

3ch VIDEO AMPLIFIER FOR COLOR DIFFERENCE SIGNAL

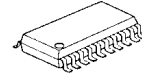
■GENERAL DESCRIPTION

The NJM2569 is a 3ch video amplifier for color difference signal (R-Y,B-Y).

It composes the output circuit of video items for color difference signal, because prepares clamp circuit, LPF, GCA.

Also it is suitable for portable items because of power save circuit.

■OUTLINE PACKAGE

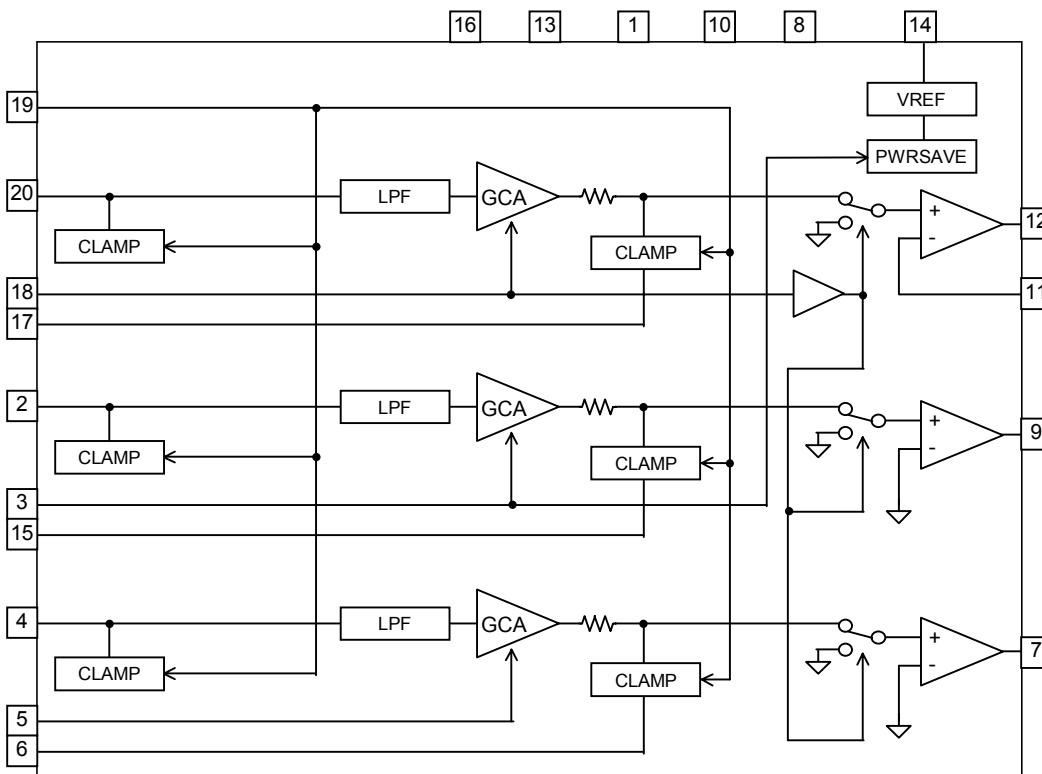


NJM2569V

■FEATURES

- Operating Voltage 4.5 to 5.5V
- Operating Current 17.0mA typ. at Vcc1=4.8V
7.0mA typ. at Vcc2=4.8V
- Operating Current at Power Save 1.5mA typ. at Vcc1=4.8V
5.0uA typ. at Vcc2=4.8V
- Internal Low Pass Filter
- Internal Gain Control Amplifier
- Bipolar Technology
- Package Outline SSOP20

■BLOCK DIAGRAM



PIN FUNCTION

- 1.Vcc1
- 2.Cb in
- 3.GCA CTL2
- 4.Cr in
- 5.GCA CTL3
- 6.CLAMP3
- 7.Cr out
- 8.GND1
- 9.Cb out
- 10.GND2(Driver)
- 11.Y_{SAG}
- 12.Yout
- 13.Vcc2(Driver)
- 14.Vref
- 15.CLAMP2
- 16.NC
- 17.CLAMP1
- 18.GCA CTL1
- 19.CP
- 20.Yin

■ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	Vcc	7.0	V
Power Dissipation	P _D	300	mW
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +125	°C

■RECOMMENDED OPERATING CONDITIONS

(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Voltage	Vopr	Vcc1,Vcc2-GND1,GND2	4.5	4.8	5.5	V

■ELECTRICAL CHARACTERISTICS (Vcc1=4.8V,Vcc2=4.8V,RL=75Ω,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current 1	Icc1	Vcc1	-	17.0	27.0	mA
Operating Current 2	Icc2	Vcc2	-	7.0	12.0	mA
Operating Current at Power Save 1	Icc1ps	Vcc1, At Power Save	-	1.5	5.0	mA
Operating Current at Power Save 2	Icc2ps	Vcc2, At Power Ssave	-	5.0	100.0	uA

[Y Amplifier Characteristics]

Voltage Gain 1	G _{Vy1}	Y _{IN} →Y _{OUT} , GCACTL1=0.5V, 0.5Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	-2.6	0.4	3.4	dB
Voltage Gain 2	G _{Vy2}	Y _{IN} →Y _{OUT} , GCACTL1=1.3V, 0.5Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	3.3	6.3	9.3	dB
Voltage Gain 3	G _{Vy3}	Y _{IN} →Y _{OUT} , GCACTL1=2.5V, 0.5Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	8.2	11.2	14.2	dB

[Cb Amplifier Characteristics]

Voltage Gain 1	G _{Vcb1}	Cb _{IN} →Cb _{OUT} , GCACTL2=0.5V, 0.35Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	-2.6	0.4	3.4	dB
Voltage Gain 2	G _{Vcb2}	Cb _{IN} →Cb _{OUT} , GCACTL2=1.3V, 0.35Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	3.3	6.3	9.3	dB
Voltage Gain 3	G _{Vcb3}	Cb _{IN} →Cb _{OUT} , GCACTL2=2.5V, 0.35Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	8.2	11.2	14.2	dB

[Cr Amplifier Characteristics]

Voltage Gain 1	G _{Vcr1}	Cr _{IN} →Cr _{OUT} , GCACTL3=0.5V, 0.35Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	-2.6	0.4	3.4	dB
Voltage Gain 2	G _{Vcr2}	Cr _{IN} →Cr _{OUT} , GCACTL3=1.3V, 0.35Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	3.3	6.3	9.3	dB
Voltage Gain 3	G _{Vcr3}	Cr _{IN} →Cr _{OUT} , GCACTL3=2.5V, 0.35Vpp, Input Sine Wave Video Signal (100kHz, 0.35Vpp Sine Wave)	8.2	11.2	14.2	dB

[GCA Control Signal]

GCACTL	V _{GH}	GCACTL1,2,3 Input control voltage range	0.5	-	Vcc	V
	V _{GL}	MUTE change value	0	-	0.3	

■ELECTRICAL CHARACTERISTICS (Vcc1=4.8V,Vcc2=4.8V,RL=75Ω,Ta=25°C)

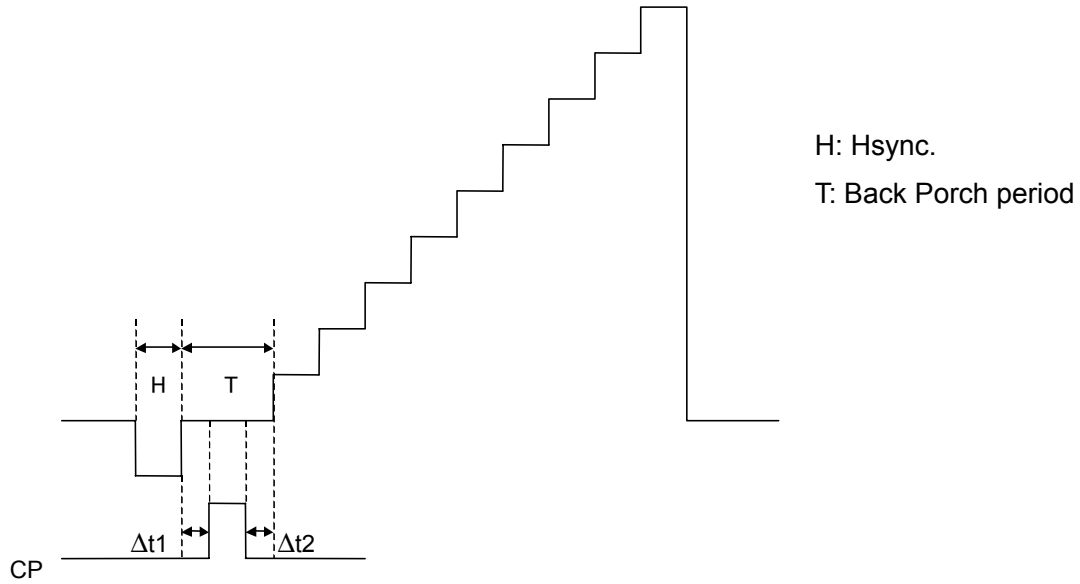
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
[Filter Characteristics]						
LPF(Y _{IN} →Y _{OUT})	Gf _{Y6.75M}	6.75MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-3.0	-1.0	-	dB
	Gf _{Y12M}	12MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-	-3.0	-	dB
	Gf _{Y27M}	27MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-	-40.0	-15.0	dB
LPF(Cb _{IN} →Cb _{OUT})	Gf _{Cb6.75M}	6.75MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-3.0	-1.0	-	dB
	Gf _{Cb27M}	27MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-	-40.0	-15.0	dB
LPF(Cr _{IN} →Cr _{OUT})	Gf _{Cr6.75M}	6.75MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-3.0	-1.0	-	dB
	Gf _{Cr27M}	27MHz/100kHz, input sine wave video signal (100mVpp sine wave)	-	-40.0	-15.0	dB
[Crosstalk Characteristics]						
Crosstalk 1	CT1	Input Red Field Signal(3.58MHz) to Y _{IN} . Measure Cr _{OUT} /Y _{OUT} .	-	-50	-	dB
Crosstalk 2	CT2	Input Red Field Signal(3.58MHz) to Y _{IN} . Measure Cb _{OUT} /Y _{OUT} .	-	-50	-	dB
Crosstalk 3	CT3	Input Red Field Signal(3.58MHz) to Cb _{IN} . Measure Y _{OUT} /Cb _{OUT} .	-	-50	-	dB
Crosstalk 4	CT4	Input Red Field Signal(3.58MHz) to Cb _{IN} . Measure Cr _{OUT} /Cb _{OUT} .	-	-50	-	dB
Crosstalk 5	CT5	Input Red Field Signal(3.58MHz) to Cr _{IN} . Measure Y _{OUT} /Cr _{OUT} .	-	-50	-	dB
Crosstalk 6	CT6	Input Red Field Signal(3.58MHz) to Cr _{IN} . Measure Cb _{OUT} /Cr _{OUT} .	-	-50	-	dB
MUTE Crosstalk 1	MCT1	Input Red Field Signal(3.58MHz) to Y _{IN} . Measure ratio of Y _{IN} to Y _{OUT} at MUTE.	-	-50	-	dB
MUTE Crosstalk 2	MCT2	Input Red Field Signal(3.58MHz) to Cb _{IN} . Measure ratio of Cb _{IN} to Cb _{OUT} at MUTE.	-	-50	-	dB
MUTE Crosstalk 3	MCT3	Input Red Field Signal(3.58MHz) to Cr _{IN} . Measure ratio of Cr _{IN} to Cr _{OUT} at MUTE.	-	-50	-	dB
[S/N Ratio]						
Y System S/N	SN _Y	Band width 100kHz to 6MHz, RL=75Ω, Input 100% White Video Signal. Measure Y _{OUT} .	-	-55	-	dB
Cb System S/N	SN _{Cb}	Band width 100kHz to 6MHz, RL=75Ω, Input 100% White Video Signal. Measure Cb _{OUT} .	-	-55	-	dB
Cr System S/N	SN _{Cr}	Band width 100kHz to 6MHz, RL=75Ω, Input 100% White Video Signal. Measure Cr _{OUT} .	-	-55	-	dB
[CP Signal *]						
CP Input Change Voltage	VCP _H	ON level	2.4	-	Vcc	V
	VCP _L	OFF level	0	-	0.8	

NJM2569

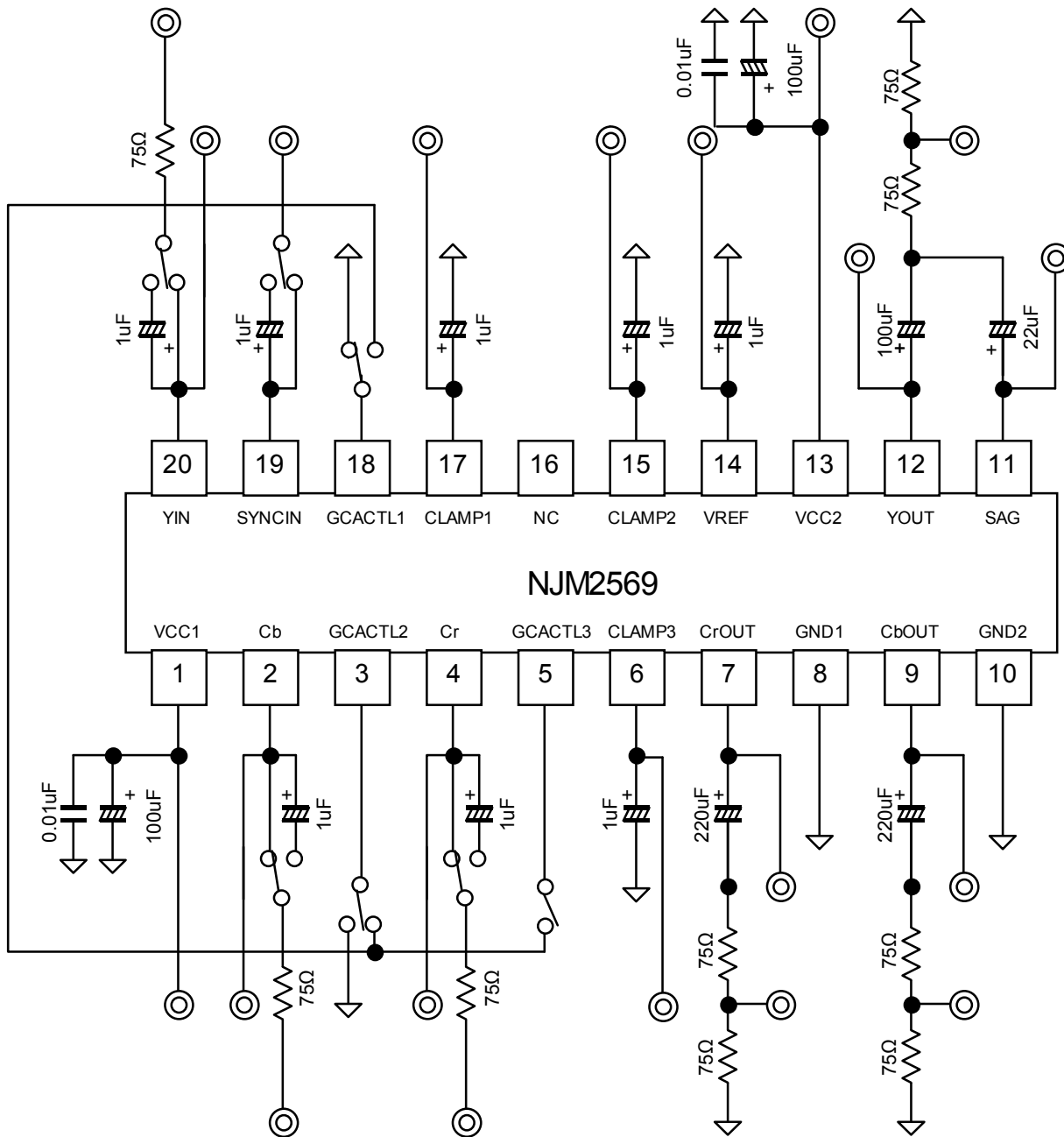
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*CP Input

Don't put CP signal on Sync signal and picture period. Keep margin of 0.2uS over of $\Delta t1$ and $\Delta t2$.

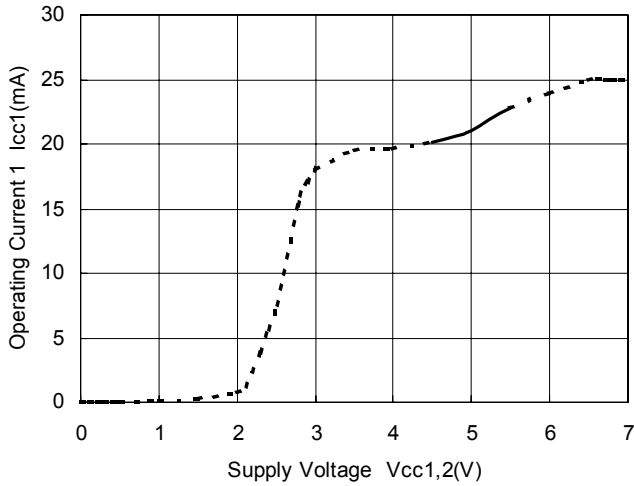


TEST CIRCUIT

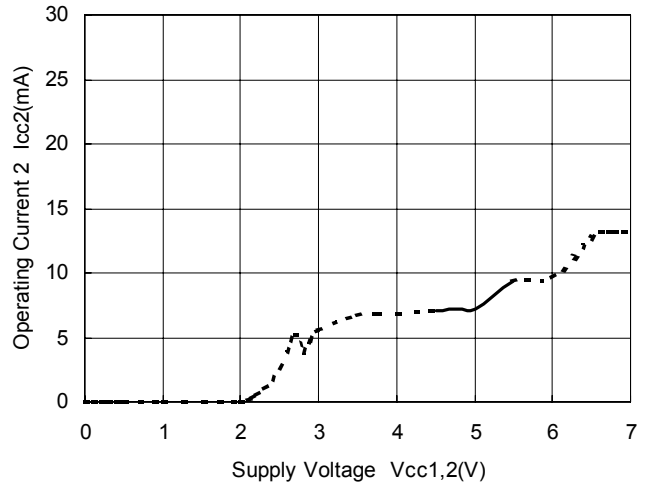


■ TYPICAL CHARACTERISTICS

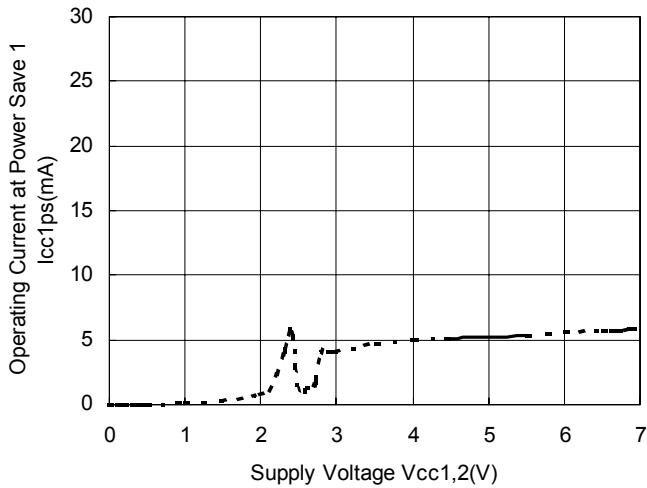
Operating Current 1 vs. Supply Voltage
(Ta=25°C)



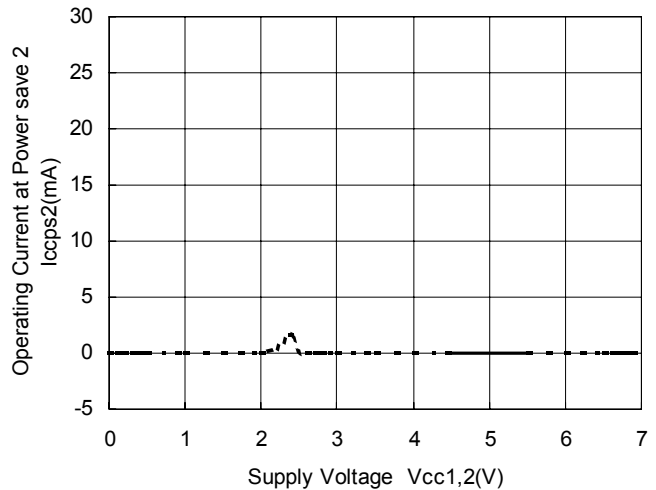
Operating Current 2 vs. Supply Voltage
(Ta=25°C)



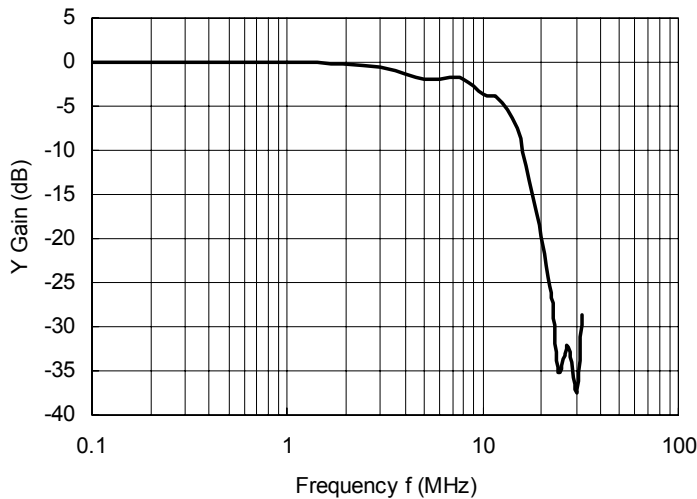
Operating Current at Power Save 1 vs. Supply Voltage
(Ta=25°C)



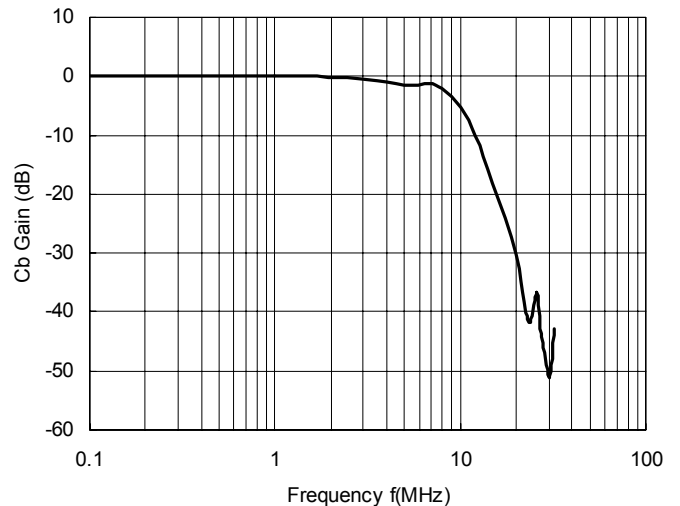
Operating Current at Power Save 2 vs. Supply Voltage
(Ta=25°C)



Y System Filter Characteristics
(Vcc=4.8V)

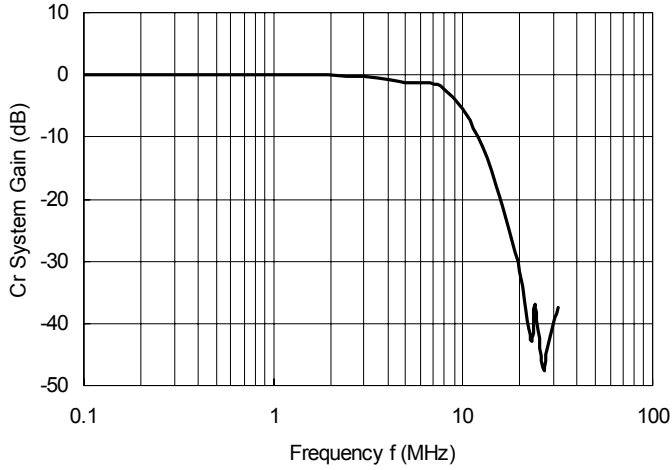


Cb System Filter Characteristics
(Vcc=4.8V)

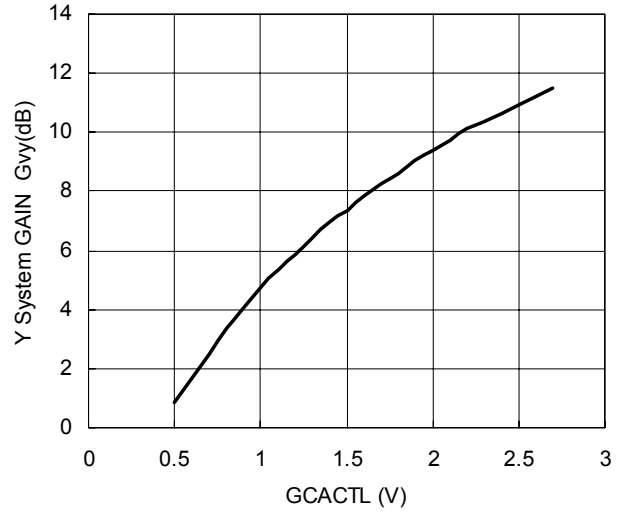


■ TYPICAL CHARACTERISTICS

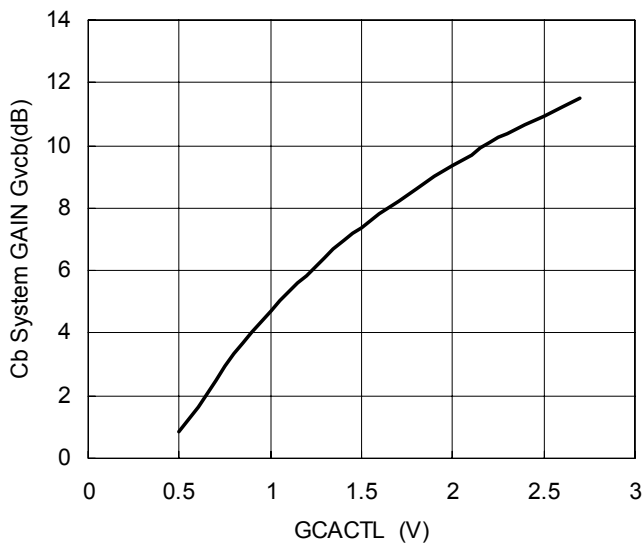
Cr System Filter Characteristics
(Vcc=4.8V)



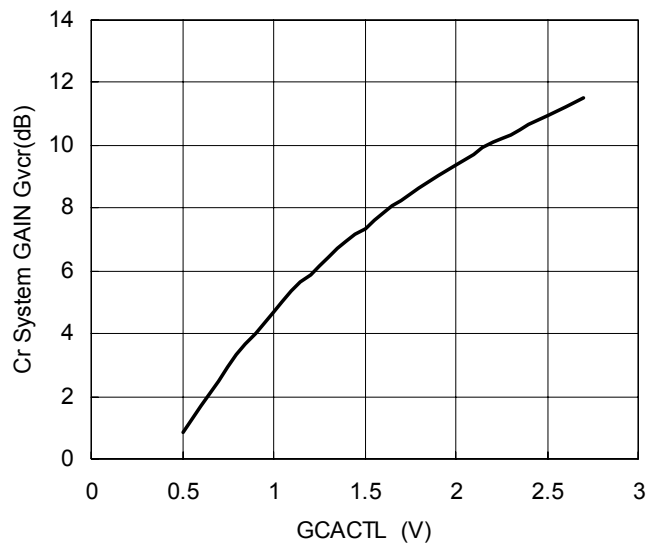
Y System GAIN vs. GCACTL
(Vcc=4.8V)



Cb System GAIN vs. GCACTL
(Vcc=4.8V)



Cr System GAIN vs. GCACTL
(Vcc=4.8V)



MEMO

[CAUTION]

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