



## QUAD OPERATIONAL AMPLIFIER

### ■ GENERAL DESCRIPTION

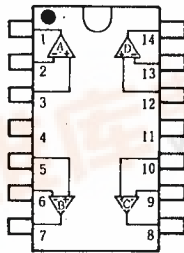
The NJM2058 integrated circuit is a quad high-gain operational amplifier internally compensated and constructed on a single silicon chip using an advanced epitaxial process.

Each amplifier of the NJM2058 has the same electrical characteristics of the NJM4558.

### ■ FEATURES

- Operating Voltage (±4V ~ ±18V)
- Package Outline DIP14, DMP14, SSOP14
- Bipolar Technology

### ■ PIN CONFIGURATION

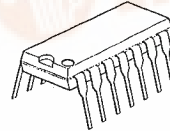


NJM2058D  
NJM2058M  
NJM2058V

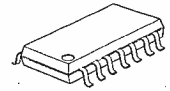
### PIN FUNCTION

1. A OUTPUT
2. A-INPUT
3. A+INPUT
4. V+
5. B+INPUT
6. B-INPUT
7. B OUTPUT
8. C OUTPUT
9. C-INPUT
10. C+INPUT
11. V-
12. D+INPUT
13. D-INPUT
14. D OUTPUT

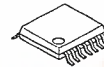
### ■ PACKAGE OUTLINE



NJM2058D

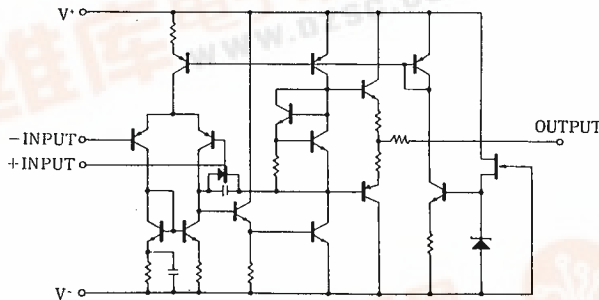


NJM2058M



NJM2058V

### ■ EQUIVALENT CIRCUIT (1/4 Shown)



# NJM2058

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER                   | SYMBOL                         | RATINGS              | UNIT |
|-----------------------------|--------------------------------|----------------------|------|
| Supply Voltage              | V <sup>+</sup> /V <sup>-</sup> | ±18                  | V    |
| Differential Input Voltage  | V <sub>ID</sub>                | ±30                  | V    |
| Input Voltage               | V <sub>IC</sub>                | ±15 (note 1)         | V    |
| Power Dissipation           | P <sub>D</sub>                 | (DIP14) 700          | mW   |
|                             |                                | (DIM14) 700 (note 2) | mW   |
|                             |                                | (SSOP14) 300         | mW   |
| Operating Temperature Range | T <sub>opr</sub>               | -40 ~ +85            | °C   |
| Storage Temperature Range   | T <sub>stg</sub>               | -40 ~ +125           | °C   |

(note 1) For supply voltage less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

(note 2) At on PC board

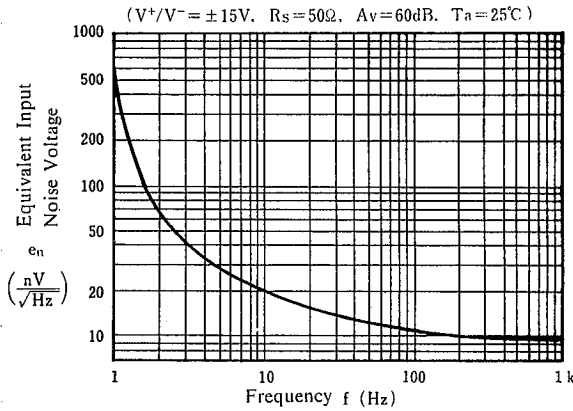
## ■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V<sup>+</sup>/V<sup>-</sup>=±15V)

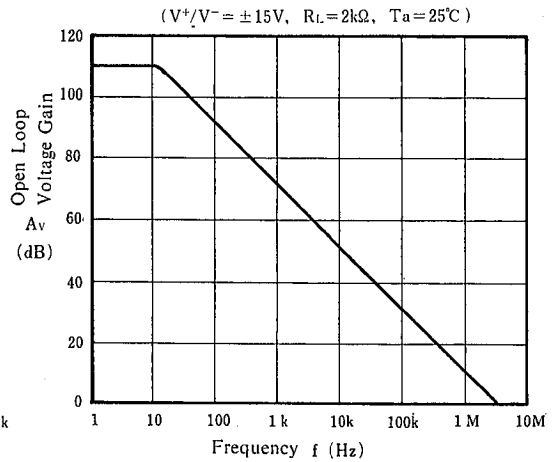
| PARAMETER                       | SYMBOL           | TEST CONDITION                              | MIN. | TYP. | MAX. | UNIT            |
|---------------------------------|------------------|---|------|------|------|-----------------|
| Input Offset Voltage            | V <sub>IO</sub>  | R <sub>S</sub> ≤ 10kΩ                       | —    | 0.5  | 6    | mV              |
| Input Offset Current            | I <sub>IO</sub>  |   | —    | 5    | 200  | nA              |
| Input Bias Current              | I <sub>B</sub>   |   | —    | 20   | 500  | nA              |
| Input Resistance                | R <sub>IN</sub>  |   | 0.3  | 1    | —    | MΩ              |
| Large signal Voltage Gain       | A <sub>V</sub>   | R <sub>L</sub> ≥ 2kΩ, V <sub>O</sub> = ±10V | 86   | 100  | —    | dB <sub>i</sub> |
| Maximum Output Voltage Swing 1  | V <sub>OM1</sub> | R <sub>L</sub> ≥ 10kΩ                       | ±12  | ±14  | —    | V               |
| Maximum Output Voltage Swing 2  | V <sub>OM2</sub> | R <sub>L</sub> ≥ 2kΩ                        | ±10  | ±13  | —    | V               |
| Input Common Mode Voltage Range | V <sub>ICM</sub> |   | ±12  | ±14  | —    | V               |
| Common Mode Rejection Ratio     | CMR              | R <sub>S</sub> ≤ 10kΩ                       | 70   | 90   | —    | dB              |
| Supply Voltage Rejection Ratio  | SVR              | R <sub>S</sub> ≤ 10kΩ                       | 76.5 | 90   | —    | dB              |
| Operating Current               | I <sub>CC</sub>  |   | —    | 7    | 11.3 | mA              |
| Slew Rate                       | SR               |   | —    | 1    | —    | V/μs            |
| Equivalent Input Noise Voltage  | V <sub>NI</sub>  | RIAA, R <sub>S</sub> = 2.2kΩ, 30kHz LPF     | —    | 1.4  | —    | μVrms           |

## TYPICAL CHARACTERISTICS

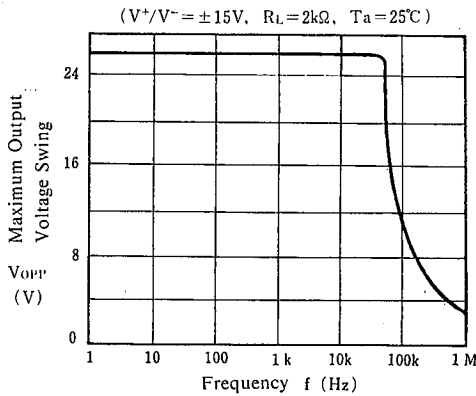
### Equivalent Input Noise Voltage vs. Frequency



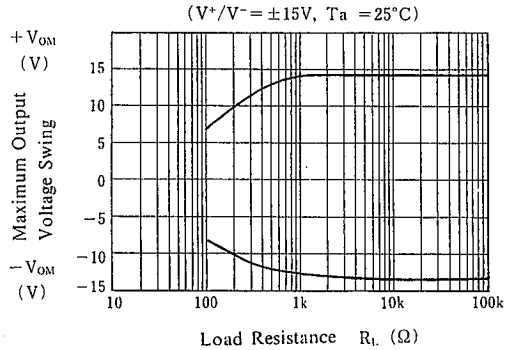
### Open Loop Voltage Gain vs. Frequency



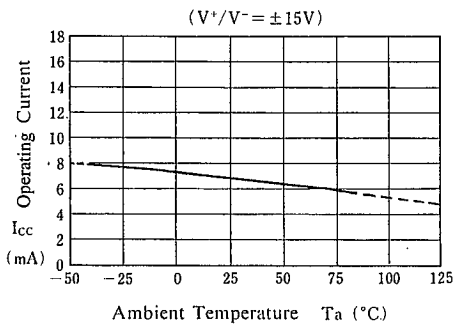
### Maximum Output Voltage Swing vs. Frequency



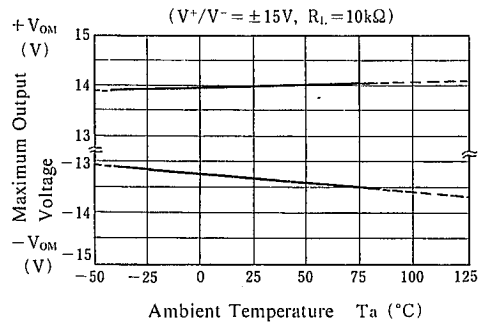
### Maximum Output Voltage Swing vs. Load Resistance



### Operating Current vs. Temperature

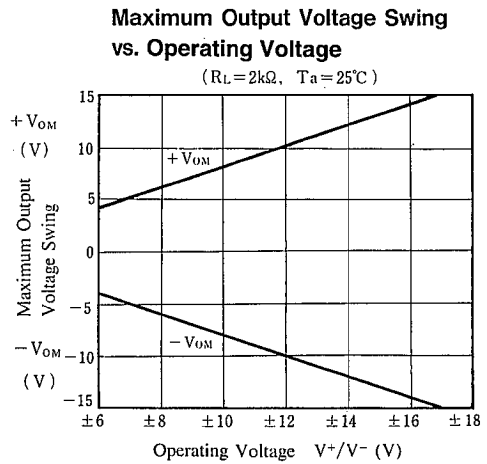
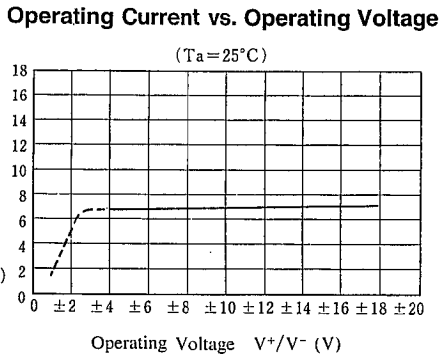
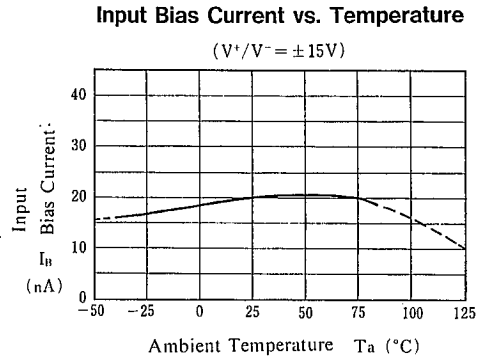
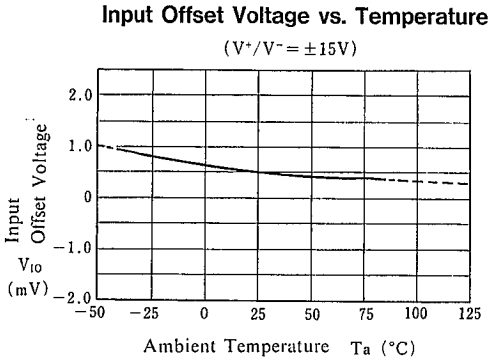


### Maximum Output Voltage Swing vs. Temperature



# NJM2058

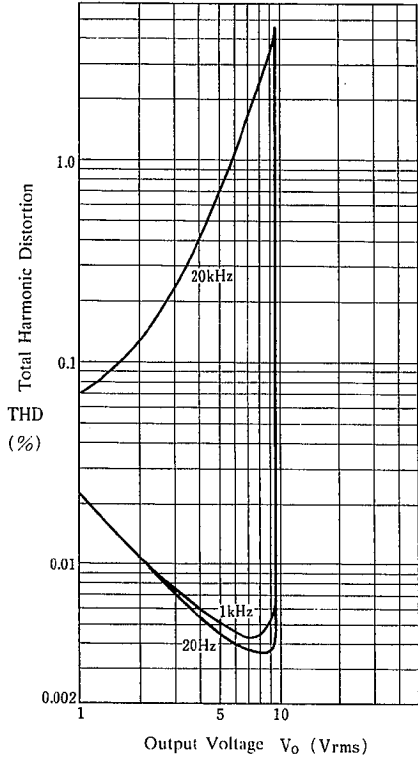
## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS

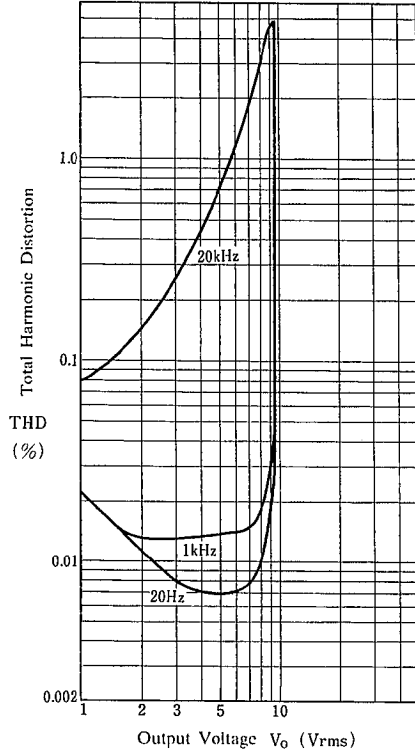
**Total Harmonic Distortion**

( $V^+/V^- = \pm 15V$ , Gain=40dB,  $R_L = 10k\Omega$ ,  
 $T_a = 25^\circ C$ )



**Total Harmonic Distortion**

( $V^+/V^- = \pm 15V$ , Gain=40dB,  $R_L = 2k\Omega$ ,  
 $T_a = 25^\circ C$ )



# NJM2058

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## MEMO

**[CAUTION]**

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