

6CH VIDEO AMPLIFIER FOR DVD

■GENERAL DESCRIPTION

The NJM2589 is a single supply voltage 6ch Video Amplifier. It includes 6dB amplifier and 75Ω driver, Low Pass Filter.

The input corresponds to the composite signal, the Y/C signal, and the component signal.

The NJM2589 is suitable for the DVD player and DVD recorder corresponding to the progressive video signal.

■PACKAGE OUTLINE

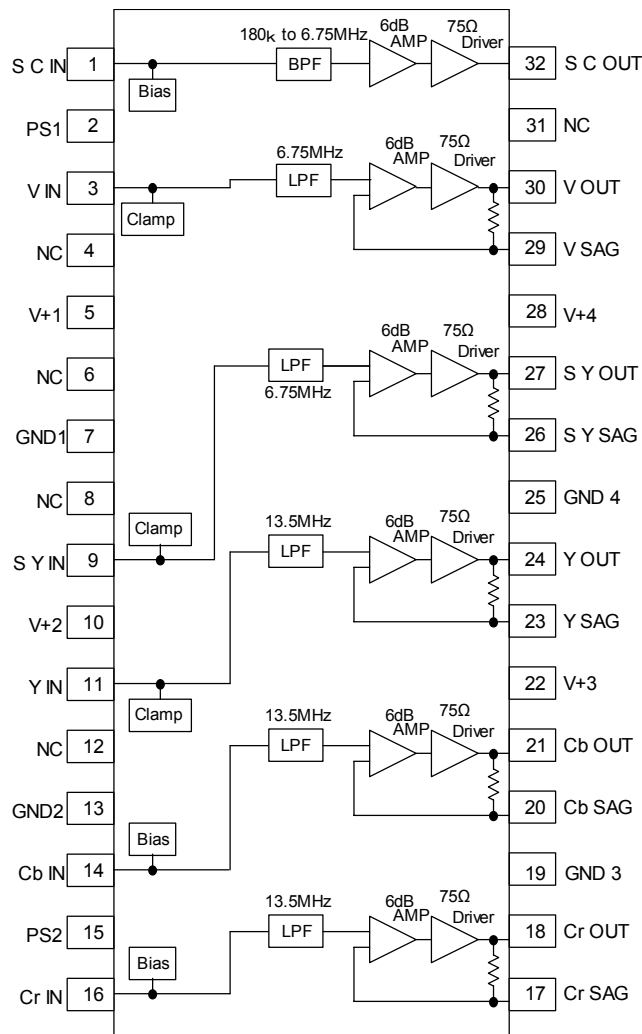


NJM2589V

■ FEATURES

- Operating Voltage 4.5V to 5.5V
- 6dB amplifier
- Internal LPF
- Internal 75Ω Driver Circuit (2-system drive)
- Power Save Circuit
- Bipolar Technology
- Package Outline SSOP32

■BLOCK DIAGRAM



■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|------------------|-------------|------|
| Supply Voltage | V ⁺ | 13.0 | V |
| Power Dissipation | P _D | 1100(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 Two layers, FR-4)

| 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⁺1 to V⁺4=5V, R_L=150Ω)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|-------------------|--|------|-------|----------------|------|
| Operating Current 1 | I _{cc} | V ⁺ 1 to V ⁺ 4, No Signal | - | 75.0 | 90.0 | mA |
| Operating Current at Power Save | I _{save} | No Signal, Power Save Mode | - | 1.0 | 3.0 | mA |
| Maximum Output Voltage Swing | V _{om} | (SYIN, VIN, YIN, CbIN, CrIN) Vin=1kHz, Sine Signal, THD=1% | 2.4 | - | - | Vp-p |
| Voltage Gain1 | Gv1 | (SYIN, VIN, YIN, CbIN, CrIN) Vin=1MHz, 1.0Vp-p, Sine Signal | 6.0 | 6.4 | 6.8 | dB |
| Voltage Gain2 | Gv2 | (SCIN) Vin=3.58MHz, 0.3Vp-p, Sine Signal | 6.0 | 6.4 | 6.8 | dB |
| Gain Difference Between channel | ΔGv1 | (SYIN, VIN, YIN, CbIN, CrIN) Vin=1MHz, 1.0Vp-p, Sine Signal | -0.2 | 0.0 | +0.2 | dB |
| Low Pass Filter Characteristic 1 | Gfy6.75M | (SYIN, VIN) 6.75MHz/1MHz, 1.0Vp-p, Sine Signal | -1.0 | 0.0 | 1.0 | dB |
| | Gfy27M | (SYIN, VIN) 27MHz/1MHz, 1.0Vp-p, Sine Signal | - | -40.0 | -27.0 | dB |
| Low Pass Filter Characteristic 2 | Gfc6.75M | (SCIN) 6.75MHz/3.58MHz, 0.3Vp-p, Sine Signal | -1.0 | 0.0 | 1.0 | dB |
| | Gfc27M | (SCIN) 27MHz/3.58MHz, 0.3Vp-p, Sine Signal | - | -40.0 | -27.0 | dB |
| Low Pass Filter Characteristic 3 | Gfp13.5M | (YIN, CbIN, CrIN) 13.5MHz/1MHz, 1.0Vp-p, Sine Signal | -1.0 | 0.0 | 1.0 | dB |
| | Gfp54M | (YIN, CbIN, CrIN) 54MHz/1MHz, 1.0Vp-p, Sine Signal | - | -40.0 | -24.0 | dB |
| Cross talk | CT | (SYIN, VIN, YIN, CbIN, CrIN) 4.43MHz, 1.0Vp-p, Sine Signal (SCIN) 4.43MHz, 0.3Vp-p, Sine Signal | - | -70 | - | dB |
| Differential Gain | DG | (SYIN, VIN, YIN, CbIN, CrIN) Vin=1.0Vp-p, 10step Video Signal | - | 0.7 | - | % |
| Differential Phase | DP | (SYIN, VIN, YIN, CbIN, CrIN) Vin=1.0Vp-p, 10step Video Signal | - | 0.3 | - | deg |
| S/N Ratio | SN | (SYIN, VIN, YIN, CbIN, CrIN) Vin=1.0Vp-p, 100% White video signal, RL=75Ω, 100KHz to 6MHz | - | 80 | - | dB |
| Power Save SW Change Voltage High Level | V _{thPH} | PS1, PS2 | 2.5 | - | V ⁺ | V |
| Power Save SW Change Voltage Low Level | V _{thPL} | PS1, PS2 | 0 | - | 1.0 | V |

■CONTROL TERMINAL

| PARAMETER | | | STATUS | NOTE |
|-----------|---|---|--------|--------------------------------------|
| P | S | 1 | H | (SYOUT, VOUT,SCOUT) Power Save: OFF |
| | | | L | (SYOUT, VOUT,SCOUT) Power Save: ON |
| | | | OPEN | (SYOUT, VOUT,SCOUT) Power Save: ON |
| P | S | 2 | H | (YOUT, CbOUT, CrOUT) Power Save: OFF |
| | | | L | (YOUT, CbOUT, CrOUT) Power Save: ON |
| | | | OPEN | (YOUT, CbOUT, CrOUT) Power Save: ON |

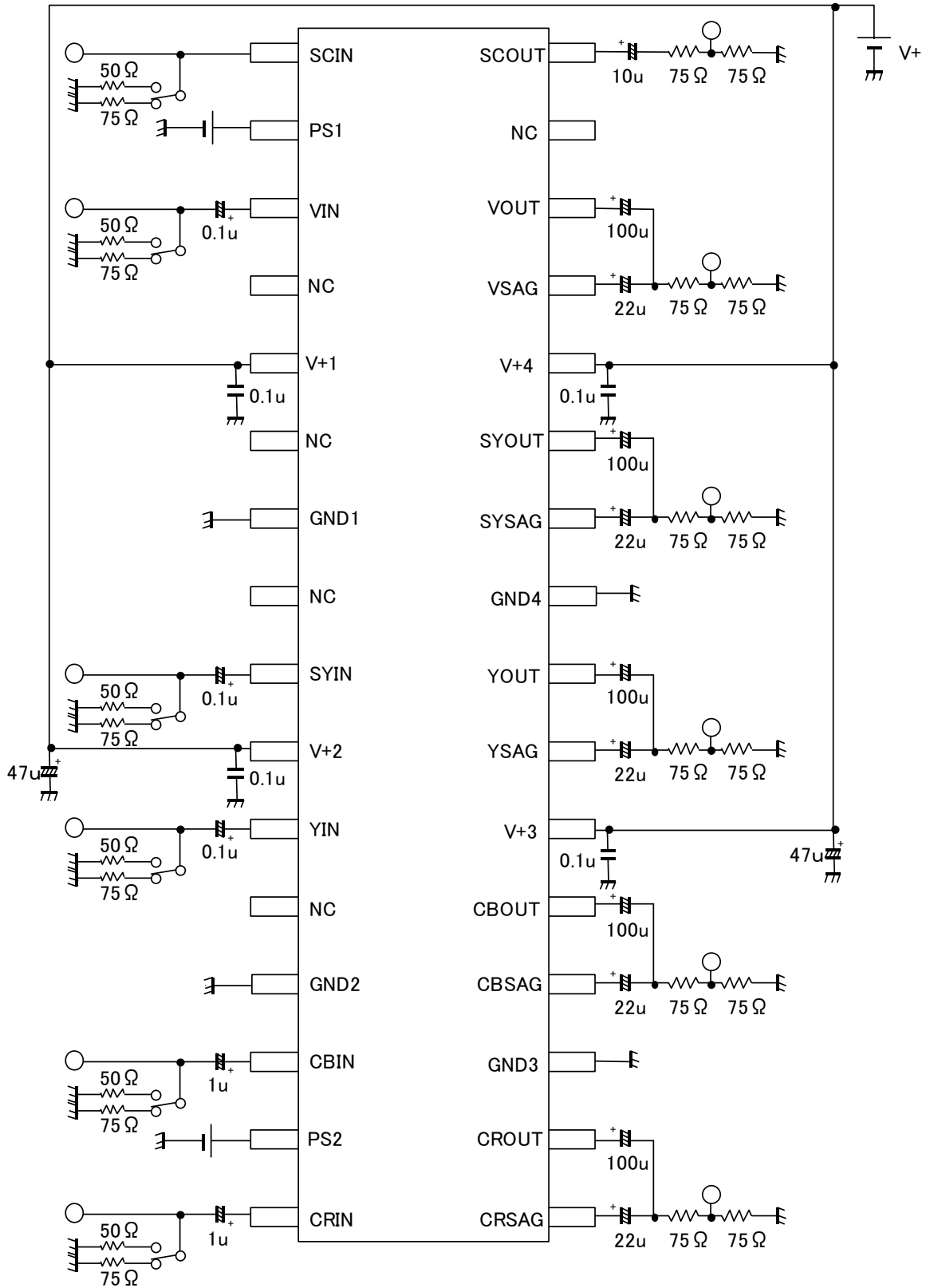
■ TERMINAL DESCRIPTION

| No. | SYMBOL | FUNCTION | EQUIVALENT CIRCUIT | VOLTAGE |
|--------------|--------------------|---|--------------------|---------|
| 1 | SCIN | Chroma signal input | | 0V |
| 3 9 11 | VIN SYIN YIN | Composite video signal input Y signal input Component signal(Y) input | | 1.65V |
| 14 16 | CbIN CrIN | Component signal(Cb) input Component signal(Cr) input | | 2.5V |
| 32 | SCOUT | Chroma signal output | | 2.5V |

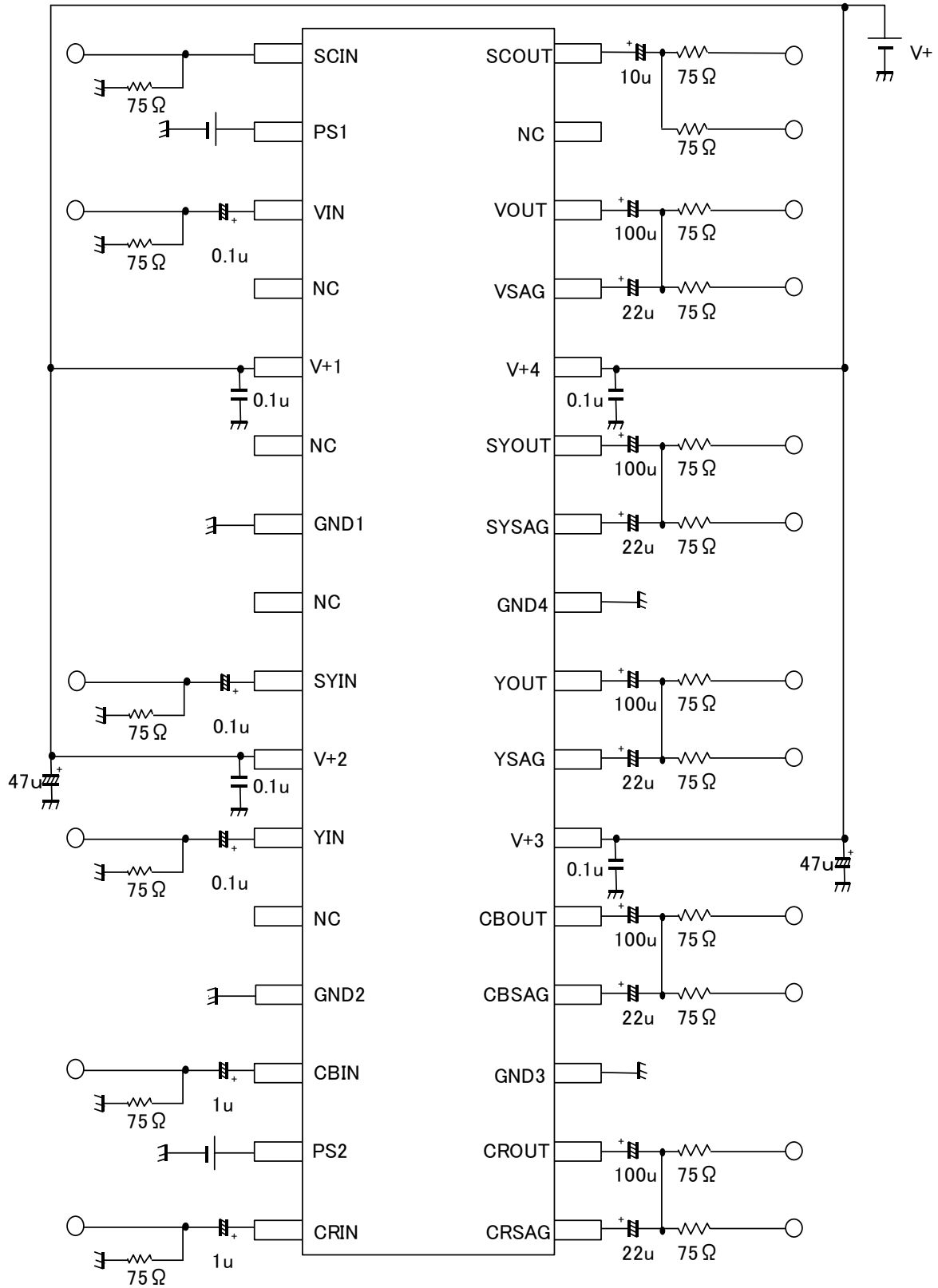
| No. | SYMBOL | FUNCTION | EQUIVALENT CIRCUIT | VOLTAGE |
|----------------|-----------------------|---|--------------------|---------|
| 18 21 | CrOUT CbOUT | Component signal(Cr) output Component signal(Cb) output | | 2.5V |
| 24 27 30 | YOUT SYOUT VOUT | Component signal(Y) output Y signal output Composite video signal input | | 1.3V |
| 17 20 | CrSAG CbSAG | Sag compensation Sag compensation | | 2.5V |

| No. | SYMBOL | FUNCTION | EQUIVALENT CIRCUIT | VOLTAGE |
|-------------------------|--------------------------------|---|--------------------|--------------|
| <p>23 26 29</p> | <p>YSAG SYSAG VSAG</p> | <p>Sag compensation Sag compensation Sag compensation</p> | | <p>1.35V</p> |
| <p>15 2</p> | <p>PS2 PS1</p> | <p>Power save (Y,Cb,Cr) Power save (V,SY,SC)</p> | | <p>0V</p> |

TEST CIRCUIT

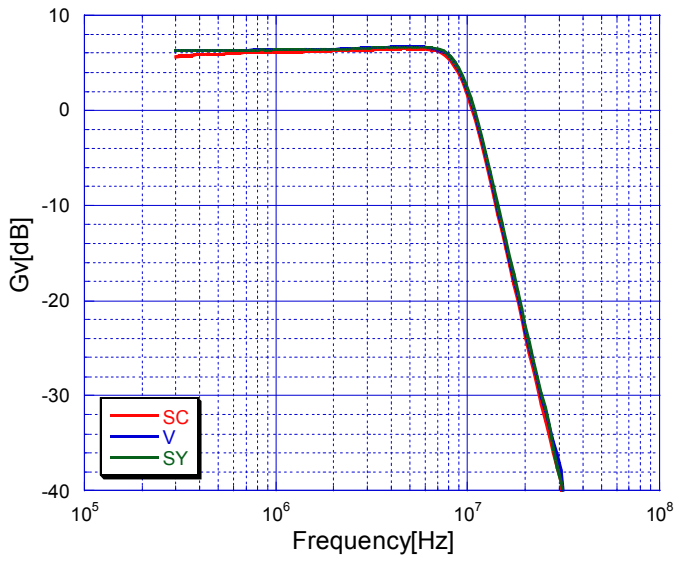


APPLICATION CIRCUIT

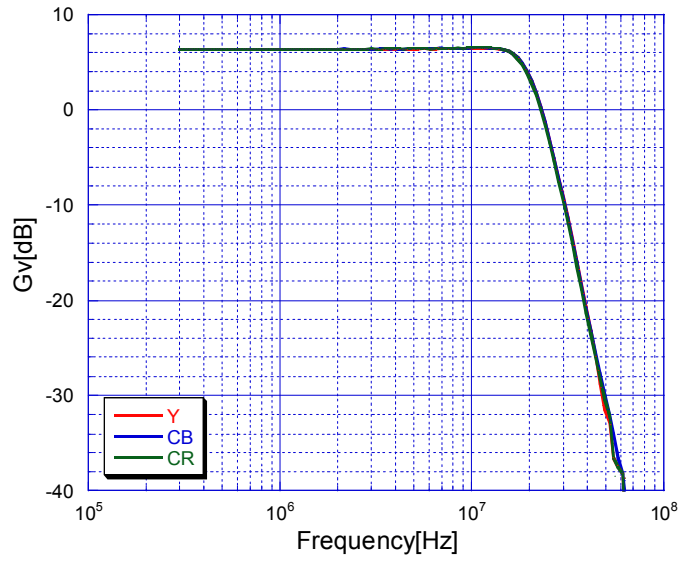


■ TYPICAL CHARACTERISTICS

Voltage Gain vs. Frequency (SC,V,CY)



Voltage Gain vs. Frequency (Y,Cb,Cr)



[CAUTION]
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