

## NJM4580

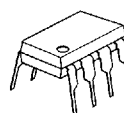
NJM4580 is the dual operational amplifier, specially designed for improving the tone control, which is most suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio preamp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the input low voltage source.

### ■ Absolute Maximum Ratings (Ta=25°C)

|                            |                                |              |
|----------------------------|--------------------------------|--------------|
| Supply Voltage             | V <sup>+</sup> /V <sup>-</sup> | ±18V         |
| Input Voltage              | V <sub>ic</sub> (note)         | ±15V         |
| Differential Input Voltage | V <sub>id</sub>                | ±30V         |
| Power Dissipation          | P <sub>D</sub> (D, L-Type)     | 800mW        |
|                            | (M, E-Type)                    | 300mW        |
|                            | (V-Type)                       | 250mW        |
| Output Current             | I <sub>O</sub>                 | ±50mA        |
| Operating Temperature      | T <sub>opr</sub>               | -20 ~ +75°C  |
| Storage Temperature        | T <sub>stg</sub>               | -40 ~ +125°C |

### ■ Package Outline



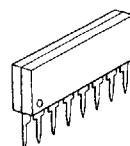
NJM4580D



NJM4580M



NJM4580E



NJM4580L



NJM4580V

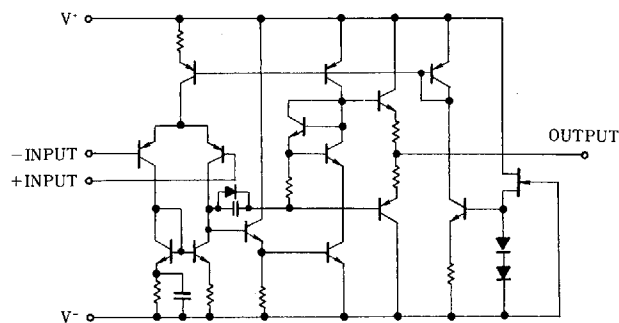
### ■ Recommended Operating Condition

|                |                                     |           |
|----------------|-------------------------------------|-----------|
| Supply Voltage | V <sup>+</sup> /V <sup>-</sup>      | ±2 ~ ±18V |
| Load Capacity  | C <sub>L</sub> (A <sub>v</sub> = 1) | ≤100pF    |
| Output Current | I <sub>O</sub>                      | ≤±50mA    |

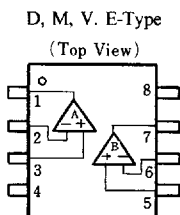
### ■ Electrical Characteristics

| Parameter                       | Symbol           | Test Condition                                                             | Min. | Typ.   | Max. | Unit                |
|---------------------------------|------------------|----------------------------------------------------------------------------|------|--------|------|---------------------|
| Input Offset Voltage            | V <sub>IO</sub>  | R <sub>S</sub> ≤ 10kΩ                                                      | —    | 0.5    | 3    | mV                  |
| Input Offset Current            | I <sub>IO</sub>  |                                                                            | —    | 5      | 200  | nA                  |
| Input Bias Current              | I <sub>IB</sub>  |                                                                            | —    | 100    | 500  | nA                  |
| Large Signal Voltage Gain       | A <sub>V</sub>   | R <sub>L</sub> ≥ 2kΩ, V <sub>O</sub> = ±10V                                | 90   | 110    | —    | dB                  |
| Output Voltage Swing            | V <sub>OM</sub>  | R <sub>L</sub> ≥ 2kΩ                                                       | ±12  | ±13.5  | —    | V                   |
| Input Common Mode Voltage Range | V <sub>ICM</sub> |                                                                            | ±12  | ±13.5  | —    | V                   |
| Common Mode Rejection Ratio     | CMR              | R <sub>S</sub> ≤ 10kΩ                                                      | 80   | 110    | —    | dB                  |
| Supply Voltage Rejection Ratio  | SVR              | R <sub>S</sub> ≤ 10kΩ                                                      | 80   | 110    | —    | dB                  |
| Supply Current                  | I <sub>CC</sub>  |                                                                            | —    | 6      | 9    | mA                  |
| Slew Rate                       | SR               | R <sub>L</sub> ≥ 2kΩ                                                       | —    | 5      | —    | V/μs                |
| Gain Bandwidth Product          | GB               | f = 10kHz                                                                  | —    | 15     | —    | MHz                 |
| Total Harmonic Distortion       | THD              | A <sub>V</sub> = 20dB, V <sub>O</sub> = 5V, R <sub>L</sub> = 2kΩ, f = 1kHz | —    | 0.0005 | —    | %                   |
| Input Noise Voltage             | V <sub>NI</sub>  | RIAA R <sub>S</sub> = 2.2kΩ, 30kHz LPF                                     | —    | 0.8    | —    | μV <sub>rms</sub> T |

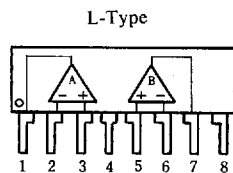
■ Equivalent Circuit(1/2 Shown)



■ Connection Diagram

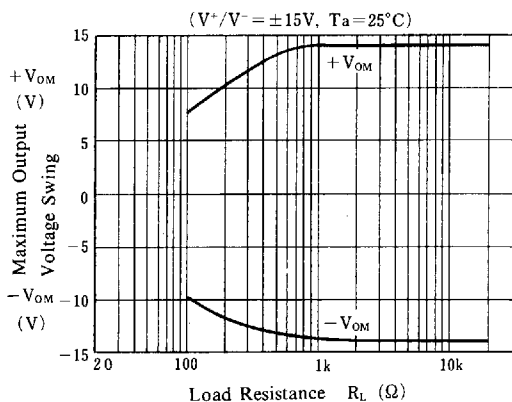


- Pin Function
- 1. A OUTPUT
  - 2. A -INPUT
  - 3. A +INPUT
  - 4. V-
  - 5. B +INPUT
  - 6. B -INPUT
  - 7. B OUTPUT
  - 8. V+

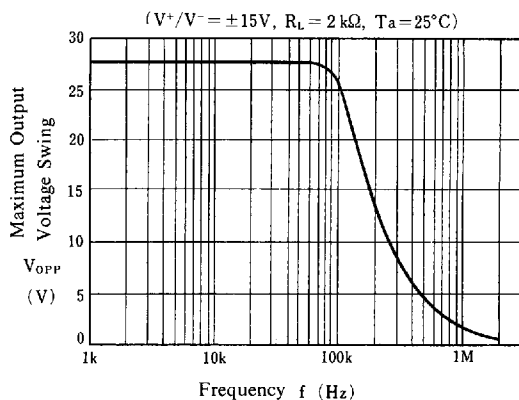


## ■ Typical Characteristics

**Maximum Output Voltage Swing vs. Load Resistance**

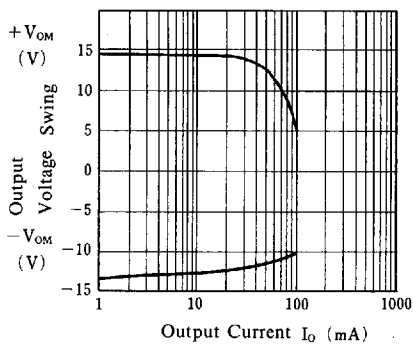


**Maximum Output Voltage Swing vs. Frequency**

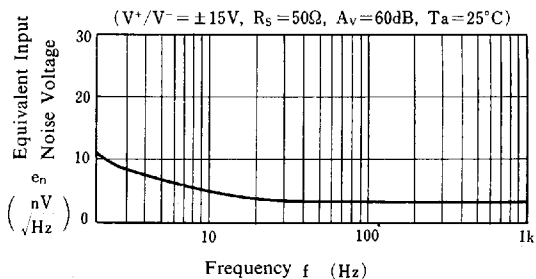


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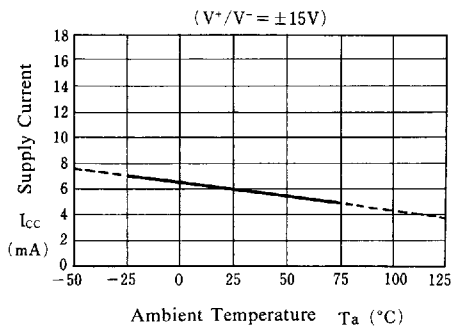
**Output Voltage Swing vs. Output Current**



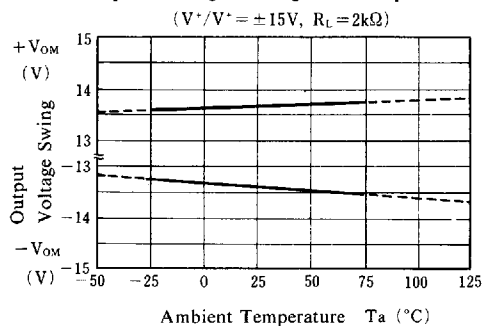
**Equivalent Input Noise Voltage vs. Frequency**



**Supply Current vs. Temperature**

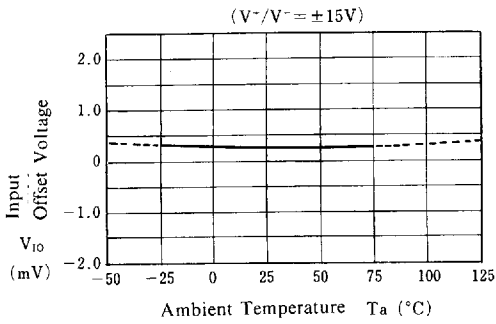


**Output Voltage Swing vs. Temperature**

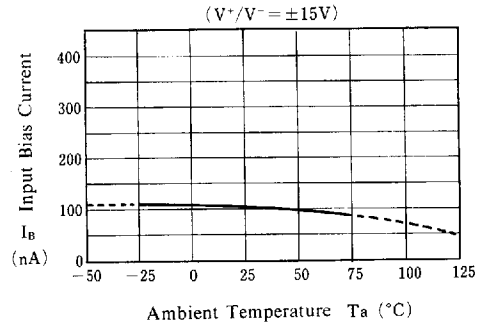


■ Typical Characteristics

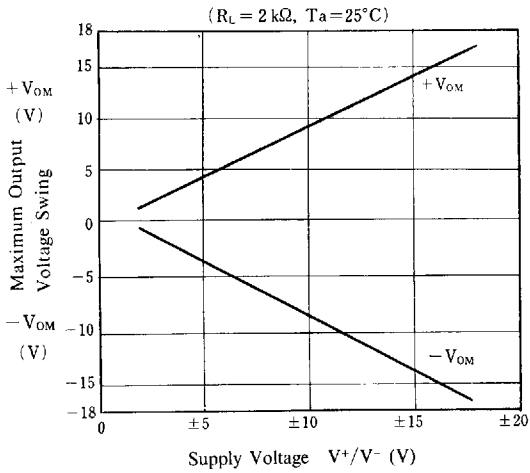
Input Offset Voltage vs. Temperature



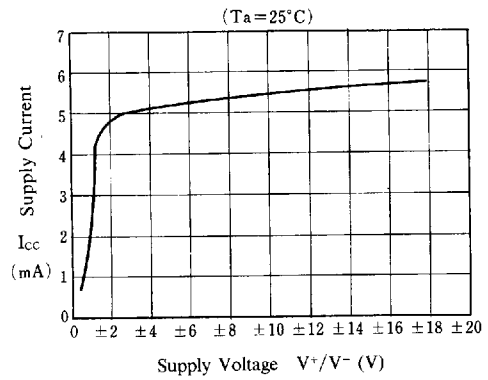
Input Bias Current vs. Temperature



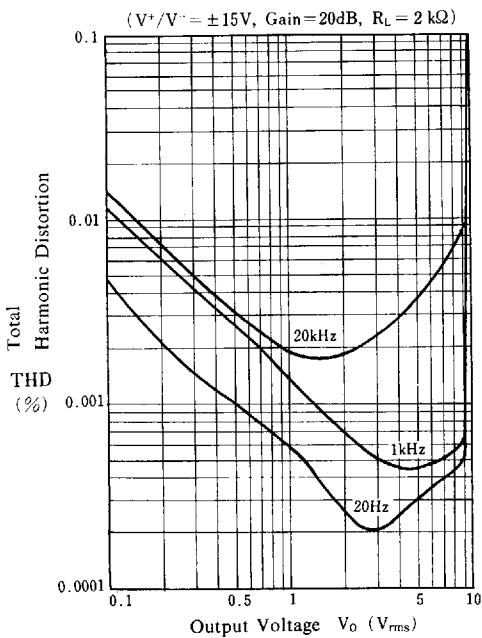
Maximum Output Voltage Swing vs. Supply Voltage



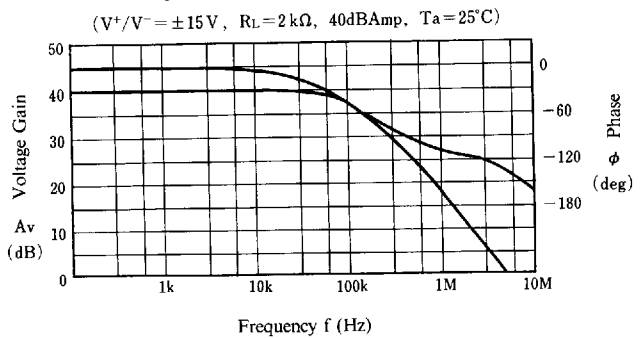
Supply Current vs. Supply Voltage



Total Harmonic Distortion vs. Output Voltage



Voltage Gain, Phase vs. Frequency



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