3ch VIDEO AMPLIFIER FOR COLOR DIFFERENCE SIGNAL

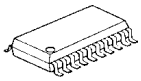
■GENERAL DESCRIPTION

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

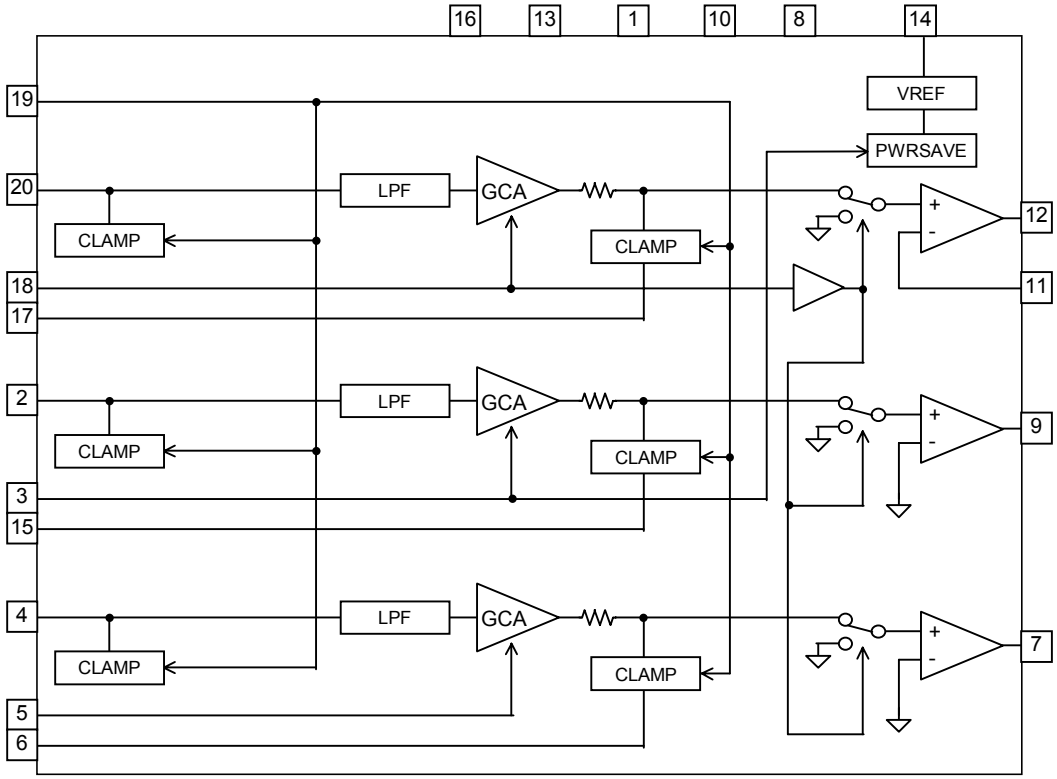


NJM2569V

■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)

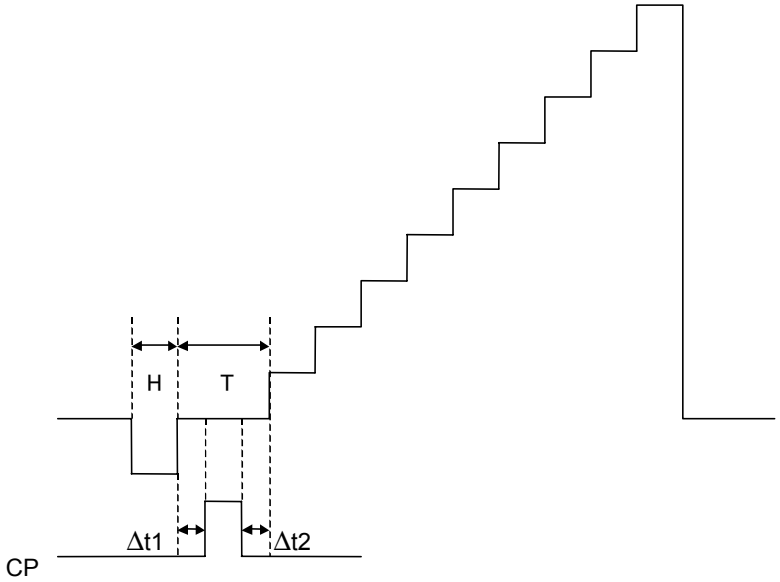
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current 1	Icc1	Vcc1	-	17.0	27.0	mA
Operating Current 2	Icc2	Vcc2	-	7.0	12.0	mA
Operating Current at Power Save 1	Icc1ps	Vcc1, At Power Save	-	1.5	5.0	mA
Operating Current at Power Save 2	Icc2ps	Vcc2, At Power Ssave	-	5.0	100.0	uA
[Y Amplifier Characteristics]						
Voltage Gain 1	Gv_Y1	$Y_{IN}\rightarrow Y_{OUT}$, 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	Gv_Y2	$Y_{IN}\rightarrow Y_{OUT}$, 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	Gv_Y3	$Y_{IN}\rightarrow Y_{OUT}$, 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	$Gv_{Cb}1$	$Cb_{IN}\rightarrow Cb_{OUT}$, 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	$Gv_{Cb}2$	$Cb_{IN}\rightarrow Cb_{OUT}$, 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	$Gv_{Cb}3$	$Cb_{IN}\rightarrow Cb_{OUT}$, 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	$Gv_{Cr}1$	$Cr_{IN}\rightarrow Cr_{OUT}$, 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	$Gv_{Cr}2$	$Cr_{IN}\rightarrow Cr_{OUT}$, 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	$Gv_{Cr}3$	$Cr_{IN}\rightarrow Cr_{OUT}$, 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	

*CP Input

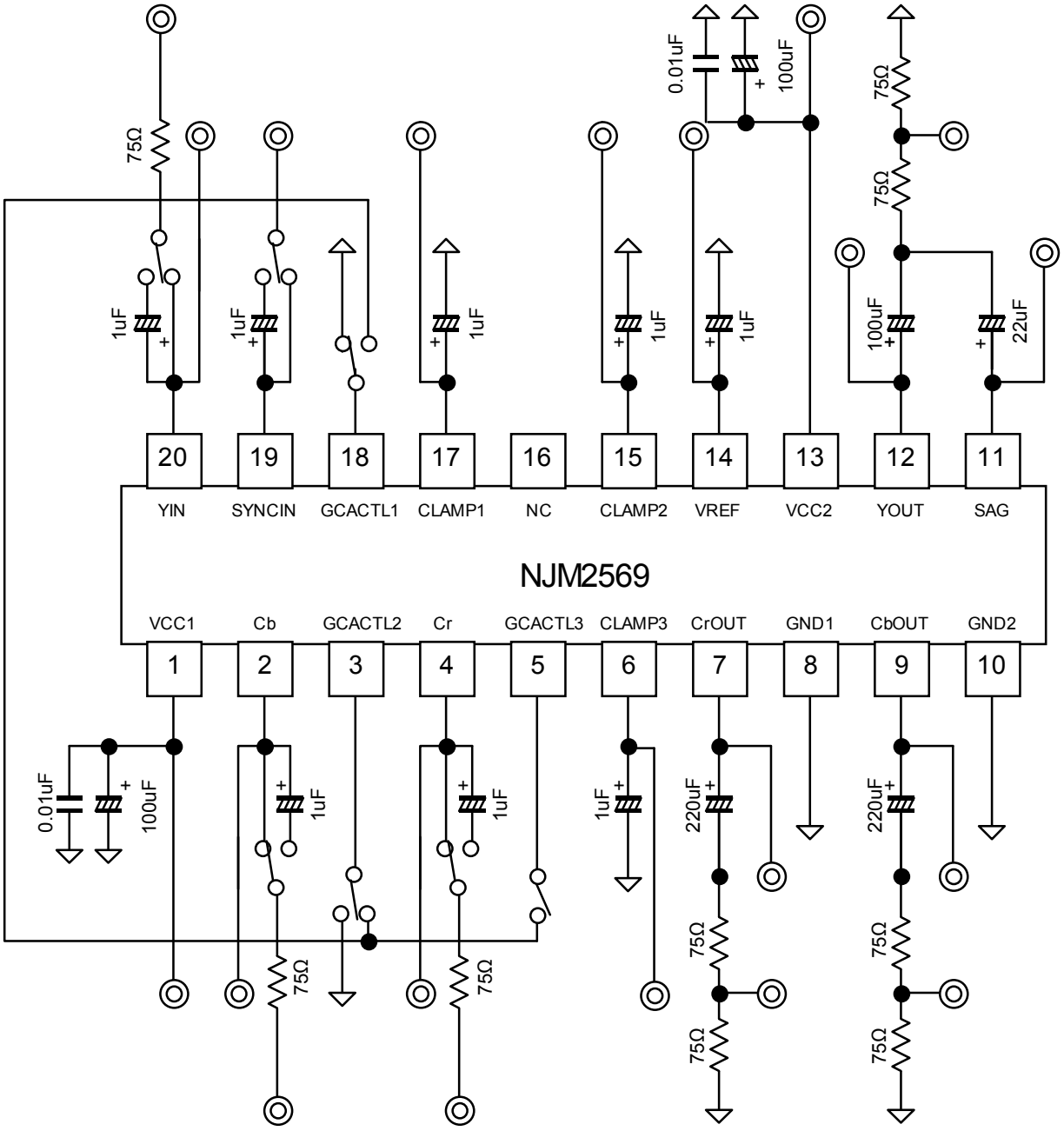
Don’t put CP signal on Sync signal and picture period. Keep margin of 0.2uS over of ∆t1 and ∆t2.



H: Hsync.

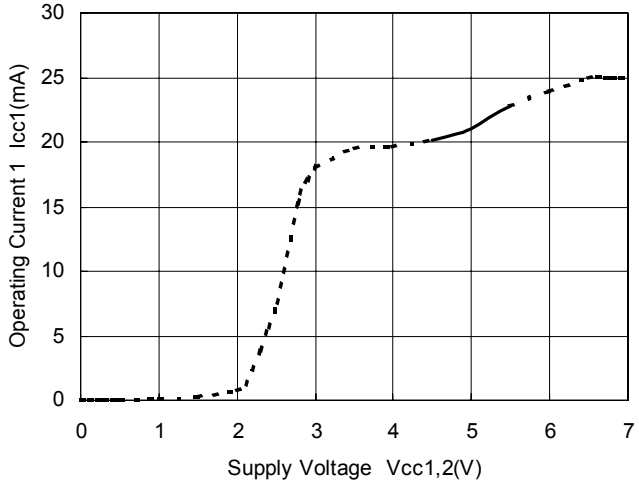
T: Back Porch period

■TEST CIRCUIT

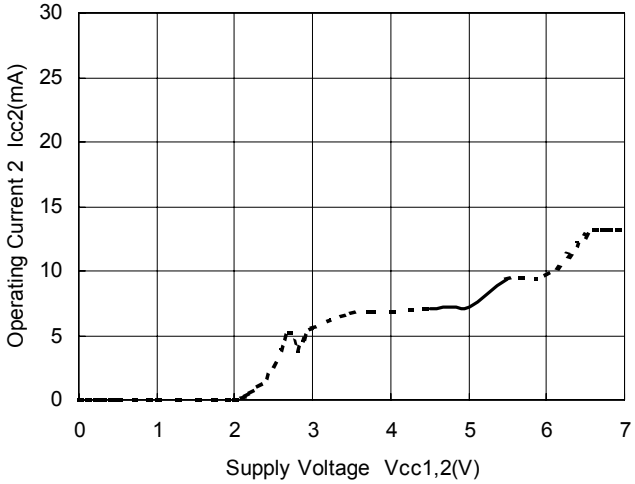


■TYPICAL CHARACTERISTICS

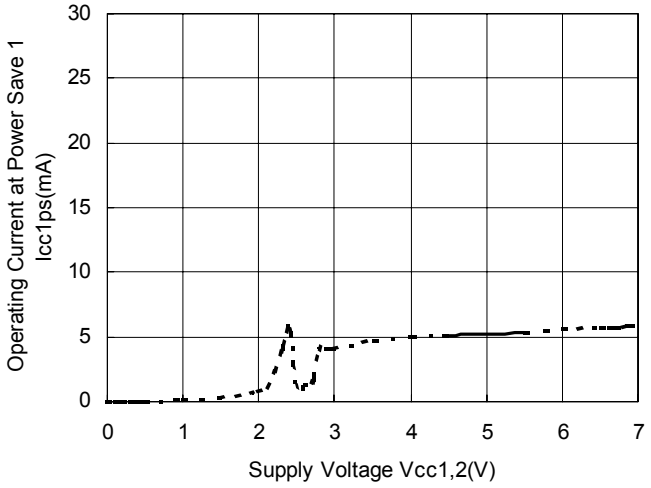
Operating Current 1 vs. Supply Voltage
(Ta=25°C)



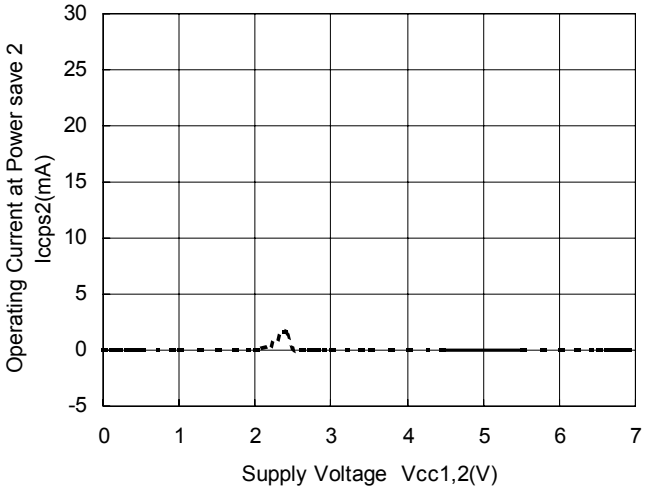
Operating Current 2 vs. Supply Voltage
(Ta=25°C)



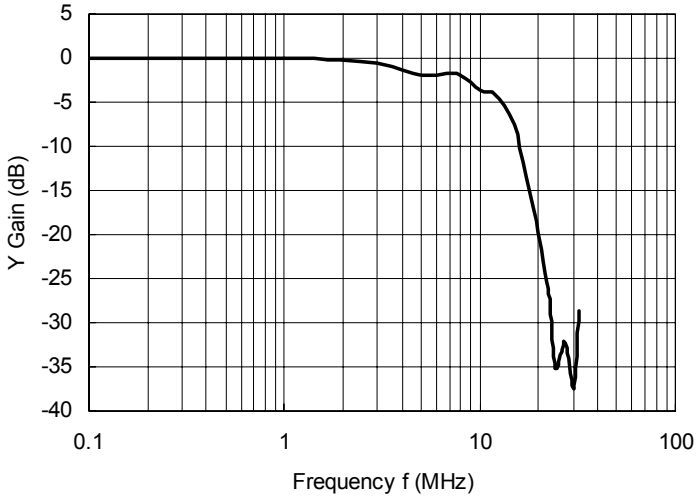
Operating Current at Power Save 1 vs. Supply Voltage
(Ta=25°C)



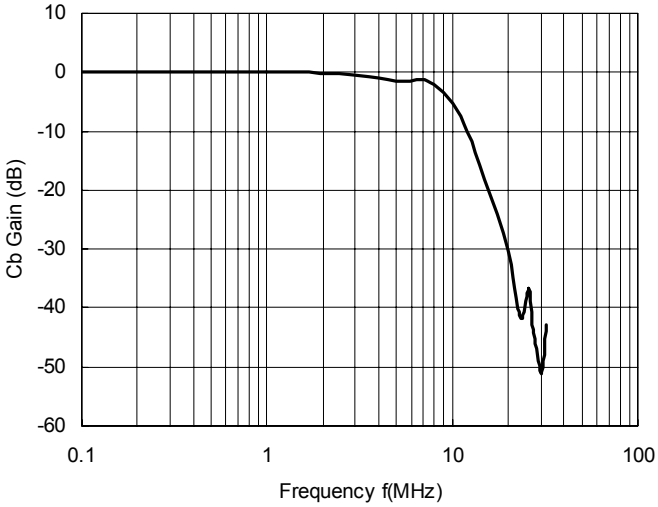
Operating Current at Power Save 2 vs. Supply Voltage
(Ta=25°C)



Y System Filter Characteristics
(Vcc=4.8V)

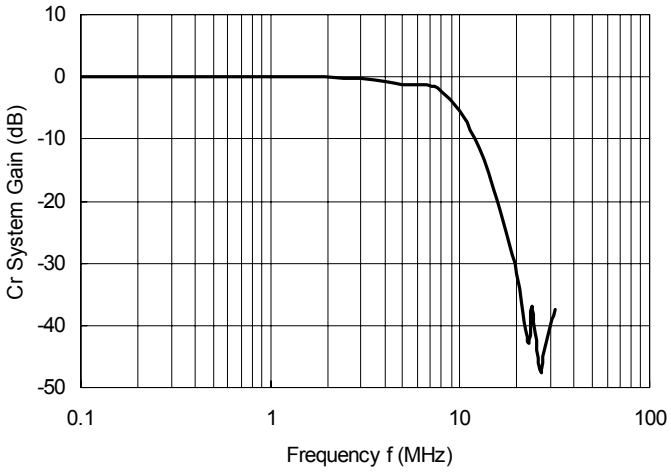


Cb System Filter Characteristics
(Vcc=4.8V)

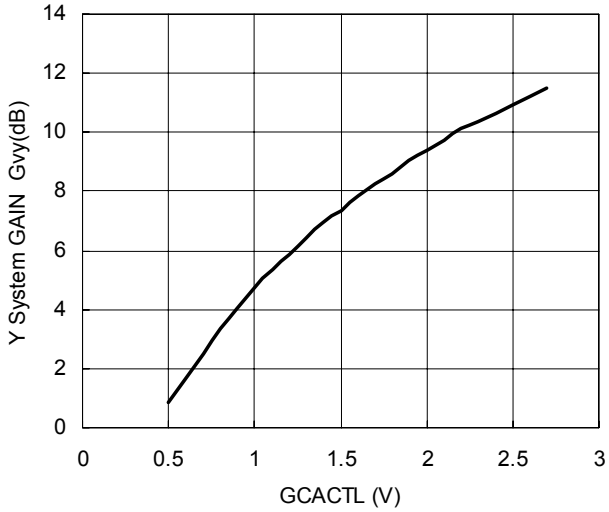


■TYPICAL CHARACTERISTICS

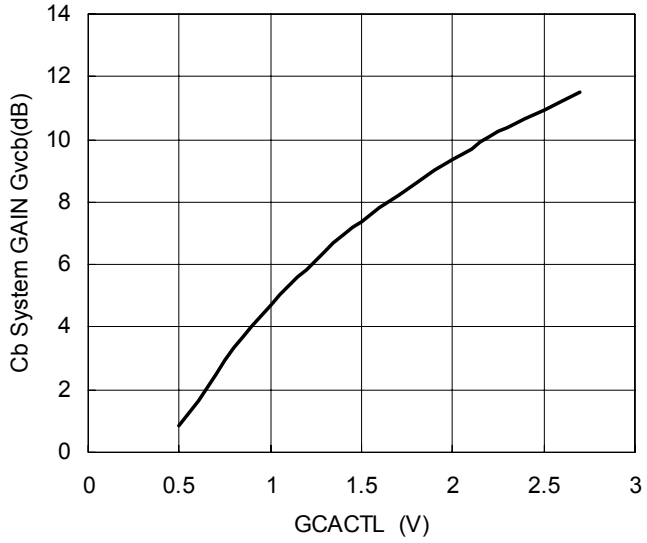
Cr System Filter Characteristics
(Vcc=4.8V)



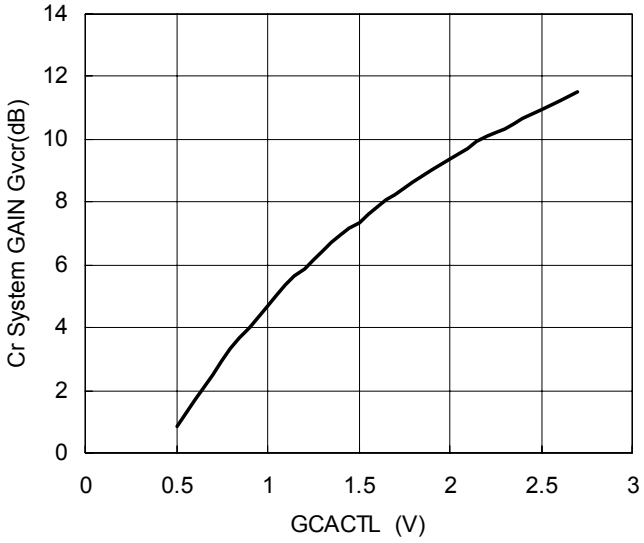
Y System GAIN vs. GCACTL
(Vcc=4.8V)



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



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



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