# VIDEO SUPER INPOSER WITH Y-C MIXER

## ■ GENERAL DESCRIPTION

The NJM2509 is video super imposer, including Y/C mix circuit.

Y-signal input terminal have sink-chip clamp function and it is applied to fixed DC level of video signal.

Impose voltage is fixed internally to white level and black level, and includes 6dB amplifier.

## ■ PACKAGE OUTLINE

NJM2509V

## ■ FEATURES

- Internal Y/C Mix Circuit
- Internal Clamp Circuit (Y Signal), Bias Circuit (C Signal)
- Impose voltage fixed internally to white level and black level.
- Internal 6dB AMP. (Input:0.5$V_{P-P}$, Output:1.0$V_{PP}$)
- Package Outline SSOP8
- Bipolar Technology

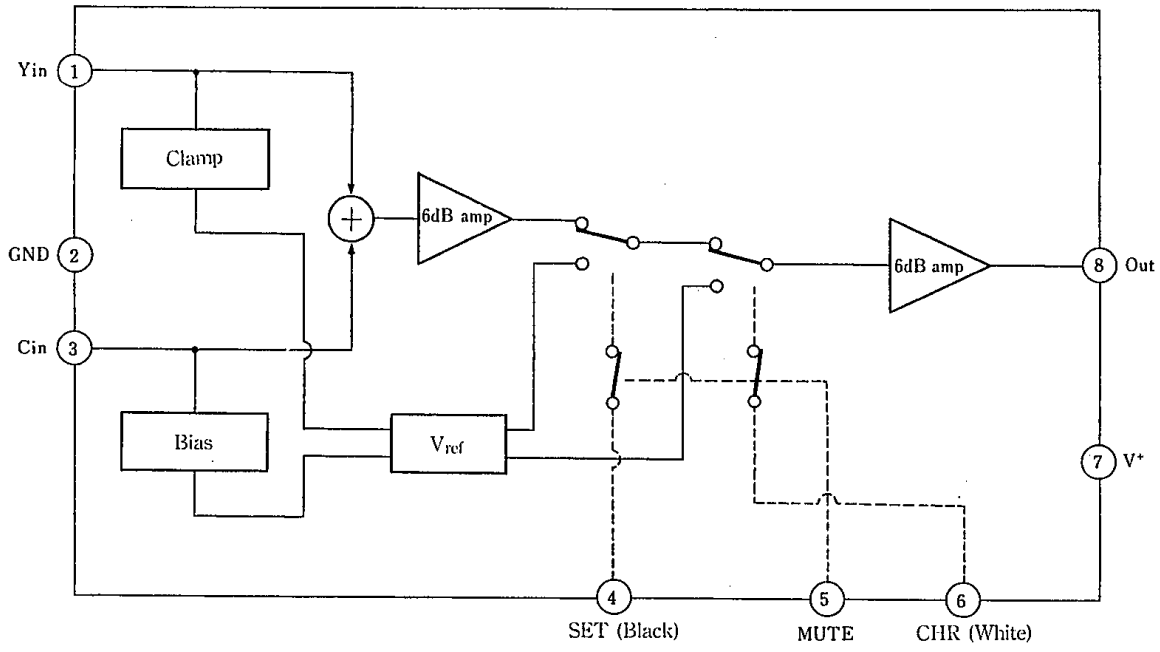
## ■ RECOMMENDED OPERATING CONDITION

- Operating Voltage $V^+$ 4.5~5.1V

## ■ APPLICATION

- Video Camera

## ■ BLOCK DIAGRAM




NJM2509V

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+$ | 7.0 | V |
| Power Dissipation | $P_D$ | 250 | mW |
| Operating Temperature Range | $T_{opr}$ | −20~+75 | ℃ |
| Storage Temperature Range | $T_{stg}$ | −40~+125 | ℃ |

## ■ ELECTRICAL CHARACTERISTICS

($V^+$=4.8V, Ta=25℃, $R_L$=10kΩ)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Operating Current | $I_{CC}$ | | 5.3 | 7.0 | 8.7 | mA |
| Clamp Voltage | $V_{cmp}$ | | 2.4 | 2.5 | 2.6 | V |
| Bias Voltage | $V_{bias}$ | | 2.4 | 2.5 | 2.6 | V |
| Voltage Gain | $G_V$ | $V_{out}/V_{in}$ 100kHz, 0.5$V_{P-P}$ Sine Wave | 6.0 | 6.3 | 6.8 | dB |
| Frequency Characteristic | $G_f$ | 0.5$V_{P-P}$ Sine Wave $\upsilon_0$ (10MHz)/$\upsilon_0$ (100kHz) | −0.7 | −0.2 | +0.3 | dB |
| Background Voltage | $V_{set}$ | From Pedestal Level | 5.0 | 15.0 | 20.0 | IRE |
| CHR. VOLTAGE | $V_{chr}$ | From Pedestal Level | 65.0 | 75.0 | 85.0 | IRE |
| Input Resistance | $R_{in}$ | Input Cin | — | 30 | — | kΩ |
| Differential Gain | DG | 0.5$V_{P-P}$, 10 STEP Stair wave | — | — | 3.0 | deg |
| Differential Phasa | DP | 0.5$V_{P-P}$, 10 STEP Stair wave | — | — | 3.0 | % |
| BACKGROUND | $V_{ch}$ | BACKGROUND SW:ON | 2.4 | — | — | V |
| Switch Change Voltage | $V_{cl}$ | BACKGROUND SW:OFF | — | — | 0.8 | V |
| CHR MUTE | $V_{ch}$MUTE | CHRMUTE SW:ON | 2.4 | — | — | V |
| Switch Change Voltage | $V_{cl}$MUTE | CHRMUTE SW:OFF | — | — | 0.8 | V |
| Crosstalk 1 | CT1 | $C_{in}$→BACKGROUND VOLTAGE (※1) | — | −50 | — | dB |
| Crosstalk 2 | CT2 | $C_{in}$→CHR VOLTAGE (※2) | — | −50 | — | dB |
| Crosstalk 3 | CT3 | $Y_{in}$→BACKGROUND VOLTAGE (※1) | — | −50 | — | dB |
| Crosstalk 4 | CT4 | $Y_{in}$→CHR VOLTAGE (※2) | — | −50 | — | dB |

※1. Crosstalk:4.43MHz. 0.5$V_{PP}$ Sine wave, $V_{out}/V_{in}$

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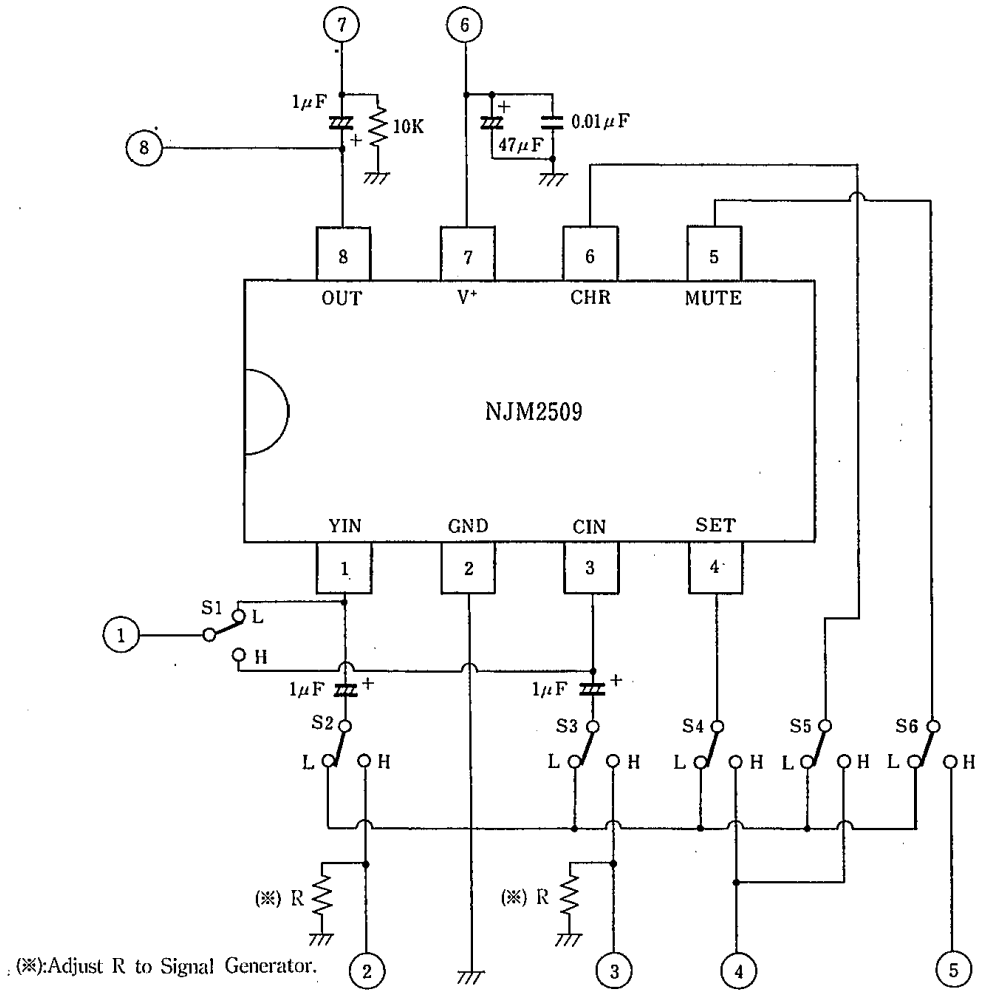
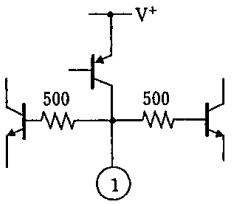
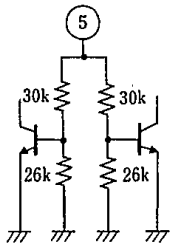
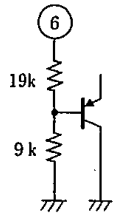
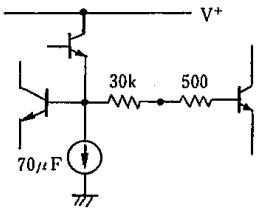
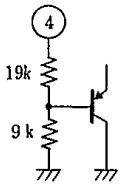
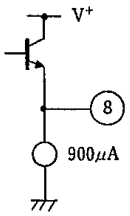
■ TEST CIRCUIT




(※):Adjust R to Signal Generator.

## ■ TERMINAL EXPLANATION

($V^+$=4.8V, Ta=25℃)

| PIN NO. | UNIT | FUNCTION | EQUIVALENT CIRCUIT | PIN NO. | UNIT | FUNCTION | EQUIVALENT CIRCUIT |
|---|---|---|---|---|---|---|---|
| 1 | YIN | Input:2.5V clamp<br>0.5Vpp Y-signal<br>or<br>Compozitto signal |  | 5 | MUTE | Ckaractor signal<br>ON/OFF Switch<br>Hi: Charactor signal OFF<br>Lo: Charactor Signal ON |  |
| 2 | GND | GROUND | | 6 | CHR | Charactor signal<br>Input pin<br>Hi: White level<br>Lo: Composit signal |  |
| 3 | CIN | Input:2.5V Bias,<br>0.5Vpp C-signal |  | 7 | V+ | Supply Voltage | |
| 4 | SET | Charactor signal<br>Input Pin<br>Hi: Black level<br>Lo: Composit signal |  | 8 | OUT | Output-1Vpp<br>Composit signal,<br>Impose Voltage |  |

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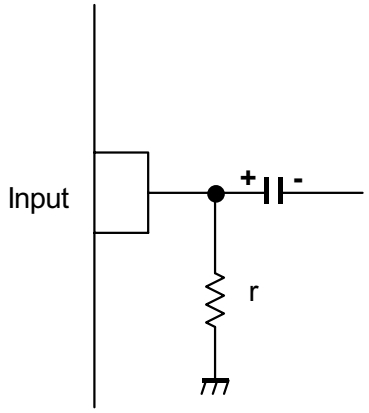
■APPLICATION

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




C ≅ 10uF

r ≅ 1MΩ

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