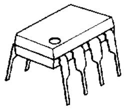
# DUAL OPERATIONAL AMPLIFIER

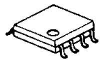
## ■ GENERAL DESCRIPTION

The NJM4562 integrated circuit is a high-gain, wide-bandwidth, low noise, dual operational amplifier capable of driving 20V peak-to-peak into 600Ω loads. The NJM4562 is frequency compensated for closed loop gains greater than 10. The NJM4562 combines many of the features of the popular NJM4558 as well as providing the capability of wider bandwith, and higer slew rate and less noise make the NJM4558 as well as providing the capability of wider bandwidth, and higher slew rate and less noise make the NJM4562 ideal for audio preamplifiers, active filters, telecommunications, and many instrumentation applications. The availability of the NJM4562 in the surface mounted micro-package allows the NJM4562 to be used in critical applications requiring very high packing densities.

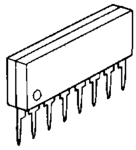
## ■ PACKAGE OUTLINE



NJM4562D



NJM4562M

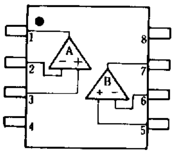


NJM4562L

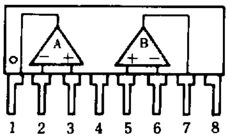
## ■ FEATURES

- Operating Voltage (±4V～±18V)
- Low Input Noise Voltage (0.6 μVrms typ.)
- Package Outline DIP8, DMP8, SIP8
- Bipolar Technology

## ■ PIN CONFIGURATION



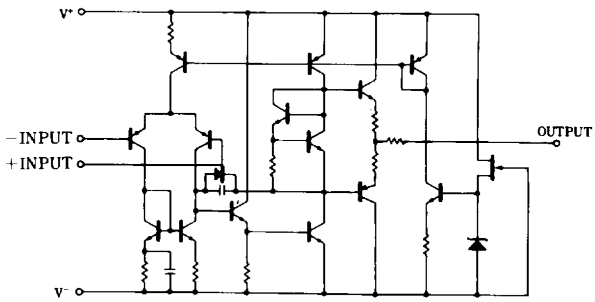

NJM4562D
NJM4562M




NJM4562L

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)



## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25℃)

| 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) 500 | mW |
| | | (DMP8) 300 | mW |
| | | (SIP8) 800 | mW |
| Operating Temperature Range | $T_{opr}$ | −20~+75 | ℃ |
| Storage Temperature Range | $T_{stg}$ | −40~+125 | ℃ |

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

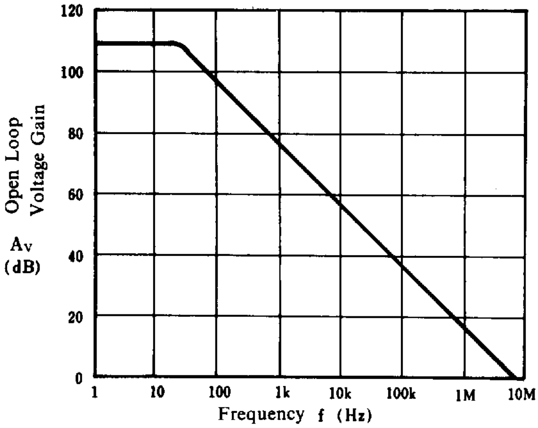
## ■ ELECTRICAL CHARACTERISTICS

($Ta=25℃, V^+/V^-=\pm 15V$)

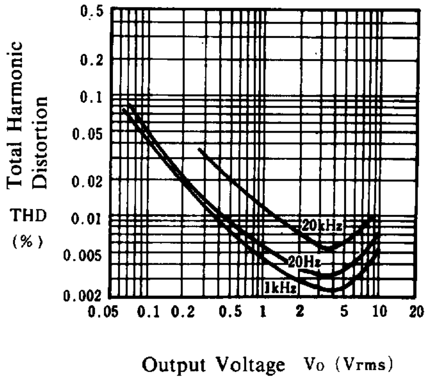
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Input Offset Voltage | $V_{IO}$ | $R_S \leqq 10k\Omega$ | — | 0.5 | 6 | mV |
| Input Offset Current | $I_{IO}$ | | — | 5 | 200 | nA |
| Input Bias Current | $I_B$ | | — | 100 | 500 | nA |
| Input Resistance | $R_{IN}$ | | 0.3 | 5 | — | MΩ |
| Large Signal Voltage Gain | $A_V$ | $R_L \geqq 2k\Omega, V_O=\pm 10V$ | 86 | 110 | — | dB |
| Maximum Output Voltage 1 | $V_{OM1}$ | $R_L \geqq 10k\Omega$ | ±12 | ±14 | — | V |
| Maximum Output Voltage 2 | $V_{OM2}$ | $R_L \geqq 2k\Omega$ | ±10 | ±13 | — | V |
| Input Common Mode Voltage Range | $V_{ICM}$ | | ±12 | ±14 | — | V |
| Common Mode Rejection Ratio | CMR | $R_S \leqq 10k\Omega$ | 70 | 90 | — | dB |
| Supply Voltage Rejection Ratio | SVR | $R_S \leqq 10k\Omega$ | 76.5 | 90 | — | dB |
| Operating Current | $I_{CC}$ | | — | 3.5 | 5.7 | mA |
| Equivalent Input Noise Voltage | $V_{NI}$ | $R_S=300\Omega$, JISA | — | 0.6 | — | μVrms |

## ■ TYPICAL CHARACTERISTICS

### Open Loop Voltage Gain vs. Frequency
($V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $Ta = 25°C$)

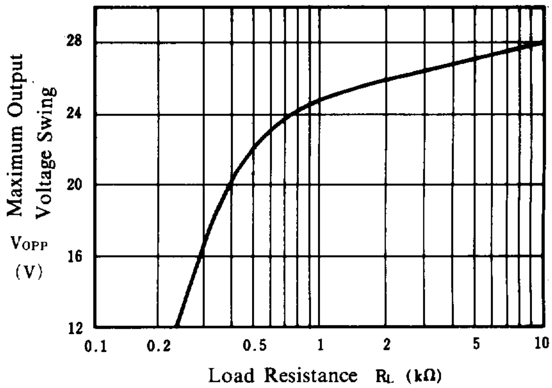



### Total Harmonic Distortion vs. Output Voltage
($V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $Ta = 25°C$)

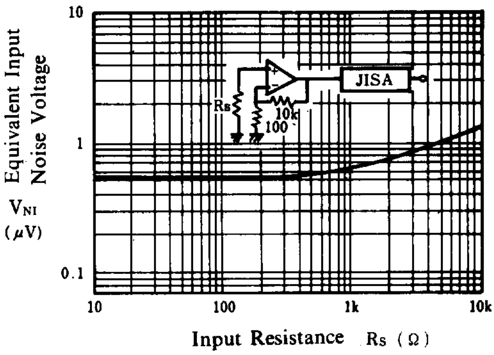




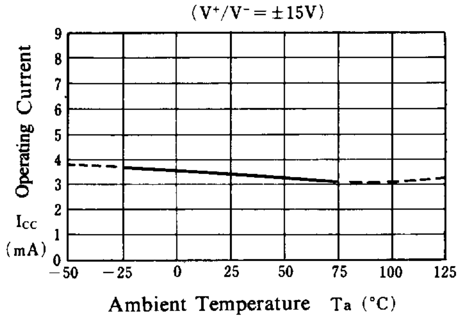

### Maximum Output Voltage Swing vs. Load Resistance
($V^+/V^- = \pm 15V$, $Ta = 25°C$)



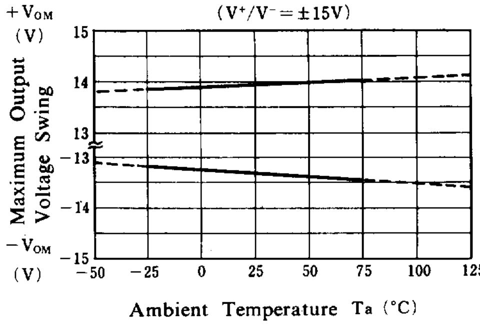

### Equivalent Input Noise Voltage vs. Rs
($V^+/V^- = \pm 15V$, $Ta = 25°C$)




### Operating Current vs. Temperature
($V^+/V^- = \pm 15V$)



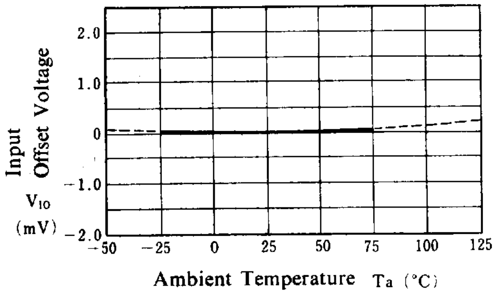

### Maximum Output Voltage Swing vs. Temperature
($V^+/V^- = \pm 15V$)



## ■ TYPICAL CHARACTERISTICS

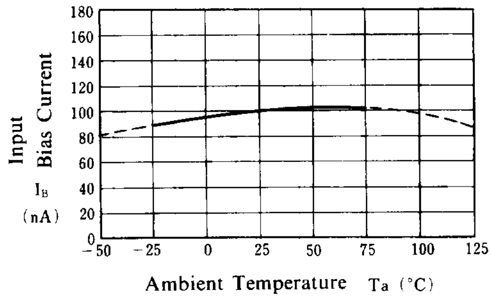
### Input Offset Voltage vs. Temperature

($V^+/V^-=\pm15V$)



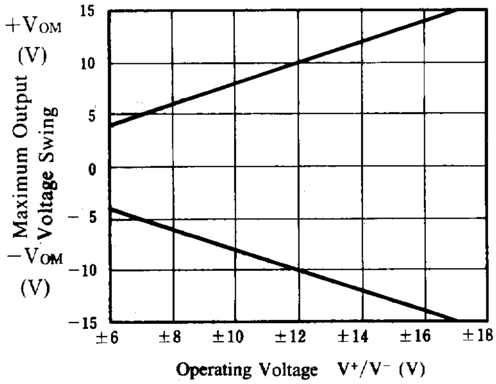

### Input Bias Current vs. Temperature

($V^+/V^-=\pm15V$)



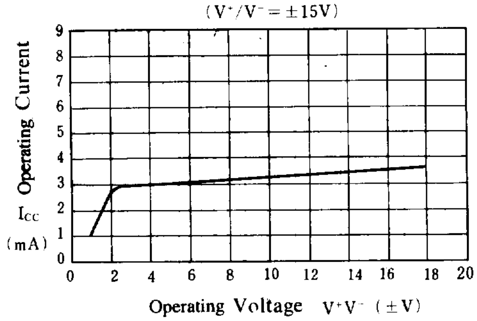

### Maximum Output Voltage Swing vs. Operating Voltage

($R_L=2k\Omega$, Ta=25℃)




### Operating Current vs. Operating Voltage

($V^+/V^-=\pm15V$)




### Maximum Output Voltage vs. Frequency

($V^+/V^-=\pm15V$, $R_L=2k\Omega$, Ta=25°C)