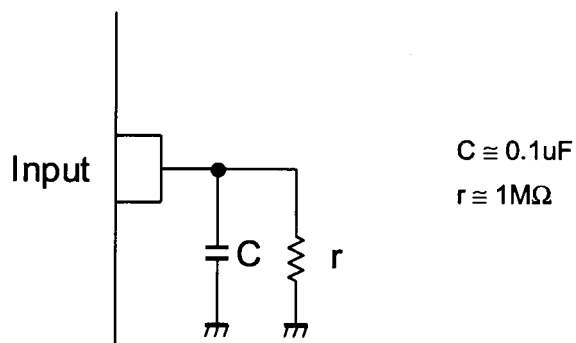
PIN NO.	PIN FUNCTION	INSIDE EQUIVALENT CIRCUIT	PIN NO.	PIN FUNCTION	INSIDE EQUIVALENT CIRCUIT
1	V <sub>IN1</sub>		5	V <sub>IN3</sub> (Mute)	
2	SW 1		6	V <sup>+</sup>	
3	V <sub>IN2</sub>		7	V <sub>OUT</sub>	
4	SW 2		8	GND	

## ■ APPLICATION

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



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



**[CAUTION]**

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