

DUAL HIGH CURRENT OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

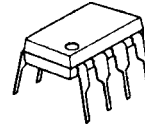
The NJM4556A integrated circuit is a high-gain, high output current dual operational amplifier capable of driving $\pm 70\text{mA}$ into 150Ω loads ($\pm 10.5\text{V}$ output voltage), and operating low supply voltage ($V^+V^- = \pm 2\text{V} \sim$).

The NJM4556A combines many of the features of the popular NJM4558 as well as having the capability of driving 150Ω loads. In addition, the wide band-width, low noise, high slew rate and low distortion of the NJM4556A make it ideal for many audio, telecommunications and instrumentation applications.

■ FEATURES

- Supply Voltage ($\pm 2\text{V} \sim \pm 18\text{V}$)
- High Output Current ($I_O = 70\text{mA}$)
- Slew Rate ($3\text{V}/\mu\text{s}$ typ.)
- Gain Band Width Product (8MHz typ.)
- Equivalent Input Noise Voltage ($10\text{nV}/\sqrt{\text{Hz}}$ typ.)
- Package Outline DIP8, DMP8, SIP8, SSOP8
- Bipolar Technology

■ PACKAGE OUTLINE



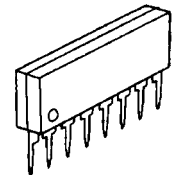
NJM4556AD



NJM4556AM

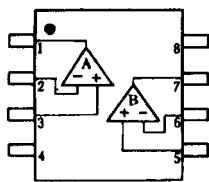


NJM4556AV

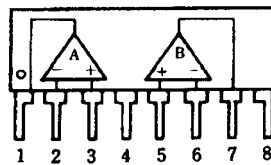


NJM4556AL

■ PIN CONFIGURATION



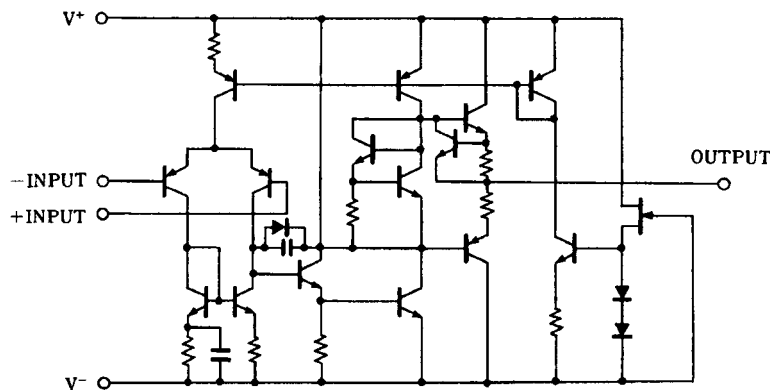
NJM4556AD
NJM4556AM
NJM4556AV



NJM4556AL

- PIN FUNCTION**
1. A OUTPUT
 2. A -INPUT
 3. A +INPUT
 4. V^-
 5. B +INPUT
 6. B -INPUT
 7. B OUTPUT
 8. V^+

■ EQUIVALENT CIRCUIT (1/2 Shown)



NJM4556A

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------------|--------------------------------|---|------|
| Supply Voltage | V ⁺ /V ⁻ | ± 18 | V |
| Differential Input Voltage | V _{ID} | ± 30 | V |
| Input Voltage | V _{IC} | ± 15 (note) | V |
| Power Dissipation | P _D | (DIP8) 700 (DMP8) 300 (SSOP8) 250 (SIP8) 800 | mW |
| Operating Temperature Range | T _{opr} | -40~+85 | °C |
| Storage Temperature Range | T _{stg} | -40~+125 | °C |

(note) For supply voltage less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS (NJM4556AD / NJM4556AL)

(V⁺/V⁻=±15V, Ta=25°C)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---------------------------------|------------------|---|--------|--------|------|------|
| Input Offset Voltage | V _{IO} | R _S ≤10kΩ | - | 0.5 | 6.0 | mV |
| Input Offset Current | I _{IO} | | - | 5 | 60 | nA |
| Input Bias Current | I _B | | - | 50 | 500 | nA |
| Input Resistance | R _{IN} | | 0.3 | 5 | - | MΩ |
| Large Signal Voltage Gain | A _V | R _L ≥2kΩ, V _O =±10V | 86 | 100 | - | dB |
| Maximum Output Voltage Swing 1 | V _{OM1} | R _L ≥2kΩ | ± 12 | ± 13.5 | - | V |
| Maximum Output Voltage Swing 2 | V _{OM2} | R _L ≥150Ω | ± 10.5 | ± 11 | - | V |
| Input Common Mode Voltage Range | V _{ICM} | | ± 13.5 | ± 14 | - | V |
| Common Mode Rejection Ratio | CMR | R _S ≤10kΩ | 70 | 90 | - | dB |
| Supply Voltage Rejection Ratio | SVR | R _S ≤10kΩ | 76.5 | 90 | - | dB |
| Supply Current | I _{CC} | | - | 9 | 12 | mA |
| Slew Rate | SR | | - | 3 | - | V/μs |
| Gain Bandwidth Product | GB | | - | 8 | - | MHz |

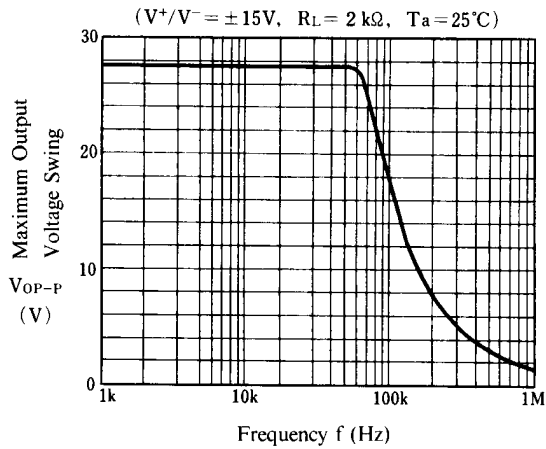
■ ELECTRICAL CHARACTERISTICS (NJM4556AM / NJM4556AV)

(V⁺/V⁻=±15V, Ta=25°C)

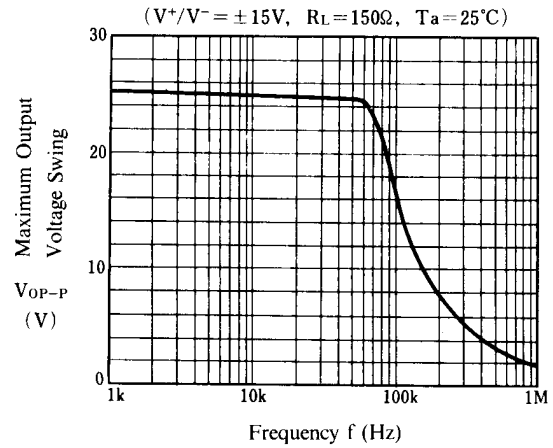
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------|-------------------|---|------|------|------|------|
| Input Offset Voltage | V _{IO} | R _S ≤10kΩ | - | 0.5 | 6.0 | mV |
| Input Offset Current | I _{IO} | | - | 5 | 60 | nA |
| Input Bias Current | I _B | | - | 50 | 500 | nA |
| Large Signal Voltage Gain | A _V | R _L ≥2kΩ, V _O =±10V | 86 | 100 | - | dB |
| Maximum Output Voltage Swing 1 | V _{OM1} | V _{IN} ⁺ =4V, V _{IN} ⁻ =3V, V ⁺ =9V, V ⁻ =0V I _{SOURCE} =40mA | 7.5 | - | - | V |
| Maximum Output Voltage Swing 2 | V _{OM2} | V _{IN} ⁺ =3V, V _{IN} ⁻ =4V, V ⁺ =9V, V ⁻ =0V I _{SINK} =40mA | - | - | 2.1 | V |
| Input Common Mode Voltage Range 1 | V _{ICM1} | V ⁺ =9V, V ⁻ =0V, V _{IL} | - | - | 1.5 | V |
| Input Common Mode Voltage Range 2 | V _{ICM2} | V ⁺ =9V, V ⁻ =0V, V _{IH} | 8 | - | - | V |
| Common Mode Rejection Ratio | CMR | R _S ≤10kΩ | 70 | 90 | - | dB |
| Supply Voltage Rejection Ratio | SVR | R _S ≤10kΩ | 76.5 | 90 | - | dB |
| Supply Current | I _{CC} | V ⁺ =9V, V ⁻ =0V | - | 8 | 12 | mA |
| Slew Rate | SR | | - | 3 | - | V/μs |
| Gain Bandwidth Product | GB | | - | 8 | - | MHz |

■ TYPICAL CHARACTERISTICS

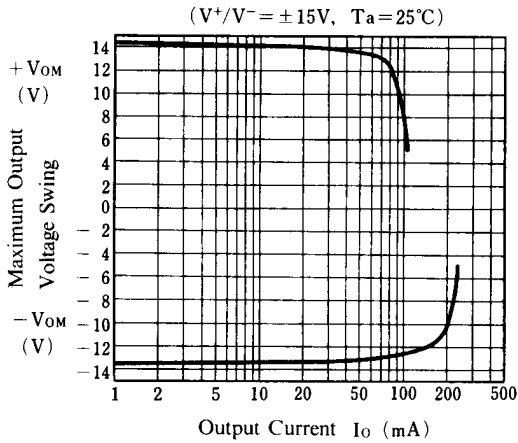
Maximum Output Voltage Swing vs. Frequency



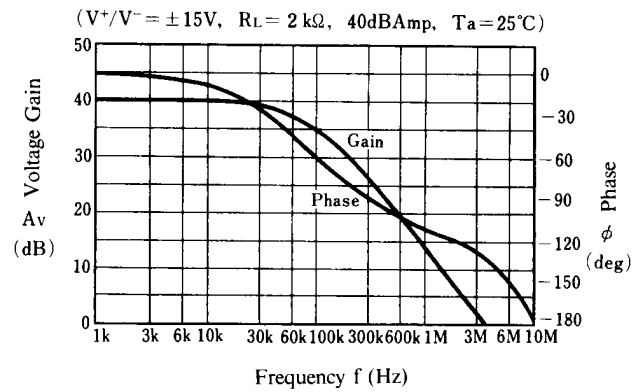
Maximum Output Voltage Swing vs. Frequency



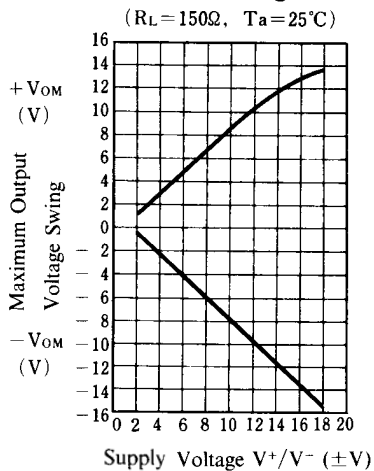
Maximum Output Voltage Swing vs. Output Current



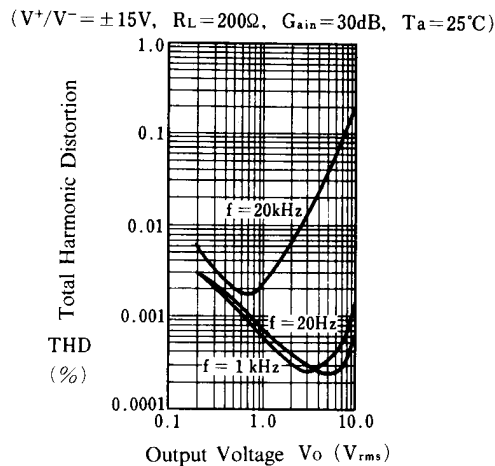
Voltage Gain, Phase Shift vs. Frequency



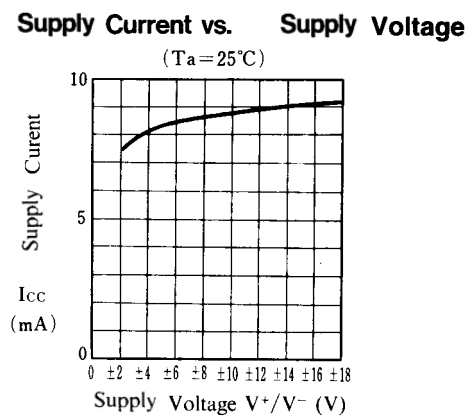
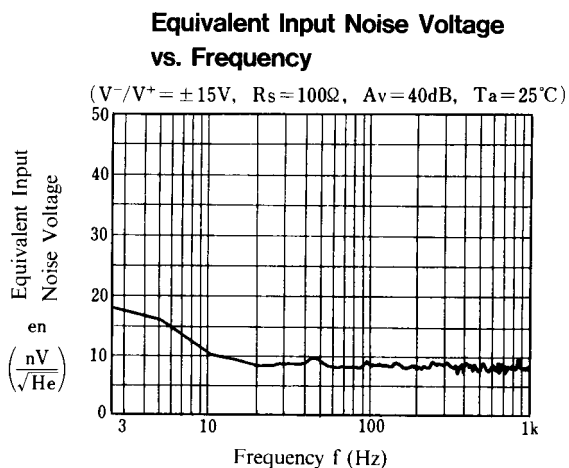
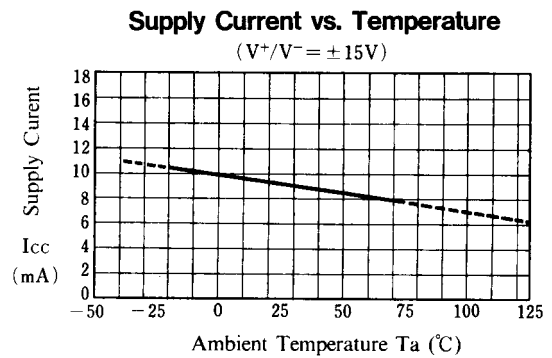
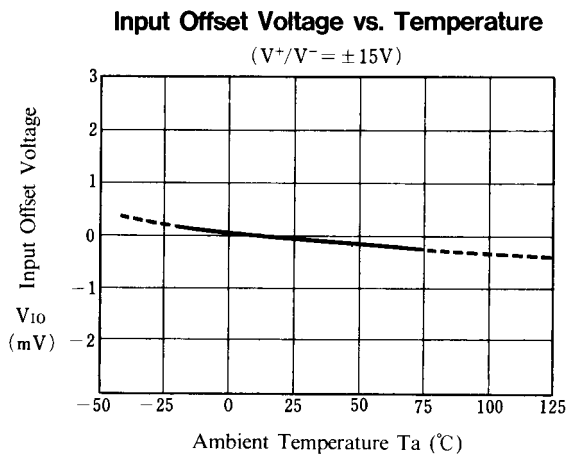
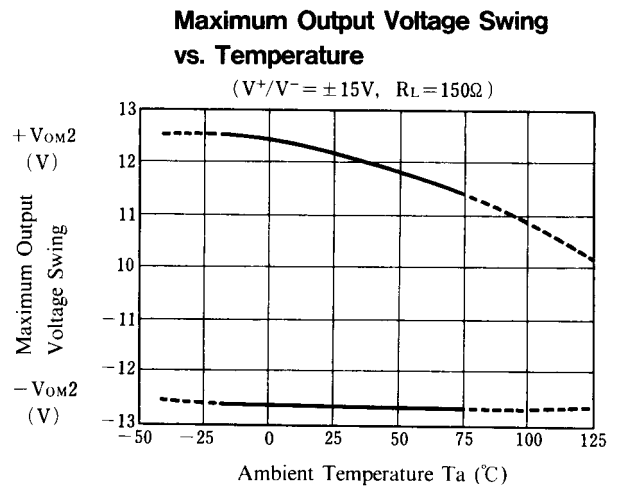
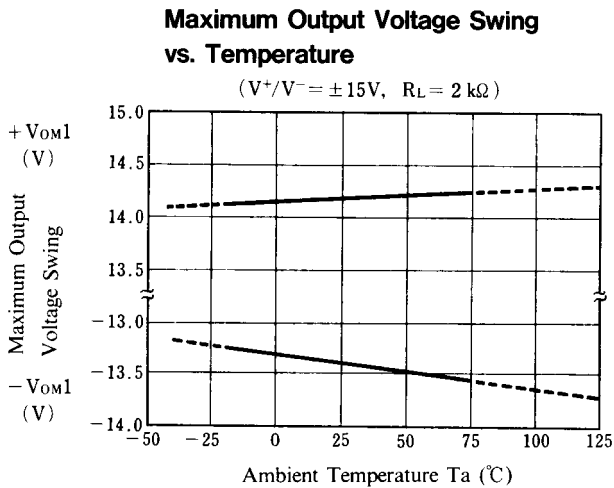
Maximum Output Voltage Swing vs. Supply Voltage



Total Harmonic Distortion vs. Output Voltage



■ TYPICAL CHARACTERISTICS



[CAUTION]
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