

VIDEO SUPER INPOSER WITH Y-C MIXER

■ GENERAL DESCRIPTION

The **NJU2509** 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 : 0.5V_{P-P} Output : 1.0 V_{P-P})
- Package Outline SSOP8
- Bipolar Technology

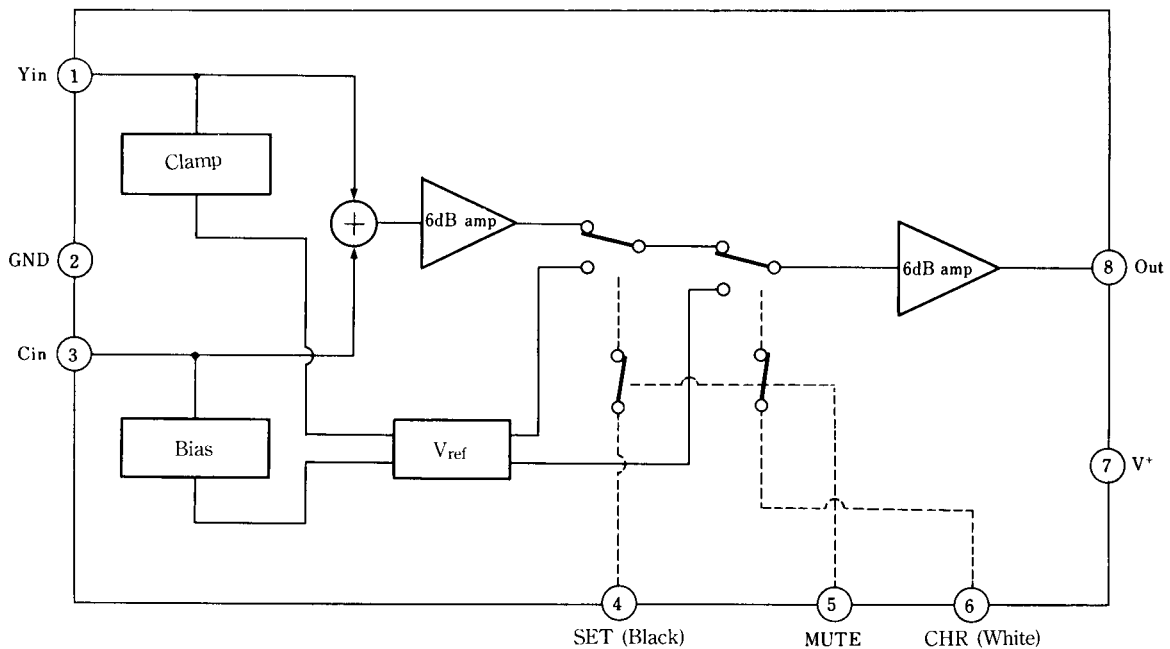
■ RECOMMENDED OPERATING CONDITION

- Operating Voltage V⁺ 4.5V to 5.1V

■ APPLICATION

- Video Camera

■ BLOCK DIAGRAM



NJM2509V

NJM2509

■ ABSOLUTE MAXIMUM RATINGS

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

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|-----------|-------------|------------------|
| Supply Voltage | V^+ | 7.0 | V |
| Power Dissipation | P_D | 250 | mW |
| Operating Temperature Range | T_{opr} | -20 to +75 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -40 to +125 | $^\circ\text{C}$ |

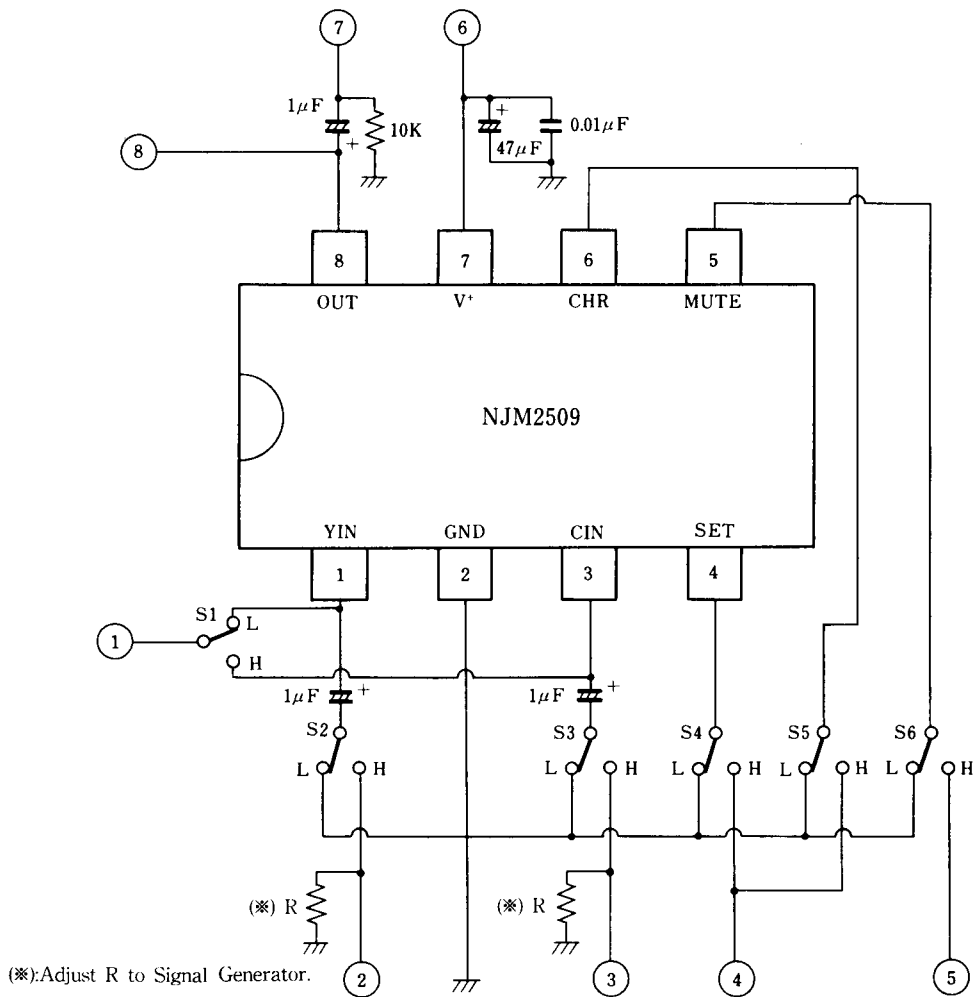
■ ELECTRICAL CHARACTERISTICS

($V^+ = 4.8\text{V}$, $T_a = 25^\circ\text{C}$, $R_L = 10\text{k}\Omega$)

| 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, 0.5V _{P-P} Sine Wave | 6.0 | 6.3 | 6.8 | dB |
| Frequency Characteristic | G_f | 0.5V _{P-P} Sine Wave v_o (10MHz) / v_o (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 C_{in} | - | 30 | - | k Ω |
| Differential Gain | DG | 0.5V _{P-P} , 10STEP Stair wave | - | - | 3.0 | deg |
| Differential Phasa | DP | 0.5V _{P-P} , 10STEP Stair wave | - | - | 3.0 | % |
| BACKGROUND | V_{ch} | BACKGROUND SW : ON | 2.4 | - | - | V |
| Switch Change Voltage | V_d | BACKGROUND SW : OFF | - | - | 0.8 | V |
| CHR MUTE | V_{chMUTE} | CHRMUTE SW : ON | 2.4 | - | - | V |
| Switch Change Voltage | V_dMUTE | CHRMUTE SW : OFF | - | - | 0.8 | V |
| Crosstalk 1 | CT1 | $C_{in} \rightarrow$ BACKGROUND VOLTAGE (*1) | - | -50 | - | dB |
| Crosstalk 2 | CT2 | $C_{in} \rightarrow$ CHR VOLTAGE (*2) | - | -50 | - | dB |
| Crosstalk 3 | CT3 | $Y_{in} \rightarrow$ BACKGROUND VOLTAGE (*1) | - | -50 | - | dB |
| Crosstalk 4 | CT4 | $Y_{in} \rightarrow$ CHR VOLTAGE (*1) | - | -50 | - | dB |

*1. Crosstalk : 4.43MHz. 0.5V_{P-P} Sine wave, V_{out} / V_{in}

■ TEST CIRCUIT



NJM2509

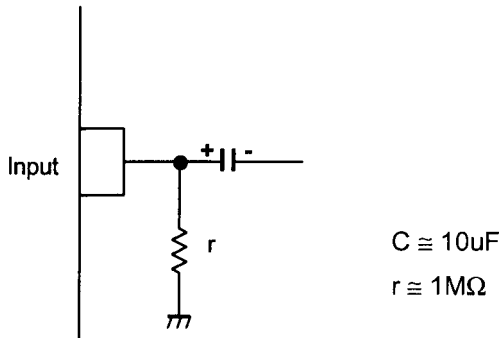
■ TERMINAL EXPLANATION

($V^+ = 4.8V, T_a = 25^\circ C$)

| PIN No. | UNIT | FUNCTION | EQUIVALENT CIRCUIT | PIN No. | UNIT | FUNCTION | EQUIVALENT CIRCUIT |
|---------|------|---|--------------------|---------|----------------|--|--------------------|
| 1 | YIN | Input 2.5V clamp 0.5V _{PP} Y-signal or Compozitto signal | | 5 | MUTE | Character signal ON/OFF Switch Hi Character signal OFF Lo Character signal ON | |
| 2 | GND | GROUND | | 6 | CHR | Character signal Input pin Hi White level Lo Composit signal | |
| 3 | CIN | Input 2.5V Bias, 0.5V _{PP} C-signal | | 7 | V ⁺ | Supply voltage | |
| 4 | SET | Character signal Input Pin H Black level i L Composit o signal | | 8 | OUT | Output-1 V _{PP} Composit signal, Impose Voltage | |

■ 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.



[CAUTION]
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