

3-INPUT VIDEO SUPER IMPOSER

■ GENERAL DESCRIPTION

The **NJM2248** is 3-input video switch for video and audio signal. Two input terminals have sink-chip clamp function and so it is applied to fixed DC level of video signal. The other input terminal is transistor base input for luminant signal and so luminant level may be easily fixed by outer circuit. Its operating supply voltage range is 4.75 to 13V and bandwidth is 10MHz. Cross-talk is 70dB (at 4.43MHz).

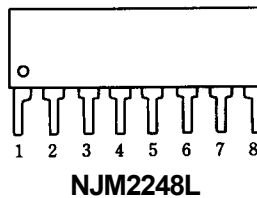
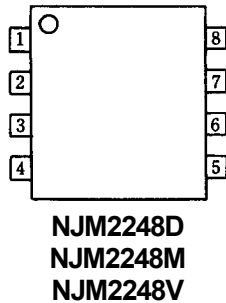
■ FEATURES

- Operating Voltage (+4.75V to +13V)
- 3 Input-1 Output
- Internal Clamp Function (V_{IN1} , V_{IN2})
- Internal Luminance Signal Control Function (V_{IN3})
- Cross - talk 70dB (at 4.43MHz)
- Wide Frequency Range
- Package Outline DIP8, DMP8 SIP8, (SSOP8)
- Bipolar Technology

■ APPLICATION

- VCR, Video Camera, AV-TV, Video Disc Player

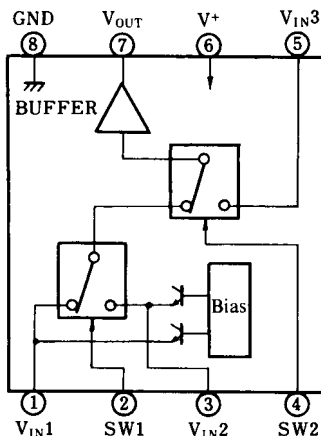
■ PIN CONFIGURATION



PIN FUNCTION

1. V_{IN1}
2. SW 1
3. V_{IN2}
4. SW 2
5. V_{IN3}
6. V^+
7. V_{OUT}
8. GND

■ BLOCK DIAGRAM



■ INPUT CONTROL SIGNAL-OUTPUT SIGNAL

SW1	SW2	OUTPUT SIGNAL
L	L	V_{IN1}
H	L	V_{IN2}
L/H	H	V_{IN3}

NJM2248

■ ABSOLUTE MAXIMUM RATINGS

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	15	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (SSOP8) 250 (SIP8) 800	mW
Operating Temperature Range	T_{opr}	-20 to +75	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-40 to +125	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS

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

PARAMETERS	SYMBOLS	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Recommended Supply Voltage	V^+		4.75	-	13.0	V
Operating Current	I_{CC}	$S1 = S2 = S3 = S4 = S5 = 1$	-	10.5	14.0	mA
Voltage Gain	G_V	$V_1 = 2.5V_{P-P}, 100\text{kHz}, V_O / V_1$	-0.5	-	+0.5	dB
Frequency Characteristics	G_f	$V_1 = 2.0V_{P-P}, V_O(10\text{MHz}) / V_O(100\text{MHz})$	-1.0	0	+1.0	dB
Differential Gain	DG	$V_1 = 2V_{P-P}$, Staircase signal	-	0	-	%
Differential Phase	DP	$V_1 = 2V_{P-P}$, Staircase signal	-	0	-	deg
Cross-talk	CT	$V_1 = 2.0V_{P-P}, 4.43\text{MHz}, V_O / V_1(\text{Note 1})$	-	-70	-	dB
Switch Change Voltage	V_{CH}	All inside SW : ON	2.4	-	-	V
	V_{CL}	All inside SW : OFF	-	-	0.8	V
Output Impedance	R_O		-	10	-	Ω

(Note 1) : Tested on all combination except three below.

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

(Note 2) : Unless specified, tested with $V_{BIAS} = 3\text{V}$.

(Note 3) : If it is not shown about switch condition, it is tested on three condition below.

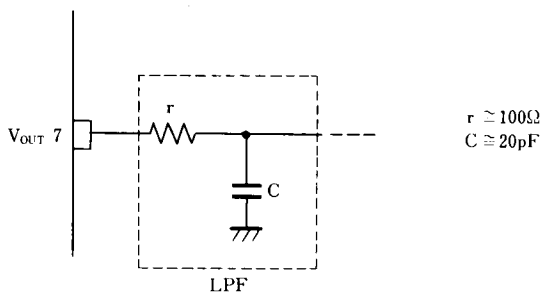
a) $S1 = 2, S2 = S3 = S4 = S5 = 1$ b) $S1 = 1, S2 = 2, S3 = 1, S4 = 2, S5 = 1$ c) $S1 = S2 = 1, S3 = 2, S4 = 1 \text{ or } 2, S5 = 2$

(Note 4) : Clamp voltage of V_{in1} and V_{in2} is about 2 / 5 of supply voltage (about 2.0V if $V^+ = 5\text{V}$).

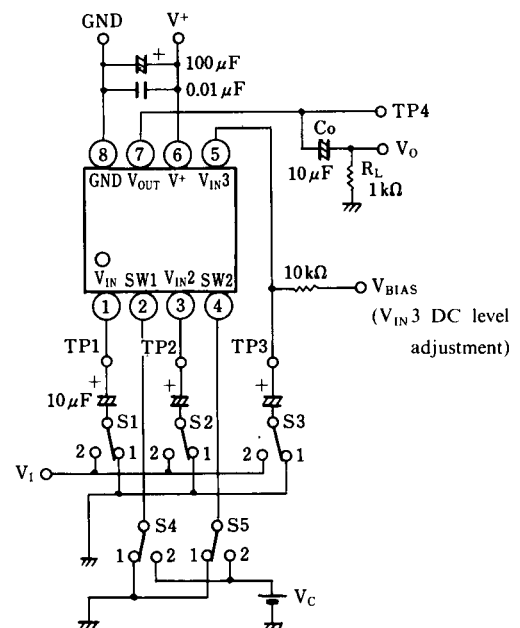
■ SPECIAL CARES TO BE TAKEN WHEN APPLICATION

Oscillation Prevention on light loading conditions

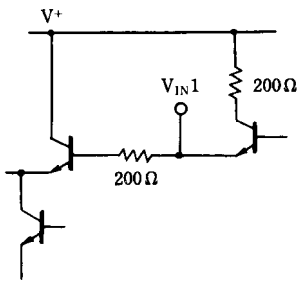
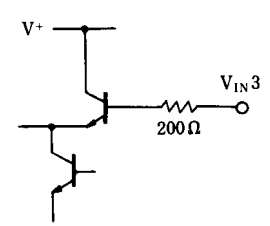
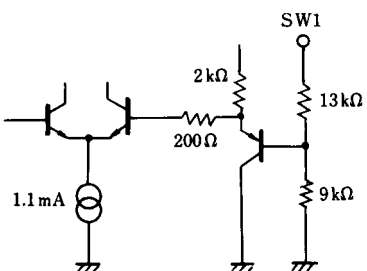
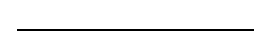
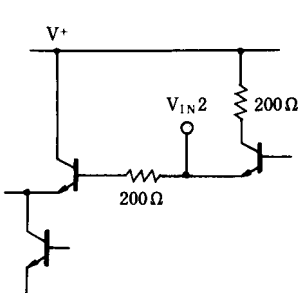
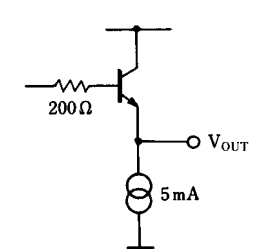
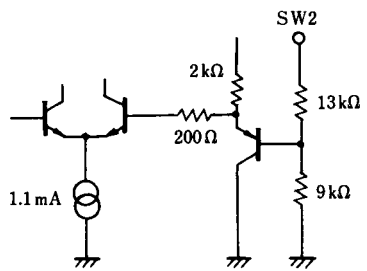
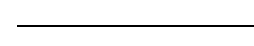
Recommended under circuit.



■ TEST CIRCUIT



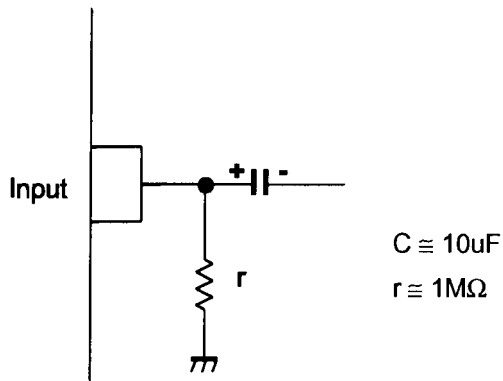
■ TERMINAL FUNCTION

PIN NO.	PIN SYMBOL	EQUIVALENT CIRCUIT	PIN NO.	PIN SYMBOL	EQUIVALENT CIRCUIT
1	V_{IN1}		5	V_{IN3}	
2	SW1		6	V^+	
3	V_{IN2}		7	V_{OUT}	
4	SW2		8	GND	

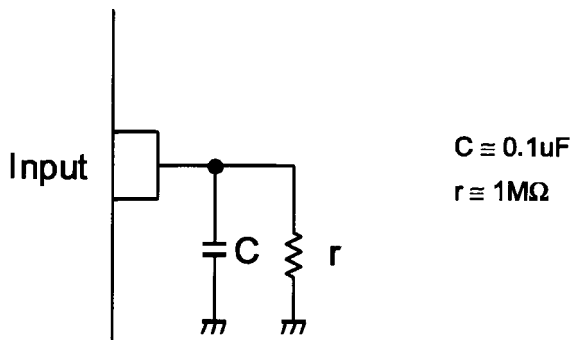
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■ APPLICATION

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.



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