

SINGLE SUPPLY DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM13404 is single-supply dual operational amplifier, which can operate from 2V supply. The features are low offset voltage, low bias current, high slew-rate, free cross-over distortion through the AB class output stage.

The package lineup is DIP, DMP and others compact, which is SON, so that the NJM13404 is suitable for audio for low voltage operation and any other kind of signal amplifier.

■ PACKAGE OUTLINE



NJM13404D



NJM13404M



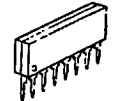
NJM13404E



NJM13404V



NJM13404R



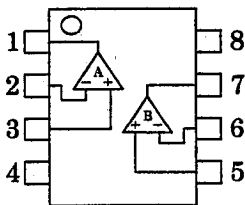
NJM13404L

■ FEATURES

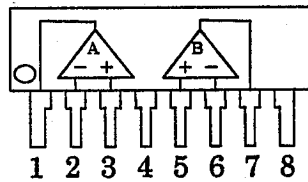
- Operating Voltage (+2V~+14V)
- Slew Rate (1.2V/μs typ.)
- Operating Current (3.5mA typ.)
- Bipolar Technology
- Package Outline

DIP8, DMP8, EMP8, SSOP8,
VSP8, SIP8, SON8(PRELIMINARY)

■ PIN CONFIGURATION



NJM13404D/13404M
NJM13404E/13404V/13404R
NJM13404x(PRELIMINARY)

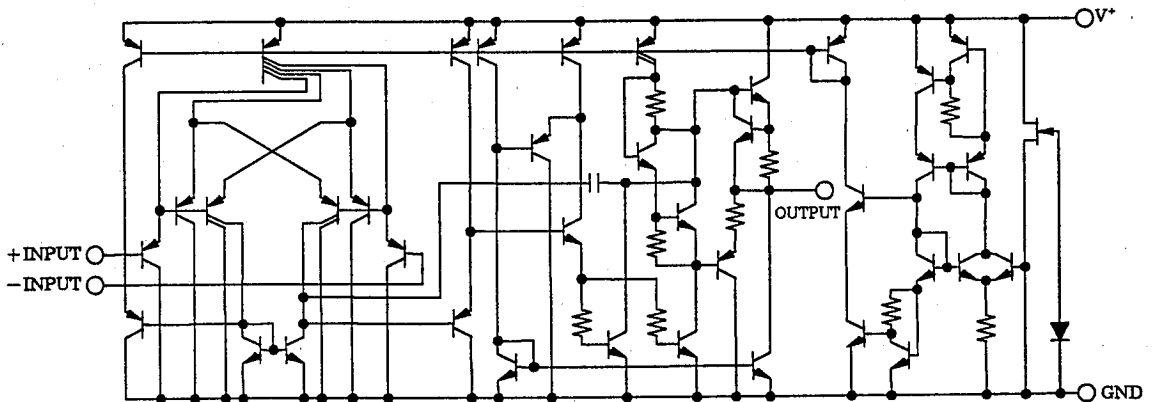


NJM13404L

PIN FUNCTION

1. A OUTPUT
2. A- INPUT
3. A+ INPUT
4. GND
5. B+ INPUT
6. B- INPUT
7. B OUTPUT
8. V+

■ EQUIVALENT CIRCUIT (1/2 Shown)



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|------------------|---|------|
| Supply Voltage | V ⁺ | 15 | V |
| Differential Input Voltage | V _{ID} | 14 | V |
| Input Voltage | V _{IC} | -0.3~+14 | V |
| Power Dissipation | P _D | (DIP8) 500 (DMP8) 300 (EMP8) 300 (SSOP8) 250 (VSP8) 320 (SIP8) 800 (SON8) U.D | mW |
| Operating Temperature Range | T _{opr} | -40~+85 | °C |
| Storage Temperature Range | T _{stg} | -40~+125 | °C |

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

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|---------------------|--|-------|------|------|------|
| Operating Voltage | V _{opr} | | 2 | — | 14 | V |
| Input Offset Voltage | V _{IO} | R _S =0Ω | — | 0.5 | 4 | mV |
| Input Offset Current | I _{IO} | | — | 5 | 50 | nA |
| Input Bias Current | I _B | | — | 25 | 150 | nA |
| Large Signal Voltage Gain | A _V | R _L ≥2kΩ | 88 | 100 | — | dB |
| Maximum Output Voltage Swing | V _{OM} | R _L =2kΩ | 4.0 | 4.2 | — | V |
| Input Common Mode Voltage Range | V _{ICM} | | 0~3.5 | — | — | V |
| Common Mode Rejection Ratio | CMR | | 70 | 90 | — | dB |
| Supply Voltage Rejection Ratio | SVR | | 80 | 94 | — | dB |
| Output Source Current | I _{SOURCE} | V _{IN} ⁺ =1V, V _{IN} ⁻ =0V | 20 | 35 | — | mA |
| Output Sink Current | I _{SINK} | V _{IN} ⁺ =0V, V _{IN} ⁻ =1V | 10 | 30 | — | mA |
| Operating Current | I _{CC} | R _L =∞ | — | 2.0 | 3.5 | mA |
| Slew Rate | SR | V ⁺ /V ⁻ =±2.5V, R _L =2kΩ, A _V =0dB, f=1kHz | — | 1.2 | — | V/μs |
| Unity Gain Bandwidth | f _T | R _L =2kΩ | — | 2.0 | — | MHz |
| Total Harmonic Distortion | THD | R _L =2kΩ, A _V =40dB, f=20kHz, V _O =1.5V _{rms} | — | 0.2 | — | % |

MEMO

[CAUTION]

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