

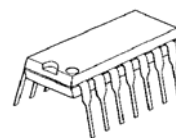
## SINGLE SUPPLY WIDE BAND 3ch VIDEO AMPLIFIER

### ■ GENERAL DESCRIPTION

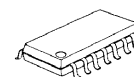
The **NJM2580** is a wide band 3ch video amplifier, operated on a single supply voltage. It is suitable for Y, Pb, and Pr signal because frequency range is 50MHz.

The **NJM2580** is suitable for Set Top Box, AV amplifier, and other high quality AV systems.

### ■ PACKAGE OUTLINE



**NJM2580D**



**NJM2580M**

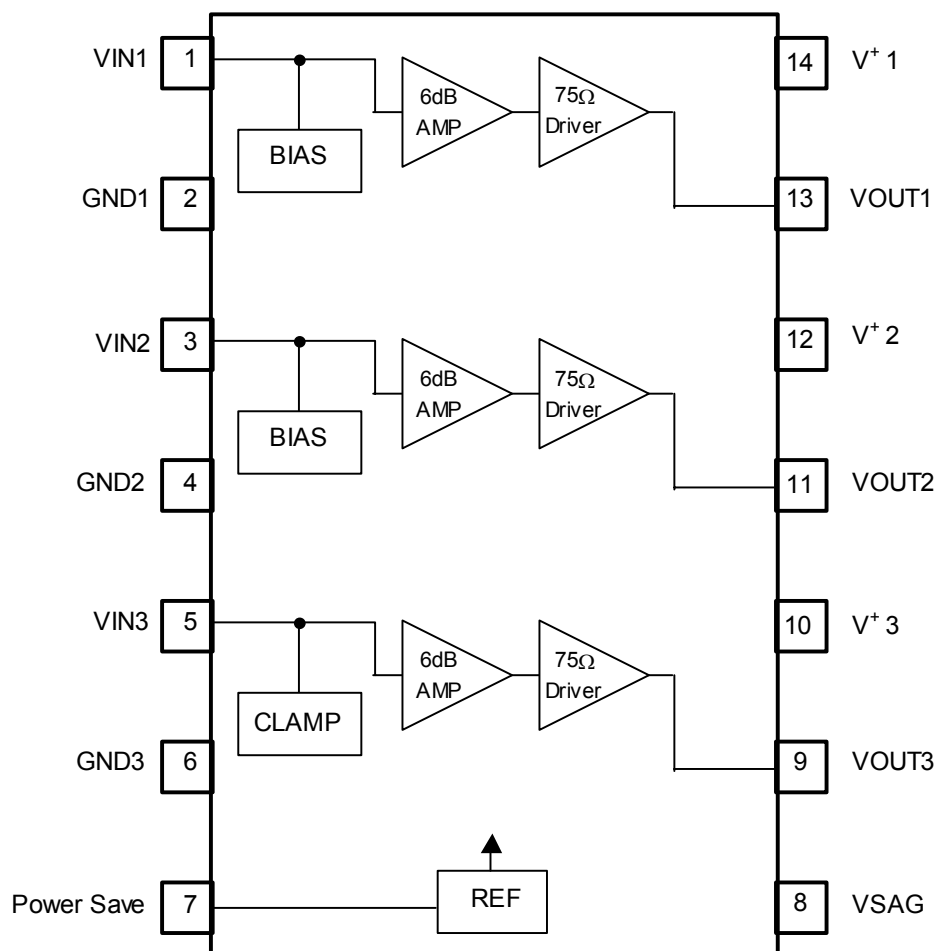


**NJM2580V**

### ■ FEATURES

- Operating Voltage 4.5 to 5.5V
- Wide frequency range 0dB at 50MHz typ.
- Internal 6dB Amplifier
- Internal 75Ω Driver Circuit (2-system drive)
- Power Save Circuit
- Bipolar Technology
- Package Outline DIP14, DMP14, SSOP14

### ■ BLOCK DIAGRAM



# NJM2580

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETERS                  | SYMBOL         | RATINGS                                | UNIT |
|-----------------------------|----------------|----------------------------------------|------|
| Supply Voltage              | V <sup>+</sup> | 12.0                                   | V    |
| Power Dissipation           | P <sub>D</sub> | (DIP) 620<br>(DMP) 430<br>(SSOP) 520 * | mW   |
| Operating Temperature Range | Topr           | -40 to +85                             | °C   |
| Storage Temperature Range   | Tstg           | -40 to +150                            | °C   |

(Note) At on a board of EIA/JEDEC specification. (114.3 x 76.2 x 1.6mm Two layers, FR-4)

## ■ ELECTRICAL CHARACTERISTICS

(V<sup>+</sup>=5.0V, R<sub>L</sub>=150Ω, Ta=25°C)

| PARAMETER                                   | SYMBOL            | TEST CONDITION                               | MIN. | TYP. | MAX.           | UNIT |
|---------------------------------------------|-------------------|----------------------------------------------|------|------|----------------|------|
| Operating Current                           | I <sub>CC</sub>   | No signal                                    | -    | 23.0 | 33.0           | mA   |
| Operating Current<br>(Power Save)           | I <sub>save</sub> | No signal, Power Save                        | -    | -    | 1.2            | mA   |
| Maximum Output Voltage1                     | V <sub>om1</sub>  | BIAS input<br>Vin=1kHz, Sin signal, THD=1%,  | 2.4  | 3.0  | -              | Vp-p |
| Maximum Output Voltage2                     | V <sub>om2</sub>  | CLAMP input<br>Vin=1kHz, Sin signal, THD=1%, | 2.2  | 2.4  | -              | Vp-p |
| Voltage Gain                                | G <sub>v</sub>    | Vin=1MHz, 1.0Vp-p Sin signal                 | 6.0  | 6.4  | 6.8            | dB   |
| Band Width                                  | f                 |                                              | -    | 50   | -              | MHz  |
| Frequency Characteristic                    | G <sub>f</sub>    | Vin=50MHz / 1MHz, 1.0Vp-p, Sin signal        | -    | 0    | -              | dB   |
| Cross talk 1                                | CTB1              | Vin=4.43MHz, 1.0Vp-p, Sin signal             | -    | -60  | -50            | dB   |
| Cross talk 2                                | CTB2              | Vin=50MHz, 1.0Vp-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   |
| Power Save Switch Change<br>Voltage H Level | V <sub>thPH</sub> | IC Operating                                 | 2.0  | -    | V <sup>+</sup> | V    |
| Power Save Switch Change<br>Voltage L Level | V <sub>thPL</sub> | IC Waiting                                   | 0    | -    | 0.6            | V    |

## ■ MODE SWITCH FUNCTION

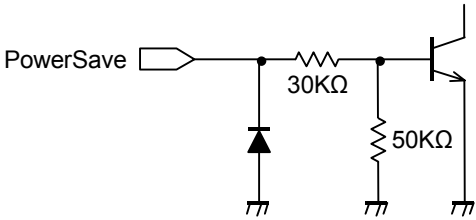
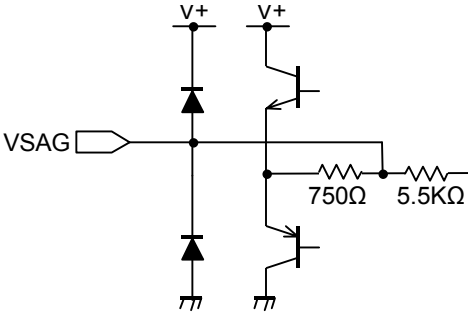
| PIN        | MODE | NOTES                 |
|------------|------|-----------------------|
| Power Save | H    | Power Save: OFF       |
|            | L    | Power Save: ON (Mute) |
|            | OPEN | Power Save: ON (Mute) |

## ■ EQUIVALENT CIRCUIT (V+=5V)

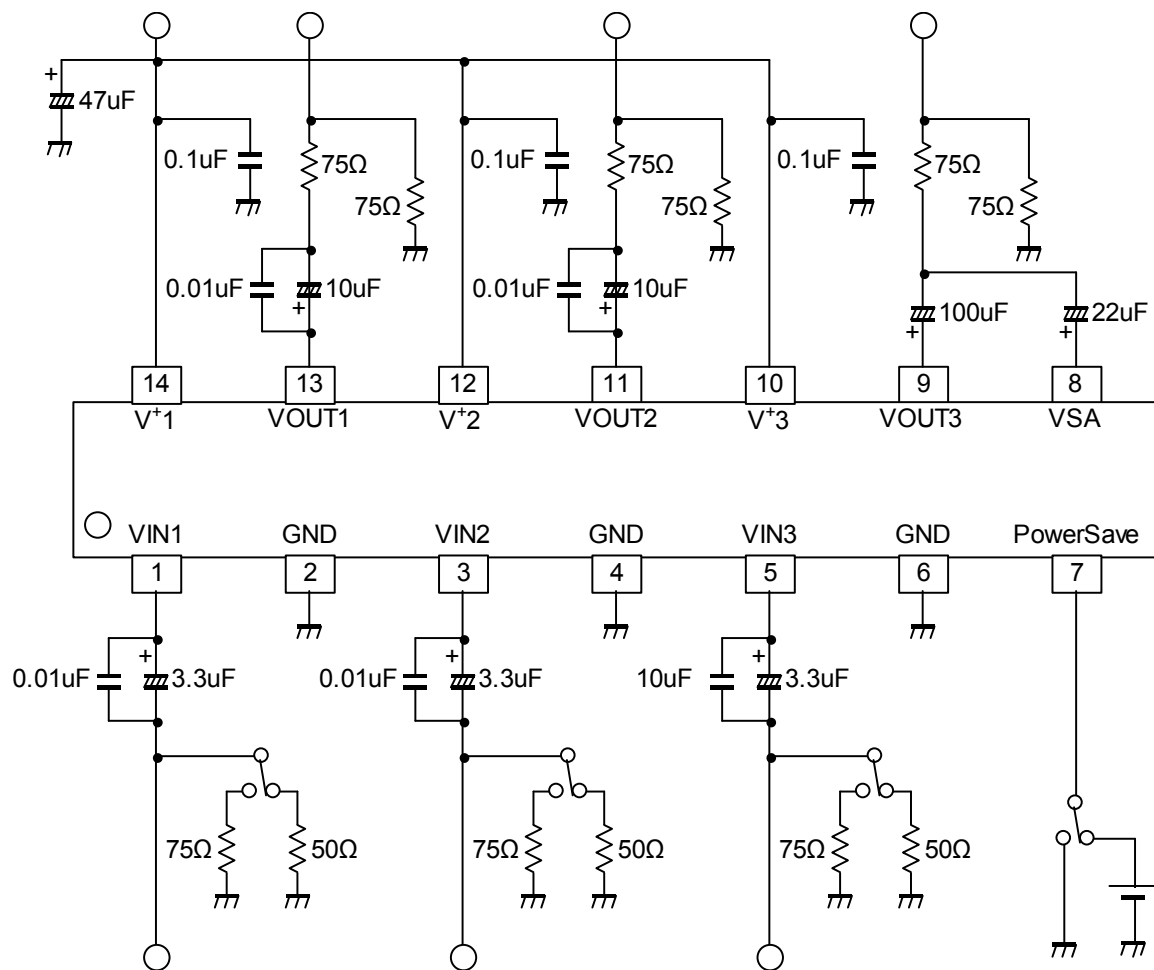
| PIN No.  | NAME           | INSIDE EQUIVALENT CIRCUIT | VOLTAGE |
|----------|----------------|---------------------------|---------|
| 1<br>3   | VIN1<br>VIN2   |                           | 2.60V   |
| 5        | VIN3           |                           | 1.70V   |
| 13<br>11 | VOUT1<br>VOUT2 |                           | 2.55V   |
| 9        | VOUT3          |                           | 1.35V   |

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■ EQUIVALENT CIRCUIT (V+=5V)

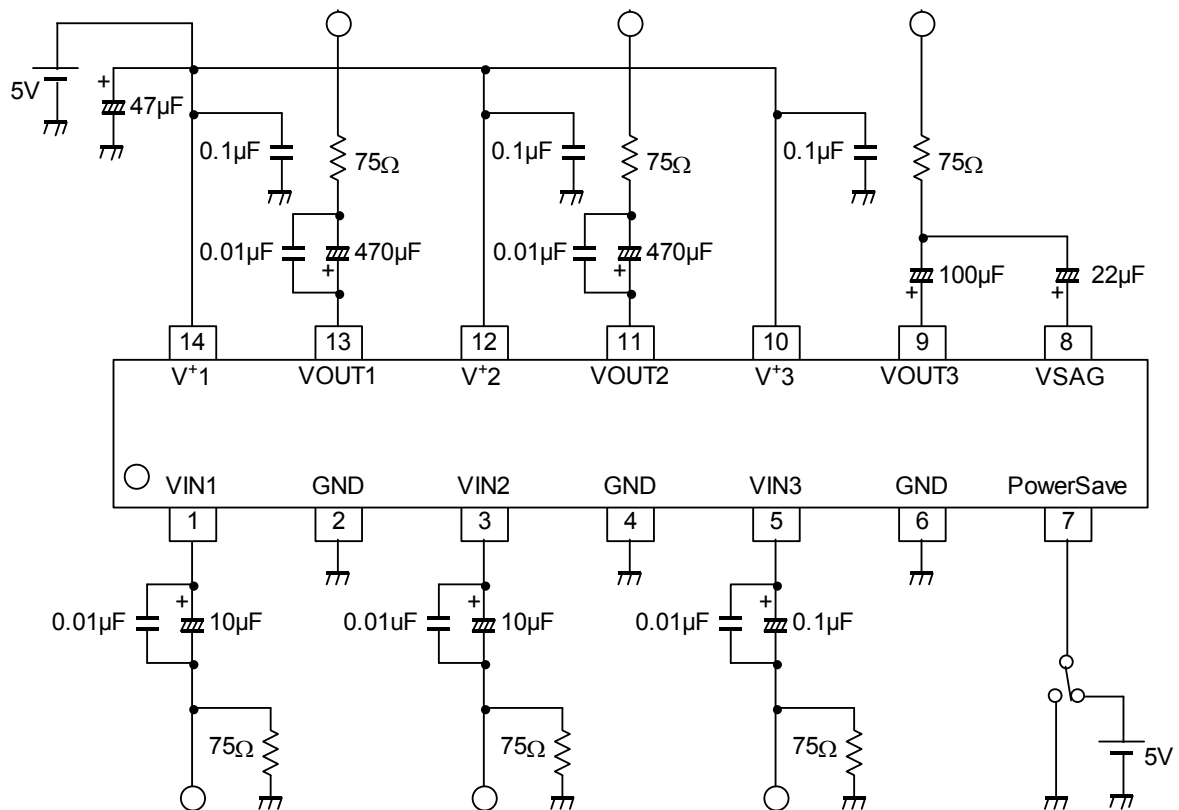
| PIN No.        | NAME                                                     | INSIDE EQUIVALENT CIRCUIT                                                          | VOLTAGE |
|----------------|----------------------------------------------------------|------------------------------------------------------------------------------------|---------|
| 7              | Power Save                                               |  | 0V      |
| 8              | VSAG                                                     |  | 1.40V   |
| 14<br>12<br>10 | V <sup>+</sup> 1<br>V <sup>+</sup> 2<br>V <sup>+</sup> 3 |                                                                                    | 5V      |
| 2<br>4<br>6    | GND1<br>GND2<br>GND3                                     |                                                                                    | 0V      |

## ■ TEST CIRCUIT

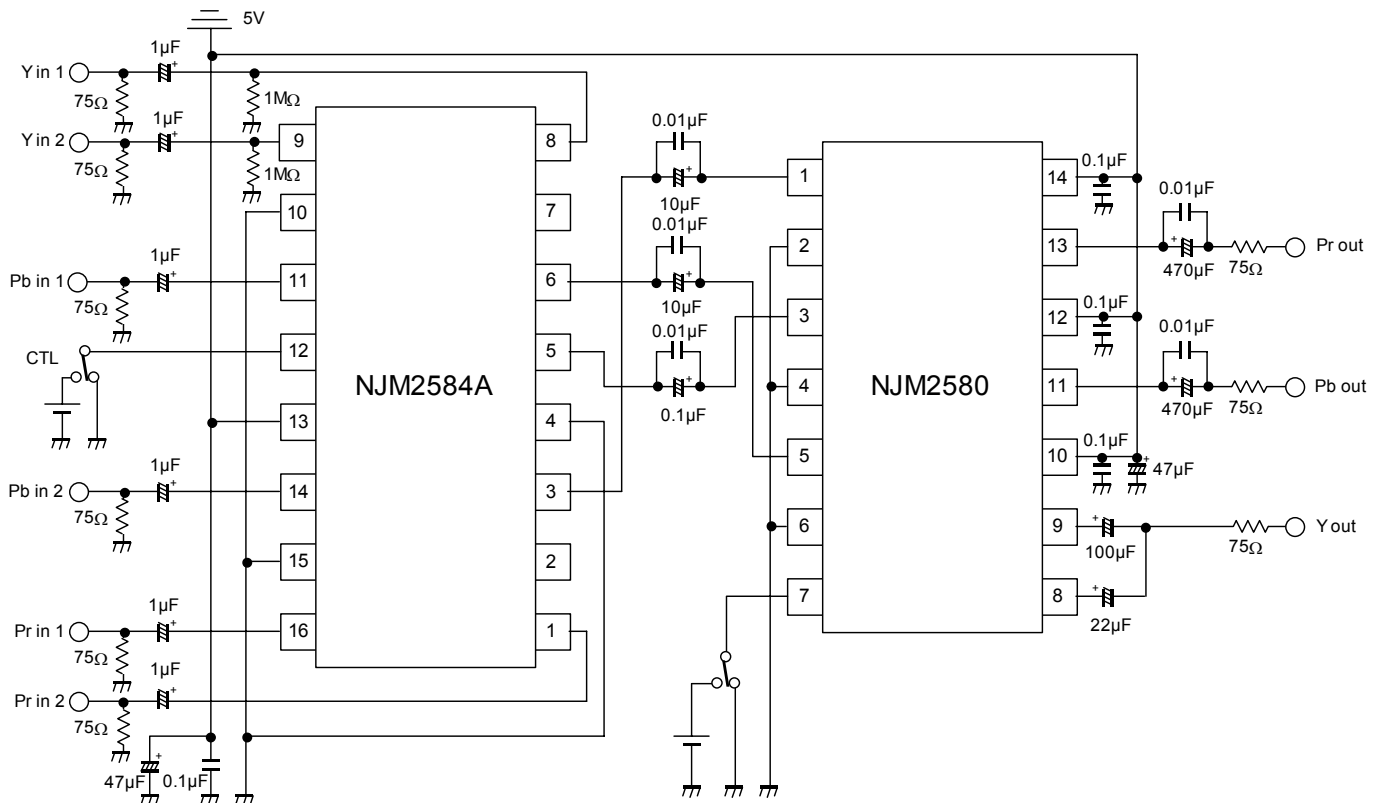


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## APPLICATION CIRCUIT 1

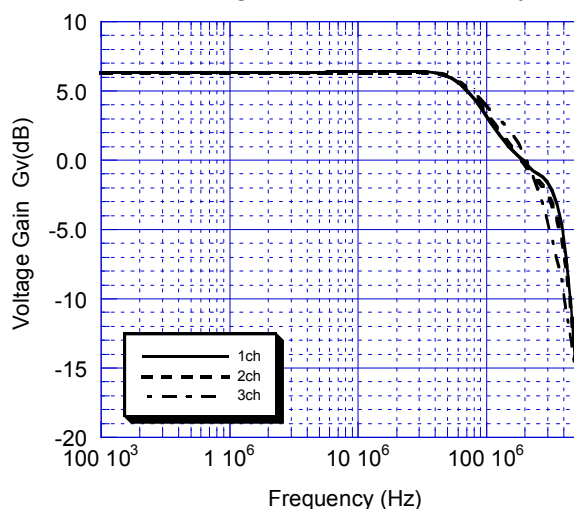


## APPLICATION CIRCUIT 2

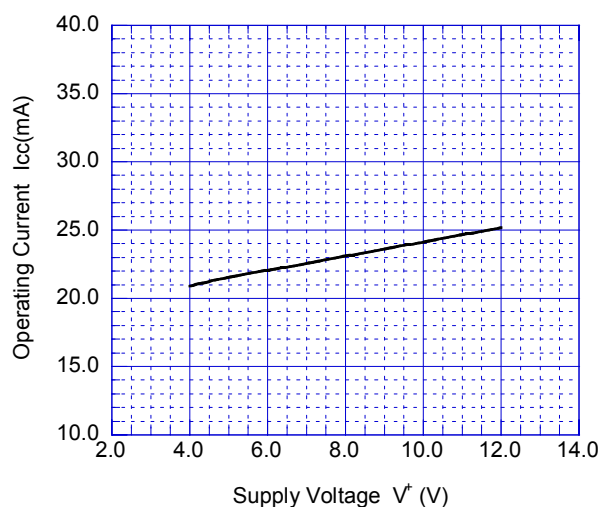


## ■ TYPICAL CHARACTERISTICS

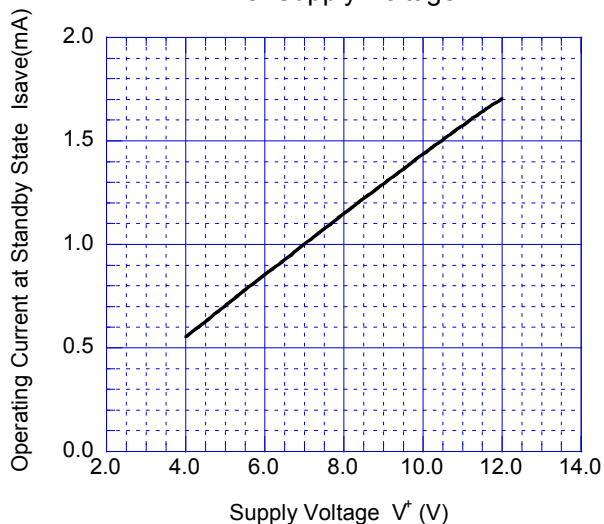
Voltage Gain vs. Frequency



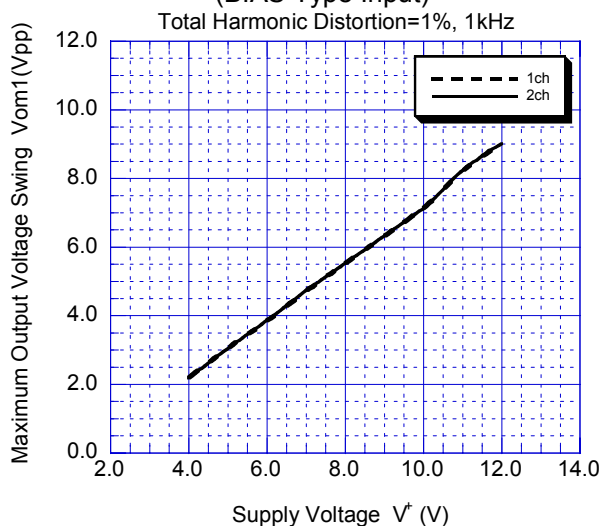
Operating Current vs. Supply Voltage



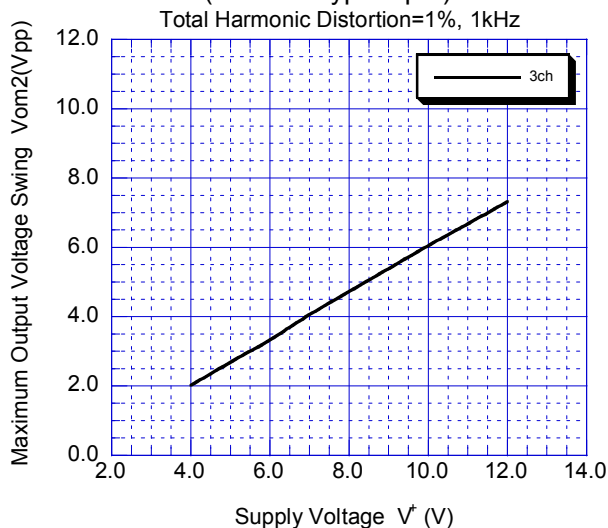
Operating Current at Standby State vs. Supply Voltage



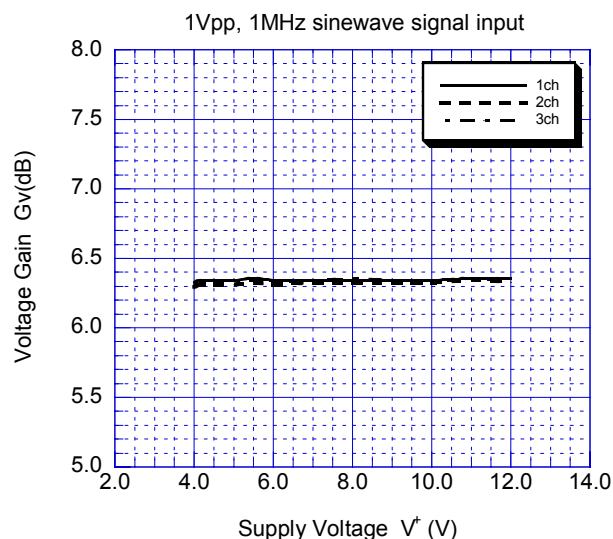
Maximum Output Voltage Swing vs. Supply Voltage  
(BIAS Type Input)



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

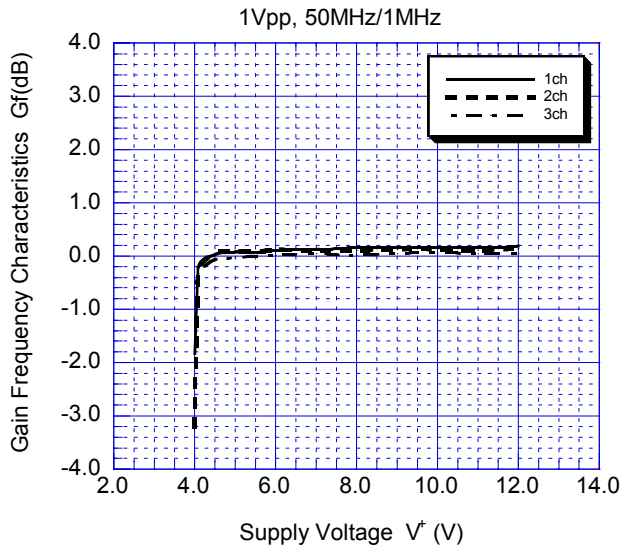


Voltage Gain vs. Supply Voltage

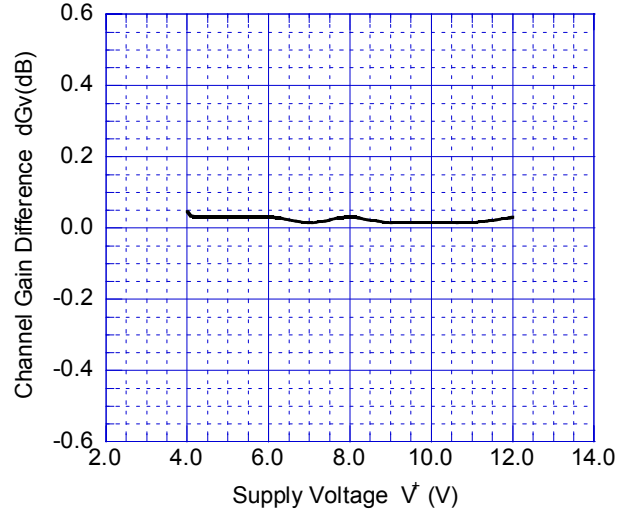


## ■ TYPICAL CHARACTERISTICS

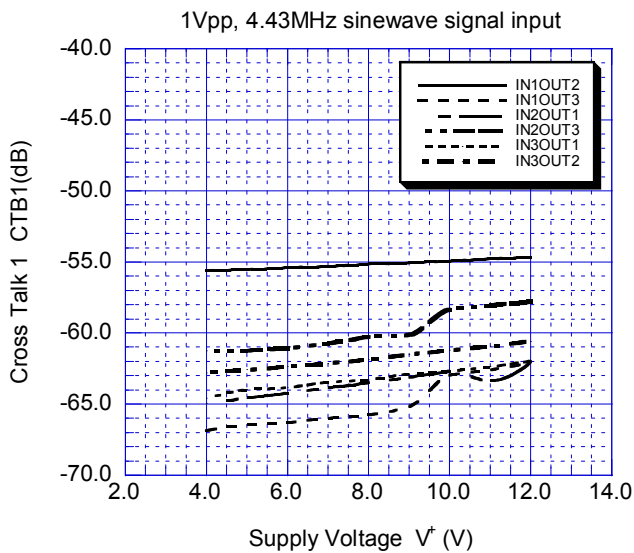
Gain Frequency Characteristics vs. Supply Voltage



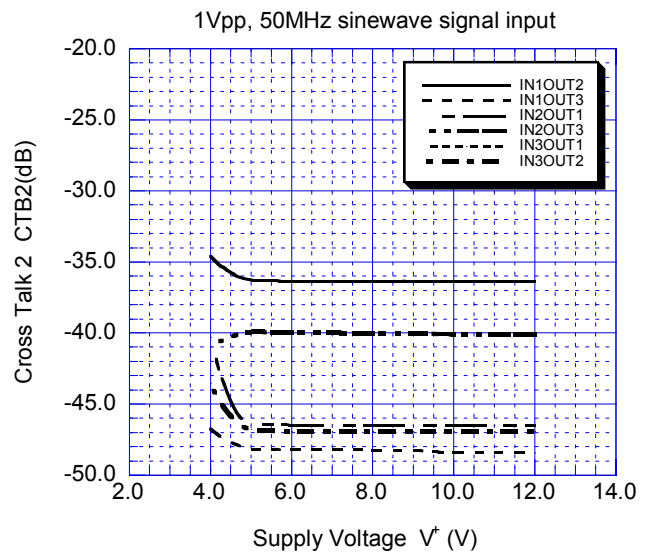
Channel Gain Difference vs. Supply Voltage



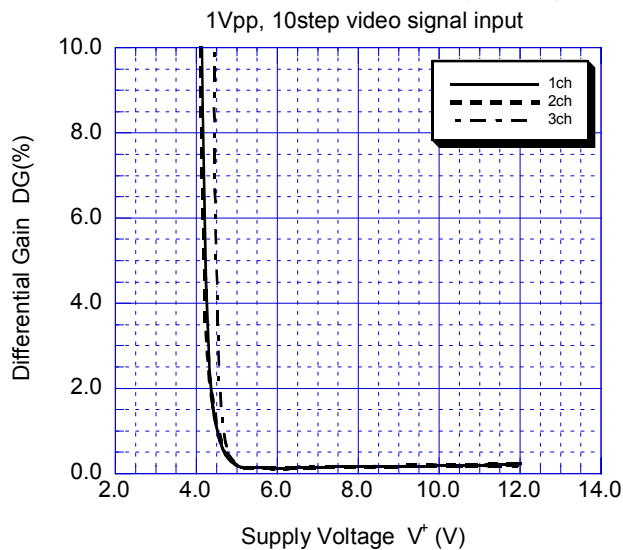
Cross Talk 1 vs. Supply Voltage



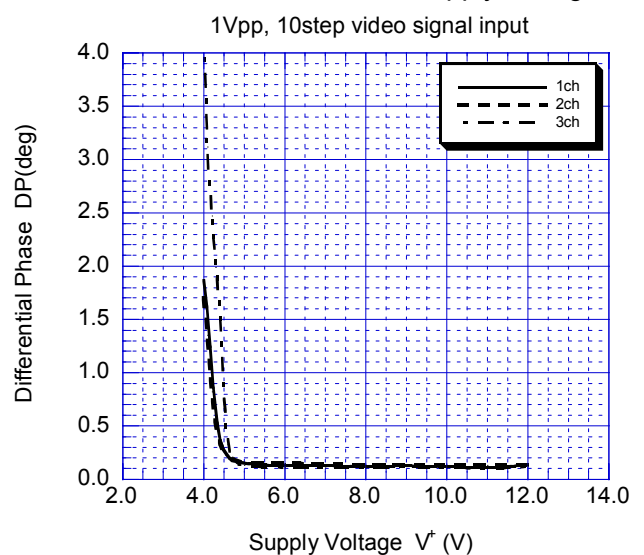
Cross Talk 2 vs. Supply Voltage



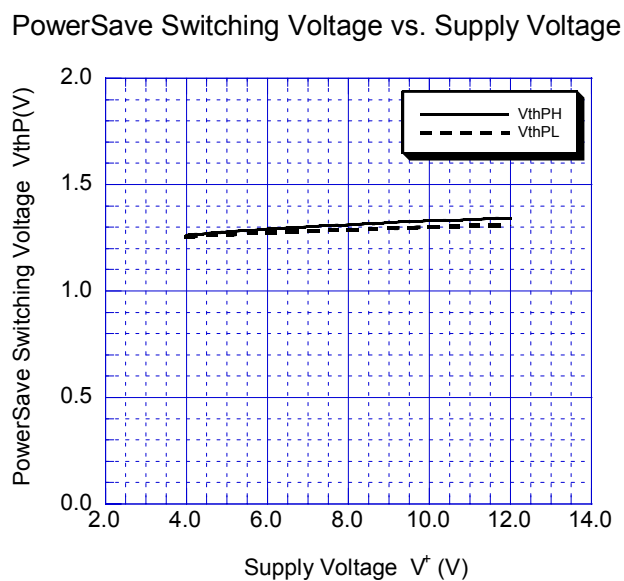
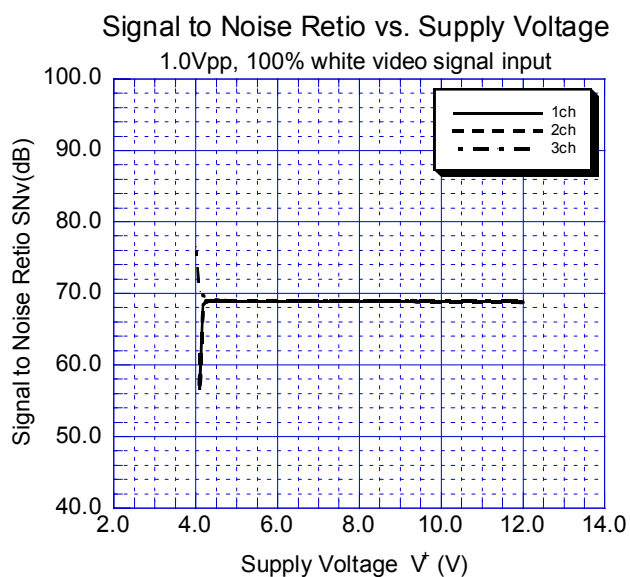
Differential Gain vs. Supply Voltage



Differential Phase vs. Supply Voltage



## ■ TYPICAL CHARACTERISTICS



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