VIDEO AMPLIFIER WITH LPF

■GENERAL DESCRIPTION

The **NJM41031** is a Video Amplifier contained LPF circuit. Internal 75Ω driver is easy to connect TV monitor directly.

Corresponds to the AC coupling and DC coupling.

The **NJM41031** features low power and small package, and is suitable for low power design on downsizing.

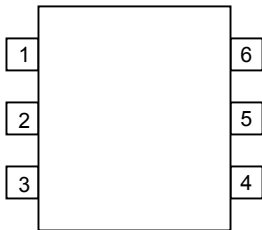* When coupled DC, 0.4V typ. output is always.

■PACKAGE OUTLINE
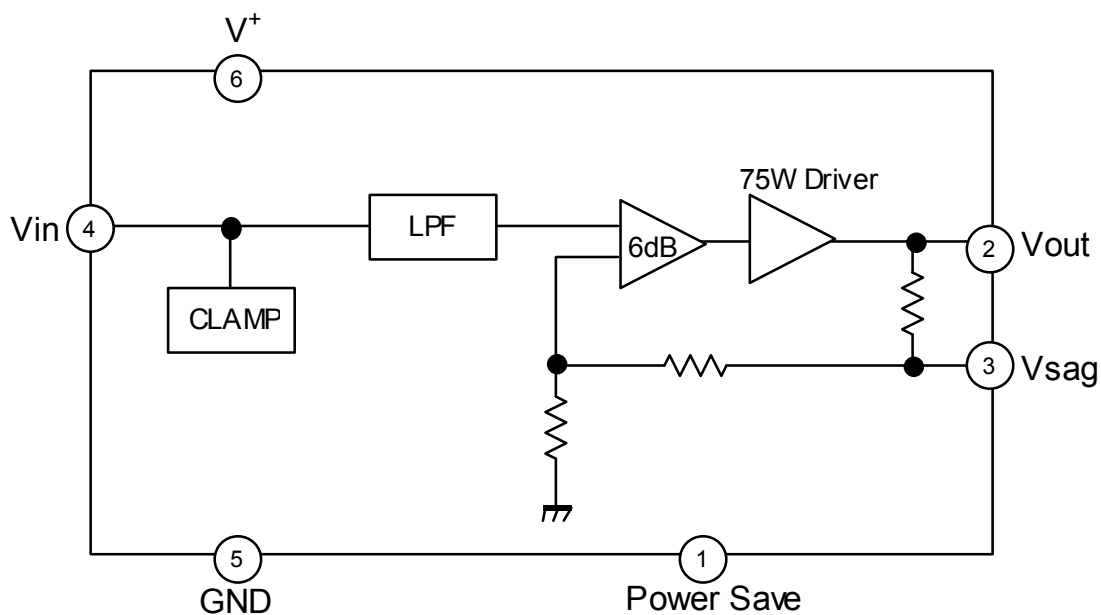
NJM41031F1

■FEATURES

- Operating Voltage   4.5 to 5.5V
- Internal LPF   -40dB at 108MHz typ.
- 6dB Amplifier
- 75Ω Driver Circuit
- Power Save Circuit
- CMOS Technology
- Package Outline   SOT-23-6

■PIN CONFIGURATION

SOT-23-6
1. Power Save
2. Vout
3. Vsag
4. Vin
5. GND
6. V$^+$

■BLOCK DIAGRAM

NJM41031

■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	7.0	V
Power Dissipation	P_D	405(SOT23-6) Note1	mW
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +125	°C

(Note1) At on a board of EIA/JEDEC specification. (114.3 x 76.2 x 1.6mm 2 layers, FR-4)

■ RECOMMENDED OPEARATING CONDITION (Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	Vopr		4.5	5.0	5.5	V

■ELECTRICAL CHARACTERISTICS (V^+=5.0V,R_L=150Ω,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I_{CC}	No Signal	-	20	25	mA
Operating Current at Power Save	Isave	No Signal, Power Save Mode	-	45	70	µA
Maximum Output Voltage Swing	Vom	f=100kHz,THD=1%	2.2	2.5	-	Vp-p
Voltage Gain	Gv	Vin=100kHz, 1.0Vp-p, Input Sine Signal	5.6	6.0	6.4	dB
Low Pass Filter Characteristic	Gfy6.75M	Vin=6.75MHz/100kHz, 1.0Vp-p	-1.0	0	1.0	dB
	Gfy108M	Vin=108MHz/100kHz, 1.0Vp-p	-	-40	-23	
Differential Gain	DG	Vin=1.0Vp-p, 10step Video Signal	-	0.5	-	%
Differential Phase	DP	Vin=1.0Vp-p, 10step Video Signal	-	0.5	-	deg
S/N Ratio	SNv	Vin=1.0Vp-p, R_L=75Ω 100% White Video Signal, 100KHz to 6MHz	-	75	-	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 (Mute)
	OPEN	Power Save: ON (Mute)

■**TEST CIRCUIT**

Input

10uF   0.1uF

0.1u   75Ω

6	5	4
V+	GND	VIN

Power Save	Vout	Vsag
1	2	3

100uF   22uF

75Ω
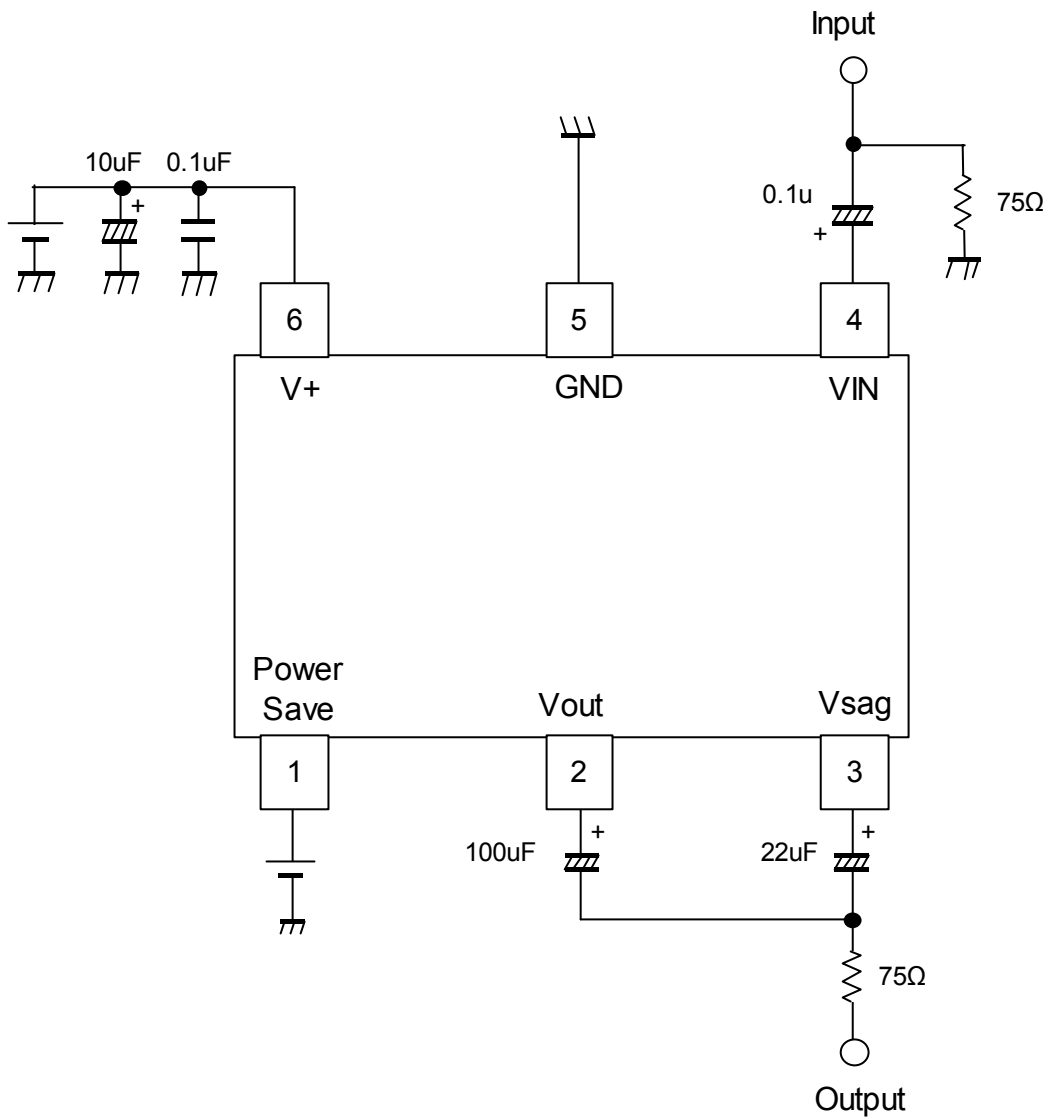
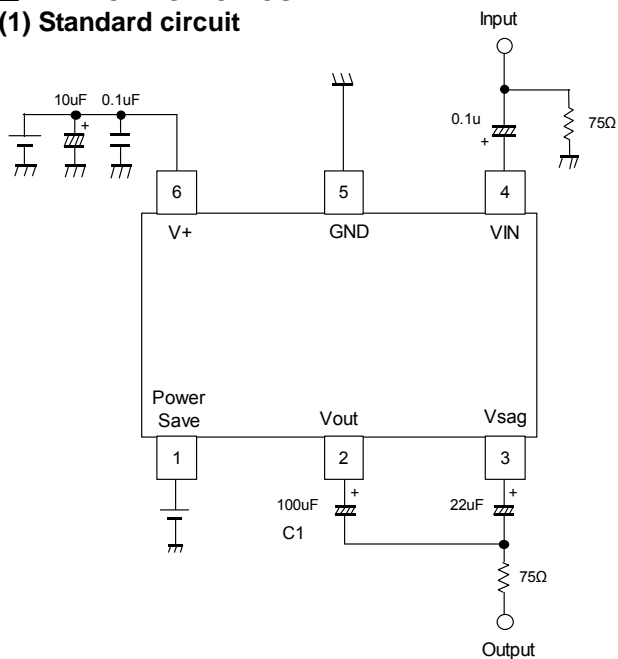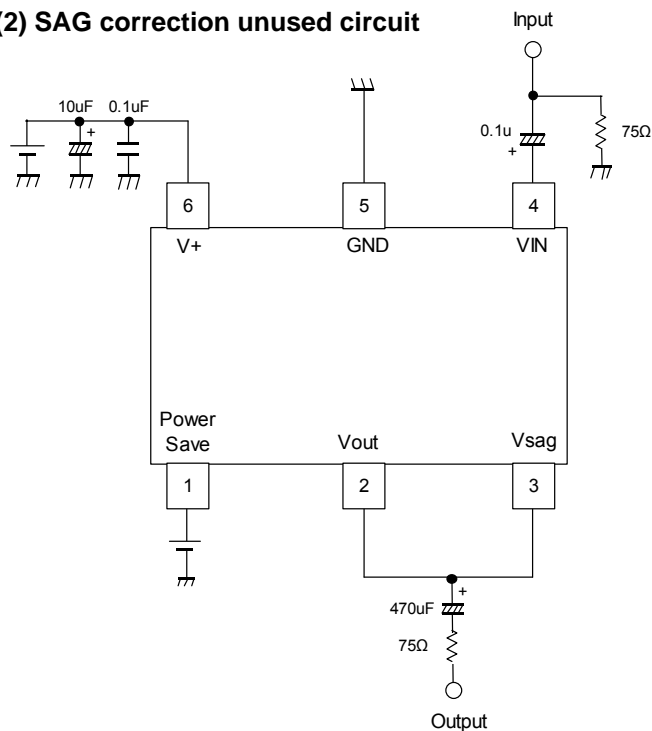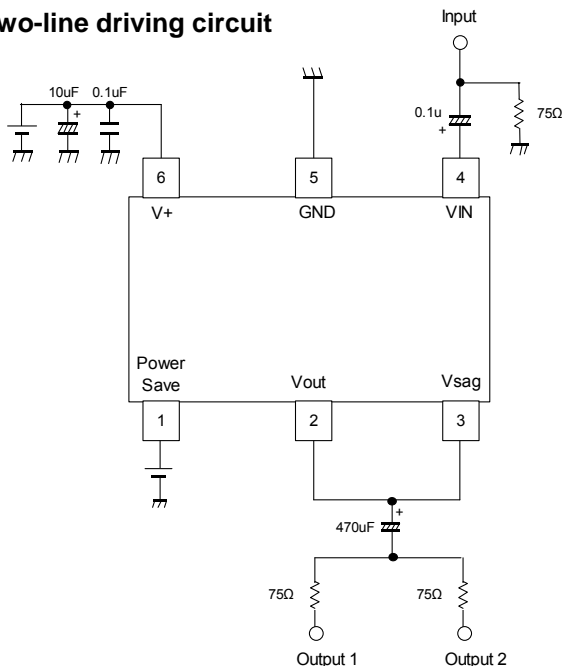Output

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■ APPLICATION CIRCUIT

(1) Standard circuit

(2) SAG correction unused circuit

(3) Two-line driving circuit

(1) Standard circuit
    This circuit is for a portable equipment of small mounting space.
    The SAG correction reduces output coupling capacitor values.
    However, this circuit may cause to SAG deterioration, and lose synchronization by luminance fluctuation.
    Adjust the C1 value, checking the waveform containing a lot of low frequency components like a bounce waveform (Worst condition waveform of SAG). Change the capacitor of C1 into a large value to improve SAG.

(2) SAG correction unused circuit
    We recommend this circuit when there is no space limitation.
    Connect the coupling capacitor after connecting the Vout pin and Vsag pin. The recommended value is 470µF or more.

(3) Two-line driving circuit
This circuit drives two-line of 150Ω. However, it may cause to lose synchronization by an input signal of large APL change (100% white signals more than 1Vp-p). Confirm the large APL change waveform (100% white signals more than 1Vp-p) and evaluate sufficiently.

■ APPLICATION CIRCUIT 1 (in case DC-coupling, 1-drive circuit)

Input

10uF 0.1uF

0.1u

75Ω

6	5	4
V+	GND	VIN

Power Save	Vout	Vsag
1	2	3

75Ω
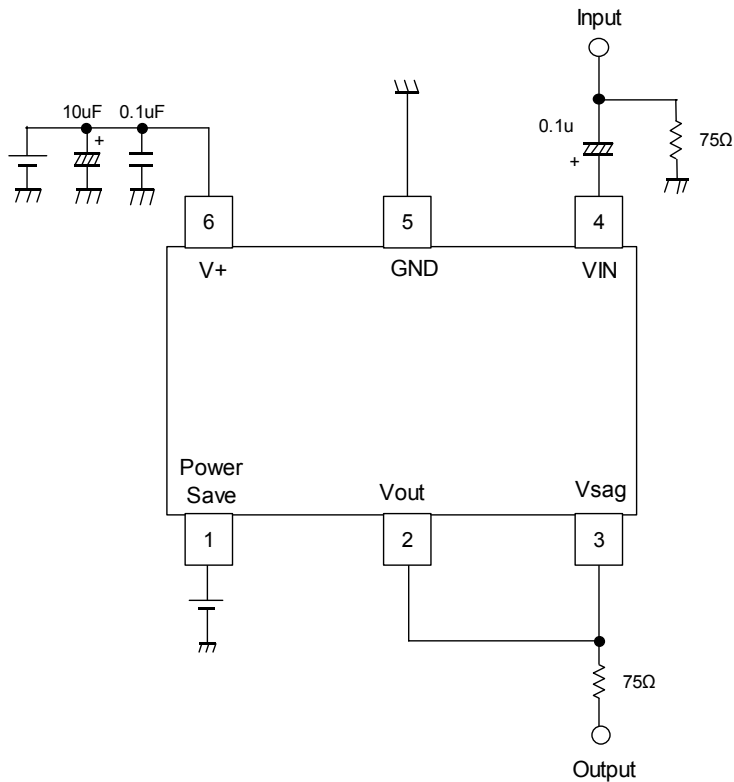
Output

■ APPLICATION CIRCUIT 2 (in case DC-coupling, 2-drive circuit)

Input

10uF 0.1uF

0.1u

75Ω

6	5	4
V+	GND	VIN

Power Save	Vout	Vsag
1	2	3

75Ω   75Ω

Output 1   Output 2
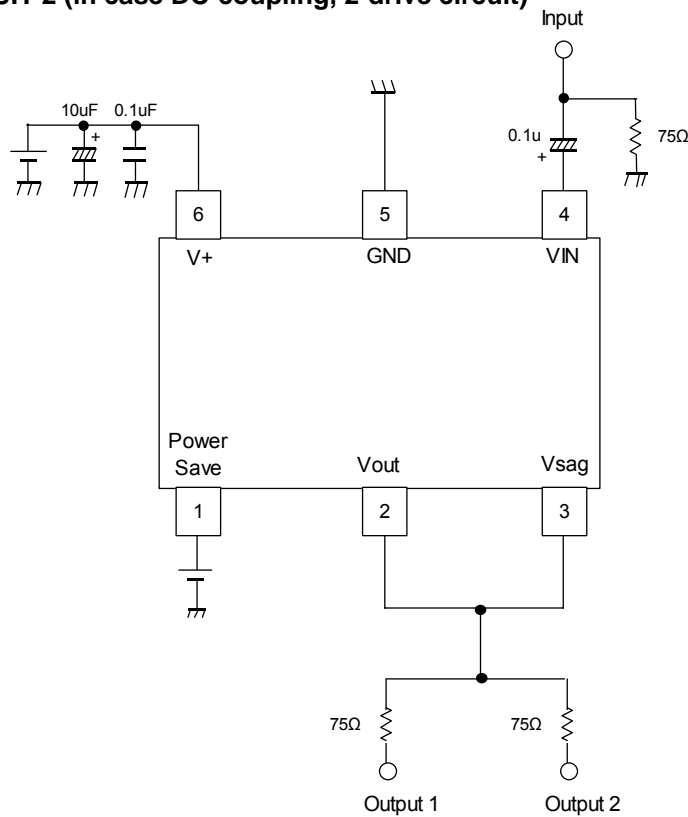
Note)
0.4V typ. is always output from Vout.

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■ **TERMINAL DESCRIPTION**

PIN No.	SYMBOL	VOLTAGE	EQUIVALENT CIRCUIT
1	Power Save	-	
2	Vout	0.4V	
3	Vsag	0.4V	
4	Vin	1.7V	
5	GND	-	
6	V$^+$	-	

■TYPICAL CHARACTERISTICS

Gain vs. Freqency
V+=5V Ta=25°C Vin=1.0Vpp Sine Signal Input
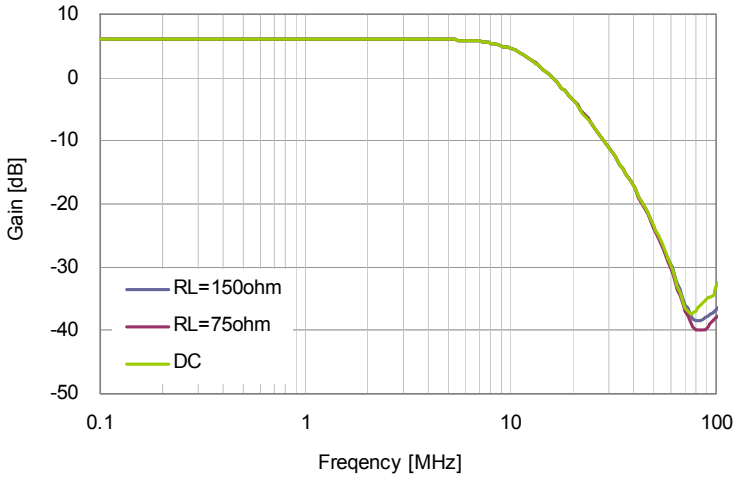
Operating Current vs. Supply Voltage
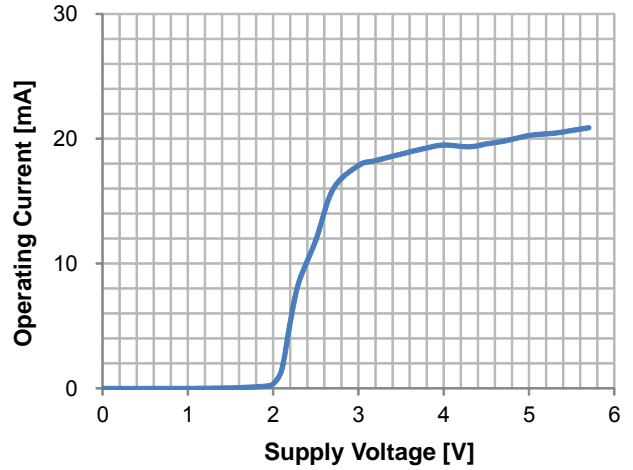
Operating Current at Power Save Mode vs. Supply Voltage
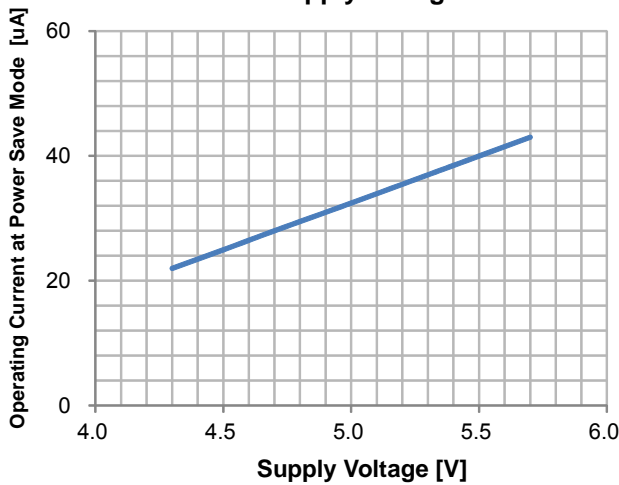
Maximam Output Voltage Swing vs. Supply Voltage
Total Harmonic Distotion=1%, 100KHz
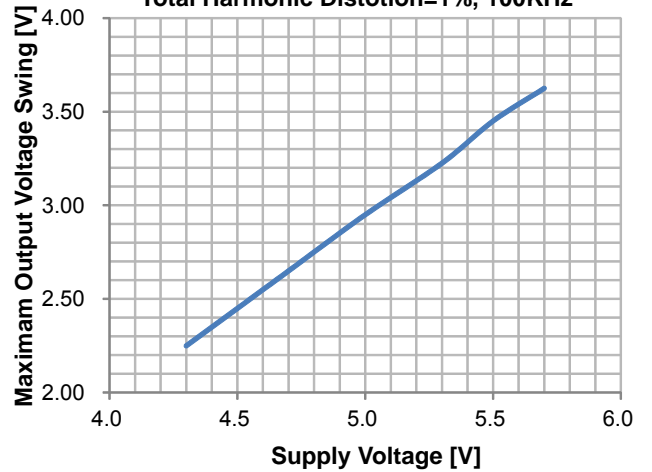
Voltage Gain vs. Supply Voltage
1.0Vpp, 100kHz, Sine Signal Input
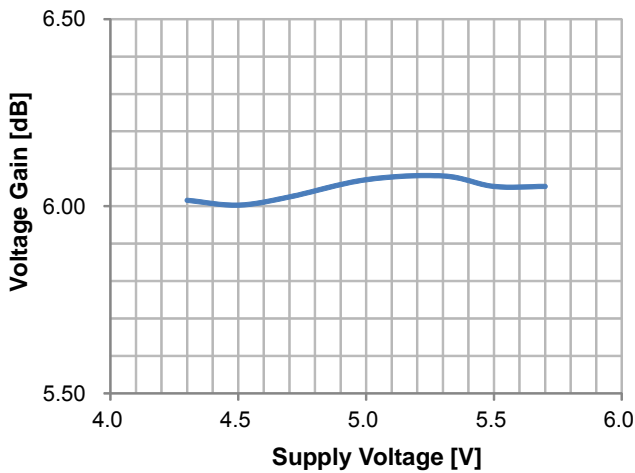
Low Pass Filter Charactrestic vs. Supply Voltage
1.0Vpp, 6.75M/100kHz, Sine Signal Input

Ver.2

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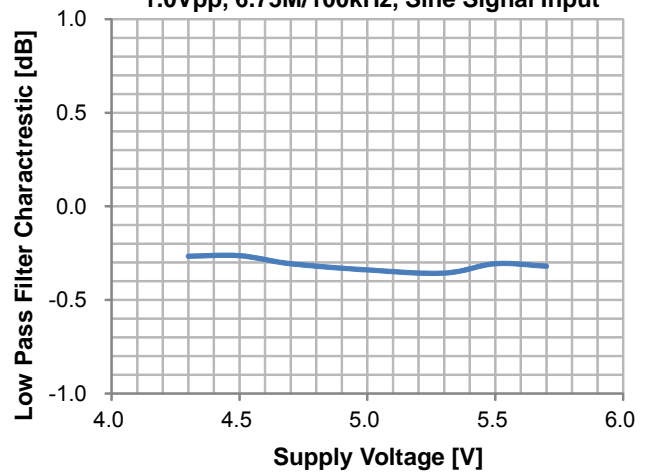
■TYPICAL CHARACTERISTICS

Low Pass Filter Charactrestic vs. Supply Voltage
1.0Vpp, 108M/100kHz, Sine Signal Input
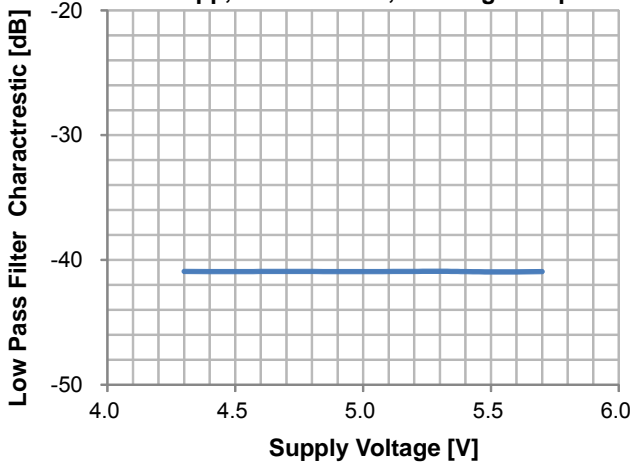
Differential Gain vs. Supply Voltage
1.0Vpp, 10step Video Signal Input
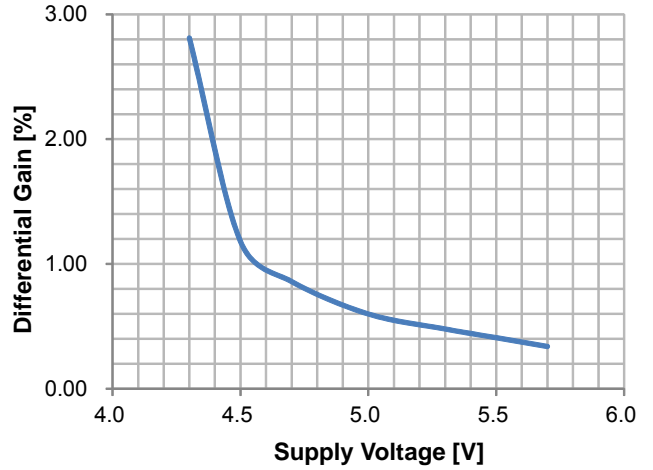
Differential Phase vs. Supply Voltage
1.0Vpp, 10step Video Signal Input
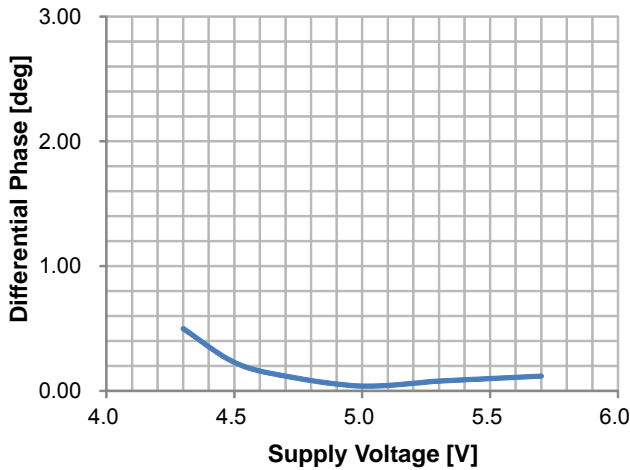
Signal to Noise Ratio vs. Supply Voltage
1.0Vpp, White 100%Video Signal Input
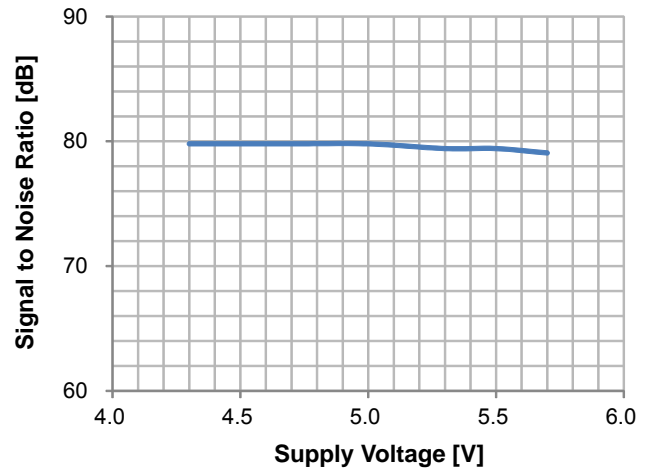
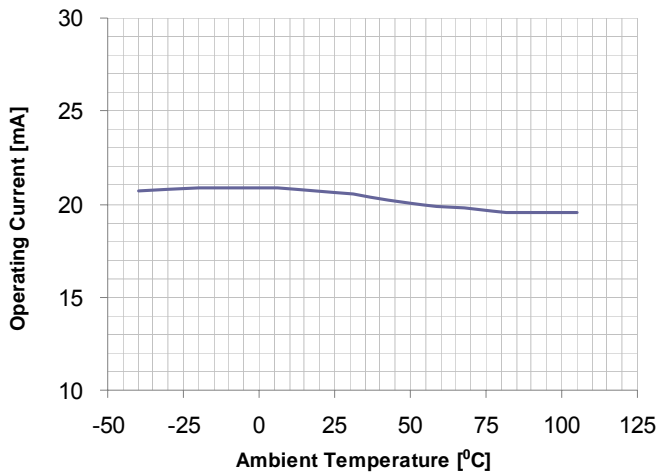### Switching Voltage Level (High Level) vs. Supply Voltage
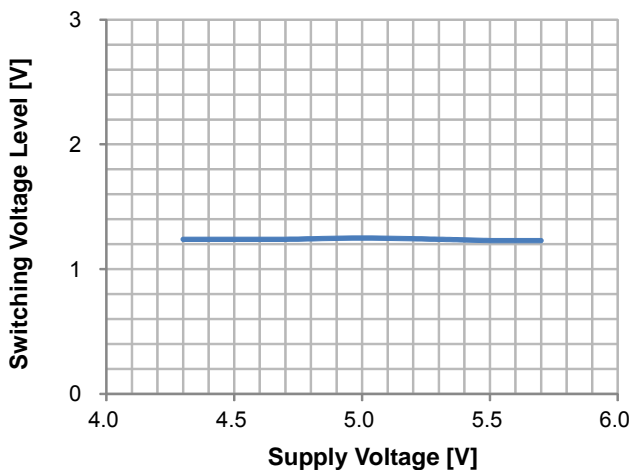
Switching Voltage Level (Low Level) vs. Supply Voltage
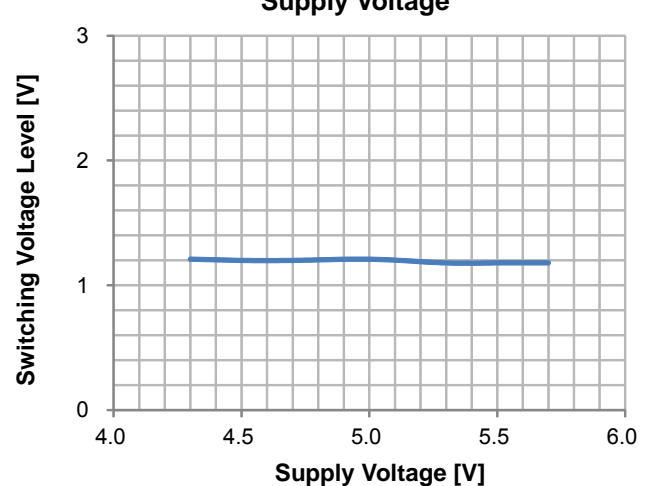
■TYPICAL CHARACTERISTICS

Operating Current vs. Temperature

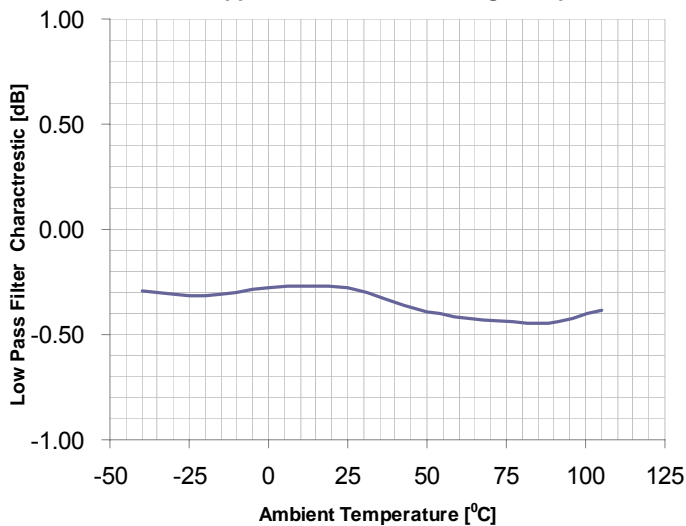## Operating Current at Power Save Mode vs. Temperature
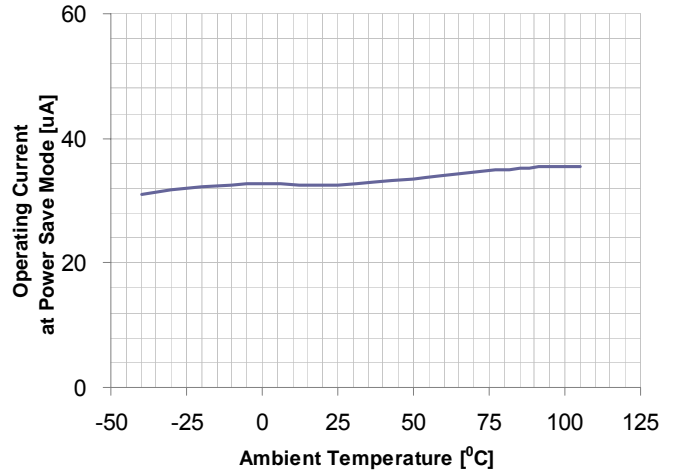
Maximam Output Voltage Swing vs. Temperature
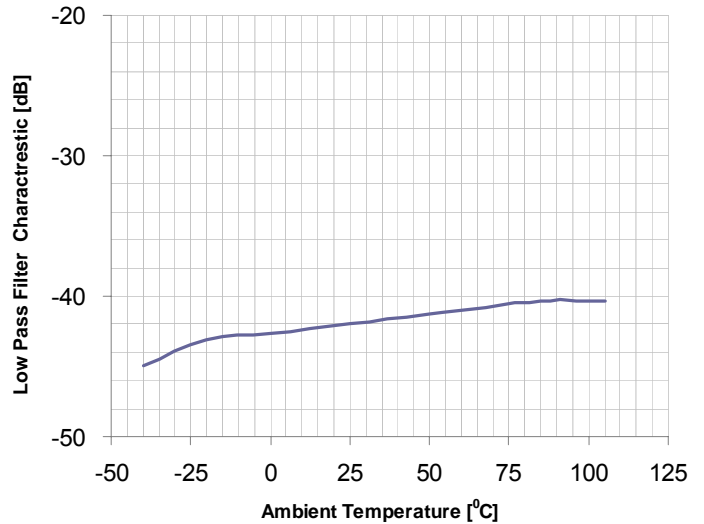### Total Harmonic Distotion=1%, 100kHz
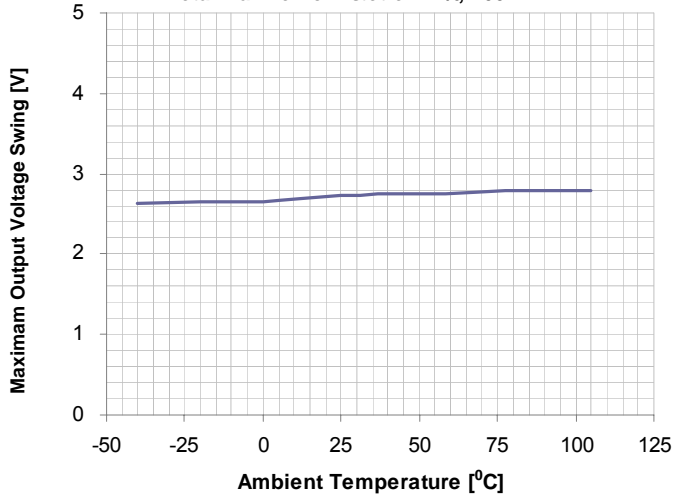
Low Pass Filter Charactrestic vs. Temperature
1.0Vpp, 108M/100kHz, Sine Signal Input
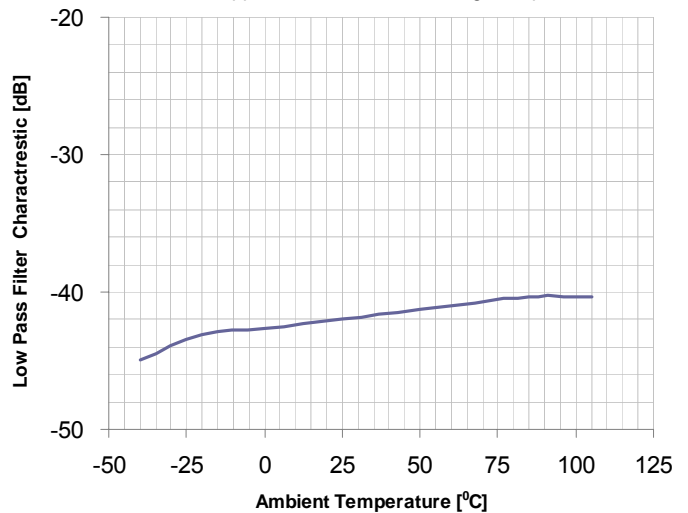
Low Pass Filter Charactrestic vs. Temperature
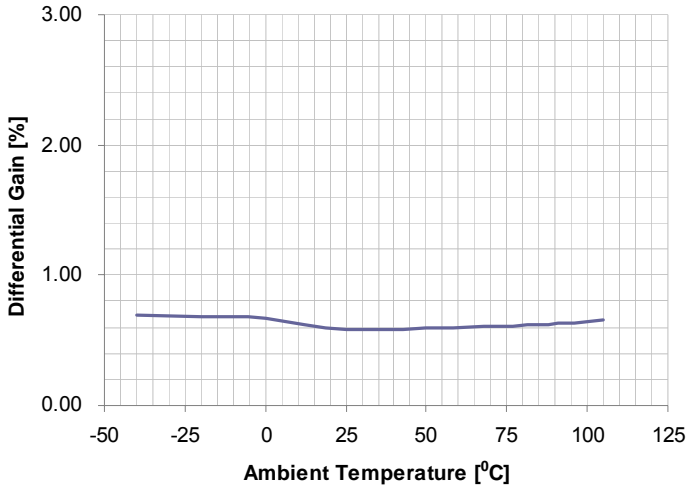### 1.0Vpp, 6.75M/100kHz, Sine Signal Input

Low Pass Filter Charactrestic vs. Temperature
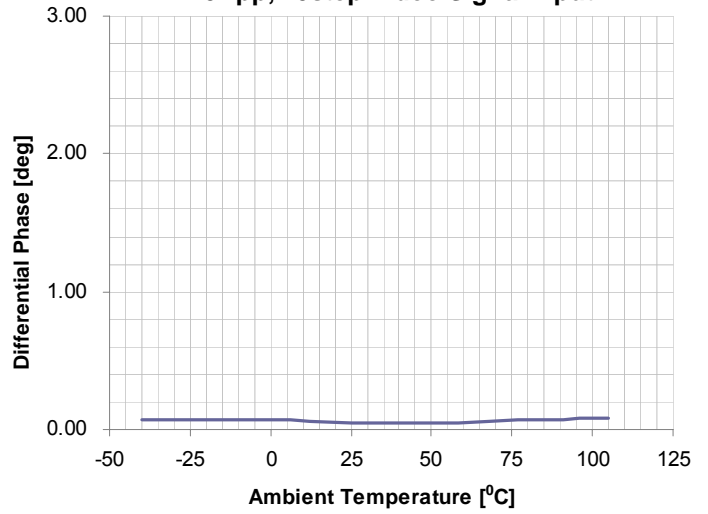### 1.0Vpp, 108M/100kHz, Sine Signal Input

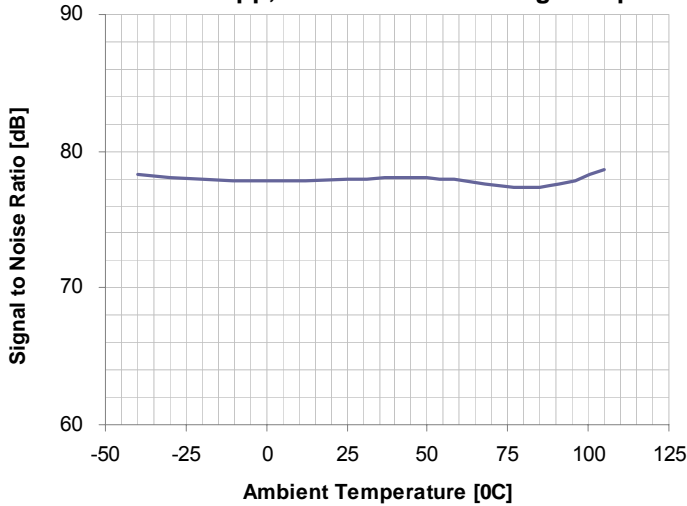# NJM41031

■TYPICAL CHARACTERISTICS

Differential Gain vs. Temperature
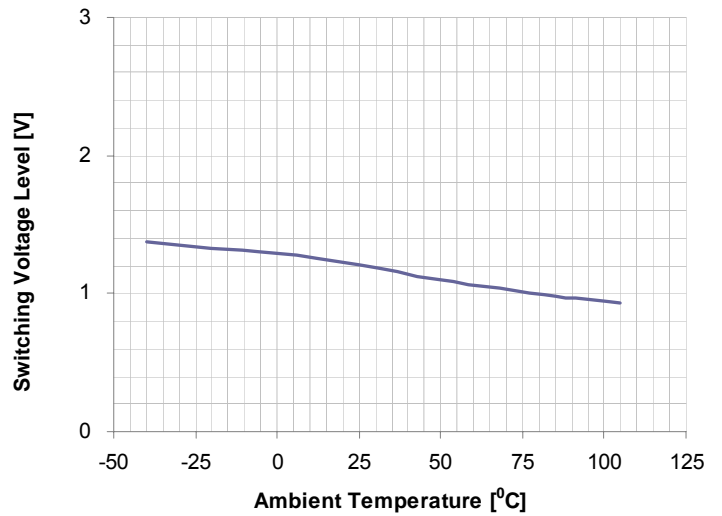#### 1.0Vpp, 10step Video Signal Input

Differential Phase vs. Temperature
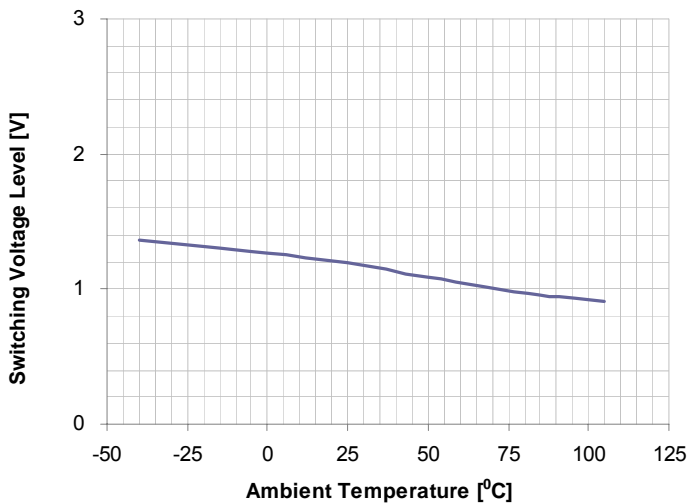#### 1.0Vpp, 10step Video Signal Input

Signal to Noise Ratio vs. Temperature
1.0Vpp, White 100% Video Signal Input

Switching Voltage Level (High Level) vs. Temperature

Switching Voltage Level (Low Level) vs. Temperature

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