

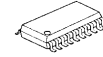
400MHz 3-channel Video Amplifier

■ GENERAL DESCRIPTION

The NJM41045 is a wideband 3-channel Video amplifier.

The NJM41045 is suitable for the HD video application because of -3dB large-signal bandwidth of 400MHz.

■ PACKAGE OUTLINE

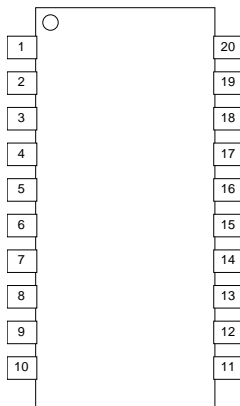


NJM41045VC3

■ FEATURES

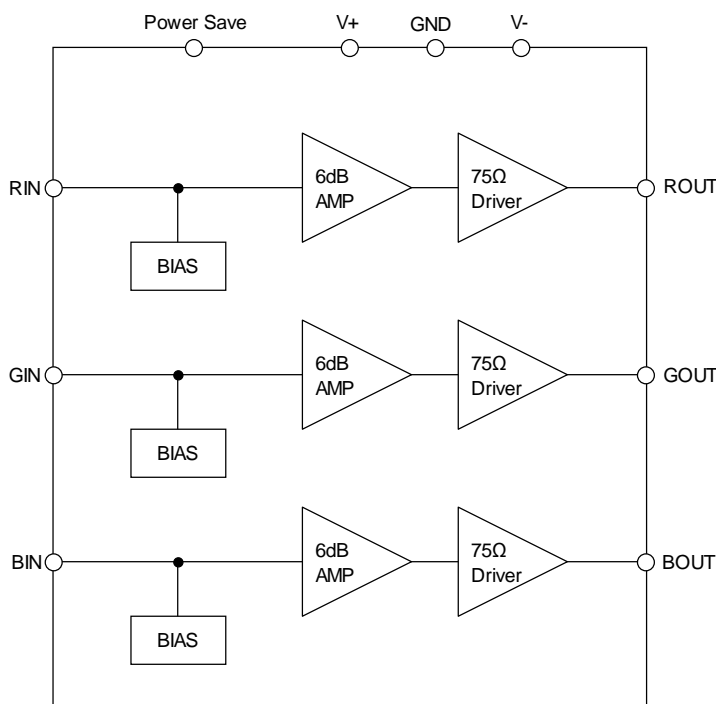
- Operating Voltage (Single) +4.5 to +9.5V
(Dual) ±3.0 to ±5.0V
- Wide Bandwidth -3dB at 400MHz (2Vp-p Output)
- 6dB amplifier
- 75Ω Driver Circuit
- Power Save Function
- Bipolar Technology
- Package Outline SSOP20-C3

■ PIN CONFIGURATION



- | | |
|---------------|----------|
| 1. N.C. | 11. V-3 |
| 2. VREF1 | 12. BOUT |
| 3. RIN | 13. V+3 |
| 4. Power save | 14. V-2 |
| 5. VREF2 | 15. GOUT |
| 6. GIN | 16. V+2 |
| 7. GND | 17. V-1 |
| 8. VREF3 | 18. ROUT |
| 9. BIN | 19. V+1 |
| 10. N.C. | 20. N.C. |

■ BLOCK DIAGRAM



NJM41045

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|----------------|--------------------------|------|
| Supply Voltage | V ⁺ | 12.0 | V |
| Power Dissipation | P _D | 1500 ^(Note 1) | mW |
| Operating Temperature Range | Topr | -40 to +85 | °C |
| Storage Temperature Range | Tstg | -40 to +150 | °C |

(Note 1) At on a board of EIA/JEDEC specification. (114.3 x 76.2 x 1.6mm 4 layers, FR-4)

■ RECOMMENDED OPEARATING CONDITION (Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------|--------|---------------------|------|------|------|------|
| Operating Voltage1 | Vopr1 | Single Power Supply | +4.5 | - | +9.5 | V |
| Operating Voltage2 | Vopr2 | Dual Power Supply | ±3.0 | - | ±5.0 | 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 | - | 65 | 80 | mA |
| Operating Current at Power Save | I _{save} | No Signal, Power Save Mode | - | 0.6 | 1 | mA |
| Maximum Output Voltage Swing | V _{om} | 100kHz, Sine Signal, THD=1% | 2.2 | 2.4 | - | Vp-p |
| Voltage Gain | G _v | 1MHz, 1.0Vp-p, Sine Signal | 5.5 | 6.0 | 6.5 | dB |
| Frequency Characteristic 1 | G _{f1} | 400MHz/1MHz, 1.0Vp-p, Sine Signal | - | -3.0 | - | dB |
| Frequency Characteristic 2 | G _{f2} | 450MHz/1MHz, 0.1Vp-p, Sine Signal | - | -3.0 | - | dB |
| Gain Difference Between channel | ΔG _{v1} | 1MHz, 1.0Vp-p, Sine Signal (Note 2) | -0.5 | 0 | 0.5 | dB |
| Differential Gain | DG | V _{in} =1.0Vp-p, 10step Video Signal | - | 0.5 | - | % |
| Differential Phase | DP | V _{in} =1.0Vp-p, 10step Video Signal | - | 0.5 | - | deg |
| SW Voltage High Level | V _{thH} | | 2.5 | - | V ⁺ | V |
| SW Voltage Low Level | V _{thL} | | 0 | - | 1.0 | V |
| Switch Inflow Current High Level | I _{thH} | V _{ps} =5V | - | - | 400 | μA |
| Switch Inflow Current Low Level | I _{thL} | V _{ps} =0.3V | - | - | 20 | μA |

(Note 2) Between ROUT/GOUT/BOUT

■ ELECTRICAL CHARACTERISTICS (Ta= 25°C, V^{+/-} = ±5.0V, R_L= 150Ω)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------|-----------------------|-----------------------------------------------|------|------|----------------|------|
| Operating Current1 | I _{CC} | No Signal | - | 65 | 80 | mA |
| Operating Current2 | I _{ee} | No Signal | -80 | -65 | - | mA |
| Operating Current at Power Save 1 | I _{save_1cc} | No Signal, Power Save Mode | - | 0.75 | 1.3 | mA |
| Operating Current at Power Save 2 | I _{save_2ee} | No Signal, Power Save Mode | -1.3 | -0.4 | - | mA |
| Maximum Output Voltage Swing | V _{om} | 100kHz, Sine Signal, THD=1% | 2.2 | 2.4 | - | Vp-p |
| Voltage Gain | G _v | 1MHz, 1.0Vp-p, Sine Signal | 5.5 | 6.0 | 6.5 | dB |
| Frequency characteristic 1 | G _{f1} | 400MHz/1MHz, 1.0Vp-p, Sine Signal | - | -3.0 | - | dB |
| Frequency characteristic 2 | G _{f2} | 450MHz/1MHz, 0.1Vp-p, Sine Signal | - | -3.0 | - | dB |
| Gain Difference Between channel | ΔG _{v1} | 1MHz, 1.0Vp-p, Sine Signal (Note 2) | -0.5 | 0 | 0.5 | dB |
| Differential Gain | DG | V _{in} =1.0Vp-p, 10step Video Signal | - | 0.5 | - | % |
| Differential Phase | DP | V _{in} =1.0Vp-p, 10step Video Signal | - | 0.5 | - | deg |
| SW Voltage High Level | V _{thH} | | 2.5 | - | V ⁺ | V |
| SW Voltage Low Level | V _{thL} | | 0 | - | 1.0 | V |
| Switch Inflow Current High Level | I _{thH} | V _{ps} =5V | - | - | 400 | μA |
| Switch Inflow Current Low Level | I _{thL} | V _{ps} =0.3V | - | - | 20 | μA |

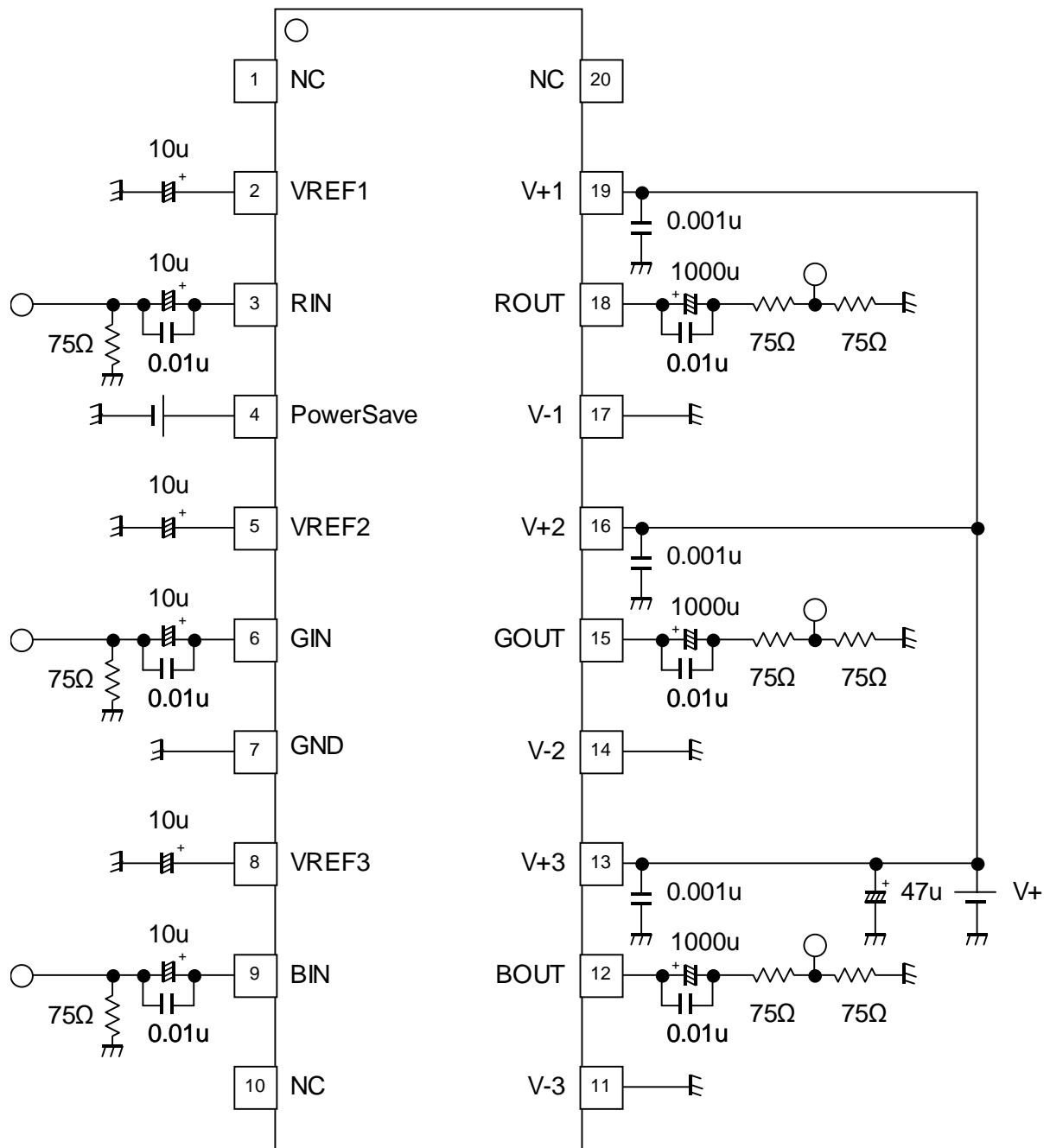
(Note 2) Between ROUT/GOUT/BOUT

■ CONTROL TERMINAL

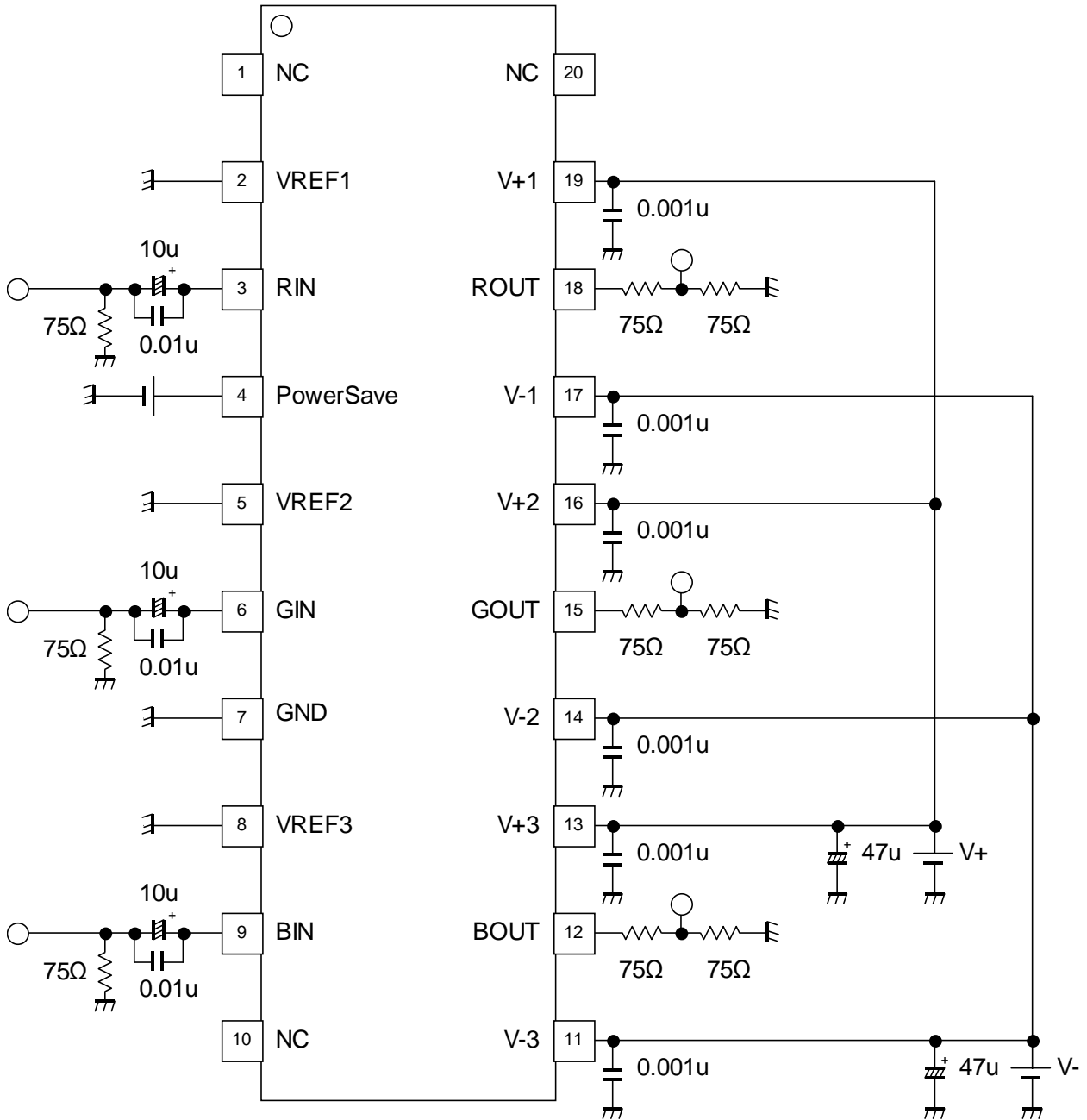
| PARAMETER | STATUS | NOTE |
|------------|--------|--------------------------|
| Power Save | H | Power Save: OFF (Active) |
| | L | Power Save: ON (Mute) |
| | OPEN | Power Save: ON (Mute) |

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■ TEST CIRCUIT(SINGLE SUPPLY)

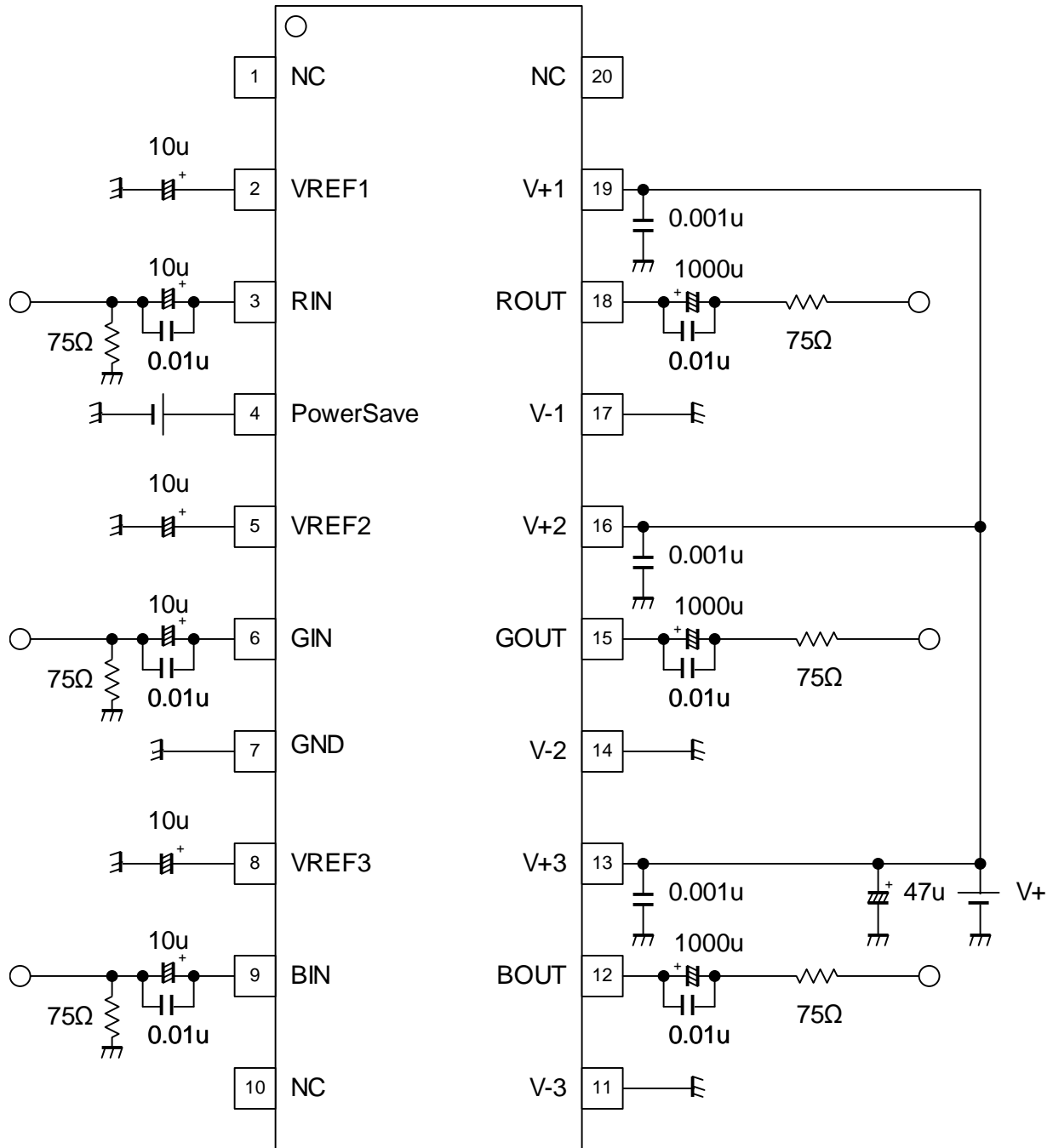


■ TEST CIRCUIT(DUAL SUPPLY)

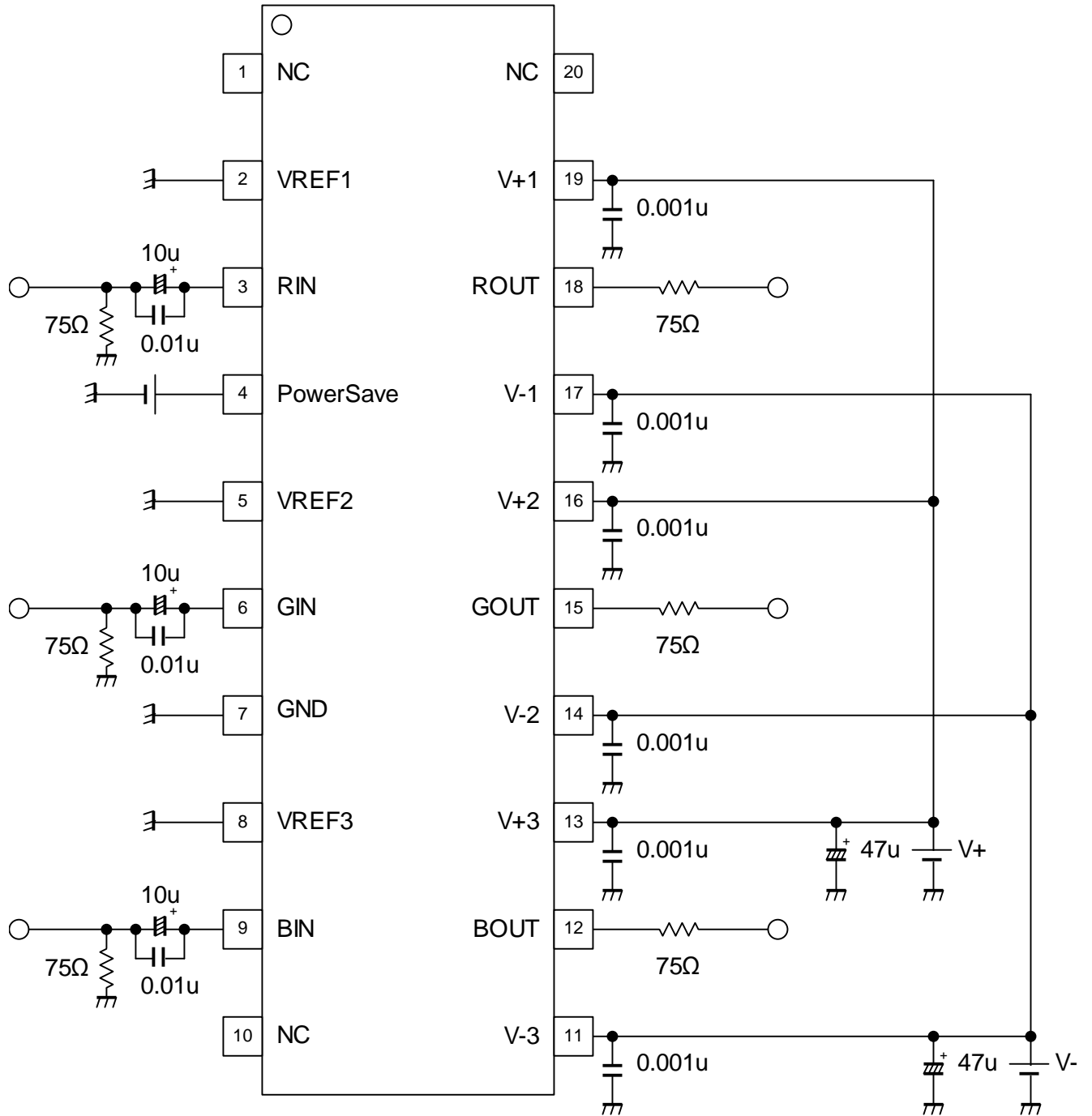


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APPLICATION CIRCUIT(SINGLE SUPPLY)



APPLICATION CIRCUIT(DUAL SUPPLY)



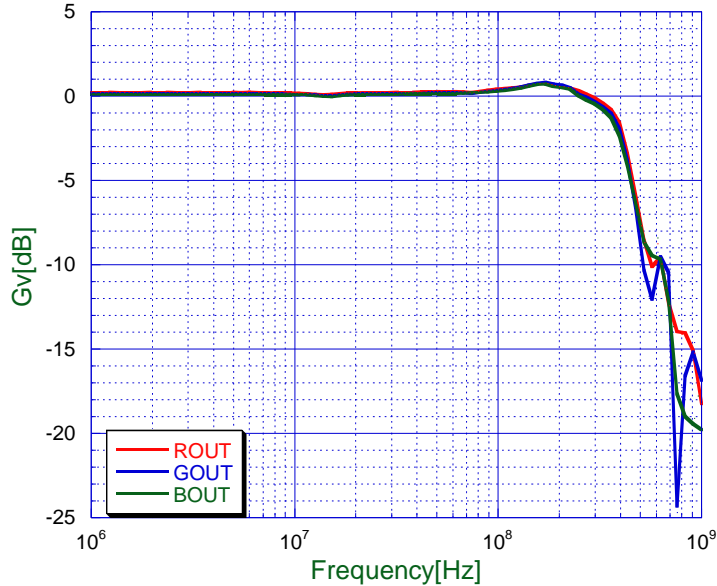
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■ TERMINAL FUNCTION

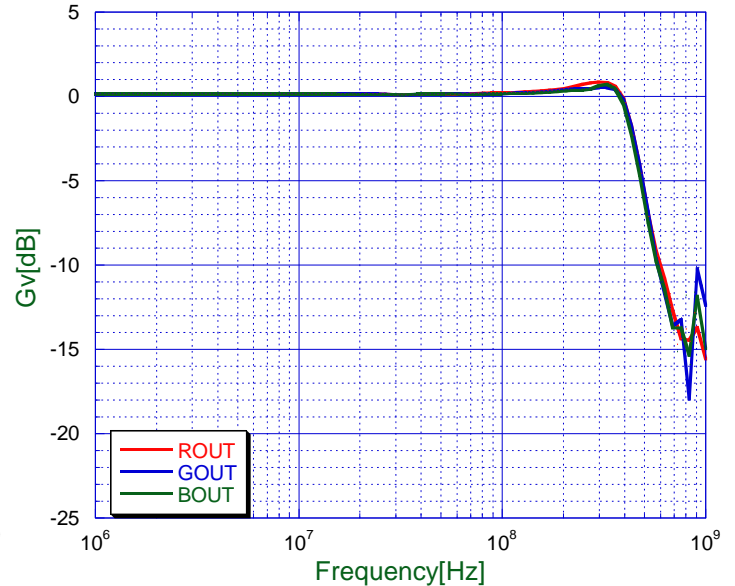
| PIN No. | PIN NAME | FUNCTION | EQUIVALENT CIRCUIT | DC VOLTAGE |
|----------------|-------------------------|-------------------------------------------------------|--------------------|--------------------------------------------|
| 3 6 9 | RIN GIN BIN | R signal input G signal input B signal input | | V+/2 at Single supply 0V at Dual supply |
| 12 15 18 | BOUT GOUT ROUT | B signal output G signal output R signal output | | V+/2 at Single supply 0V at Dual supply |
| 2 5 8 | VREF1 VREF2 VREF3 | Reference voltage | | V+/2 at Single supply 0V at Dual supply |
| 4 | Power Save | Power Save | | - |

■ TYPICAL CHARACTERISTICS

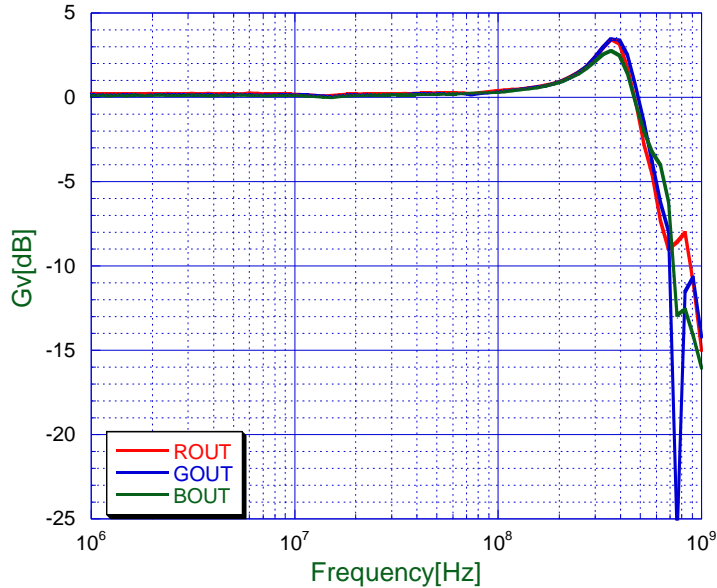
Voltage Gain vs. Frequency
(Single Supply 1Vpp)



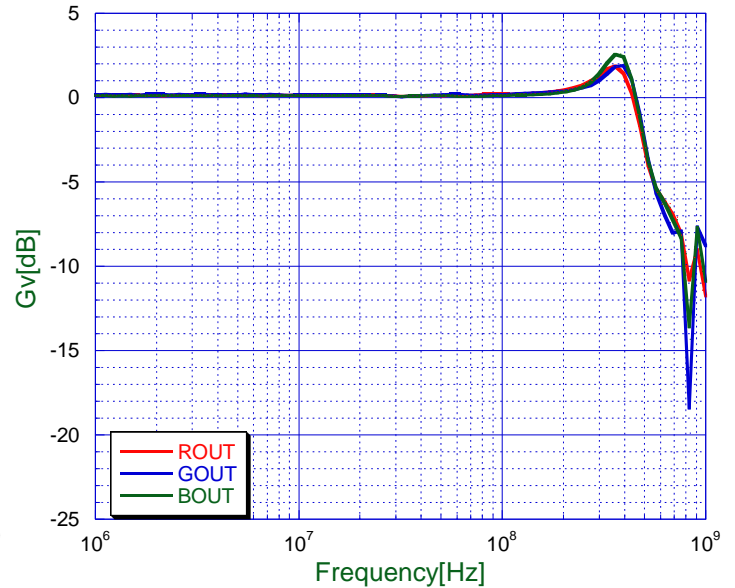
Voltage Gain vs. Frequency
(Dual Supply 1Vpp)



Voltage Gain vs. Frequency
(Single Supply 0.1Vpp)



Voltage Gain vs. Frequency
(Dual Supply 0.1Vpp)



[CAUTION]
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