LOW VOLTAGE VIDEO AMPLIFIER WITH LPF

■**GENERAL DESCRIPTION**

The **NJM2575** is a Low Voltage Video Amplifier contained LPF circuit. Internal 75Ω driver is easy to connect TV monitor directly. The **NJM2575** features low power and small package, and is suitable for low power design on downsizing of DSC and DVC.
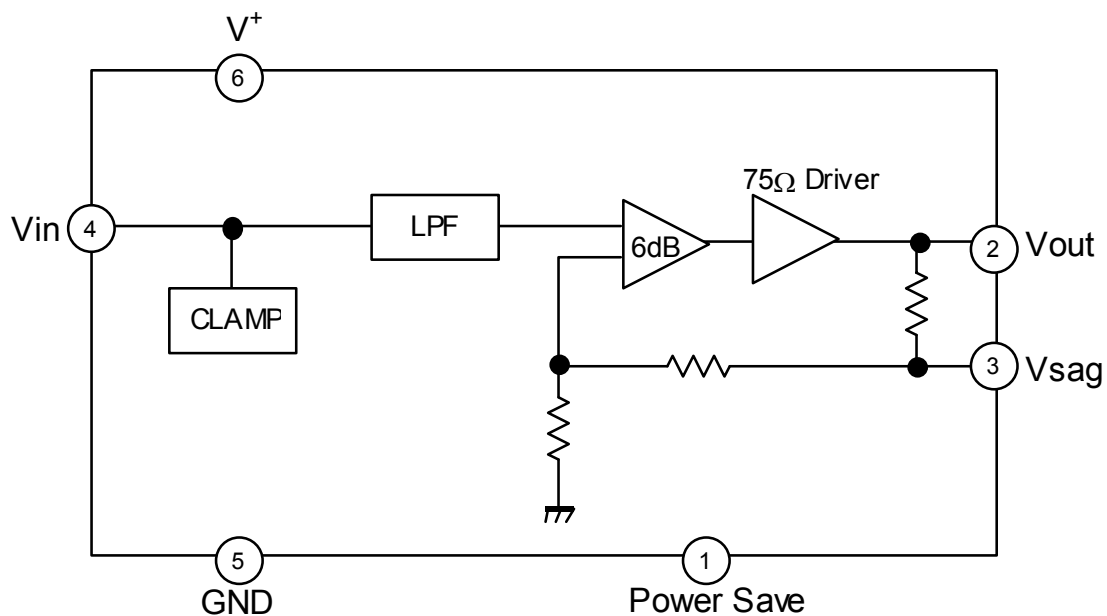
■**PACKAGE OUTLINE**

NJM2575F1

■**FEATURES**

- ● Operating Voltage   2.8 to 5.5V
- ● Composite Video Signal Input   1.0Vp-p
- ● 6dB Amplifier
- ● 75Ω Driver
- ● 2nd order Low Pass Filter
- ● Operating Current   7.0mA typ. at V^+ = 3.0V
- ● Operating Current   60μA typ.at V^+ = 3.0V
  (Power Save Mode)
- ● Bipolar Technology
- ● Package Outline   SOT23-6 (MTP6)

■**BLOCK DIAGRAM**

NJM2575

■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 Voltage	Vopr		2.8	3.0	5.5	V
Operating Current	I_{CC}	No Signal	-	7.0	10.0	mA
Operating Current at Power Save	Isave	Power Save Mode	-	60	90	μA
Maximum Output Voltage Swing	Vom	f=1kHz,THD=1%	2.2	2.4	-	Vp-p
Voltage Gain	Gv	Vin=100kHz,1.0Vp-p, Input Sine Signal	6.1	6.5	6.9	dB
Low Pass Filter Characteristic	Gfy4.5M	Vin=4.5MHz/100kHz,1.0Vp-p	-0.5	0.0	+0.5	dB
	Gfy8M	Vin=8MHz/100kHz,1.0Vp-p	-	-2.0	-	
	Gfy16M	Vin=16MHz/100kHz,1.0Vp-p	-	-12.0	-	
Differential Gain	DG	Vin=1.0Vp-p, Input 10step Video Signal	-	0.2	-	%
Differential Phase	DP	Vin=1.0Vp-p, Input 10step Video Signal	-	0.2	-	deg
S/N Ratio	SNv	Vin=1.0Vp-p, 100% White Video Signal, R_L=75Ω	-	+60	-	dB
2nd. Distortion	Hv	Vin=1.0Vp-p,3.58MHz, Sine Video Signal, R_L=75Ω	-	-40	-	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

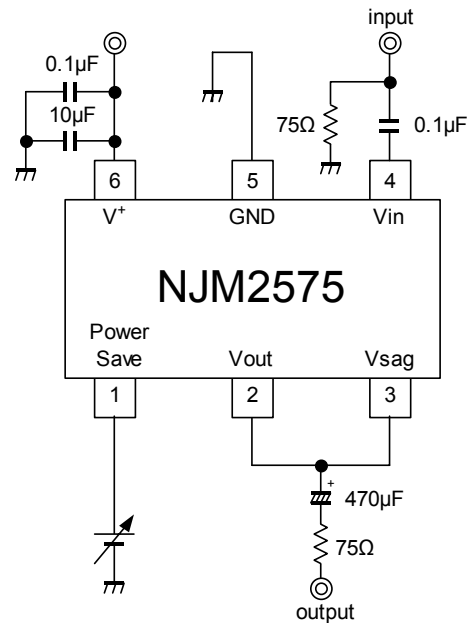| PARAMETER	STATUS	NOTE
Power Save	H	Power Save : OFF
	L	Power Save : ON (Mute)
	OPEN	Power Save : ON (Mute)

■TEST CIRCUIT
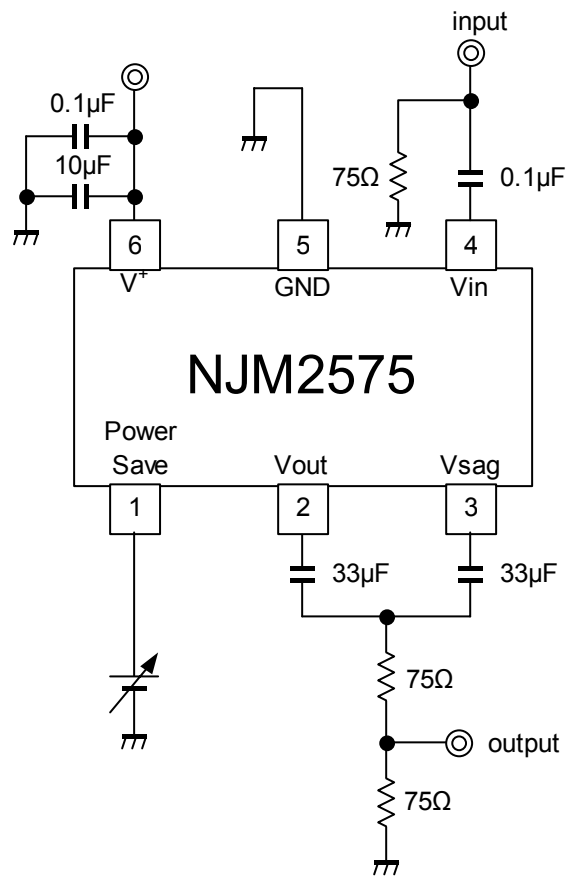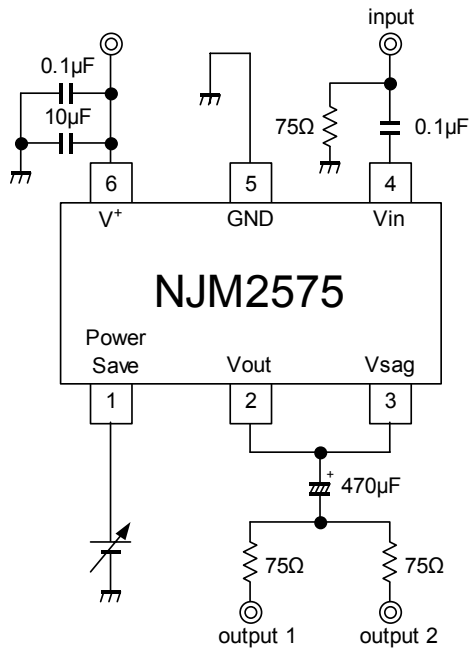
■**APPLICATION CIRCUIT**

(1) Standard circuit
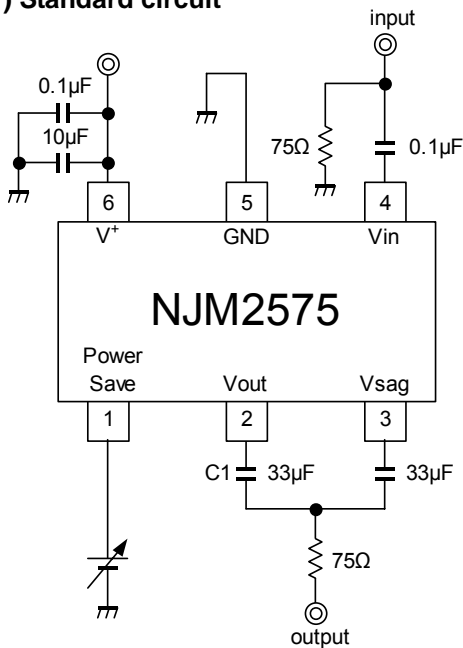
(2) SAG correction unused circuit

(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.
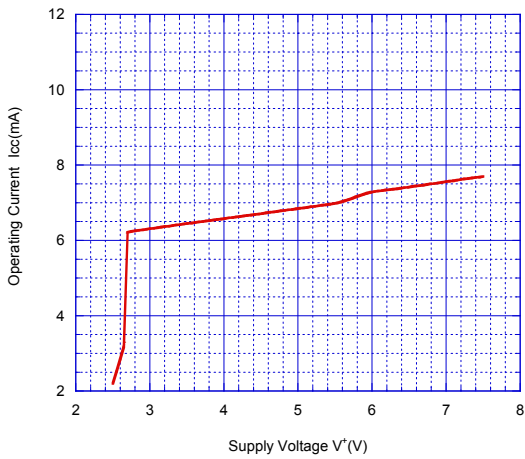
■TERMINAL FUNCTION

PIN No.	PIN NAME	DC VOLTAGE	EQUIVALENT CIRCUIT
1	Power save	-	Power save $32K\Omega$ $48K\Omega$
2	Vout	0.26V	V^+ V^+ Vout 750Ω $25.3K\Omega$
3	Vsag	-	V^+ V^+ Vsag 750Ω $25.3K\Omega$
4	Vin	1.10V	V^+ V^+ V^+ Vin
5	GND	-	
6	V^+	3V	

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■TYPICAL CHARACTERISTICS

Frequency Characteristic
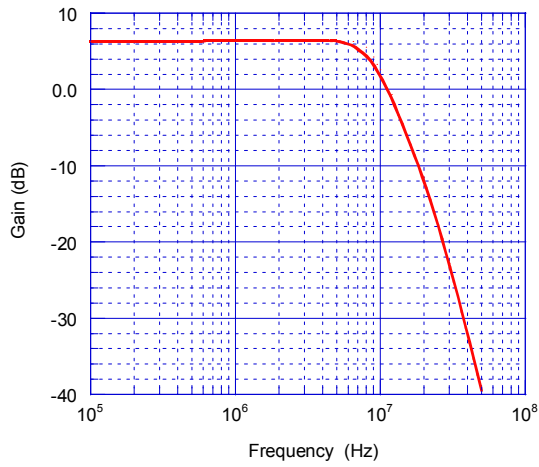
Operating Current vs. Supply Voltage

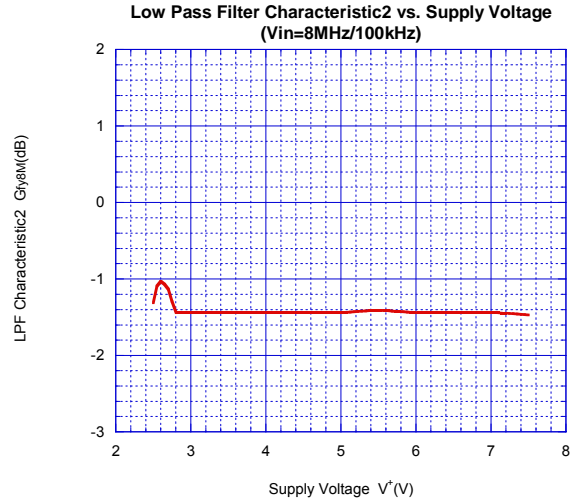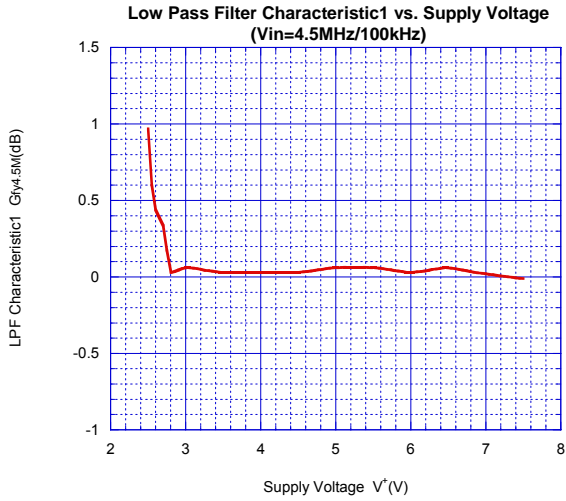**Operating Current at Standby State vs. Supply Voltage**
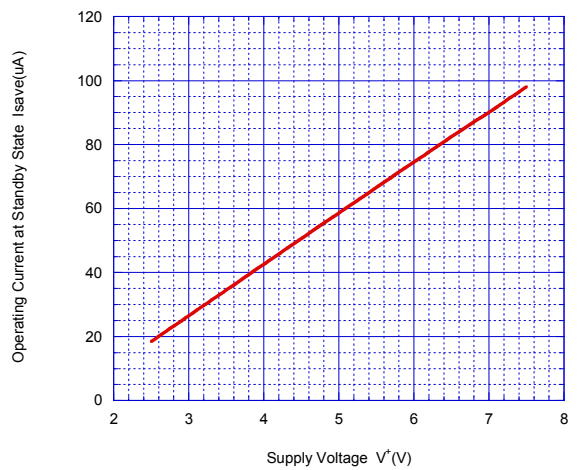
Maximum Output Voltage Swing vs. Supply Voltage
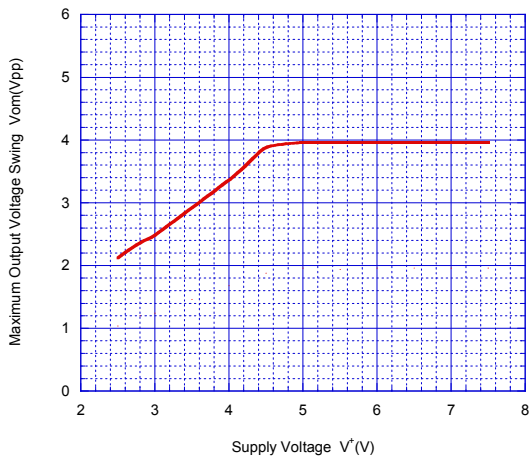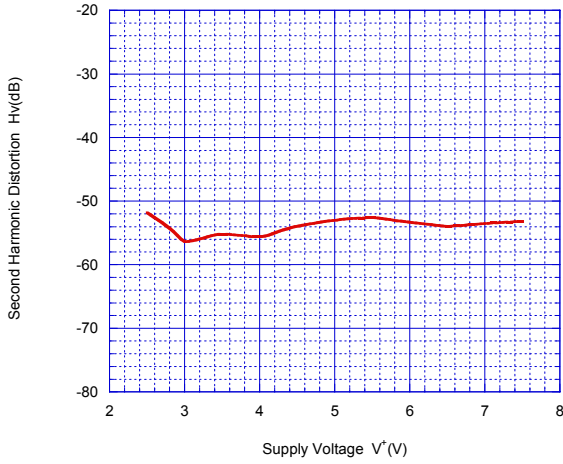

Voltage Gain vs. Supply Voltage

■TYPICAL CHARACTERISTICS

Low Pass Filter Characteristic1 vs. Supply Voltage
(Vin=4.5MHz/100kHz)

LPF Characteristic1 Gfy4.5M(dB) vs. Supply Voltage V$^+$(V)

Low Pass Filter Characteristic2 vs. Supply Voltage
(Vin=8MHz/100kHz)

LPF Characteristic2 Gfy8M(dB) vs. Supply Voltage V$^+$(V)

Low Pass Filter Characteristic3 vs. Supply Voltage
(Vin=16MHz/100kHz)

LPF Characteristic3 Gfy16M(dB) vs. Supply Voltage V$^+$(V)

Differential Gain vs. Supply Voltage

Differential Gain DG(%) vs. Supply Voltage V$^+$(V)

Differential Phase vs. Supply Voltage

Differential Phase DP(deg) vs. Supply Voltage V$^+$(V)

Signal to Noise Ratio vs. Supply Voltage

Signal to Noise Ratio SNv(dB) vs. Supply Voltage V$^+$(V)

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■**TYPICAL CHARACTERISTICS**

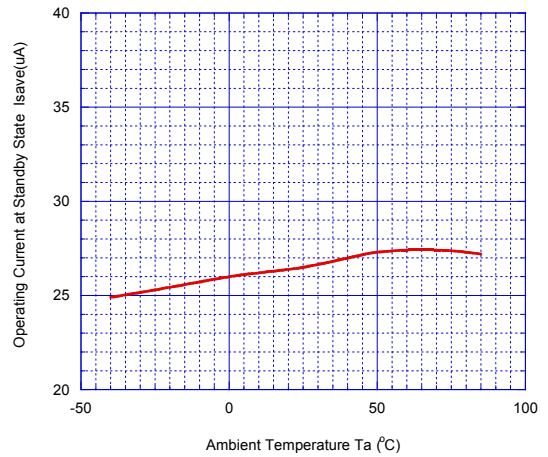**Second Harmonic Distortion vs. Supply Voltage**

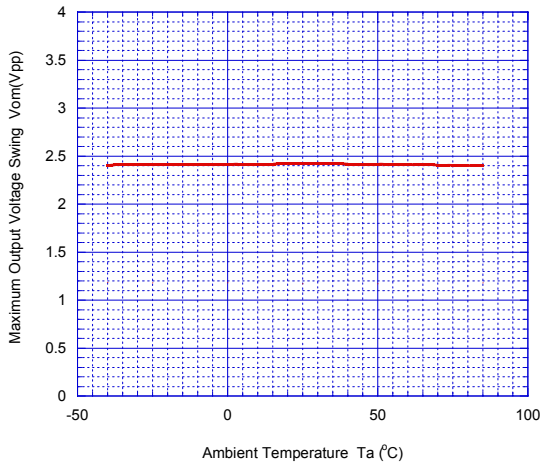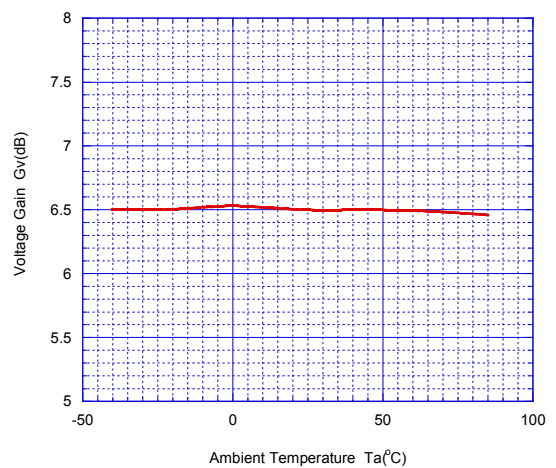**Switching Voltage vs. Supply Voltage**
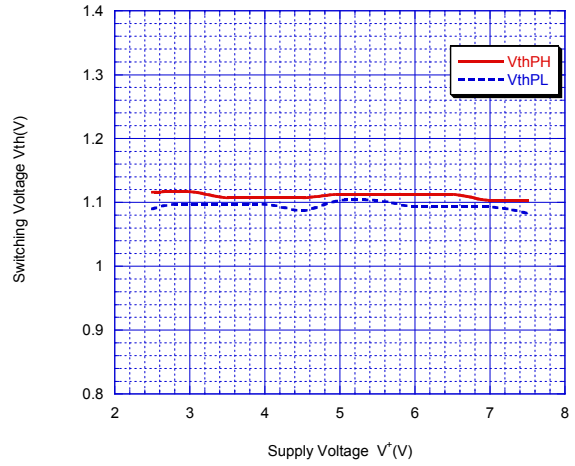
Operating Current vs. Temperature
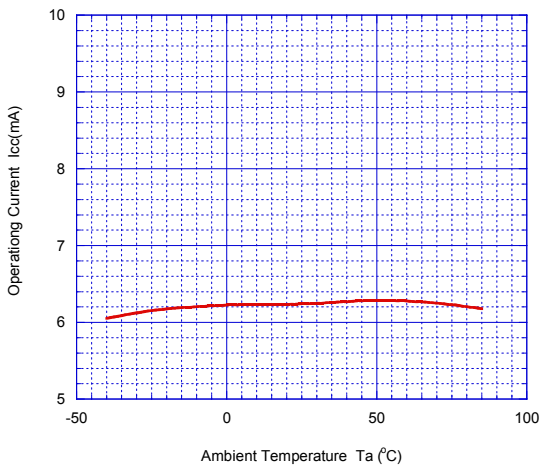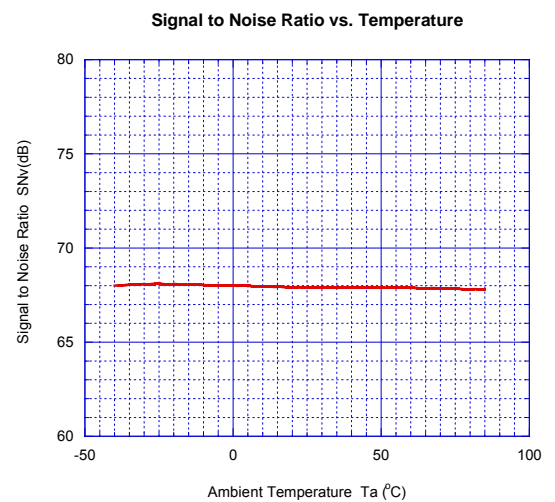

Operating Current at Standby State vs. Temperature

Maximum Output Voltage Swing vs. Temperature
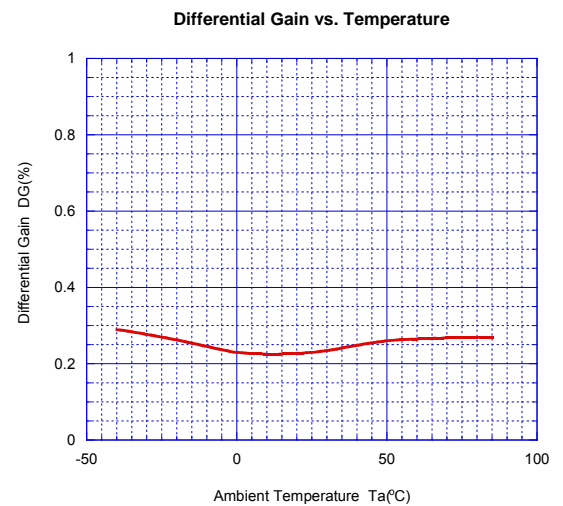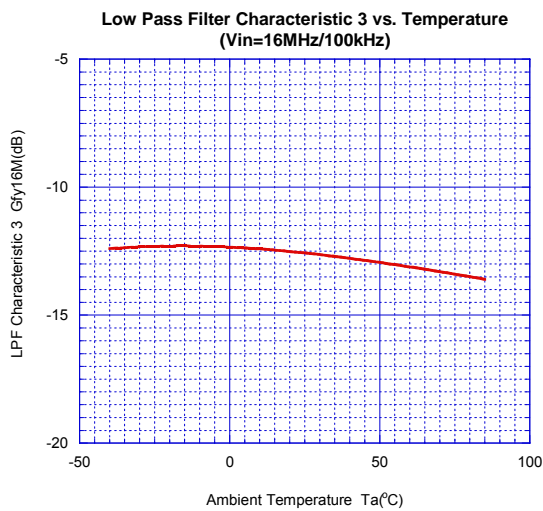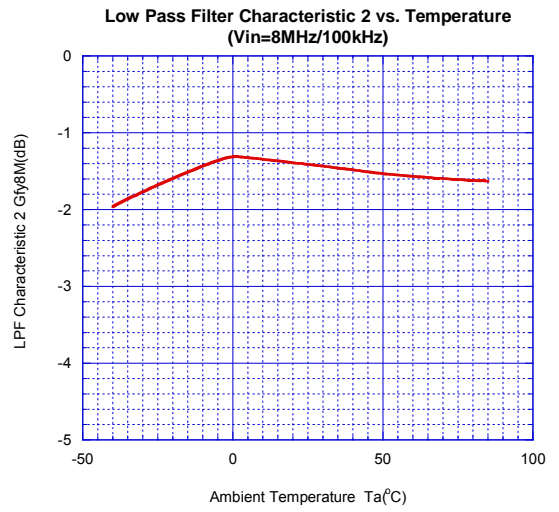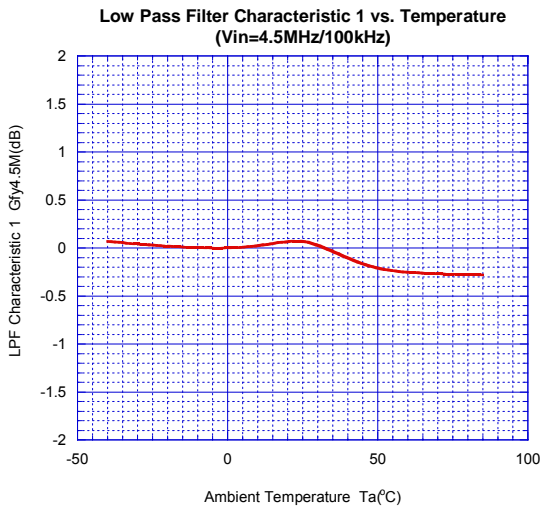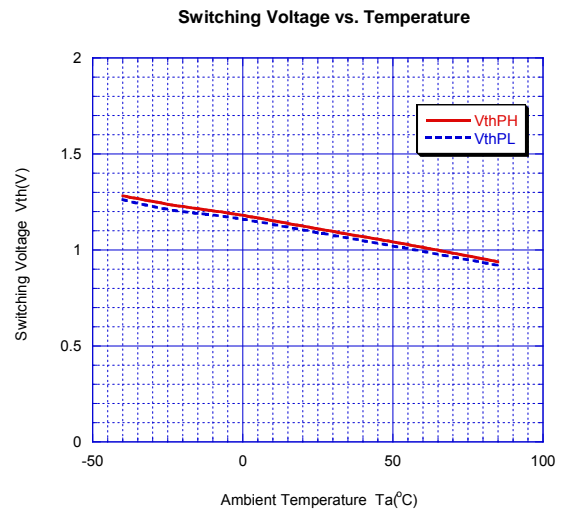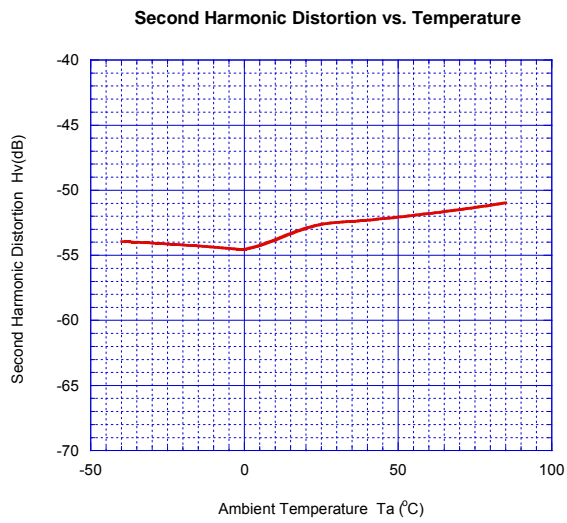

Voltage Gain vs. Temperature

■**TYPICAL CHARACTERISTICS**

Low Pass Filter Characteristic 1 vs. Temperature
(Vin=4.5MHz/100kHz)

Low Pass Filter Characteristic 2 vs. Temperature
(Vin=8MHz/100kHz)

Low Pass Filter Characteristic 3 vs. Temperature
(Vin=16MHz/100kHz)

Differential Gain vs. Temperature

Differential Phase vs. Temperature

Signal to Noise Ratio vs. Temperature

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■**TYPICAL CHARACTERISTICS**

Second Harmonic Distortion vs. Temperature

Switching Voltage vs. Temperature
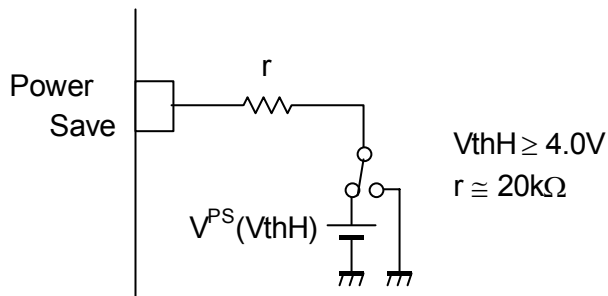
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■ APPLICATION

When you use a power save terminal more than by 4.0V, please put resistance of about 20kΩ into a power save terminal.
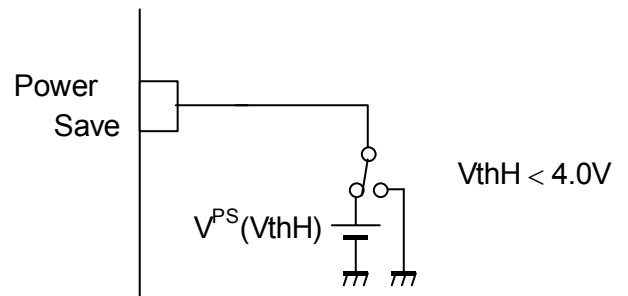
In addition, power save terminal voltage (VthH) -- in the case of below 4.0V, resistance is not required

Example)

● PS(VthH) $\geq$ 4.0V　　　　　　　　　　　　● PS(VthH) $<$ 4.0V

Power Save

r

V^{PS}(VthH)

VthH $\geq$ 4.0V
r $\cong$ 20kΩ

Power Save

V^{PS}(VthH)

VthH $<$ 4.0V