# LOW VOLTAGE VIDEO AMPLIFIER WITH LPF

## ■GENERAL DESCRIPTION

The **NJM2571A** is a Low Voltage Video Amplifier contained LPF circuit. Internal 75Ω driver is easy to connect TV monitor directly.

The **NJM2571A** features low power and small package, and is suitable for low power design on downsizing of DSC and DVC.

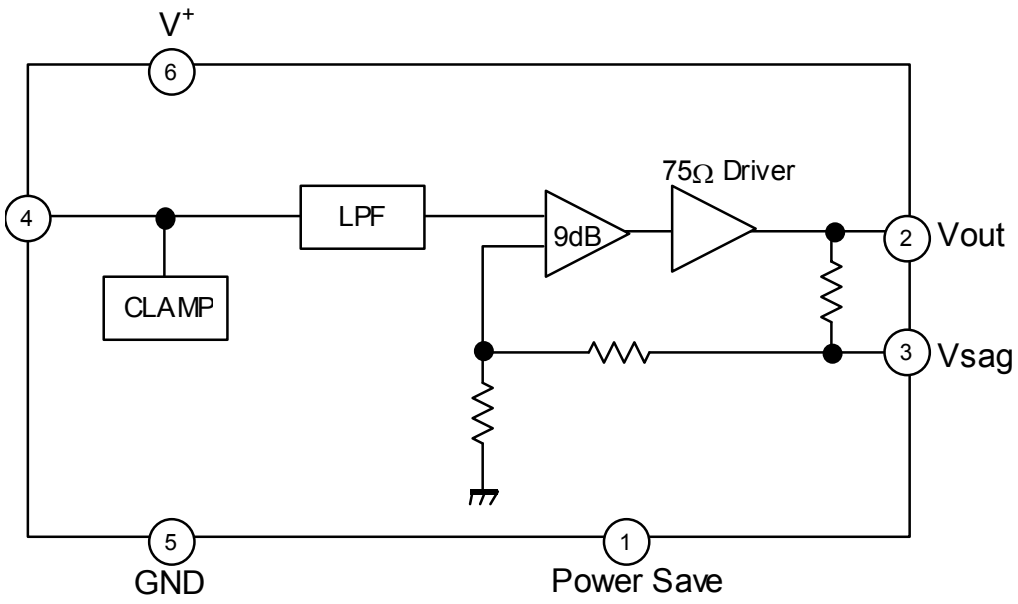
## ■PACKAGE OUTLINE

**NJM2571AF1**

## ■FEATURES

- Operating Voltage 2.8 to 5.5V
- 9dB amplifier
- Internal LPF -33dB at 19MHz typ.
- Internal 75Ω Driver Circuit (2-system drive)
- Power Save Circuit
- Bipolar Technology
- Package Outline MTP6

## ■BLOCK DIAGRAM



■**ABSOLUTE MAXIMUM RATINGS** (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Supply Voltage | $V^+$ | 7.0 | V |
| Power Dissipation | $P_D$ | 200 | mW |
| Operating Temperature Range | Topr | -40 to +85 | °C |
| Storage Temperature Range | Tstg | -40 to +125 | °C |

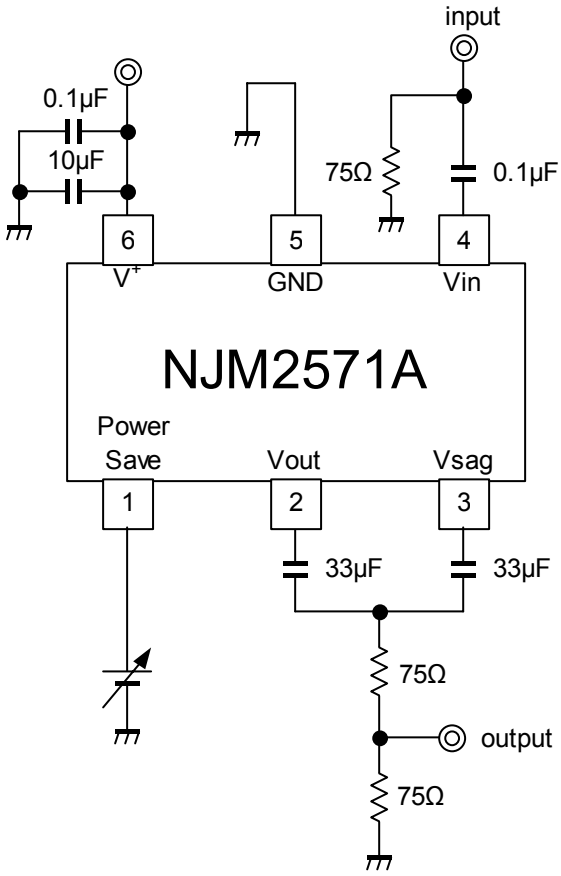
■**ELECTRICAL CHARACTERISTICS** ($V^+$=3.0V,$R_L$=150Ω,Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Operating Current | $I_{CC}$ | No Signal | - | 8.0 | 12.0 | mA |
| Operating Current at Power Save | Isave | Power Save Mode | - | 30 | 50 | μA |
| Maximum Output Voltage Swing | Vom | f=100kHz,THD=1% | 2.2 | 2.5 | - | Vp-p |
| Voltage Gain | Gv | Vin=100kHz, 0.7Vp-p,<br>Input Sine Signal | 8.5 | 9.0 | 9.5 | dB |
| Low Pass Filter Characteristic | Gfy4.5M | Vin=4.5MHz/100kHz, 0.7Vp-p | -0.6 | -0.1 | 0.4 | dB |
| | Gfy19M | Vin=19MHz/100kHz, 0.7Vp-p | - | -33 | -23 | |
| Differential Gain | DG | Vin=0.7Vp-p,<br>Input 10step Video Signal | - | 0.5 | - | % |
| Differential Phase | DP | Vin=0.7Vp-p,<br>Input 10step Video Signal | - | 0.5 | - | deg |
| S/N Ratio | SNv | Vin=0.7Vp-p, $R_L$=75Ω<br>100% White Video Signal | - | +60 | - | dB |
| 2nd. Distortion | Hv | Vin=0.7Vp-p, 3.58MHz,<br>Sine Video Signal, $R_L$=75Ω | - | -50 | - | dB |
| SW Change Voltage High Level | VthPH | Active | 1.8 | - | $V^+$ | V |
| SW Change Voltage Low Level | VthPL | Non-active | 0 | - | 0.3 | |

■**CONTROL TERMINAL**

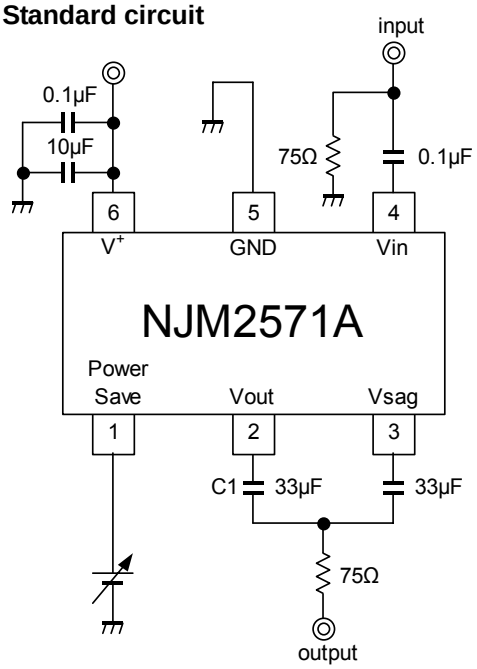
| PARAMETER | STATUS | NOTE |
|---|---|---|
| Power Save | H | Power Save: OFF |
| | L | Power Save: ON |
| | OPEN | Power Save: ON |

■TEST CIRCUIT

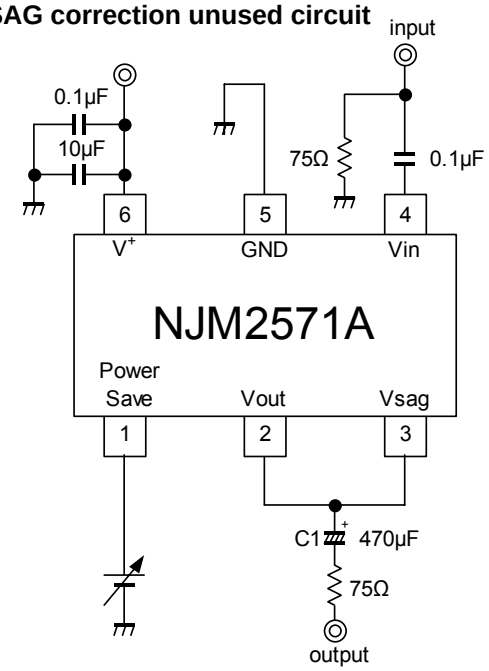


## ■ APPLICATION CIRCUIT

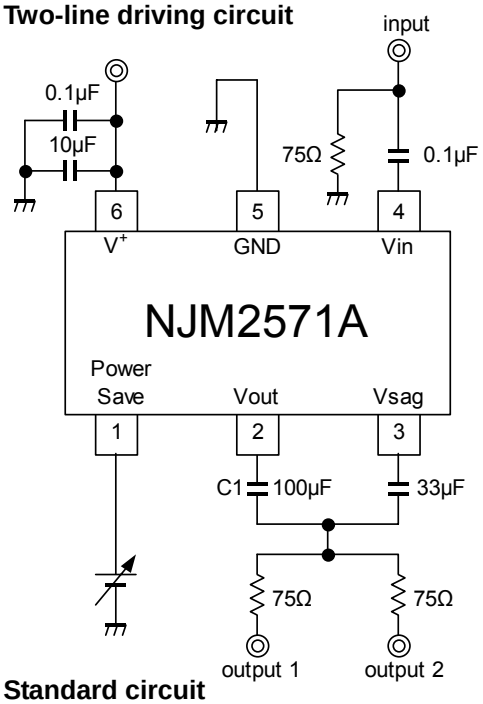
**(1) Standard circuit**




**(2) SAG correction unused circuit**




**(3) Two-line driving circuit**




**(1) Standard circuit**

The SAG correction reduces output coupling capacitor values.
The capacitor of C1 (33μF) is recommended for the portable application.
However, the 33μF capacitor may deteriorate SAG, and lose synchronization by luminance fluctuation.
Adjust the C1 value, checking the waveform containing a lot of low frequency components like a bounce waveform (In case of worst condition). Change the capacitor of C1 into a large value to improve SAG.

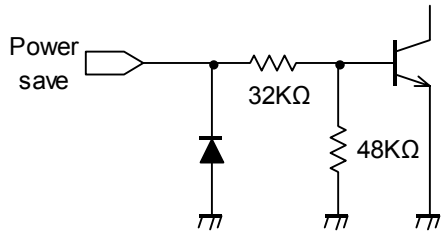
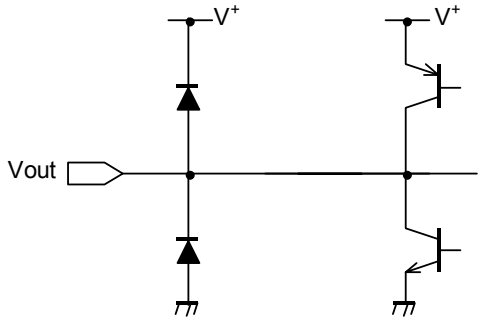
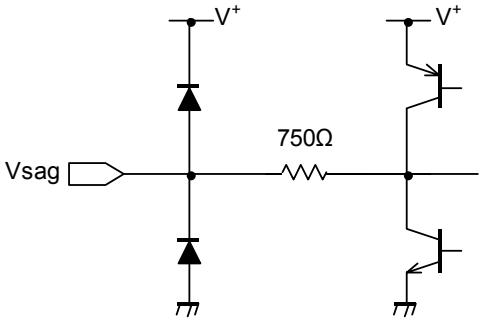
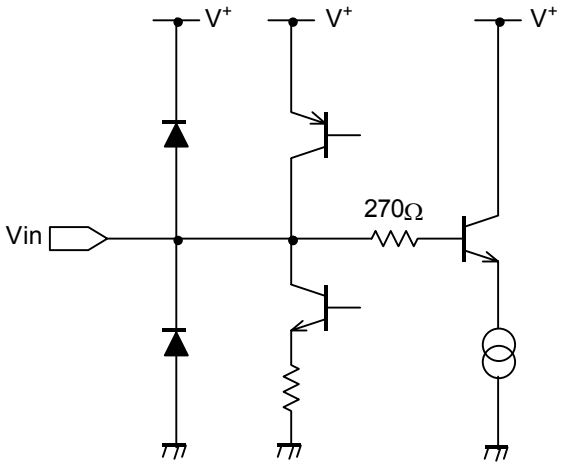
**(2) SAG correction unused circuit**

Cancel the SAG correction to improve lost synchronization.
Connect the coupling capacitor after connecting the Vout pin and Vsag pin. The recommended value is 470μF or more.

**(3) Two-line driving circuit**

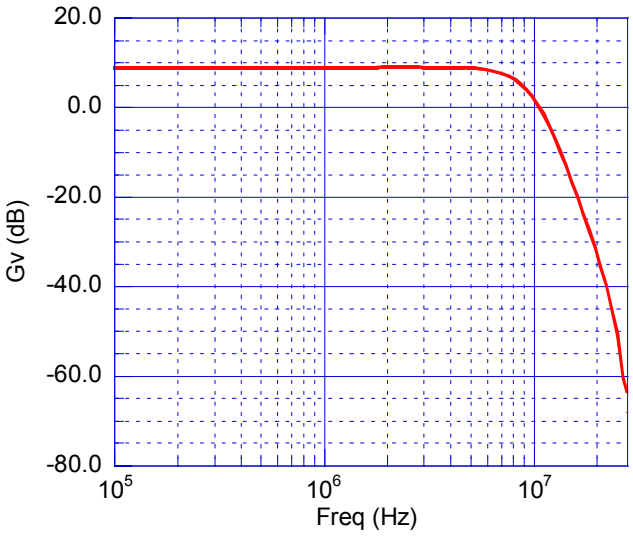
The NJM2571A drives two-line load of 150Ω.
The capacitance value of C1 should be 100μF or more, because SAG is deteriorated than a standard circuit.

■**TERMINAL FUNCTION**

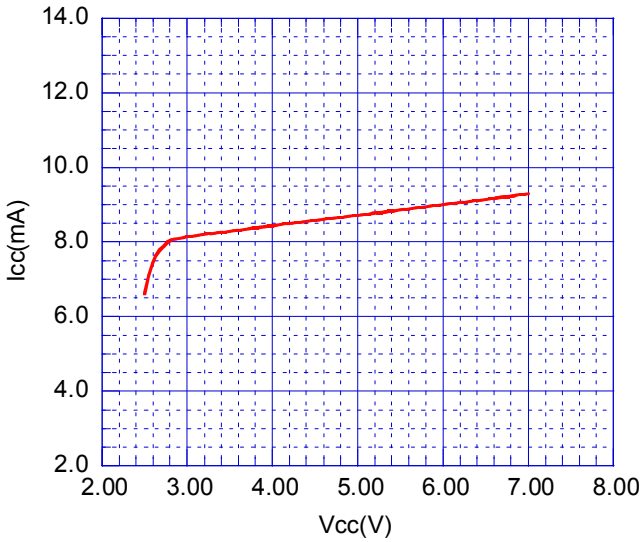
| PIN No. | PIN NAME | DC VOLTAGE | EQUIVALENT CIRCUIT |
|---|---|---|---|
| 1 | Power Save | - |  |
| 2 | Vout | 0.26V |  |
| 3 | Vsag | - |  |
| 4 | Vin | 1.10V |  |
| 5 | GND | - | |
| 6 | $V^+$ | 3V | |

## ■TYPCAL CHARACTERISTICS

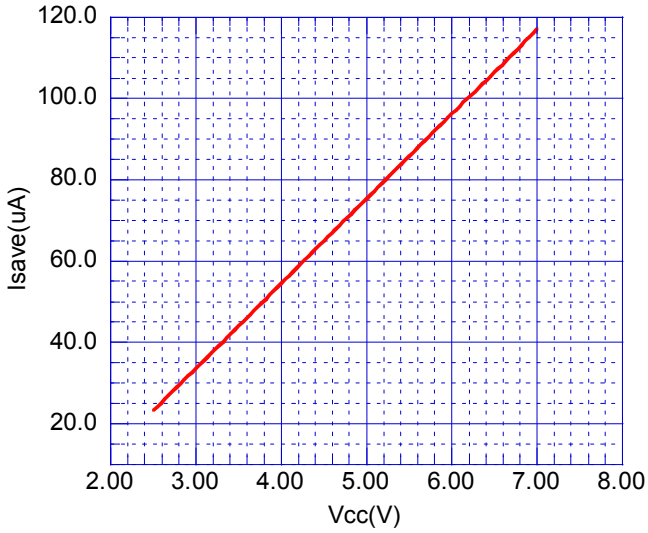
Voltage Gain vs. Frequency



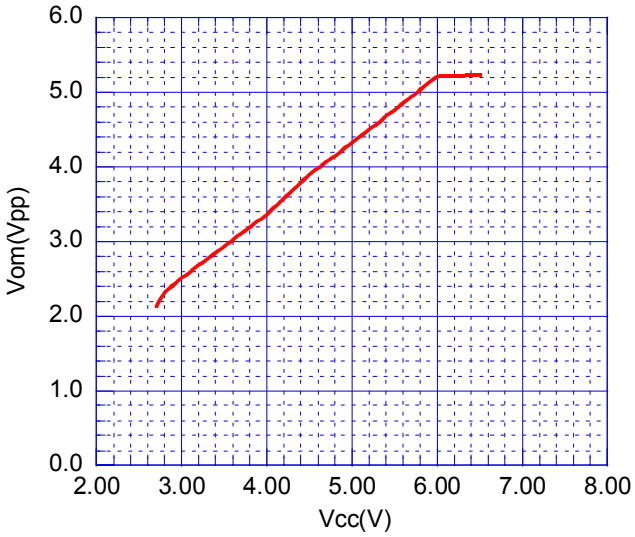

Operating Current vs. Supply Voltage



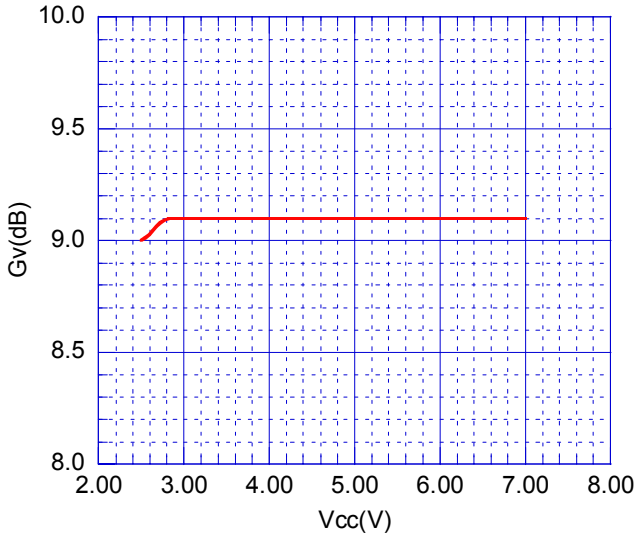

Operatibg Current at Standby State vs. Supply Voltage



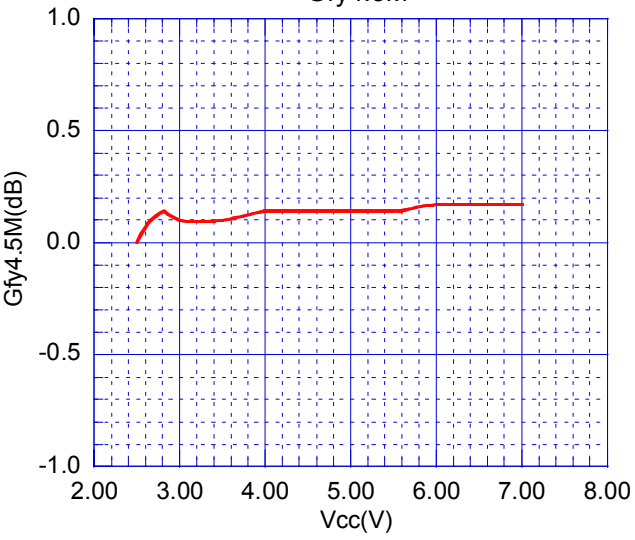

Maxim Output Voltage Swing vs. Supply Voltage



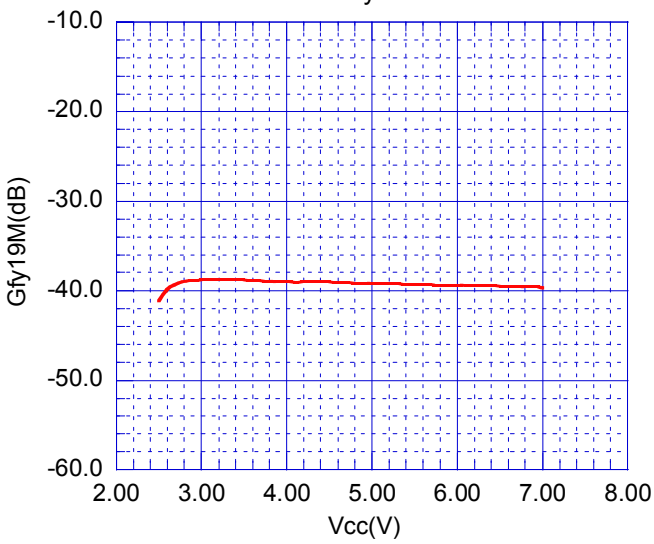

Voltage Gain vs. Supply Voltage



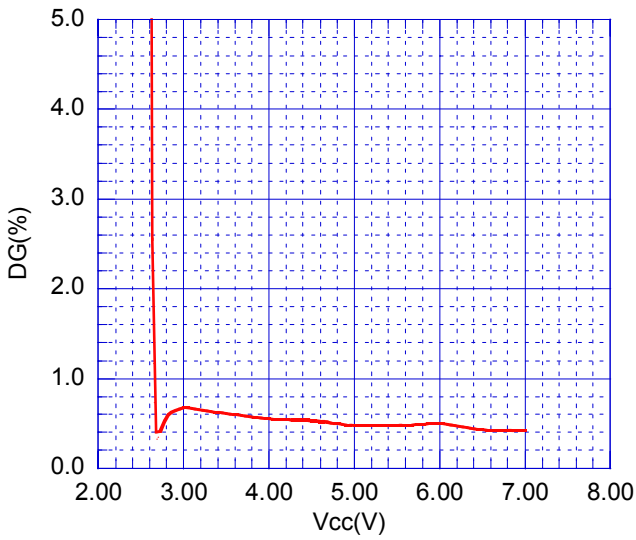

Low Pass Fillter Characteristics vs. Supply Voltage
Gfy4.5M



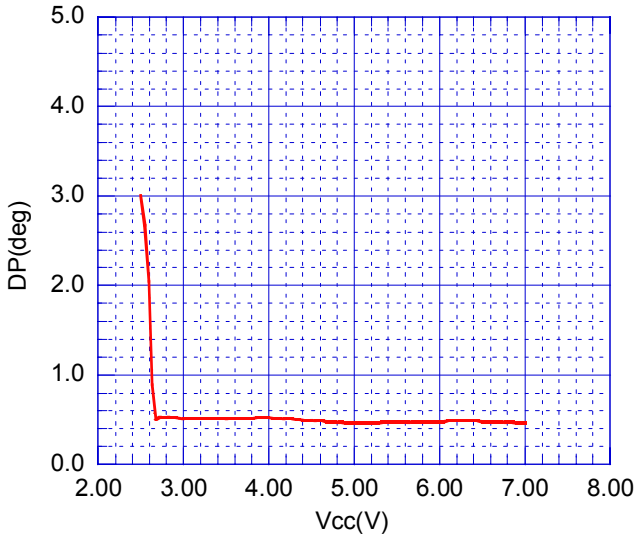
Low Pass Fillter Characteristics vs. Supply Voltage
Gfy19M



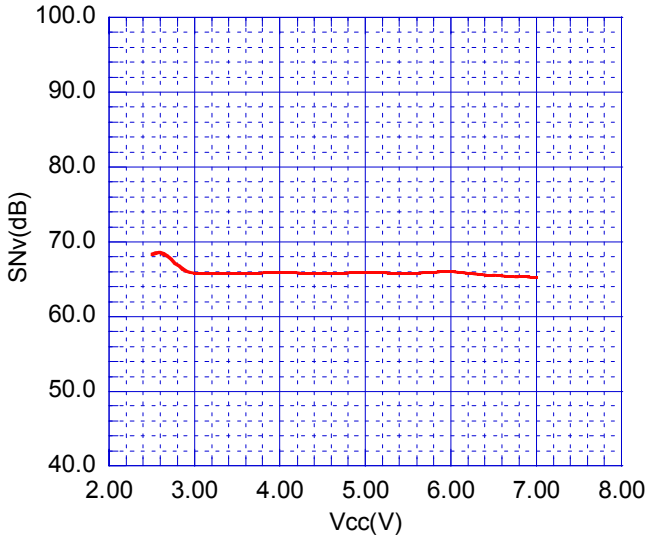

Differential Gain vs. Suplly Voltage



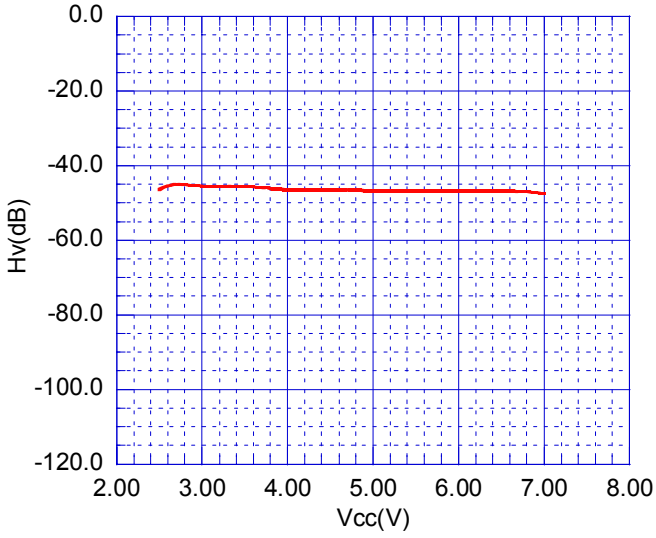

Differential Phase vs. Suplly Voltage



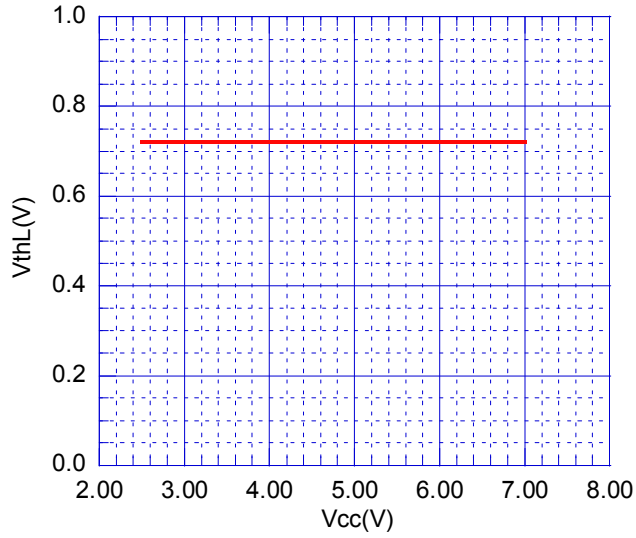

Signal to Noise Ratio vs. Supply Voltage



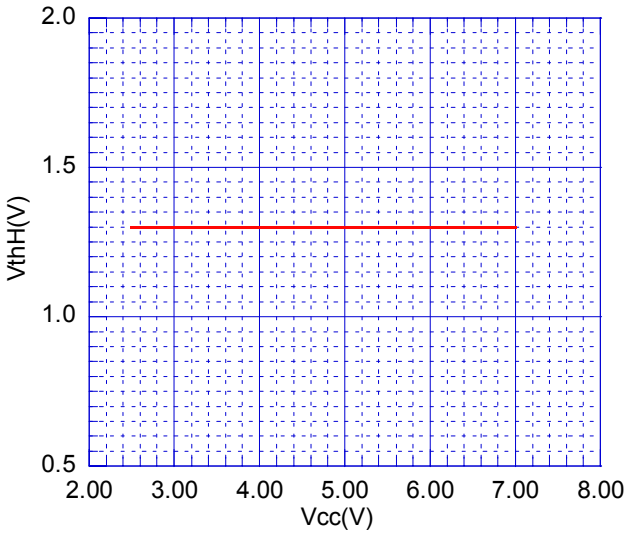

Second Harmonic Distotion vs. Supply Voltage



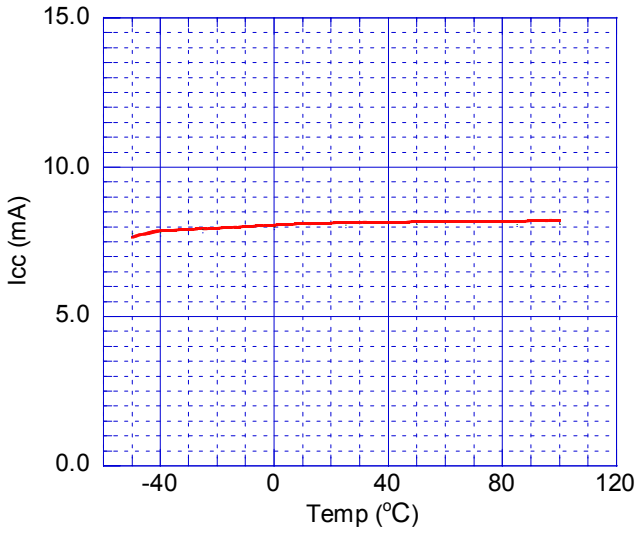

Switching Voltage vs. Supply Voltage



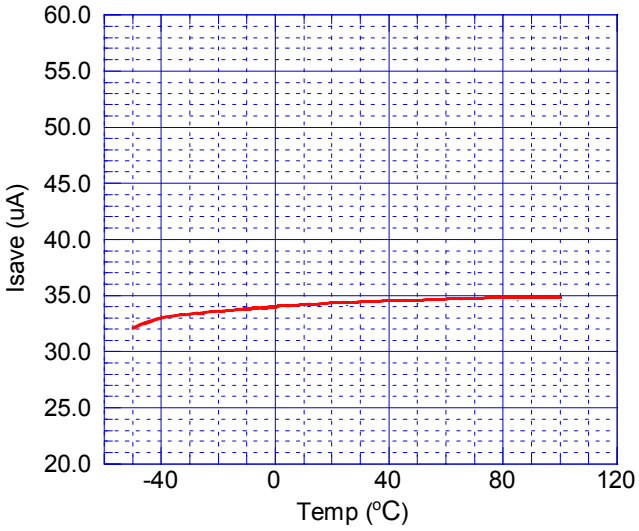
Switching Voltage vs. Supply Voltage



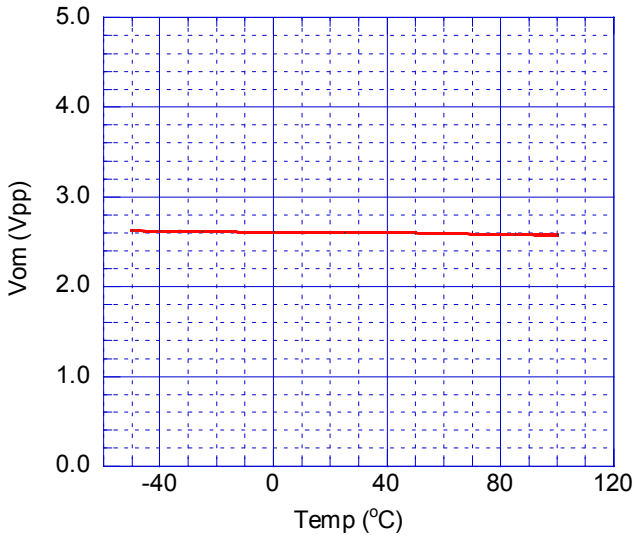

Operating Current vs. Temperature



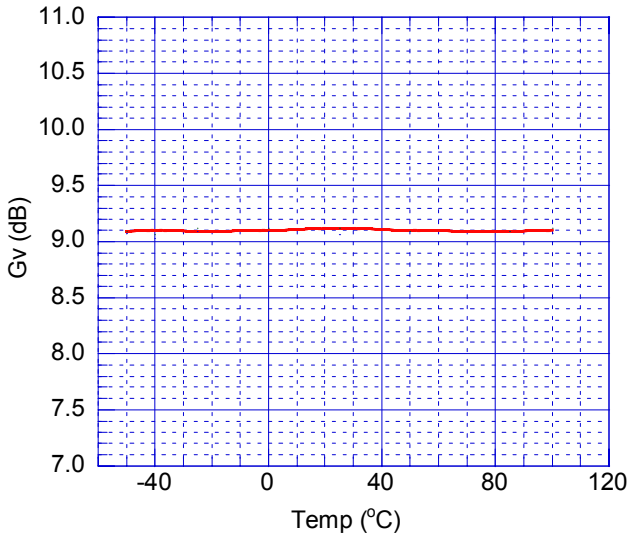

Operating Current at Standby State vs. Temperature



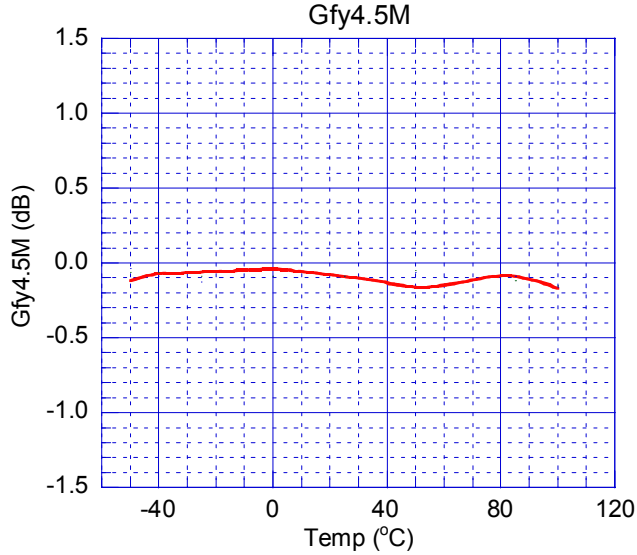

Maximum Output Voltage Swing vs. Temperature



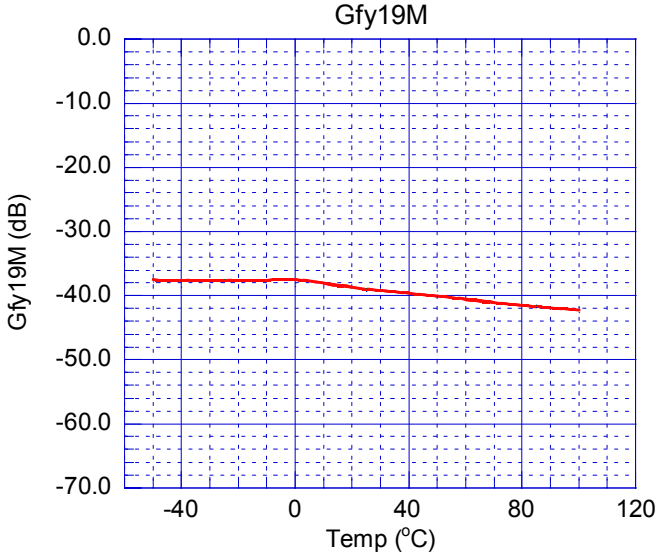

Voltage Gain vs. Temperature



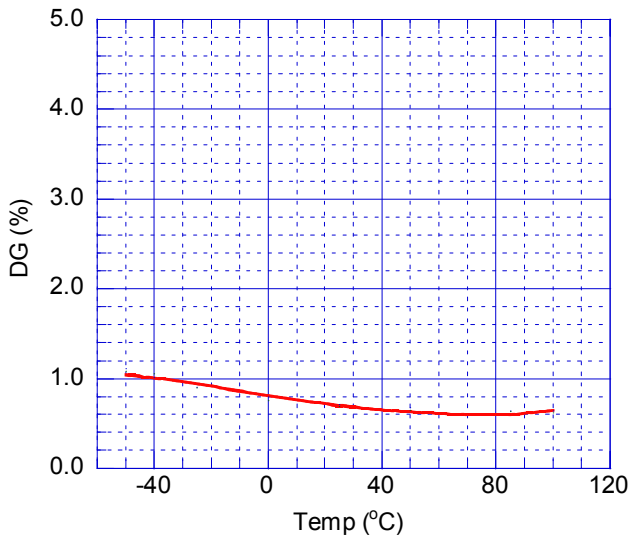

Low Pass Filter Characeristic vs. Temperature
Gfy4.5M



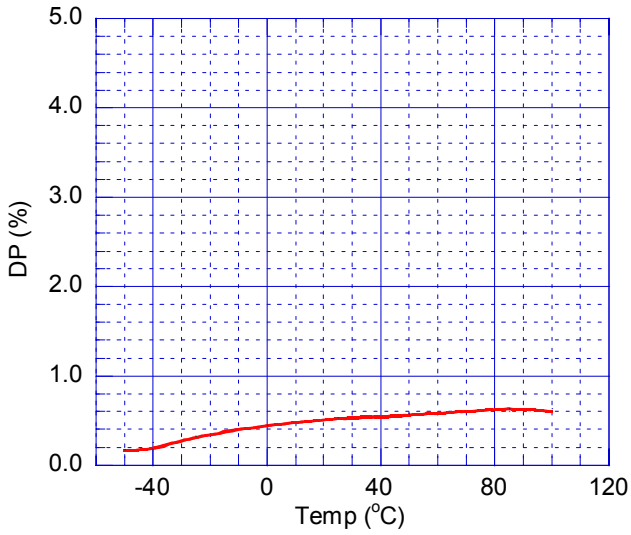
Low Pass Filter Characeristic vs. Temperature
Gfy19M



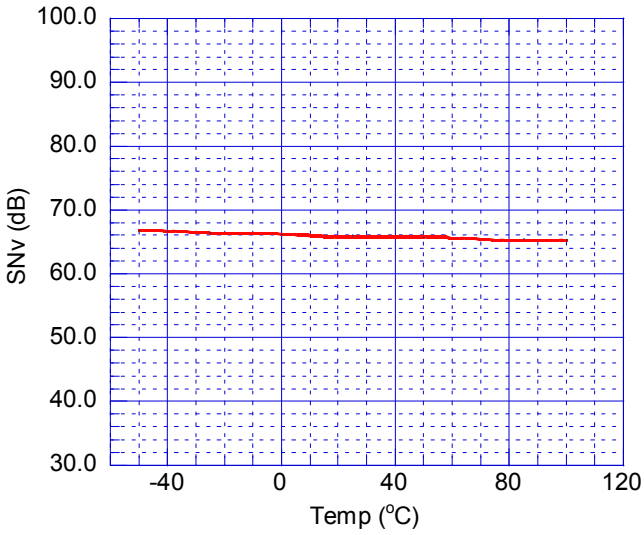

Differential Gain vs. Temperature



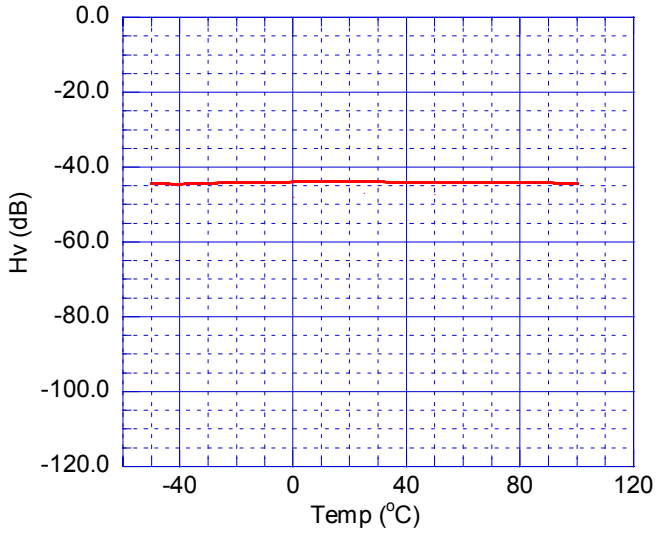

Differential Phase vs. Temperature




Signal to Nise Ratio vs. Temperature




Second Harmonic DIstotion vs.Temperature




Switchng Voltage vs. Temperature