

75Ω Driver with Filter and Y/C MIX

■ GENERAL DESCRIPTION

NJM2570A is a video amplifier included LPF in Y and C system. Adjustable LPF characteristic with external resistor and output with 75ohm driver optimize the TV monitor system.

Also, it can discriminated the aspect ratio of TV by internal DC interface for S terminal.

NJM2570A includes power save circuit to suitable for portable video application.

■ PACKAGE OUTLINE

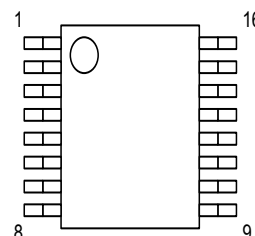


NJM2570AV

■ FEATURES

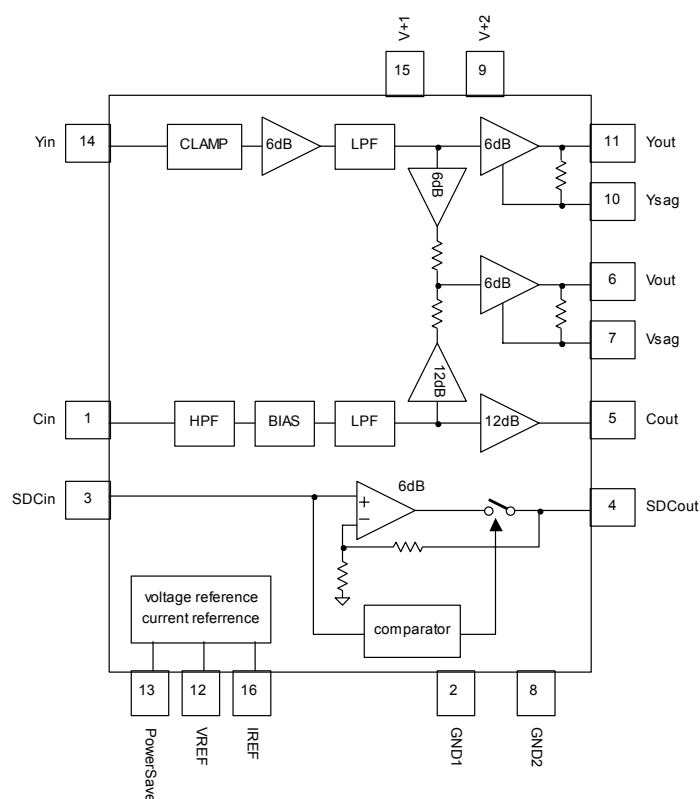
- Operating Voltage 4.5 to 5.5V
- Input Y and C 0.5Vpp
- Internal LPF
 - 0dBtyp. at 4MHz (at IREF=33kΩ)
 - 35dBtyp. at 10MHz (at IREF=33kΩ)
 - 0dBtyp. at 6MHz (at IREF=22kΩ)
 - 40dBtyp. at 16MHz (at IREF=22kΩ)
- Internal DC Interface for aspect ratio discrimination
- Bipolar technology
- Package Outline SSOP16

■ PIN CONFIGURATION



1. Cin
2. GND
3. SDCin
4. SDCout
5. Cout
6. Vout
7. Vsag
8. GND2
9. V+2
10. Ysag
11. Yout
12. VREF
13. POWERSAVE
14. Yin
15. V+1
16. IREF

■ BLOCK DIAGRAM



NJM2570A

■ ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	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 OPEARATING CONDITION(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	MIN.	TYP.	MAX.	UNIT
Operating Voltage 1	Vopr1	V ⁺ 1	4.5	5.0	5.5	V
Operating Voltage 2	Vopr2	V ⁺ 2	4.5	5.0	5.5	V

■ ELECTRICAL CHARACTERISTICS ($V^+1=V^+2=5.0V$, Powersave=1.8V, IREF=22k Ω , SDCin=open, SDCout=100k Ω , $R_L=150\Omega$, Input=ACgnd(75 Ω to GND), Ta=25°C at non-designation)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Circuit 1	I _{CC1}	V ⁺ 1=5.0V, No signal	-	10	18	mA
Operating Circuit 2	I _{CC2}	V ⁺ 2=5.0V, No signal	-	15	25	mA
Operating Circuit 1 at Power Save	I _{save1}	V ⁺ 1=5.0V, Power Save Mode	-	50	120	μ A
Operating Circuit 2 at Power Save	I _{save2}	V ⁺ 2=5.0V, Power Save Mode	-	0	120	μ A
Voltage Gain 1(Y Signal)	G _{vy}	Yin=100kHz, 0.5Vpp Input Sign signal	12.0	12.4	12.9	dB
Voltage Gain Difference 1 (Y Signal)	Δ G _{vyv}	Yin=100kHz, 0.5Vpp Input Sign signal, Measure the G _{vv3} =Vout/Yin. Δ G _{vyv} =G _{vv3} -G _{vy}	-0.5	0	+0.5	dB
Voltage Gain 1(C Signal)	G _{vc}	Cin=4.43MHz, 0.15Vpp Input Sign signal	12.5	13.5	14.5	dB
Voltage Gain Difference 2 (C Signal)	Δ G _{vcv}	Cin=4.43MHz, 0.15Vpp Input Sign signal, Measure the G _{vv2} =Vout/Cin. Δ G _{vcv} =G _{vv2} -G _{vc}	-0.5	0	+0.5	dB
Voltage Gain 1(V Signal)	G _{vv}	Yin=100kHz, 0.5Vpp Input Sign signal	12.0	12.4	12.9	dB
Frequency Characteristics (Y Signal)	G _{fy1-1}	Yin=4MHz/100kHz, 0.5Vpp, Input Sine signal IREF=33k Ω	-3.0	0	1.0	dB
	G _{fy1-2}	Yin=10MHz/100kHz, 0.5Vpp, Input Sign signal IREF=33k Ω	-	-35	-30	
	G _{fy2-1}	Yin=6MHz/100kHz, 0.5Vpp, Input Sine signal IREF=22k Ω	-3.0	0	2.0	
	G _{fy2-2}	Yin=16MHz/100kHz, 0.5Vpp Input Sine signal, IREF=22k Ω	-	-40	-30	
Frequency Characteristics (C Signal)	G _{fc1-1}	Cin=4.43MHz-500kHz, 0.15Vpp Input Sine signal, IREF=33k Ω	-1.0	1.0	3.0	dB
	G _{fc1-2}	Cin=4.43MHz+500kHz, 0.15Vpp Input Sine signal, IREF=33k Ω	-5.0	-2.0	1.0	
	G _{fc1-3}	Cin=10MHz/4.43MHz, 0.15Vpp Input Sign signal, IREF=33k Ω	-	-35	-30	
	G _{fc2-1}	Cin=4.43MHz-500kHz, 0.15Vpp Input Sine signal, IREF=22k Ω	-1.0	0	1.0	
	G _{fc2-2}	Cin=4.43MHz+500kHz, 0.15Vpp Input Sine signal, IREF=22k Ω	-1.0	0	1.0	
	G _{fc2-3}	Cin=16MHz/4.43MHz, 0.15Vpp Input Sign Singal, IREF=22k Ω	-	-40	-30	
	G _{fc3}	Cin=1MHz/4.43MHz, 0.15Vpp Input Sign Signal, IREF=22k Ω	-	-1.5	-	
*1 Y/C Delay1	TdYC1	IREF=22k Ω	-	0	-	ns
*1 Y/C Delay2	TdYC2	IREF=33k Ω	-	0	-	ns
*1 Y Group Delay1	TdY1	IREF=22k Ω , 4.43MHz, Sign Signal	-	100	-	ns
*1 Y Group Delay2	TdY2	IREF=33k Ω , 4.43MHz, Sign Signal	-	155	-	ns
*1 C Group Delay1	TdC1	IREF=22k Ω , 4.43MHz, Sign Signal	-	100	-	ns
*1 C Group Delay2	TdC2	IREF=33k Ω , 4.43MHz, Sign Signal	-	155	-	ns

NJM2570A

■ **ELECTRICAL CHARACTERISTICS** ($V^+1=V^+2=5.0V$, Powersave=1.8V, IREF=22k Ω , SDCin=open, SDCout=100k Ω , $R_L=150\Omega$, Input=ACgnd(75 Ω to GND), Ta=25°C at non-designation)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Maximum Output Voltage Swing 1(Y Signal)	Voym	$V^+1=V^+2=4.5V$, Yin=100kHz, Sine Signal, THD=1%, $R_L=75\Omega$	1.2	1.5	-	Vp-p
Maximum Output Voltage Swing 1(C Signal)	Vocm	$V^+1=V^+2=4.5V$, Cin=4.43MHz, Sine Signal, THD=1%, $R_L=75\Omega$	1.05	1.85	-	Vp-p
Maximum Output Voltage Swing 1(V Signal)	Vovm	$V^+1=V^+2=4.5V$, Yin=100kHz, Sine Signal, THD=1%, $R_L=75\Omega$	1.2	1.4	-	Vp-p
*1 Differential Gain(V)	DGy	Yin=0.5Vpp, 10Step video signal, measure the Yout.	-	0.6	-	%
*1 Differential Phase(V)	DPy	Yin=0.5Vpp, 10Step video signal, measure the Yout.	-	0.6	-	deg
*1 Differential Gain(V)	DGv	Yin=0.5Vpp, Cin=0.15V, 10Step video signal, measure the Vout.	-	0.2	-	%
*1 Differential Phase(V)	DPv	Yin=0.5Vpp, Cin=0.15V, 10Step video signal, measure the Yout.	-	0.2	-	deg
SW Change Voltage High Level for Power Save	VcH	Active	1.8	-	V^+	V
SW Change Voltage High Level for Power Save	VcL	Non-active	0	-	0.3	
Crosstalk 1(Yin to Cout)	CTyc	Yin to Cout=20log(Cout/Yout) Yin=4.43MHz, 0.5Vpp Sine Signal, Cin=AC GND	-	-50	-40	dB
Crosstalk 2(Cin to Yout)	CTcy	Cin to Yout=20log(Yout/Cout) Cin=4.43MHz, 0.15Vpp Sine Signal, Yin=AC GND	-	-50	-40	dB
*1 S/N1(Y Signal)	SNy	Yin=50% White Video Signal, $R_L=75\Omega$ at Yout Bandwidth 100kHz to 6MHz	55	60	-	dB
*1 S/N2(C Signal)	SNc	Cin=100% Red Field Video Signal, $R_L=75\Omega$ at Cout Bandwidth 100Hz to 500kHz	55	60	-	dB
*1 S/N3(C Signal)	SNc2	Cin=100% Red Field Video Signal, $R_L=75\Omega$ at Cout Bandwidth 100Hz to 500kHz PM Noise	59	64	-	dB
*1 S/N4 (V Signal)	SNv	Yin=50% White Video Signal, $R_L=75\Omega$ at Vout Bandwidth 100kHz to 6MHz	53	57	-	dB
*1 S/N5(C→V Signal)	SNv2	Cin=100% Red Field Video Signal, $R_L=75\Omega$ at Cout Bandwidth 100Hz to 6MHz AM Noise	63	68	-	dB
*1 S/N6(C→V Signal)	SNcv	Cin=100% Red Field Video Signal, $R_L=75\Omega$ at Vout Bandwidth 100Hz to 6MHz PM Noise	59	64	-	dB
Total Harmonics Distortion (Y Signal)	THDy	$V^+1=V^+2=4.5V$, IREF=22k Ω , Yin=100kHz, 0.5Vpp sing signal	-	-	0.8	%
Total Harmonics Distortion (V Signal)	THDv	$V^+1=V^+2=4.5V$, IREF=22k Ω , Yin=100kHz, 0.5Vpp sign signal	-	-	0.8	%

■ **ELECTRICAL CHARACTERISTICS** ($V^+1=V^+2=5.0V$, Powersave=1.8V, IREF=22k Ω , SDCin=open, SDCout=100k Ω , $R_L=150\Omega$, Input=ACgnd(75 Ω to GND), Ta=25°C at non-designation)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
*1 2nd. Distortion 1 (Y Signal)	Hy	Yin=1MHz, 0.5Vpp, Sine Signal	-	-50	-40	dB
*1 2nd. Distortion 2 (C Signal)	Hc	Cin=4.43MHz, 0.15Vpp, Sine Signal	-	-50	-40	dB
*1 2nd. Distortion 3 (V Signal)	Hv1	Yin=1MHz, 0.5Vpp, Sine Signal	-	-47	-37	dB
2 nd . Distortion 4(V Signal)	Hv2	Yin=DC, Cin=4.43MHz, $V^+1=V^+2=4.7V$, Vout=1.275Vpp (Cout=0.91Vpp in Vout)	-	-50	-40	dB
SDC Voltage Gain	Gv SDC	SDCin=1.0V, $R_L=100k\Omega$	5.5	6.0	6.5	dB
SDC Maxim Output Voltage	Vom SDC	$R_L=100k\Omega$, $V^+1=V^+2=4.5V$ *2	3.6	-	-	V
Threshold Voltage for SDC Output Impedance	VthR SDC	Change Guarantee for SDC High Impedance	-	-	0.3	V
SDC Output Impedance	RSDC	SDCout at High Impedance	140	220	275	k Ω

*1 Limits are guaranteed by statistical analysis.

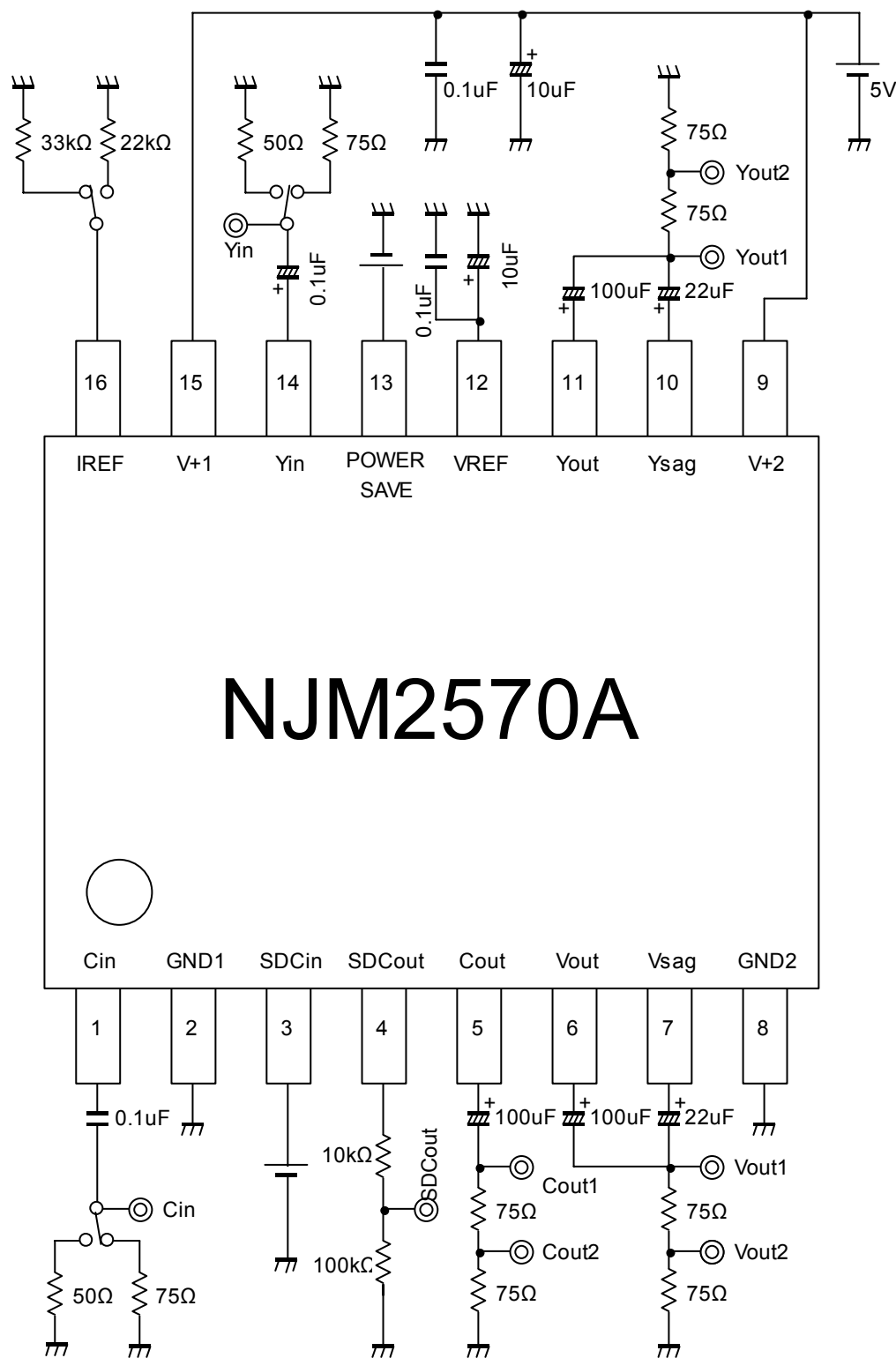
*2 Reference to the TEST CIRCUIT.

■ **CONTROL TERMINAL**

PARAMETER	CONTROL	NOTES
Power Save	H	Power Save: OFF
	L	Power Save: ON
	OPEN	Power Save: ON

NJM2570A

■ TEST CIRCUIT



[CAUTION]
The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative