

4CH VIDEO AMPLIFIER WITH SW&SD/ HD LPF

■ GENERAL DESCRIPTION

The **NJM2525** is 4ch video amplifier with SD/HD LPF.

The **NJM2525** includes 2in-1out selector for the composite and component signal. The isolation amplifier eliminates the common mode noise from external equipment.

The **NJM2525** is suitable for the AV equipment such as the home theater systems and AV receivers that switch the internal Video signal and the external Video signal.

■ PACKAGE OUTLINE

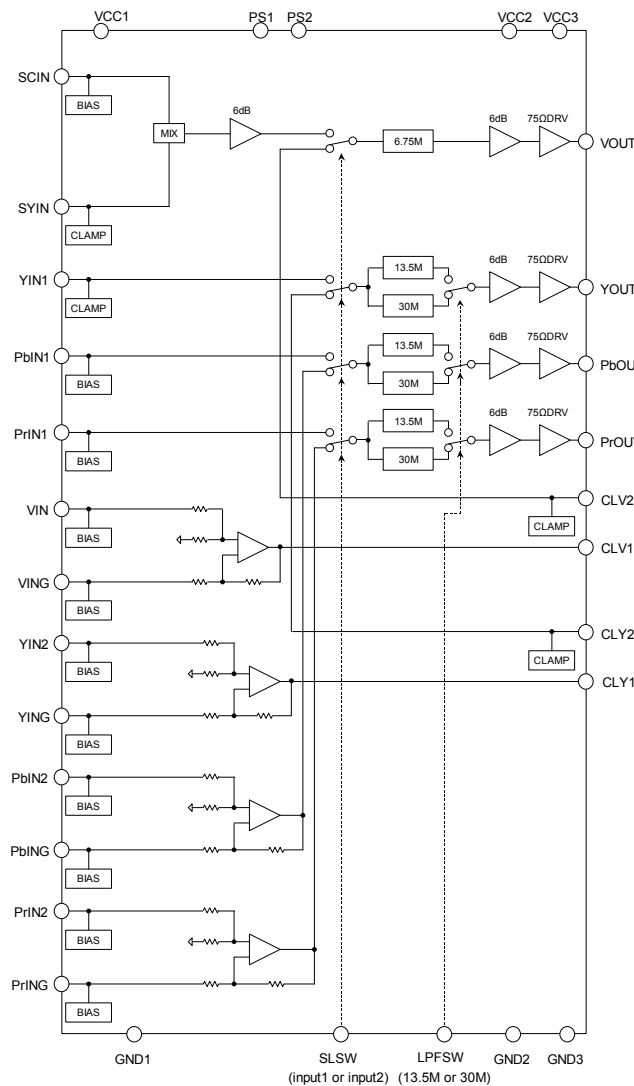


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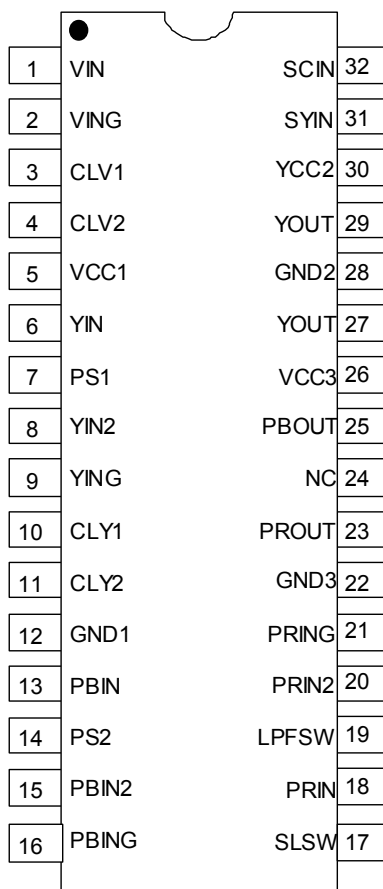
■ FEATURES

- Operating Voltage 4.5 to 5.5V
- SD/ HD LPF 6.75MHz/ 13.5MHz/ 30MHz
- 6dB amplifier
- 75Ω Driver Circuit
- Y/C MIX Circuit
- Isolation amplifier
- Power Save Circuit
- Bipolar Technology
- Package Outline SSOP32

■ BLOCK DIAGRAM



■ PIN CONFIGURATION (SSOP32)



No.	Symbol	Function	No.	Symbol	Function
1	VIN	V input	17	SLSW	Input control switch
2	VING	VGND input	18	PRIN	PR input
3	CLV1	V isolation output	19	LPFSW	LPF control switch
4	CLV2	V isolation input	20	PRIN2	PR input 2
5	VCC1	Power Supply Terminal 1	21	PRING	PRGND input
6	YIN	Y input	22	GND3	GND 3
7	PS1	Power Save 1	23	PROUT	PR output
8	YIN2	Y input 2	24	NC	No Connection
9	YING	YGND input	25	PBOUT	PB output
10	CLY1	Y isolation output	26	VCC3	Power Supply Terminal 3
11	CLY2	Y isolation input	27	YOUT	Y output
12	GND1	GND 1	28	GND2	GND 2
13	PBIN	PB input	29	VOUT	V output
14	PS2	Power Save 2	30	VCC2	Power Supply Terminal 2
15	PBIN2	PB input 2	31	SYIN	SY input
16	PBING	PBGND input	32	SCIN	SC input

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺	10.0	V
Power Dissipation	P _D	1250 (Note)	mW
Operating Temperature Range	T _{opr}	-40 to +85	°C
Storage Temperature Range	T _{stg}	-40 to +150	°C

(Note) 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	V _{opr}		4.5	5.0	5.5	V

■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V⁺=5V, R_L=150Ω)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I _{cc}	No Signal	-	50	65	mA
Operating Current at Power Save	I _{save}	Power Save Mode	-	0.6	1.2	mA
Maximum Output Voltage Swing	V _{om}	V _{in} =100kHz, Sine Signal, THD=1%	2.2	-	-	V _{p-p}
Voltage Gain1	G _{v1}	(Note 7)V _{in} =1MHz, 1.0V _{p-p} , Sine Signal	5.6	6.1	6.6	dB
Voltage Gain2	G _{v2}	(Note 3)V _{in} =3.58MHz,0.3V _{pp} ,Sine Signal	5.6	6.1	6.6	dB
Gain Difference Between channel	ΔG _{v1}	(Note 1) V _{in} =1MHz, 1.0V _{p-p} ,Sine Signal	-0.2	0	+0.2	dB
Low Pass Filter Characteristic 1	G _{fy} 6.75M	(Note 2) 6.75MHz/1MHz, 1.0V _{p-p} Sine Signal	-1.0	0	1.0	dB
	G _{fy} 108M	(Note 2) 108MHz/1MHz, 1.0V _{p-p} Sine Signal	-	-40.0	-24.0	dB
Low Pass Filter Characteristic 2	G _{fc} 6.75M	(Note 3)6.75MHz/3.58MHz, 0.3V _{p-p} Sine Signal	-1.0	0	1.0	dB
	G _{fc} 108M	(Note 3) 108MHz/3.58MHz, 0.3V _{p-p} Sine Signal	-	-40.0	-24.0	dB
Low Pass Filter Characteristic 3	G _{fSD} 13.5M	(Note 4) 13.5MHz/1MHz, 1.0V _{p-p} , Sine Signal	-1.0	0	1.0	dB
	G _{fSD} 108M	(Note 4) 108MHz/1MHz, 1.0V _{p-p} , Sine Signal	-	-40.0	-24.0	dB
Low Pass Filter Characteristic 4	G _{fHD} 30M	(Note 4) 30MHz/1MHz, 1.0V _{p-p} , Sine Signal	-1.0	0	1.0	dB
	G _{fHD} 148M	(Note 4) 148MHz/1MHz, 1.0V _{p-p} , Sine Signal	-	-40.0	-24.0	dB
Differential Gain	DG	(Note 5) V _{in} =1.0V _{p-p} , 10step Video Signal	-	0.5	-	%
Differential Phase	DP	(Note 5) V _{in} =1.0V _{p-p} , 10step Video Signal	-	0.5	-	deg
S/N Ratio1	SN1	(Note 2) V _{in} =1.0V _{p-p} , 100% White video signal, R _L =75Ω, 100KHz to 6MHz	-	70	-	dB
S/N Ratio2	SN2	(Note 4) V _{in} =1.0V _{p-p} , 100% White video signal, R _L =75Ω, 100KHz to 6MHz,	-	80	-	dB
S/N Ratio3	SN3	(Note 6) V _{in} =1.0V _{p-p} , 100% White video signal, R _L =75Ω, 100KHz to 6MHz,	-	75	-	dB
Common Mode Noise Rejection Ratio	CMR	(Note 4) V _{in} =20KHz,V _{in} =1V _{p-p} ,Sine Signal	-	-55	-	dB
Cross Talk	CT	V _{in} =4.43MHz,V _{in} =1V _{p-p} ,Sine Signal	-	-60	-	dB

(Note 1) YOUT/ PbOUT/ PrOUT (Note 2) SCIN,SYIN-VOUT

(Note 3) SCIN – VOUT (Note 4) YIN-YOUT,PbIN-PbOUT,PrIN-PrOUT

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(Note 5) SYIN – VOUT, YIN – YOUT (Note 6) VIN-VOUT, YIN2-YOUT, PbIN2-PbOUT, PrIN2-PrOUT

(Note 7) SYIN/VIN - VOUT, YIN1/YIN2 - YOUT, PbIN1/PbIN2 - PbOUT, PrIN1/PrIN2 - PrOUT

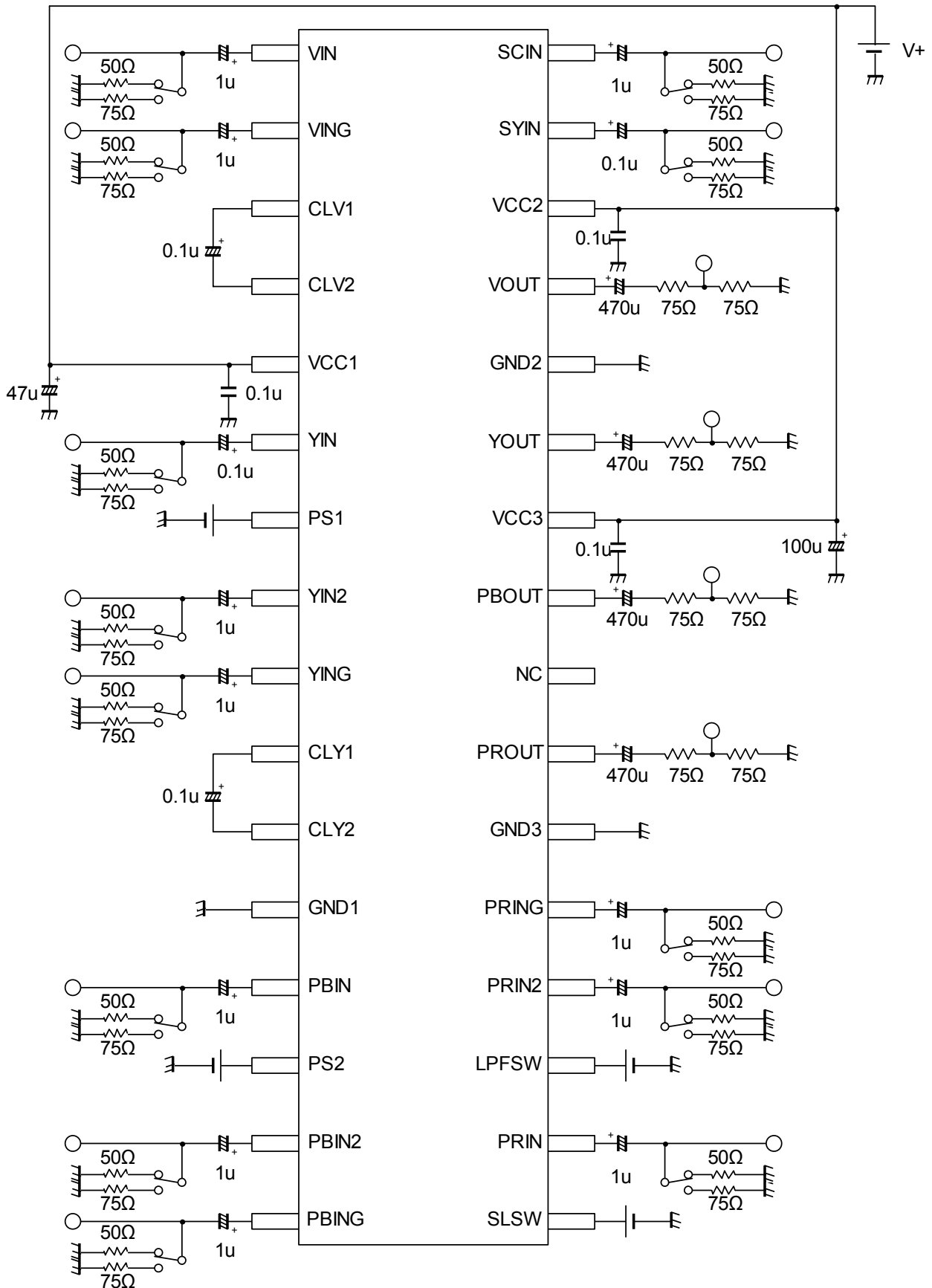
■ ELECTRICAL CHARACTERISTICS (Ta=25°C, V⁺= 5V, R_L=150Ω)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
SW Voltage High Level	VthH		2.0	-	V ⁺	V
SW Voltage Low Level	VthL		0	-	1.0	V
Switch inflow current High Level	IthH	V _{SLSW} =V _{LPFSW} =V _{PS1} =V _{PS2} =5V	-	-	120	μA
Switch inflow current Low Level	IthL	V _{SLSW} =V _{LPFSW} =V _{PS1} =V _{PS2} =0.3V	-	-	8.0	μA

■ CONTROL TERMINAL

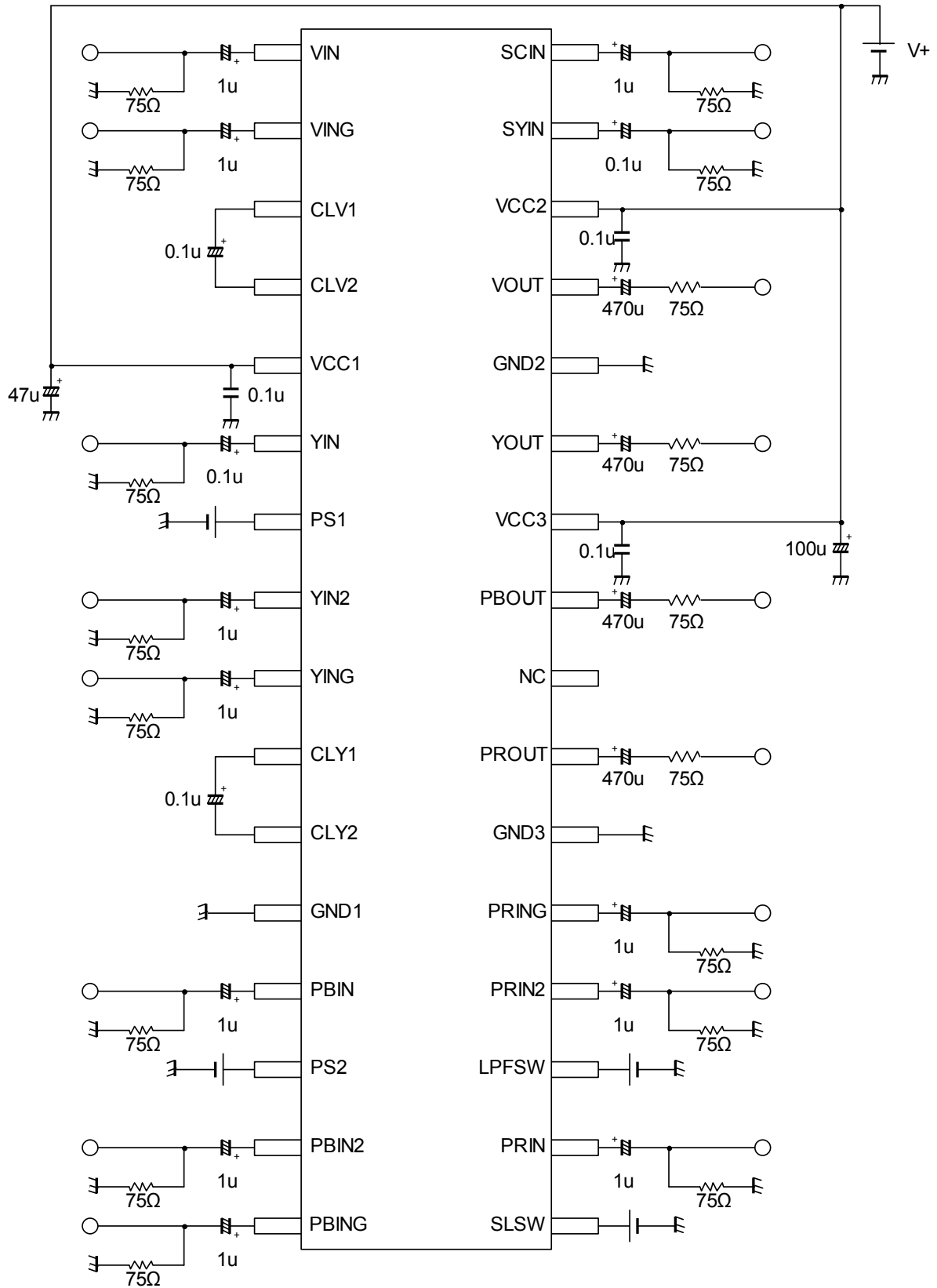
PARAMETER	STATUS	NOTE
PS1 (Power Save1)	H	(SY, V, SC) Power Save: OFF, Active
	L	(SY, V, SC) Power Save: ON, Mute
	OPEN	(SY, V, SC) Power Save: ON, Mute
PS2 (Power Save2)	H	(Y, Pb, Pr) Power Save: OFF, Active
	L	(Y, Pb, Pr) Power Save: ON, Mute
	OPEN	(Y, Pb, Pr) Power Save: ON, Mute
S L S W (Y/Pb/PrOUT)	H	YIN2/PbIN2/PrIN2/VIN
	L	YIN1/PbIN1/PrIN1/SCIN/SYIN
	OPEN	YIN1/PbIN1/PrIN1/SCIN/SYIN
L P F S W (L P F)	H	30MHz LPF
	L	13.5MHz LPF
	OPEN	13.5MHz LPF

MEASUREMENT CIRCUIT



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APPLICATION CIRCUIT



■ TERMINAL DESCRIPTION

PIN No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT	TERMINAL VOLTAGE
1 2 8 9 13 15 16 18 20 21 32	VIN VING YIN2 YING PBIN PBIN2 PBING PRIN PRIN2 PRING SCIN	V input VGND input Y input 2 YGND input PB input PB input2 PBGND input PR input PR input 2 PRGND input SC input		2.5V
3 10	CLV1 CLY1	V isolation output Y isolation output		2.5V
4 6 11 31	CLV2 YIN CLY2 SYIN	V isolation input Y input Y isolation input SY input		1.7V
7 14 17 19	PS1 PS2 SLSW LPFSW	Power Save 1 Power Save 2 Input control switch LPF control switch		-

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PIN No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT	TERMINAL VOLTAGE
23 25 27 29	PROUT PBOUT YOUT VOUT	PR output PB output Y output V output	<p>The diagram shows an equivalent circuit for the outputs. It consists of a differential pair of transistors. The top transistor's emitter is connected to a 5k resistor, which is in turn connected to a common output terminal. The bottom transistor's emitter is also connected to this common output terminal. The bases of both transistors are connected to a common node, which is connected to a diode. The other end of this diode is connected to another diode, which is connected to the common output terminal. The circuit is powered by V+ and GND.</p>	2.5V 2.5V 1.4V 1.4V

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