



NJM2584A

WIDE BAND 3 CIRCUITS VIDEO SWITCH

■ GENERAL DESCRIPTION

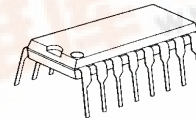
The **NJM2584A** is a wide band 2-Input 1-Output 3-Circuit video switch. It is suitable for Y, Pb, and Pr signal because frequency range is 50MHz.

The **NJM2584A** is suitable for PTV, DTV, PDP and other high quality AV systems.

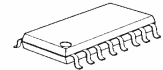
■ FEATURES

- Operating Voltage 4.5 to 9.0V
- Wide frequency range 0dB at 50MHz typ.
- Internal 2 input-1output 3-circuit video switch
- Input coupling capacitor is 1 μ F
- Operating Current 10mA typ.
- Bipolar Technology
- Package Outline DIP16, DMP16

■ PACKAGE OUTLINE

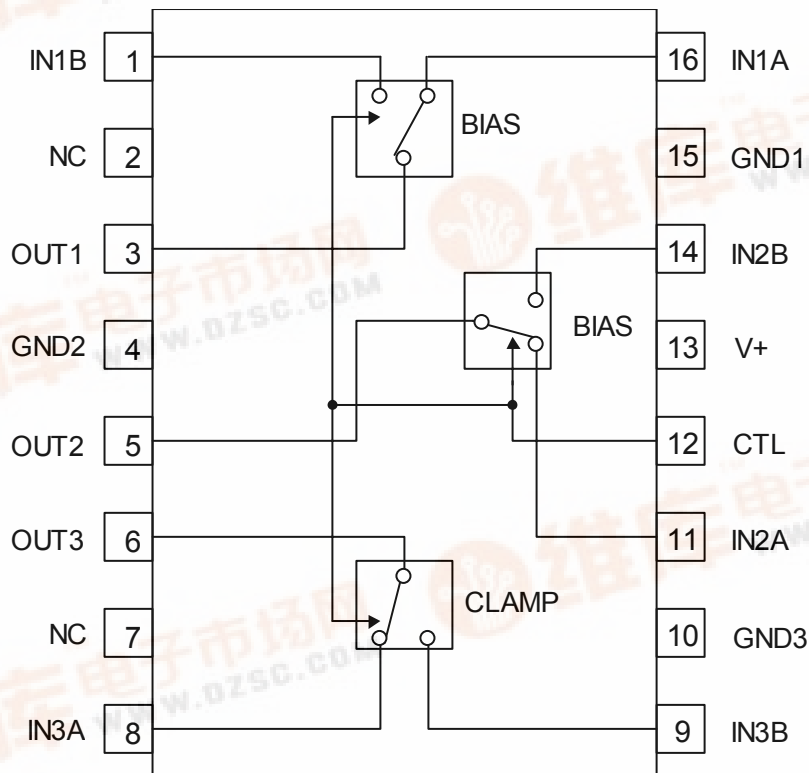


NJM2584AD



NJM2584AM

■ BLOCK DIAGRAM



NJM2584A

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETERS | SYMBOL | RATINGS | UNIT |
|-----------------------------|------------------|------------------------|------|
| Supply Voltage | V _{CC} | 10.0 | V |
| Power Dissipation | P _D | (DIP) 500 (DMP) 300 | mW |
| Operating Temperature Range | T _{opr} | -40 to +85 | °C |
| Storage Temperature Range | T _{stg} | -40 to +125 | °C |

■ ELECTRICAL CHARACTERISTICS

(V_{CC}=5.0V, R_L=10kΩ, Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------------------------|------------------|---|------|------|----------------|------|
| Operating Current | I _{CC} | No signal | - | 10.0 | 15.0 | mA |
| Maximum input Voltage 1 | V _{im1} | BIAS input | 3.2 | 3.5 | - | Vp-p |
| Maximum input Voltage 2 | V _{im2} | CLAMP input | 2.4 | 2.6 | - | Vp-p |
| Maximum Output Voltage 1 | V _{om1} | BIAS input, Vin=1kHz, Sin signal, THD=1%, | 3.2 | 3.5 | - | Vp-p |
| Maximum Output Voltage 2 | V _{om2} | CLAMP input, Vin=1kHz, Sin signal, THD=1%, | 2.4 | 2.6 | - | Vp-p |
| Voltage Gain | G _v | Vin=1MHz, 2.0Vp-p Sin signal | -0.5 | 0 | 0.5 | dB |
| Differential Gain (Channel) | ΔG _{vI} | Vin=1MHz, 2.0Vp-p Sin signal | -0.2 | 0 | 0.2 | dB |
| Differential Gain (Block) | ΔG _{vB} | Vin=1MHz, 2.0Vp-p Sin signal | -0.2 | 0 | 0.2 | dB |
| Band Width | f | | - | 50 | - | MHz |
| Frequency Characteristic | G _f | Vin=1MHz / 50MHz, 1.0Vp-p, Sin signal | - | 0 | - | dB |
| Channel Cross talk 1 | CTI1 | Vin=4.43MHz, 2.0Vp-p, Sin signal | - | -70 | -60 | dB |
| Channel Cross talk 2 | CTI2 | Vin=50MHz, 2.0Vp-p, Sin signal | - | -40 | - | dB |
| Block Cross talk 1 | CTB1 | Vin=4.43MHz, 2.0Vp-p, Sin signal | - | -70 | -60 | dB |
| Block Cross talk 2 | CTB2 | Vin=50MHz, 2.0Vp-p, Sin signal | - | -40 | - | dB |
| Differential Gain | DG | Vin=1.0Vpp 10step Video signal | - | 0.3 | - | % |
| Differential Phase | DP | Vin=1.0Vpp 10step Video signal | - | 0.3 | - | deg |
| S/N | SN _v | Vin=1.0Vpp, 100% White Video signal | - | +65 | - | dB |
| Switch Change Voltage H Level | V _{thH} | | 2.0 | - | V ⁺ | V |
| Switch Change Voltage L Level | V _{thL} | | 0 | - | 0.6 | V |

■ MODE SWITCH FUNCTION

| PIN | MODE | NOTES |
|---------|------|------------------|
| Control | H | B channel output |
| | L | A channel output |
| | OPEN | A channel output |

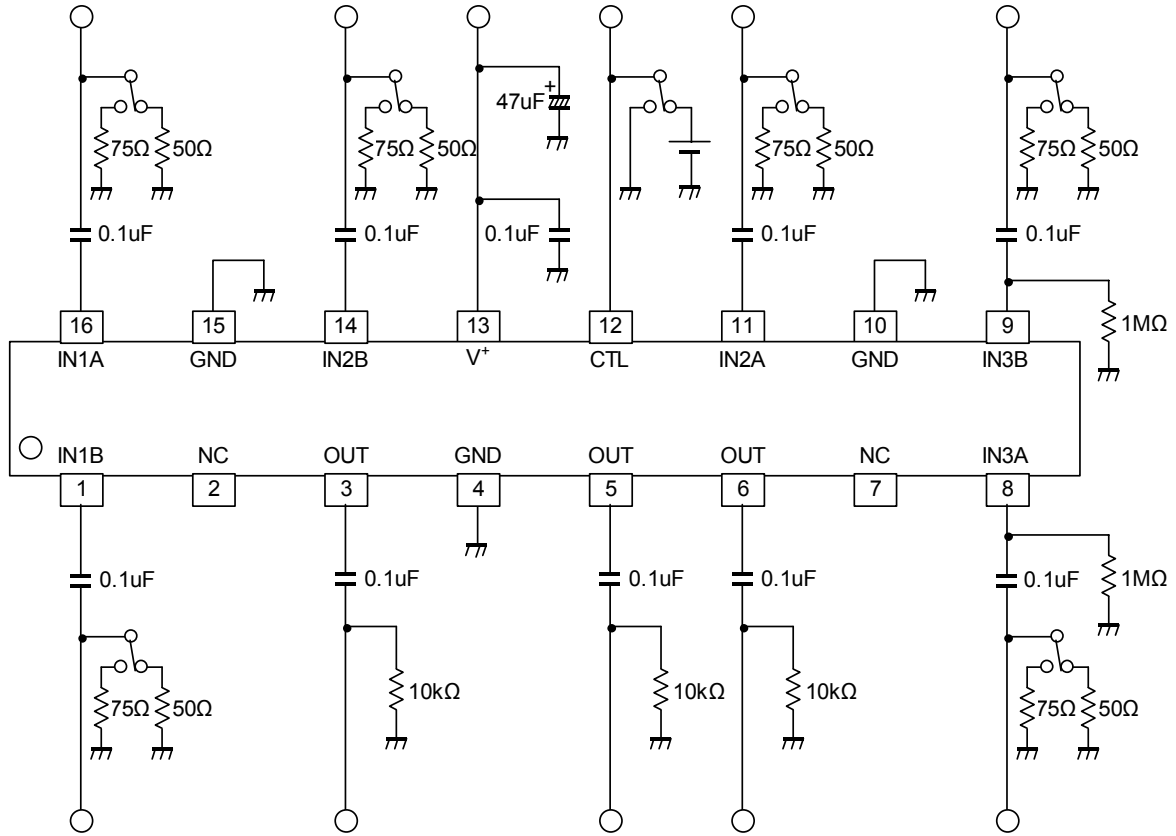
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■ EQUIVALENT CIRCUIT (V+=5.0V)

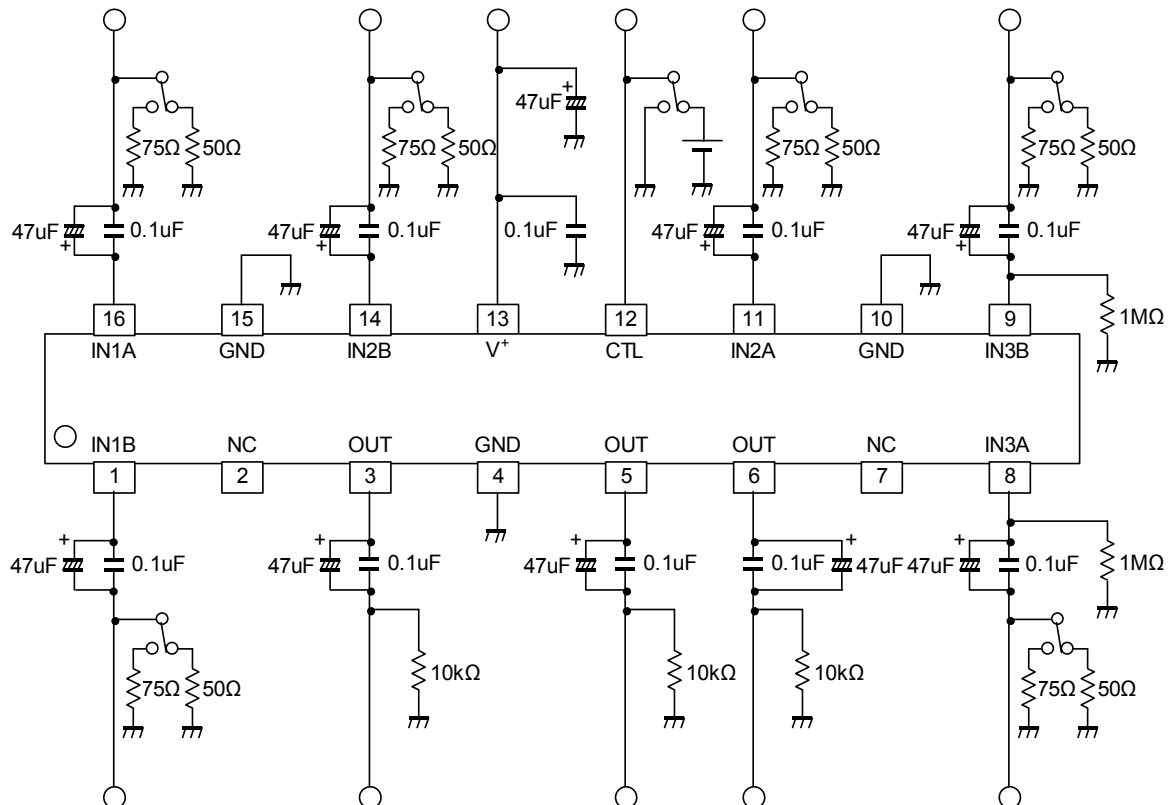
| PIN No. | PIN NAME | INSIDE EQUIVALENT CIRCUIT | VOLTAGE | Note |
|---------------------|------------------------------|---------------------------|--|--|
| 16 1 11 14 | IN1A IN1B IN2A IN2B | | 2.90V | IN1A, IN2A CTL : L IN1B, IN2B CTL : H |
| 8 9 | IN3A IN3B | | 1.75V | IN3A CTL : L IN3B CTL : H |
| 3 5 6 | OUT1 OUT2 OUT3 | | (OUT1, OUT2) 2.10V (OUT3) 1.00V | |
| 12 | CTL | | 0V | |
| 13 | V+ | _____ | | |
| 15 4 10 | GND1 GND2 GND3 | _____ | | |

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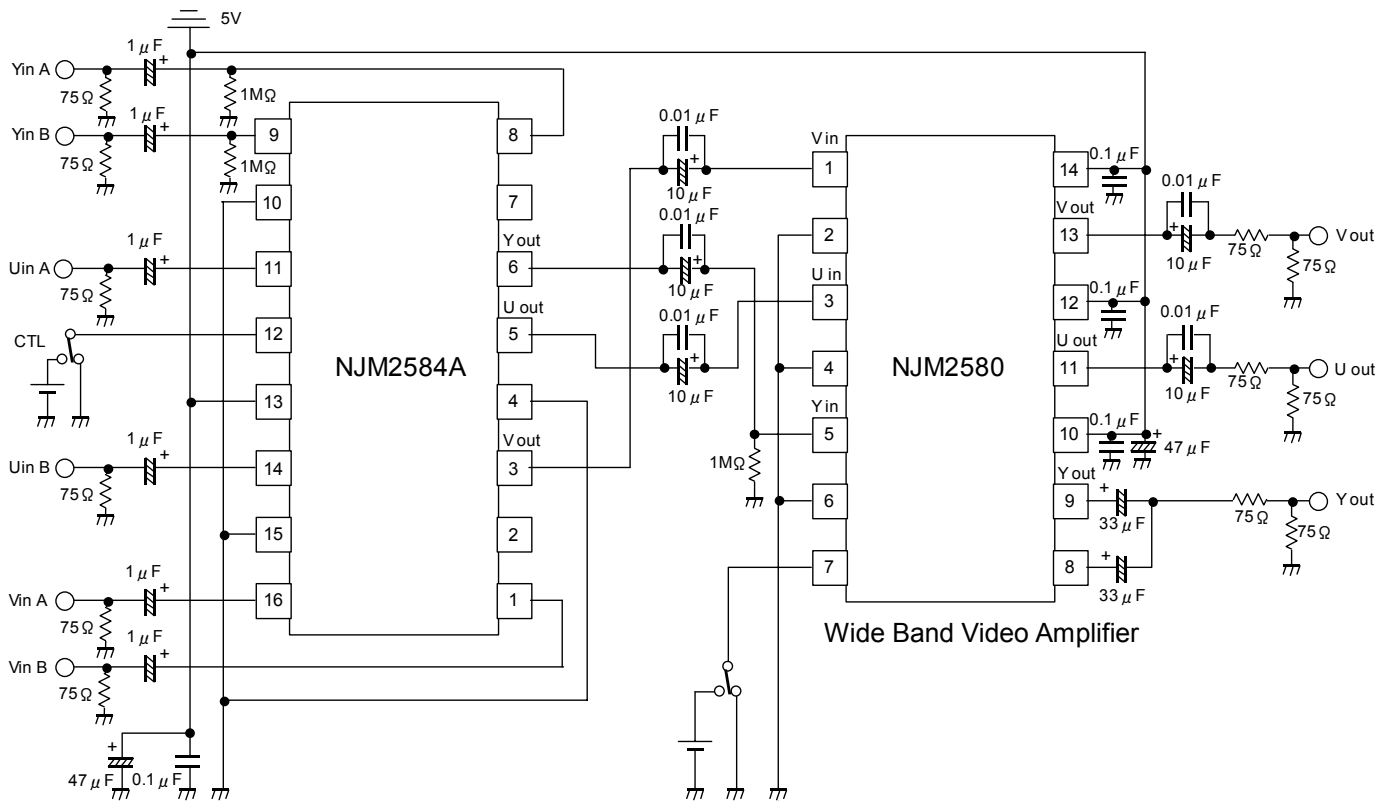
TEST CIRCUIT1



TEST CIRCUIT2 (DG, DP, S/N)



APPLICATION CIRCUIT

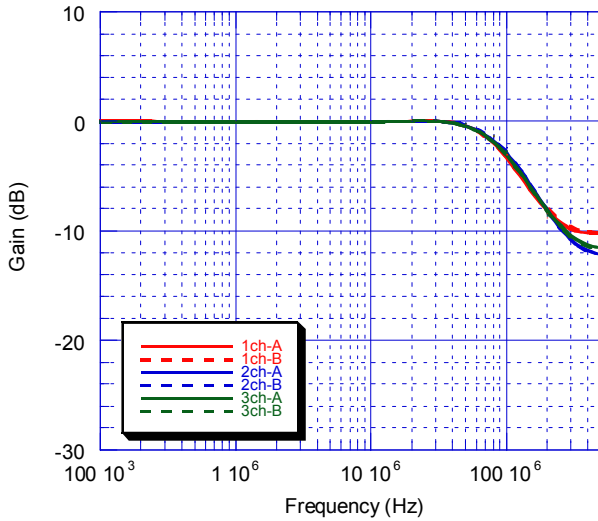


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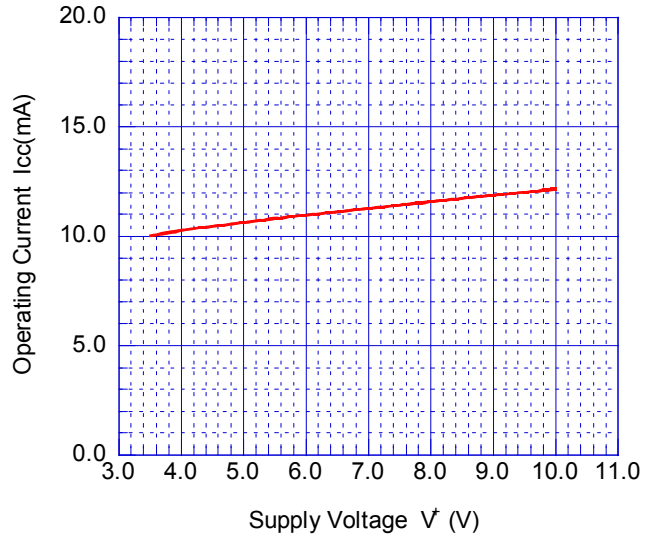
TYPICAL CHARACTERISTICS

Voltage Gain vs. Frequency

1Vpp sinewave signal input

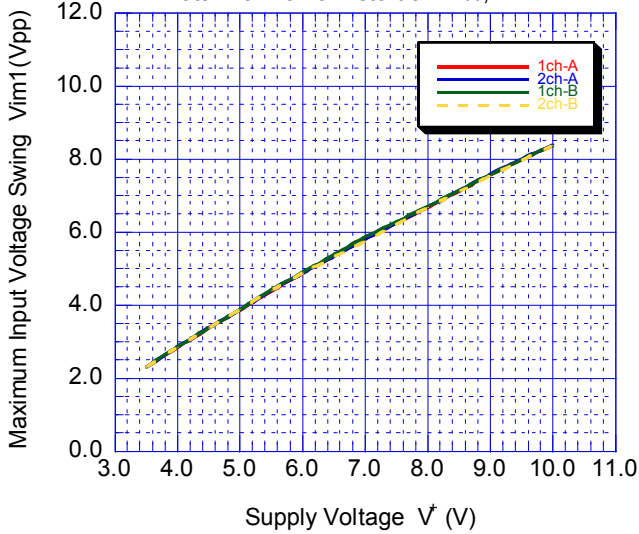


Operating Current vs. Supply Voltage



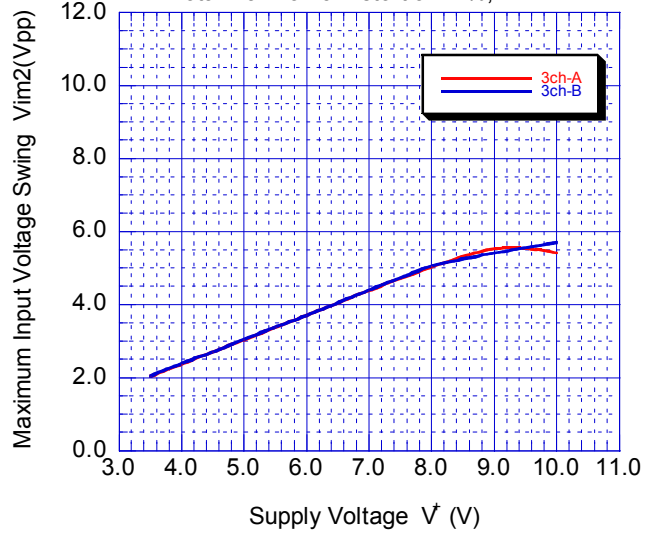
Maximum Input Voltage Swing vs. Supply Voltage (BIAS Type Input)

Total Harmonic Distortion=1%, 1kHz



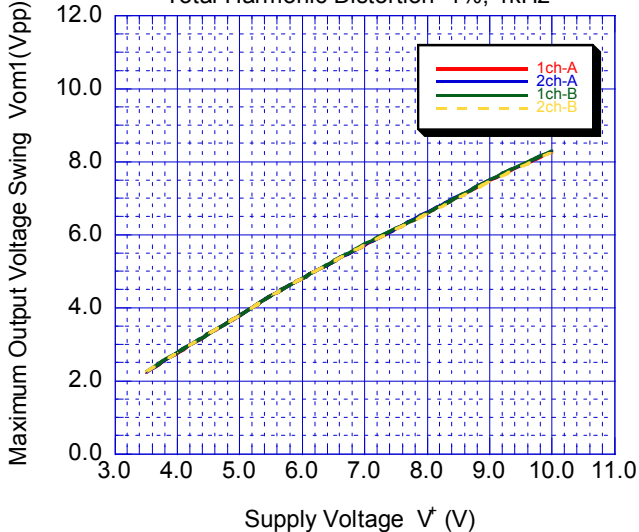
Maximum Input Voltage Swing vs. Supply Voltage (CLAMP Type Input)

Total Harmonic Distortion=1%, 1kHz



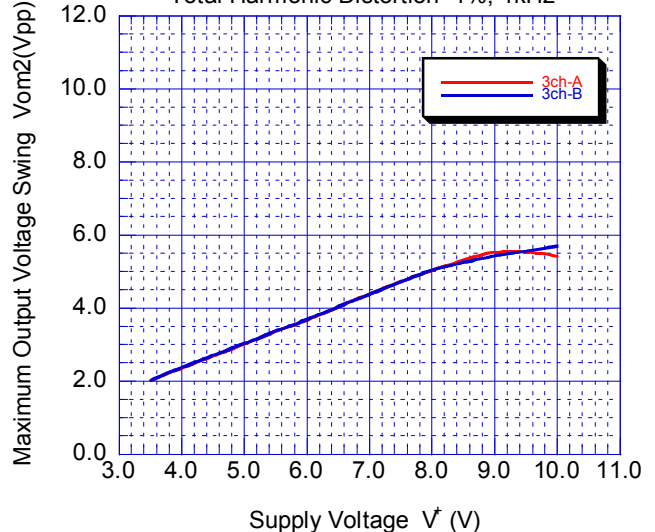
Maximum Output Voltage Swing vs. Supply Voltage (BIAS Type Input)

Total Harmonic Distortion=1%, 1kHz

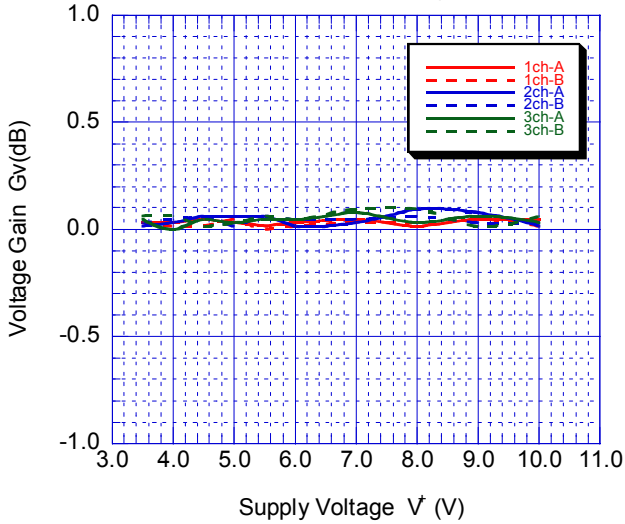


Maximum Output Voltage Swing vs. Supply Voltage (CLAMP Type Input)

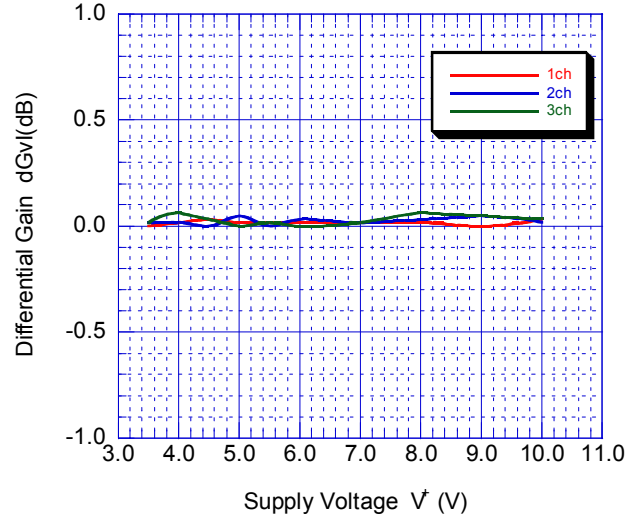
Total Harmonic Distortion=1%, 1kHz



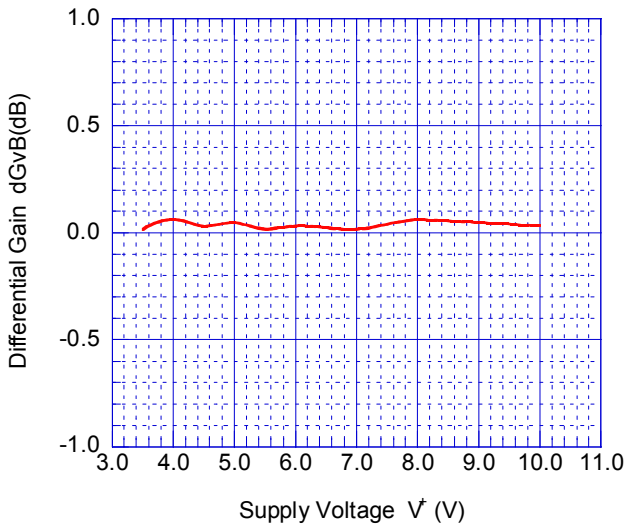
Voltage Gain vs. Supply Voltage
2Vpp, 1MHz sinewave signal input



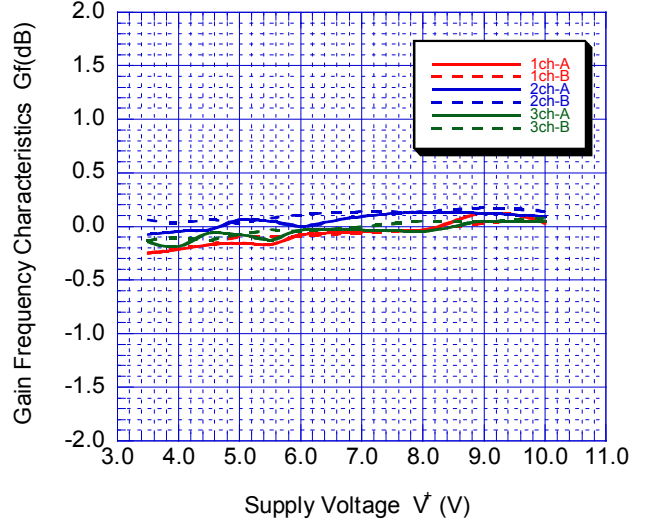
Input Gain Defference vs. Supply Voltage



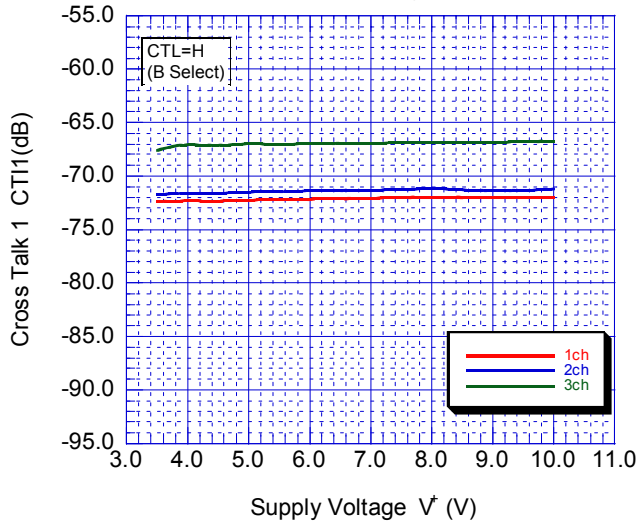
Channel Gain Defference vs. Supply Voltage



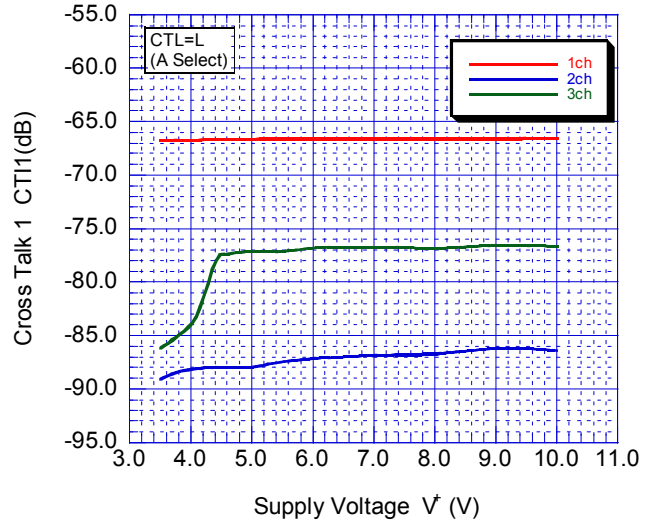
Gain Frequency Characteristics vs. Supply Voltage
1Vpp, 50MHz/1MHz



Input Cross Talk 1 vs. Supply Voltage
2Vpp, 4.43MHz sinewave signal input (Achannel)

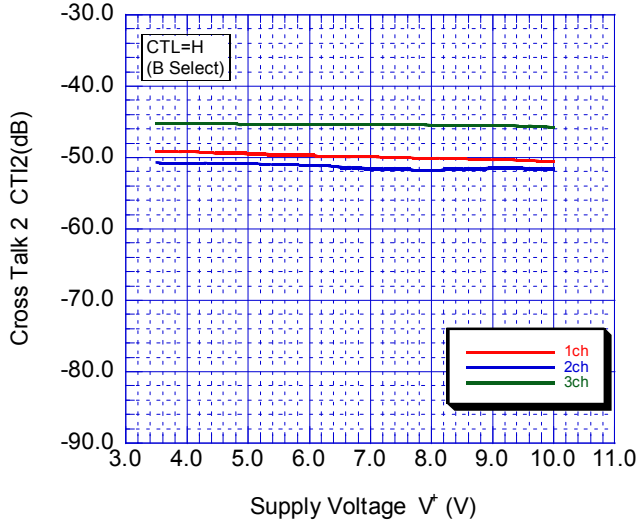


Input Cross Talk 1 vs. Supply Voltage
2Vpp, 4.43MHz sinewave signal input (Bchannel)

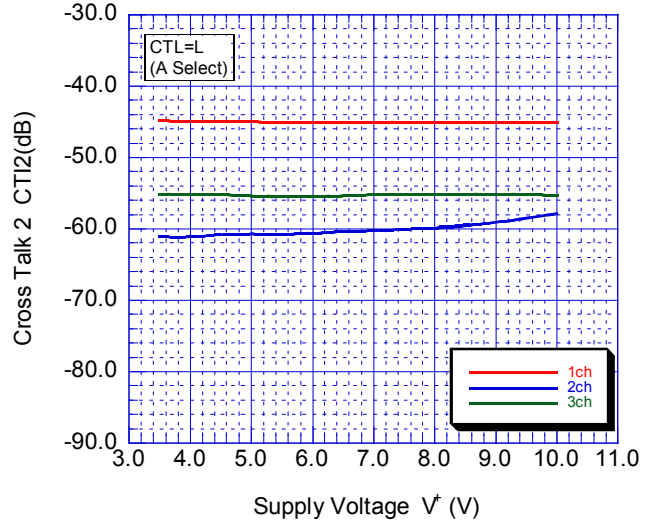


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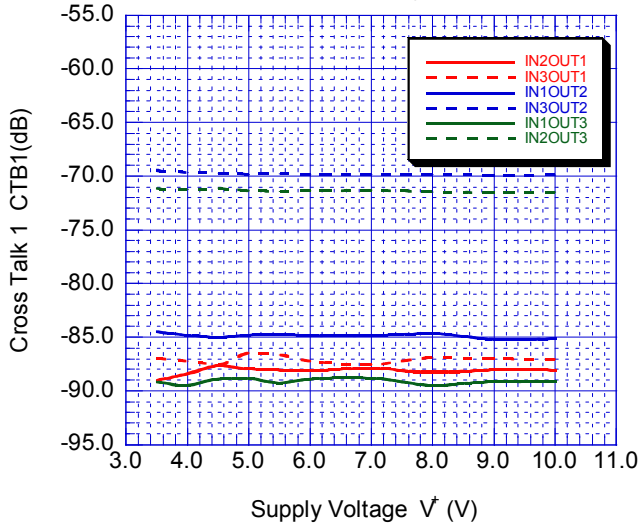
Input Cross Talk 2 vs. Supply Voltage
2Vpp, 50MHz sinewave signal input (Achannel)



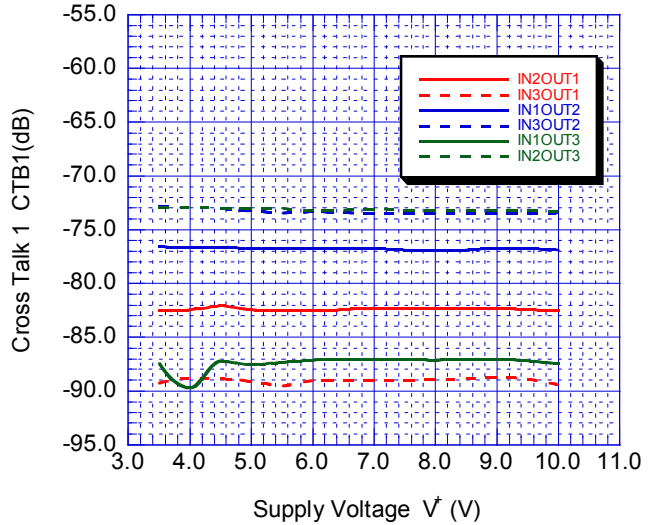
Input Cross Talk 2 vs. Supply Voltage
2Vpp, 50MHz sinewave signal input (Bchannel)



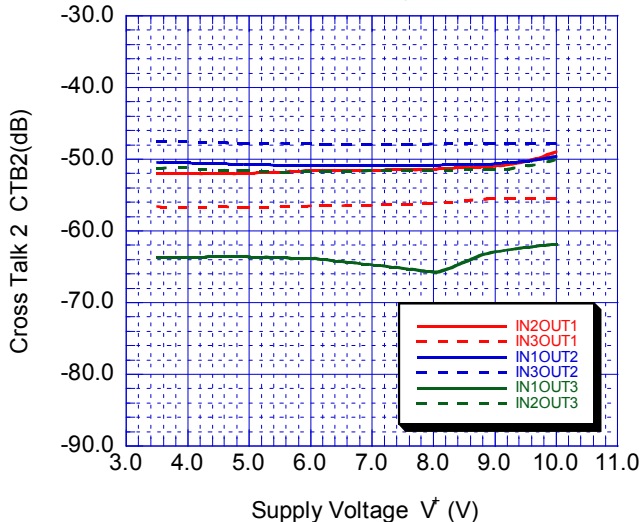
Block Cross Talk 1 vs. Supply Voltage
2Vpp, 4.43MHz sinewave signal input (Achannel)



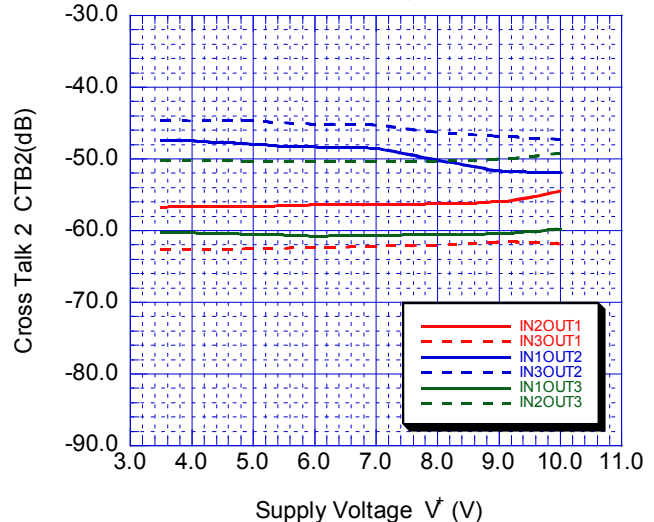
Block Cross Talk 1 vs. Supply Voltage
2Vpp, 4.43MHz sinewave signal input (Bchannel)



Block Cross Talk 2 vs. Supply Voltage
2Vpp, 50MHz sinewave signal input (Achannel)

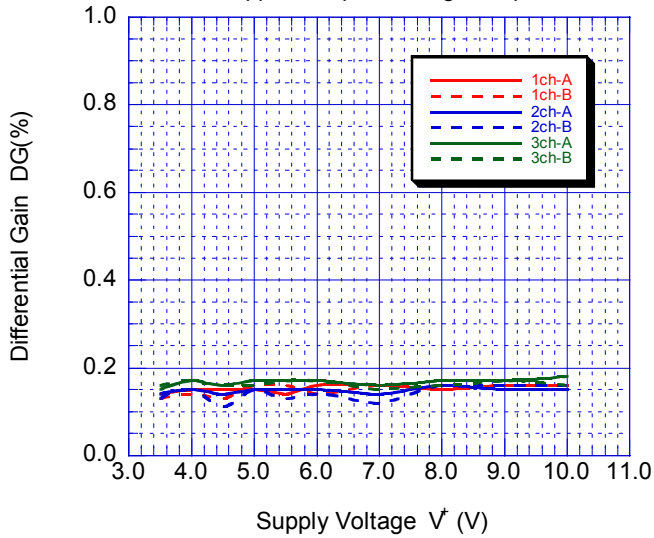


Block Cross Talk 2 vs. Supply Voltage
2Vpp, 50MHz sinewave signal input (Bchannel)



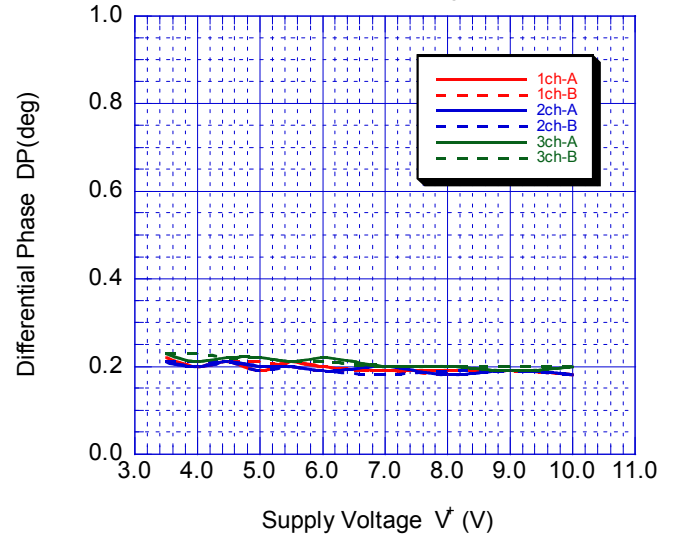
Differential Gain vs. Supply Voltage

1Vpp, 10step video signal input



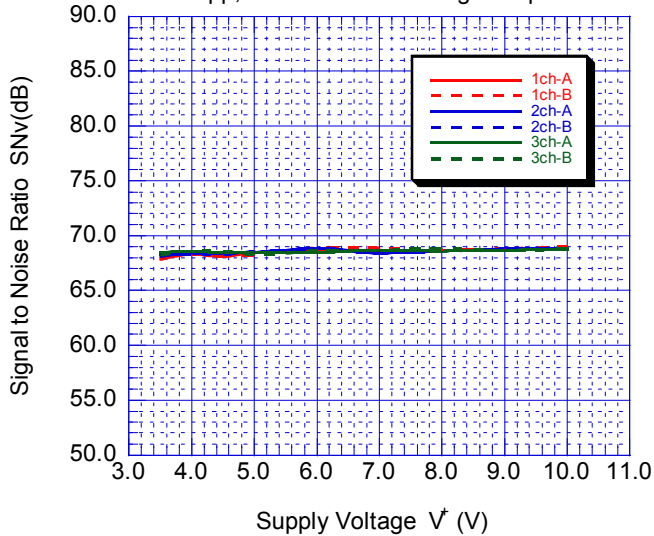
Differential Phase vs. Supply Voltage

1Vpp, 10step video signal input

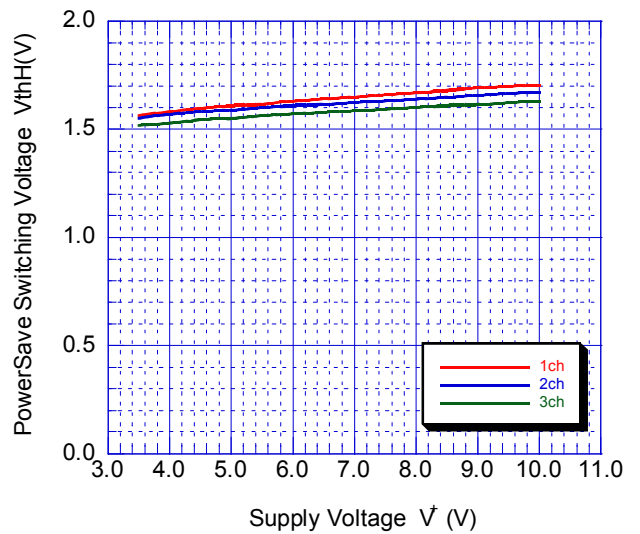


Signal to Noise Ratio vs. Supply Voltage

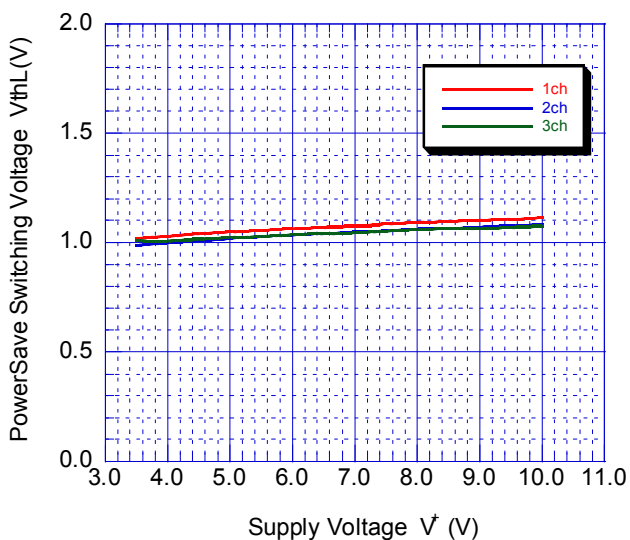
1Vpp, 100% white video signal input



Switching Voltage H Level vs. Supply Voltage



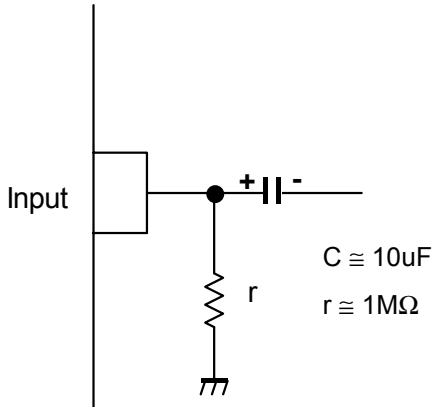
Switching Voltage L Level vs. Supply Voltage



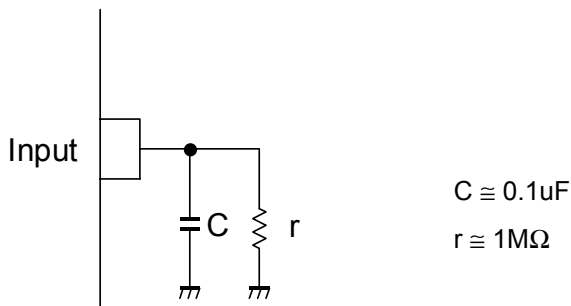
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APPLICATION

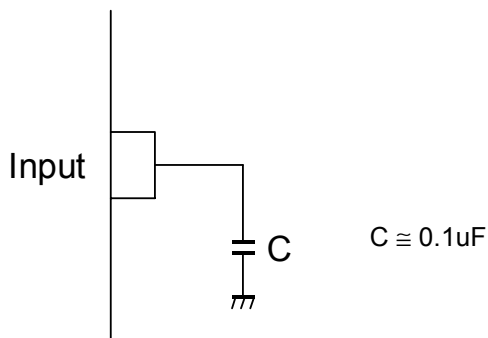
This IC requires $1M\Omega$ resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



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



This IC requires $0.1\mu F$ capacitor between INPUT and GND for bias type input at mute mode.



When the power supply voltage is not impressing, please do not impress voltage to the control terminal.

[CAUTION]
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