

## WIDE BAND 3 CIRCUITS VIDEO SWITCH

### ■ GENERAL DESCRIPTION

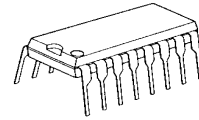
The **NJM2584A** is a wide band 2-Input 1-Output 3-Circuit video switch. It is suitable for Y, Pb, and Pr signal because frequency range is 50MHz.

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

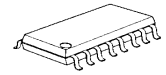
### ■ FEATURES

- 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 $\mu$ F
- Operating Current                    10mA typ.
- Bipolar Technology
- Package Outline                        DIP16, DMP16

### ■ PACKAGE OUTLINE

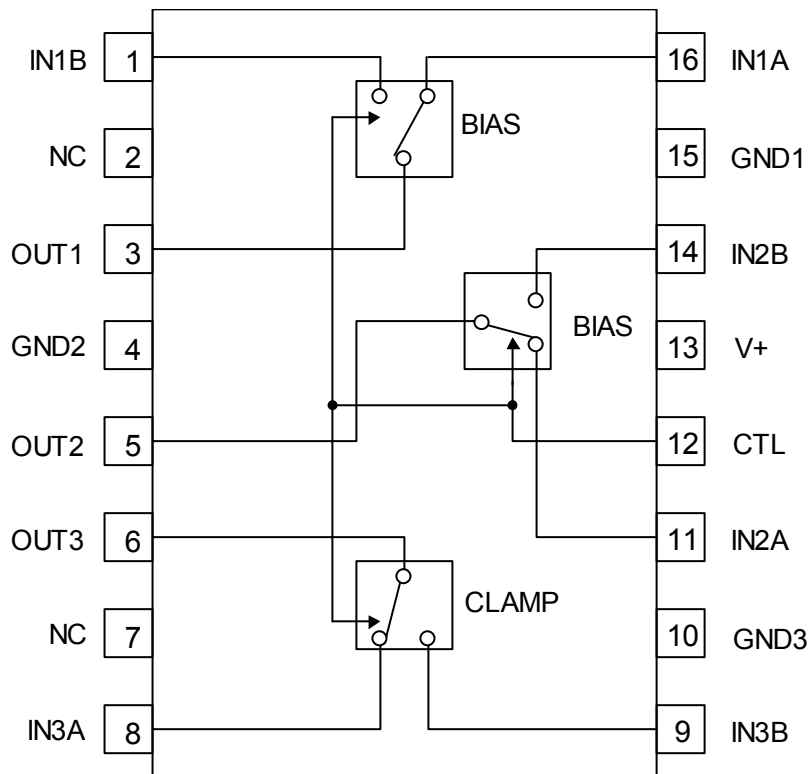


**NJM2584AD**



**NJM2584AM**

### ■ BLOCK DIAGRAM



# NJM2584A

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETERS	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	10.0	V
Power Dissipation	P <sub>D</sub>	(DIP) 500 (DMP) 300	mW
Operating Temperature Range	T <sub>opr</sub>	-40 to +85	°C
Storage Temperature Range	T <sub>stg</sub>	-40 to +125	°C

## ■ ELECTRICAL CHARACTERISTICS

(V<sub>CC</sub>=5.0V, R<sub>L</sub>=10kΩ, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I <sub>CC</sub>	No signal	-	10.0	15.0	mA
Maximum input Voltage 1	V <sub>im1</sub>	BIAS input	3.2	3.5	-	Vp-p
Maximum input Voltage 2	V <sub>im2</sub>	CLAMP input	2.4	2.6	-	Vp-p
Maximum Output Voltage 1	V <sub>om1</sub>	BIAS input, Vin=1kHz, Sin signal, THD=1%,	3.2	3.5	-	Vp-p
Maximum Output Voltage 2	V <sub>om2</sub>	CLAMP input, Vin=1kHz, Sin signal, THD=1%,	2.4	2.6	-	Vp-p
Voltage Gain	G <sub>v</sub>	Vin=1MHz, 2.0Vp-p Sin signal	-0.5	0	0.5	dB
Differential Gain (Channel)	ΔG <sub>v1</sub>	Vin=1MHz, 2.0Vp-p Sin signal	-0.2	0	0.2	dB
Differential Gain (Block)	ΔG <sub>vB</sub>	Vin=1MHz, 2.0Vp-p Sin signal	-0.2	0	0.2	dB
Band Width	f		-	50	-	MHz
Frequency Characteristic	G <sub>f</sub>	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 <sub>v</sub>	Vin=1.0Vpp, 100% White Video signal	-	+65	-	dB
Switch Change Voltage H Level	V <sub>thH</sub>		2.0	-	V <sup>+</sup>	V
Switch Change Voltage L Level	V <sub>thL</sub>		0	-	0.6	V

## ■ MODE SWITCH FUNCTION

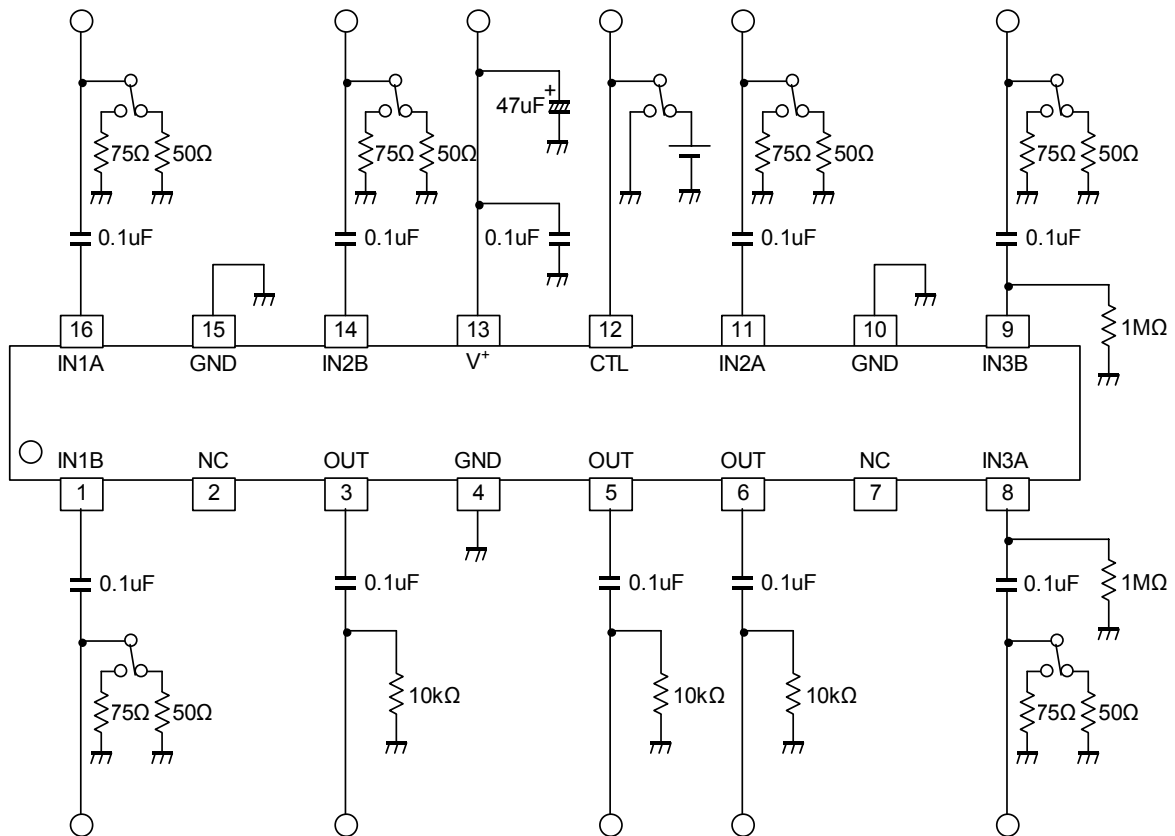
PIN	MODE	NOTES
Control	H	B channel output
	L	A channel output
	OPEN	A channel output

■ EQUIVALENT CIRCUIT (V+=5.0V)

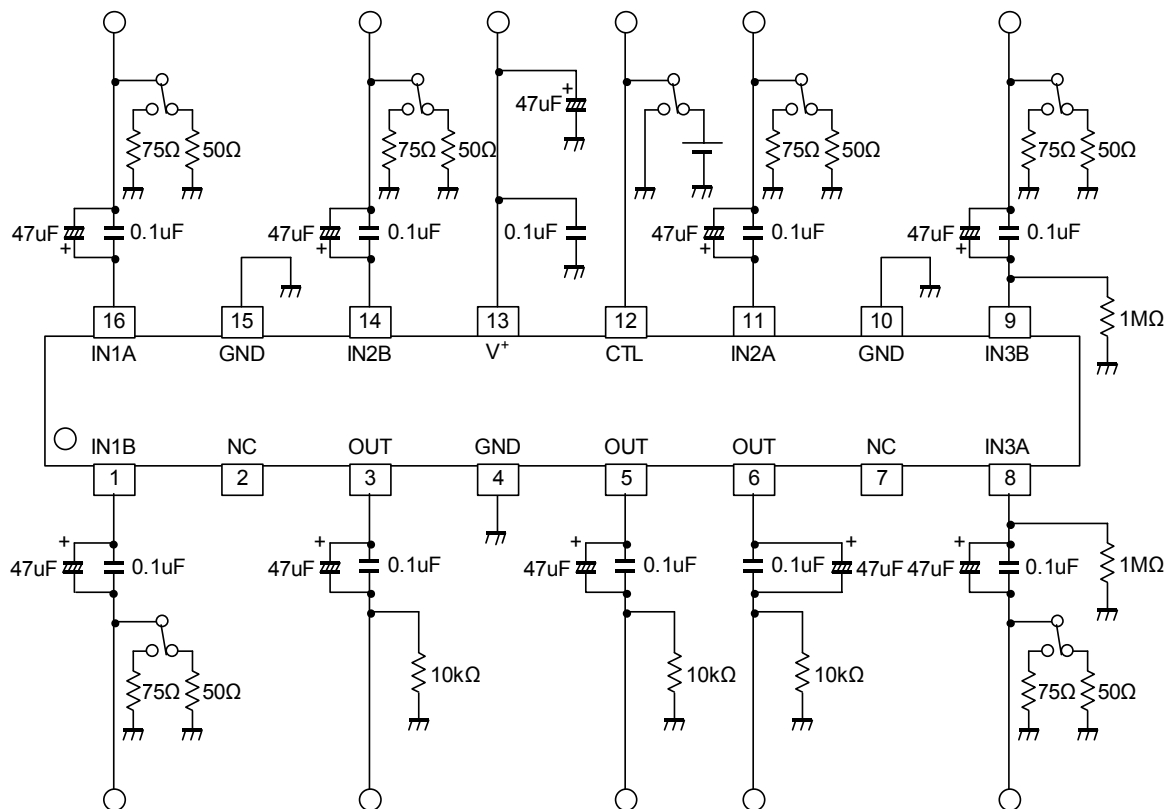
PIN No.	PIN NAME	INSIDE EQUIVALENT CIRCUIT	VOLTAGE	Note
16 1 11 14	IN1A IN1B IN2A IN2B		2.90V	IN1A, IN2A CTL : L  IN1B, IN2B CTL : H
8 9	IN3A IN3B		1.75V	IN3A CTL : L IN3B CTL : H
3 5 6	OUT1 OUT2 OUT3		(OUT1, OUT2) 2.10V  (OUT3) 1.00V	
12	CTL		0V	
13	V+	_____		
15 4 10	GND1 GND2 GND3	_____		

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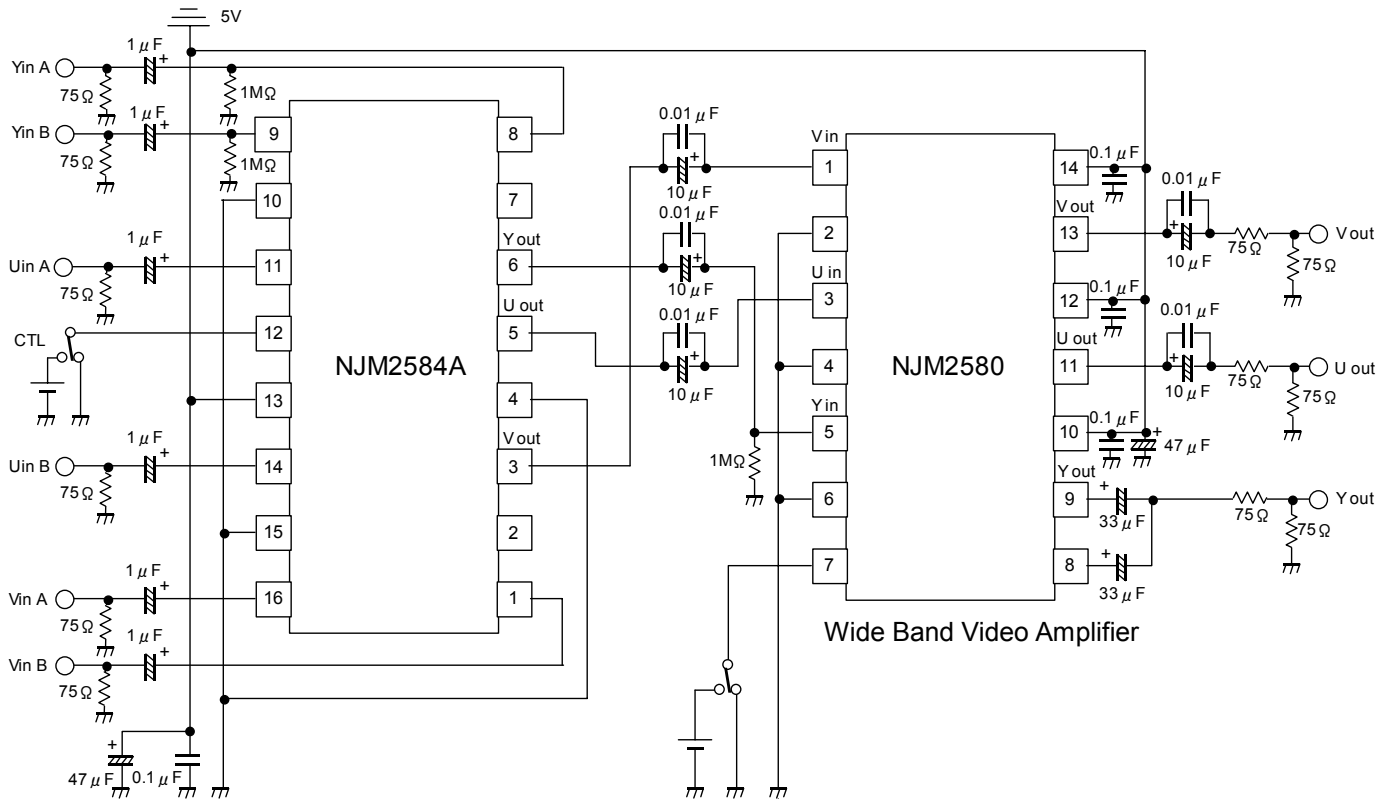
## TEST CIRCUIT1



## TEST CIRCUIT2 (DG, DP, S/N)



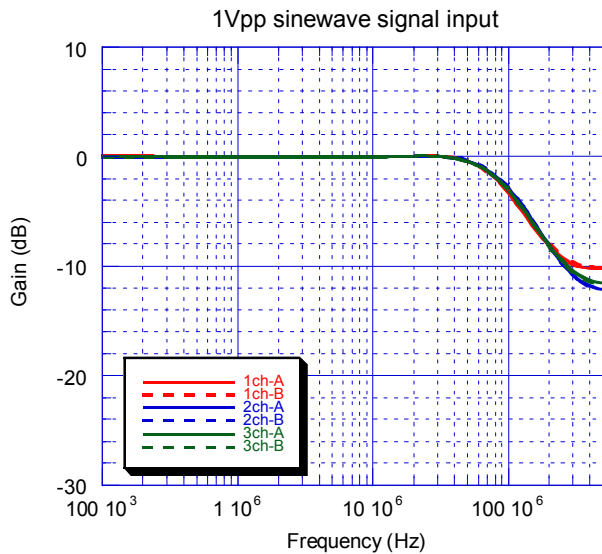
## APPLICATION CIRCUIT



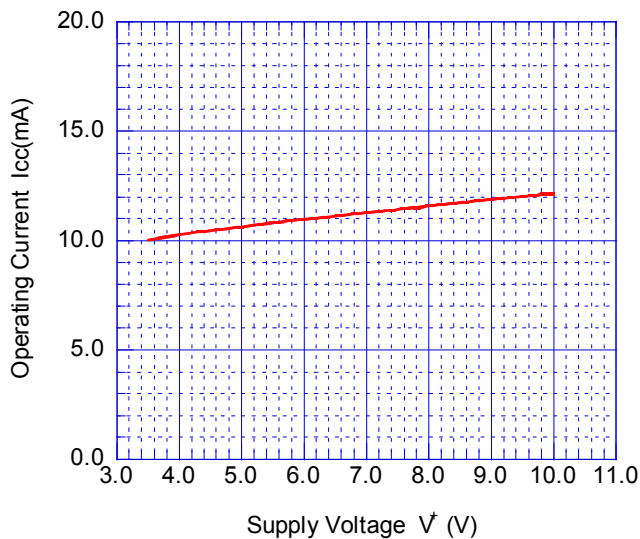
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## TYPICAL CHARACTERISTICS

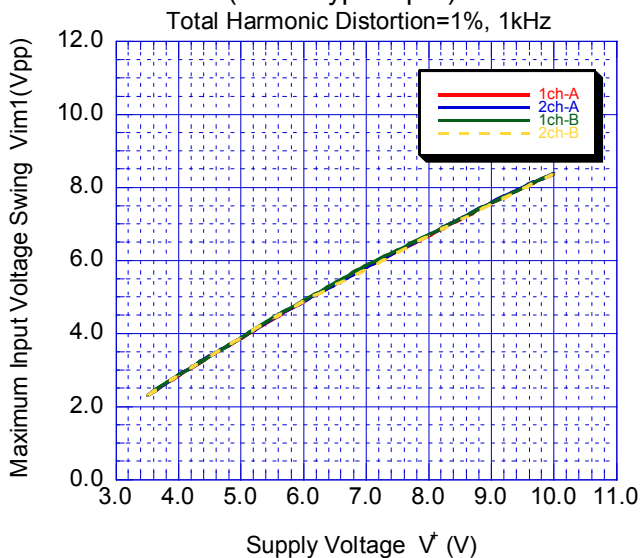
Voltage Gain vs. Frequency



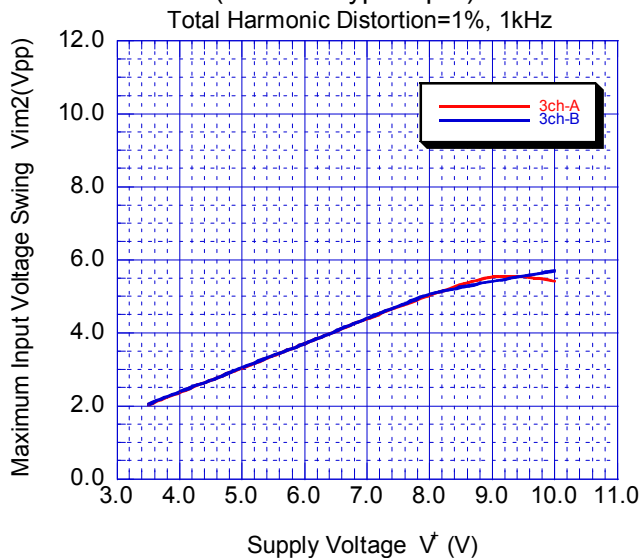
Operating Current vs. Supply Voltage



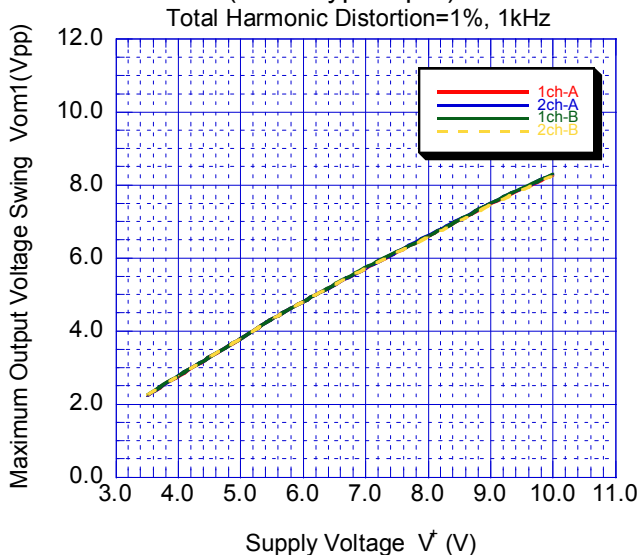
Maximum Input Voltage Swing vs. Supply Voltage (BIAS Type Input)



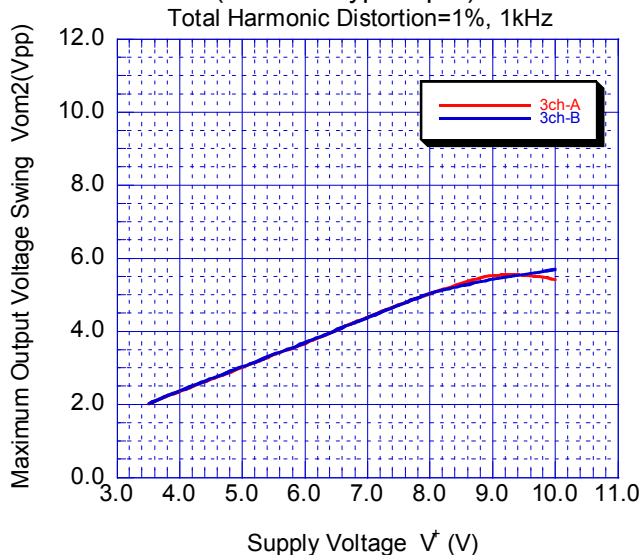
Maximum Input Voltage Swing vs. Supply Voltage (CLAMP Type Input)



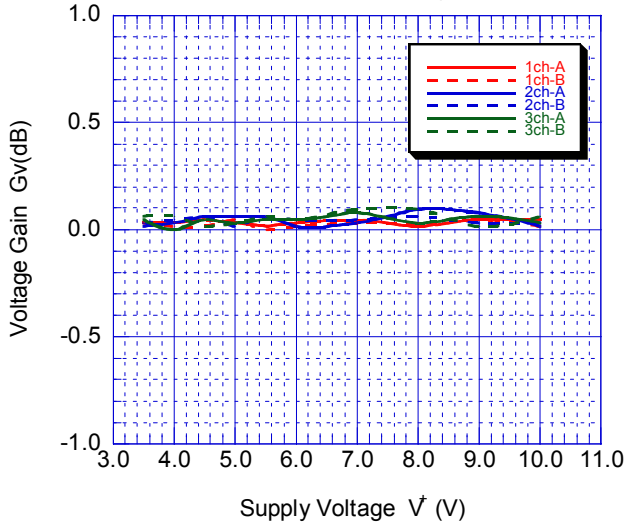
Maximum Output Voltage Swing vs. Supply Voltage (BIAS Type Input)



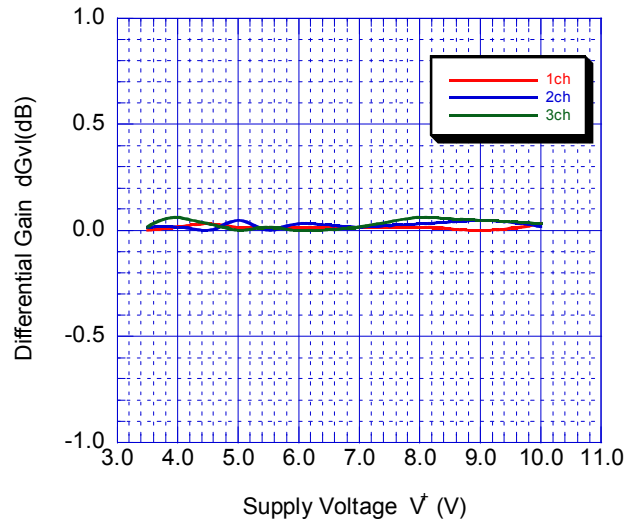
Maximum Output Voltage Swing vs. Supply Voltage (CLAMP Type Input)



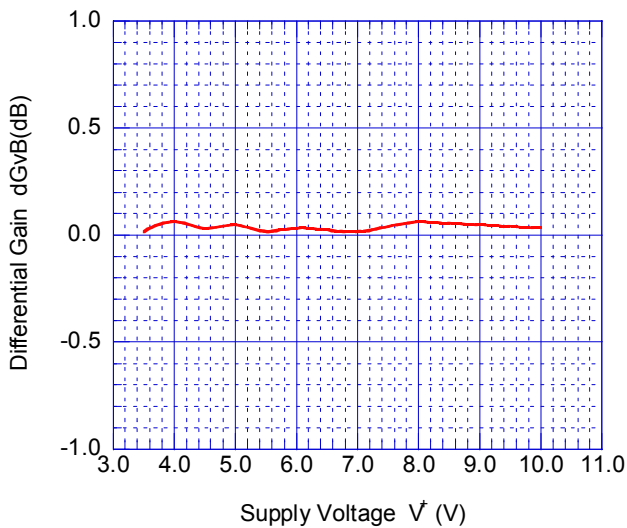
Voltage Gain vs. Supply Voltage  
2Vpp, 1MHz sinewave signal input



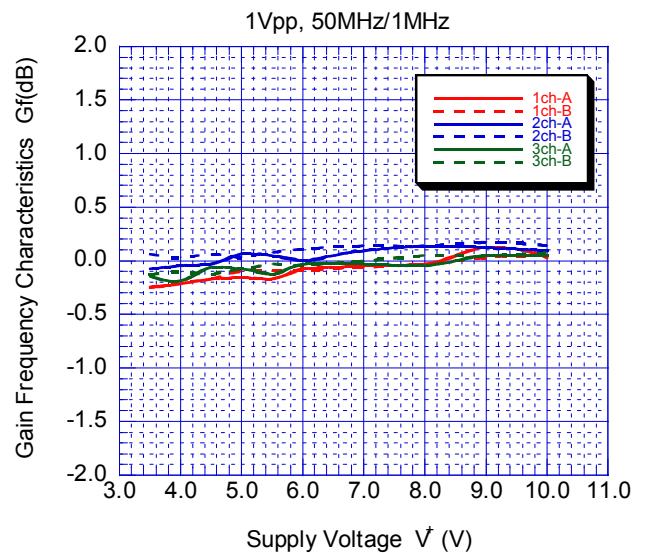
Input Gain Defference vs. Supply Voltage



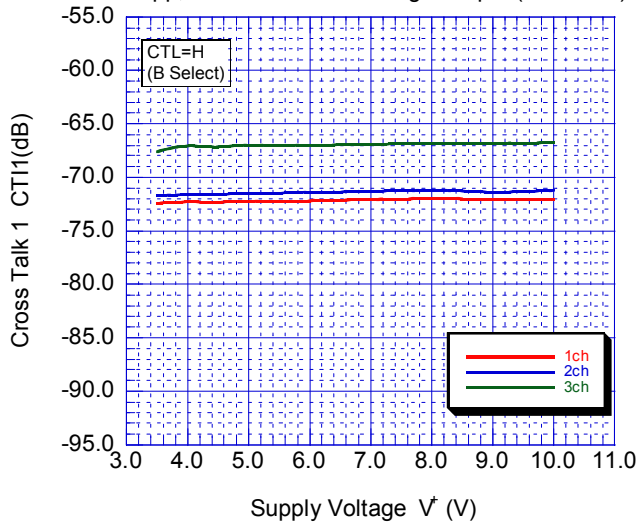
Channel Gain Defference vs. Supply Voltage



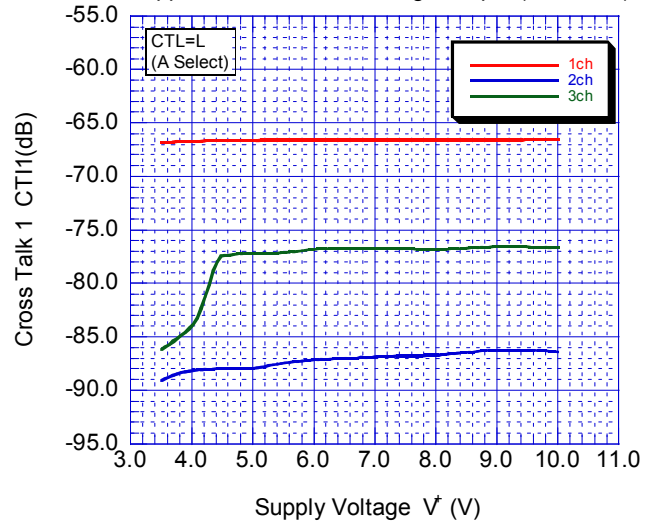
Gain Frequency Characteristics vs. Supply Voltage

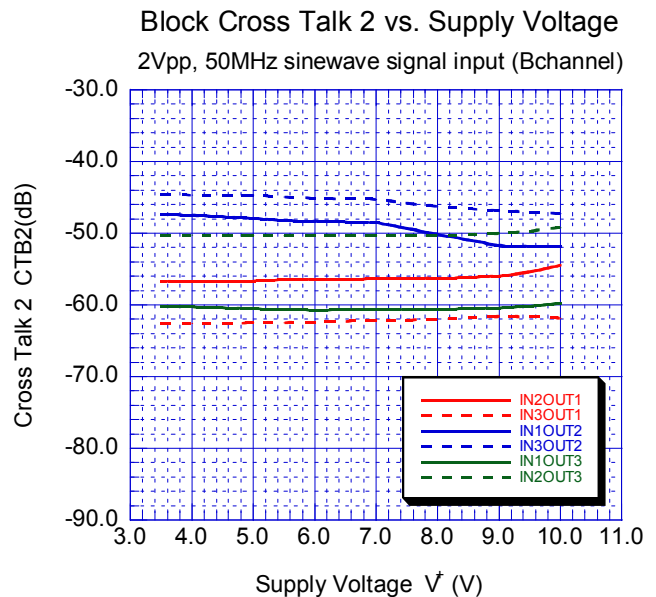
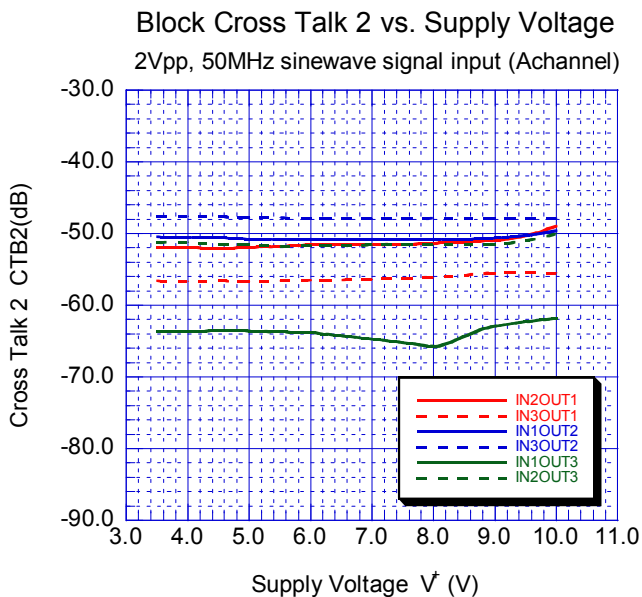
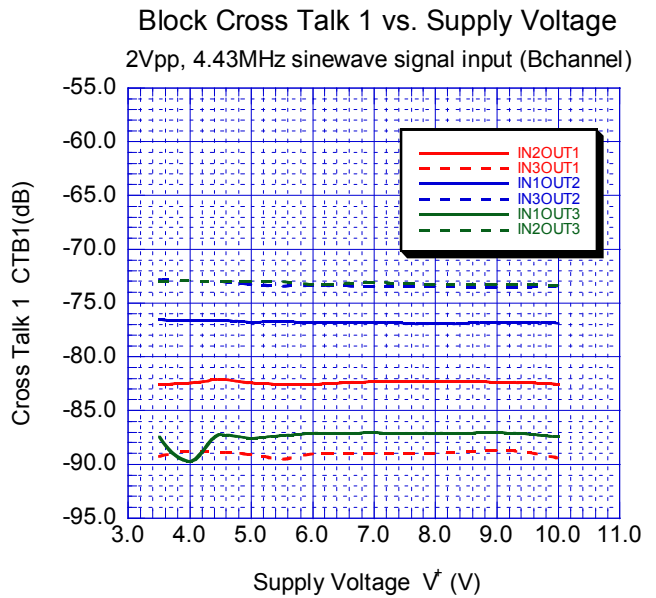
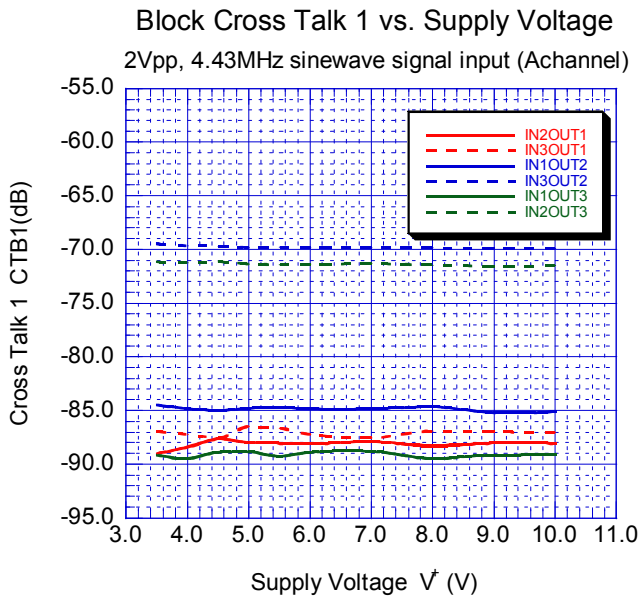
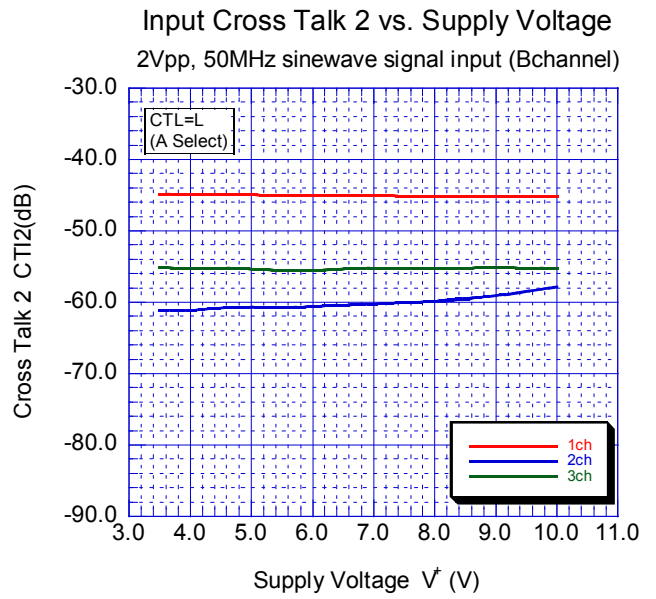
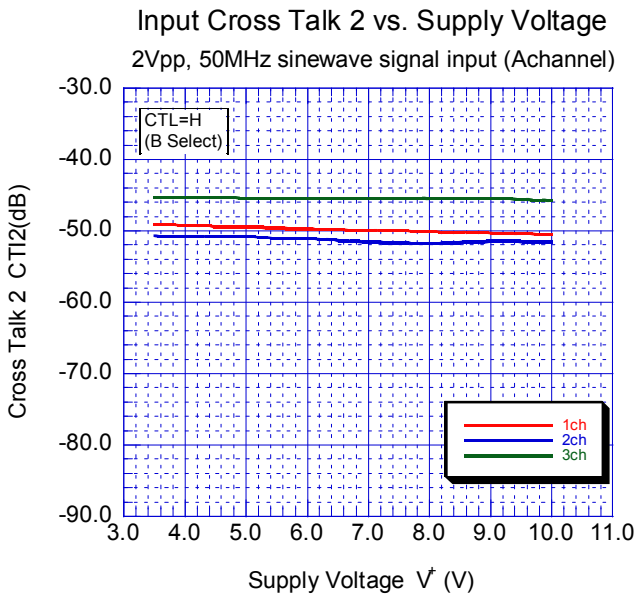


Input Cross Talk 1 vs. Supply Voltage  
2Vpp, 4.43MHz sinewave signal input (Achannel)



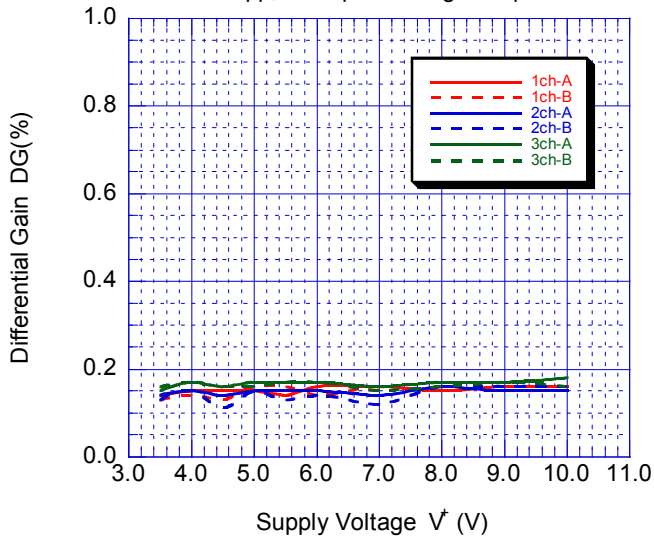
Input Cross Talk 1 vs. Supply Voltage  
2Vpp, 4.43MHz sinewave signal input (Bchannel)



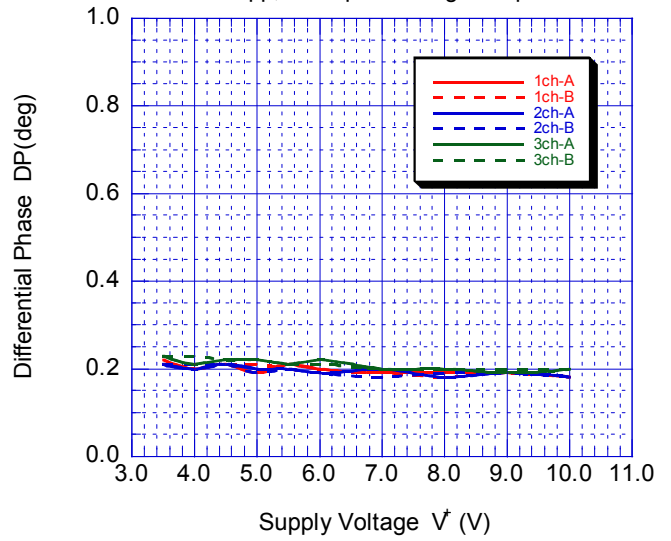




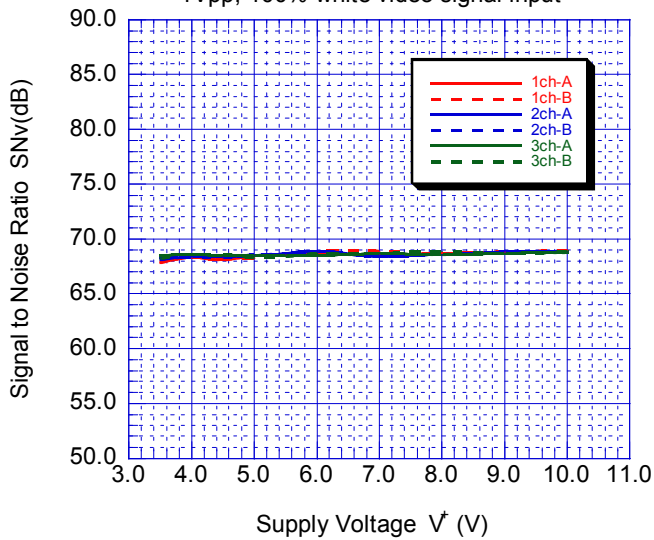
Differential Gain vs. Supply Voltage  
1Vpp, 10step video signal input



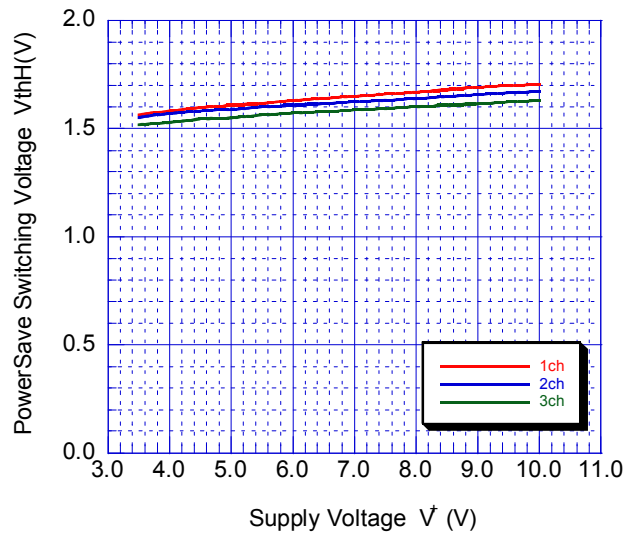
Differential Phase vs. Supply Voltage  
1Vpp, 10step video signal input



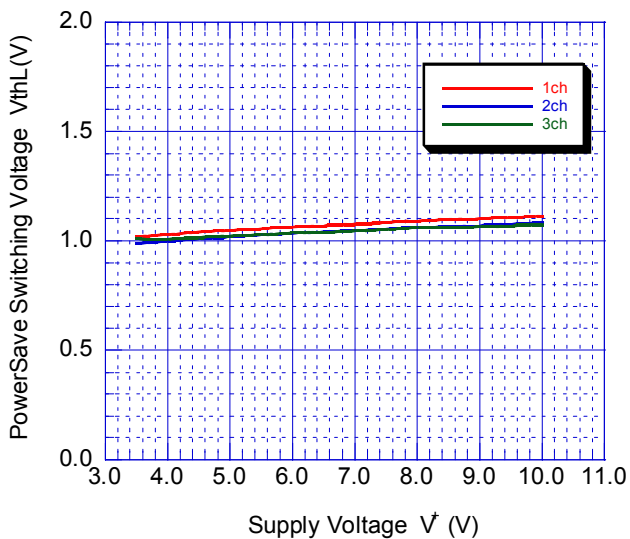
Signal to Noise Ratio vs. Supply Voltage  
1Vpp, 100% white video signal input



Switching Voltage H Level vs. Supply Voltage



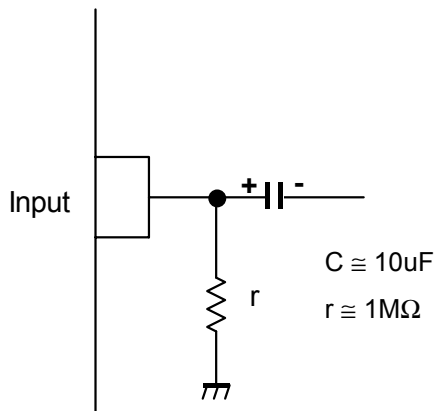
Switching Voltage L Level vs. Supply Voltage



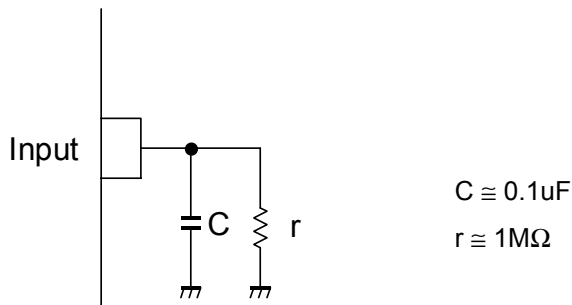
# NJM2584A

## APPLICATION

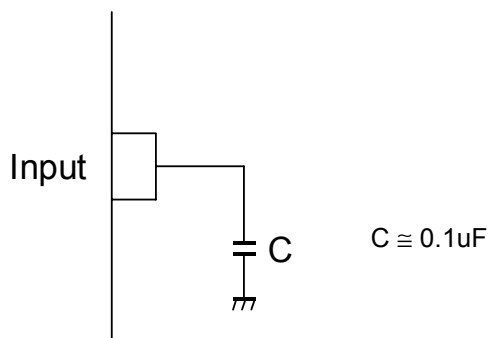
This IC requires  $1M\Omega$  resistance between INPUT and GND pin for clamp type input since the minute current causes an unstable pin voltage.



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.



This IC requires  $0.1\mu\text{F}$  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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