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## SINGLE SUPPLY HIGH-SLEW RATE SINGLE OPERATIONAL AMPLIFIER

### ■ GENERAL DESCRIPTION

The NJM2716 is single supply single high slew rate operational amplifier.

It is applicable to A/D converters, FAX, scanner which require the single supply operation and high slew rate.

### ■ PACKAGE OUTLINE

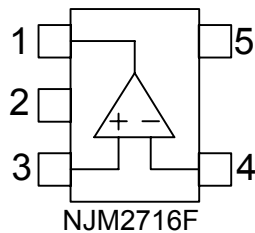


NJM2716F

### ■ FEATURES

- Single Supply
- Operating Voltage      +2.7V to 12V
- Operating Current      5.5mA max.
- High Slew Rate        40V/μs typ.
- Bipolar Technology
- Package Outline        SOT-23-5

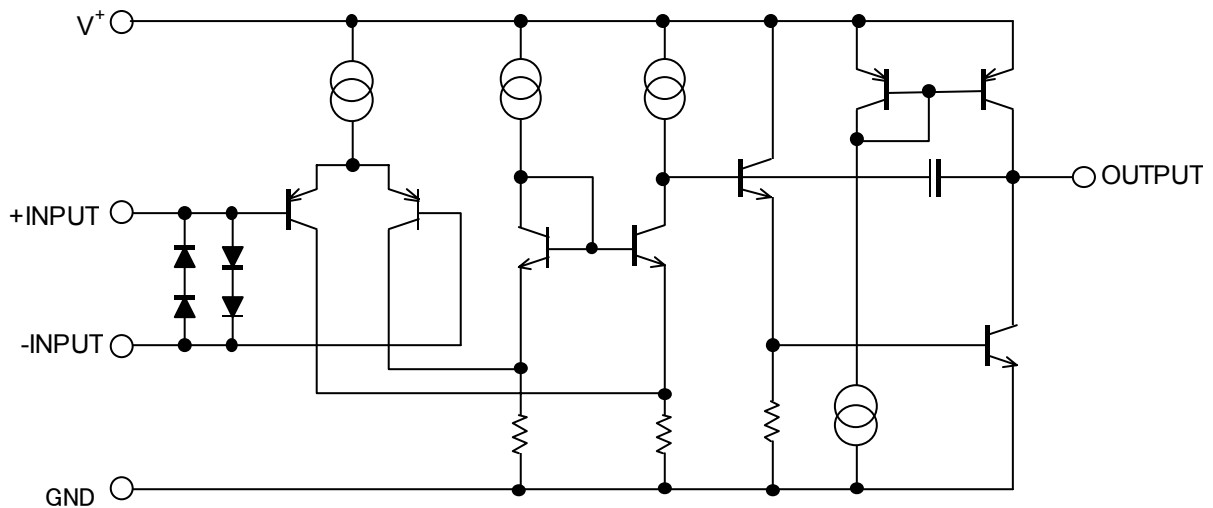
### ■ PIN CONFIGURATION



#### PIN FUNCTION

- 1.OUTPUT
- 2.GND
- 3.+INPUT
- 4.-INPUT
- 5.V<sup>+</sup>

### ■ EQUIVALENT CIRCUIT



# NJM2716

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

| PARAMETER                   | SYMBOL            | RATINGS            | UNIT |
|-----------------------------|-------------------|--------------------|------|
| Supply Voltage              | V <sup>+</sup>    | 15.0               | V    |
| Power Dissipation           | P <sub>D</sub>    | 200                | mW   |
| Differential Input Voltage  | V <sub>ID</sub>   | ±3                 | V    |
| Input Voltage               | V <sub>IC</sub>   | -0.3 to +15 (note) | V    |
| Output Sink Current         | I <sub>SINK</sub> | 10                 | mA   |
| Operating Temperature Range | T <sub>opr</sub>  | -40 to +85         | °C   |
| Storage Temperature Range   | T <sub>stg</sub>  | -40 to +125        | °C   |

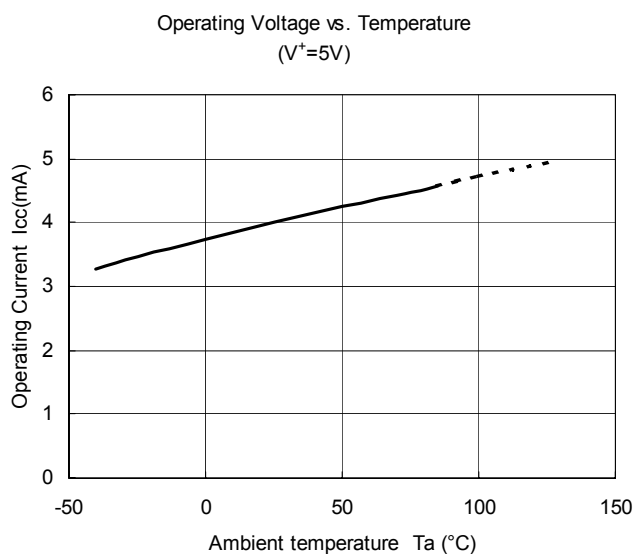
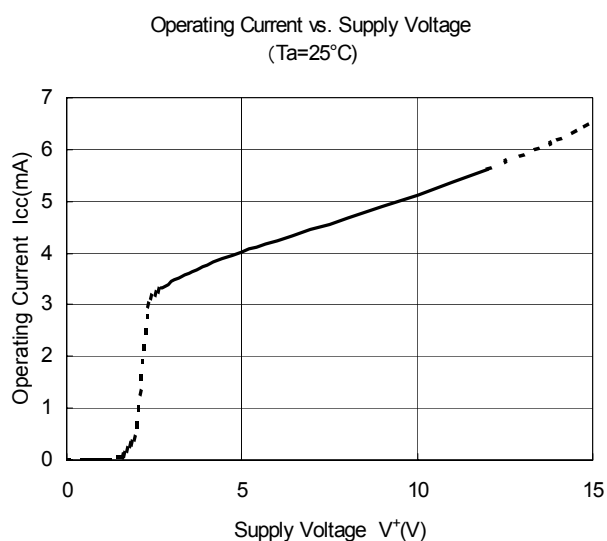
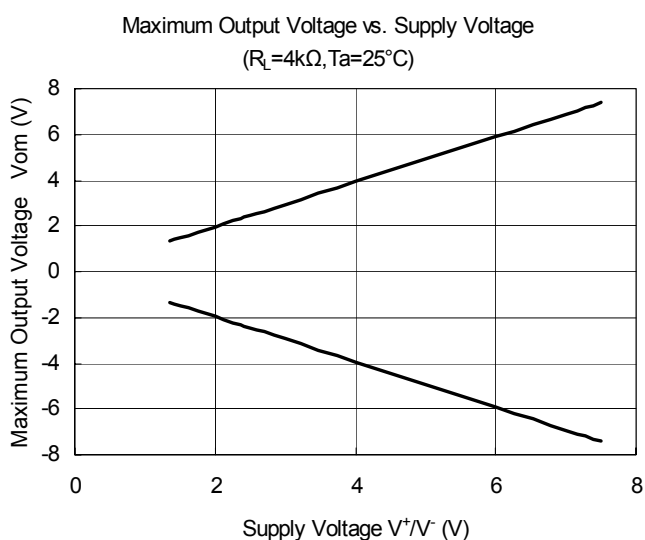
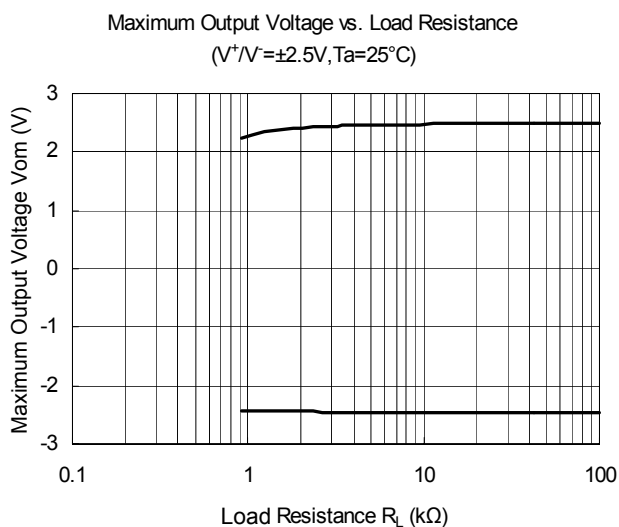
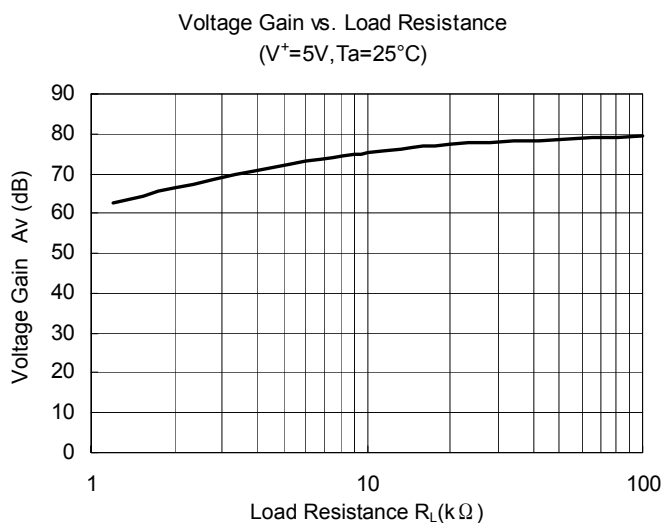
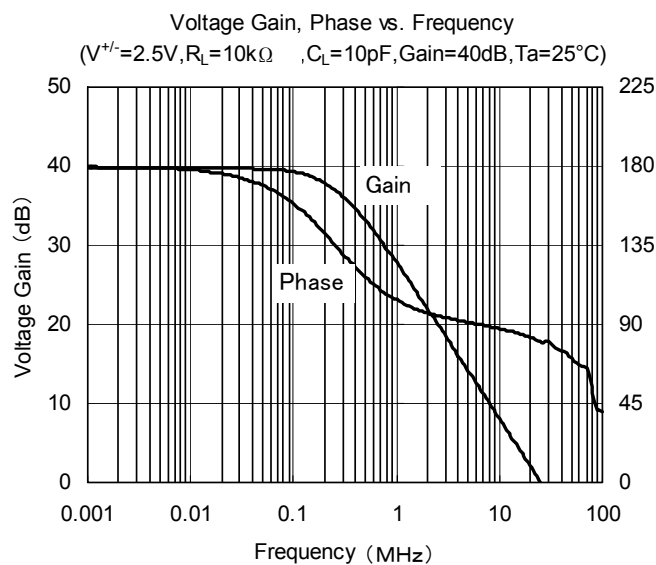
(note) When supply voltage is less than 15V, the absolute maximum input voltage is equal to the supply voltage.

## ■ ELECTRICAL CHARACTERISTICS ( V<sup>+</sup>=5V, Ta=25°C)

| PARAMETER                       | SYMBOL                        | TEST CONDITION              | MIN.     | TYP. | MAX. | UNIT |
|---------------------------------|-------------------------------|-----------------------------|----------|------|------|------|
| Input Offset Voltage            | V <sub>IO</sub>               | R <sub>s</sub> =0Ω          | -        | 1    | 10   | mV   |
| Input Offset Current            | I <sub>IO</sub>               |                             | -        | 0.2  | 0.5  | μA   |
| Input Bias Current              | I <sub>B</sub>                |                             | -        | 1    | 2.5  | μA   |
| Voltage Gain                    | A <sub>V</sub>                | R <sub>L</sub> ≥10kΩ        | 60       | 75   | -    | dB   |
| Input Common Mode Voltage Range | V <sub>ICM</sub>              |                             | 0 to 3.8 | -    | -    | V    |
| Common Mode Rejection Ratio     | CMR                           |                             | 45       | 80   | -    | dB   |
| Supply Voltage Rejection Ratio  | SVR                           |                             | 50       | 75   | -    | dB   |
| Maximum Output Voltage1         | V <sub>OM</sub> <sup>+1</sup> | R <sub>L</sub> =4kΩ to GND  | 4.3      | 4.5  | -    | V    |
|                                 | V <sub>OM</sub> <sup>-1</sup> |                             | -        | 0.05 | 0.1  |      |
| Maximum Output Voltage 2        | V <sub>OM</sub> <sup>+2</sup> | R <sub>L</sub> =4kΩ to 2.5V | 4.5      | 4.7  | -    | V    |
|                                 | V <sub>OM</sub> <sup>-2</sup> |                             | -        | 0.1  | 0.5  |      |
| Output Source Current           | I <sub>SOURCE</sub>           |                             | 1        | 2.5  | -    | mA   |
| Output Sink Current             | I <sub>SINK</sub>             |                             | 2.5      | 5    | -    | mA   |
| Operating Current               | I <sub>CC</sub>               | R <sub>L</sub> =∞           | -        | 4.2  | 5.5  | mA   |
| Slew Rate                       | SR                            |                             | -        | 40   | -    | V/μs |
| Unity Gain Bandwidth            | f <sub>T</sub>                |                             | -        | 30   | -    | MHz  |

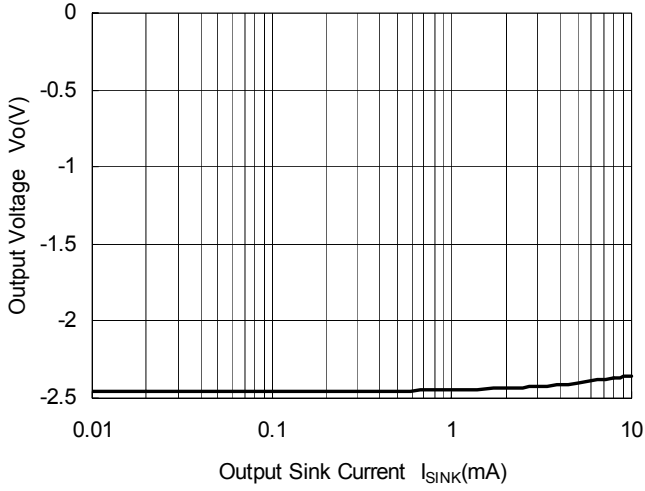
Ver.5

## TYPICAL CHARACTERISTICS

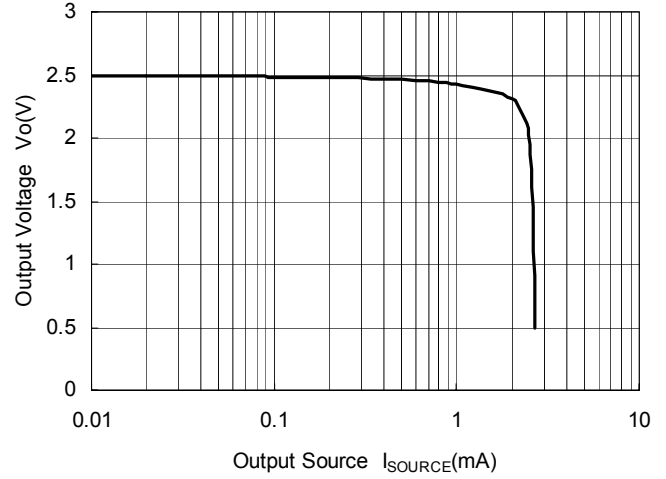


## TYPICAL CHARACTERISTICS

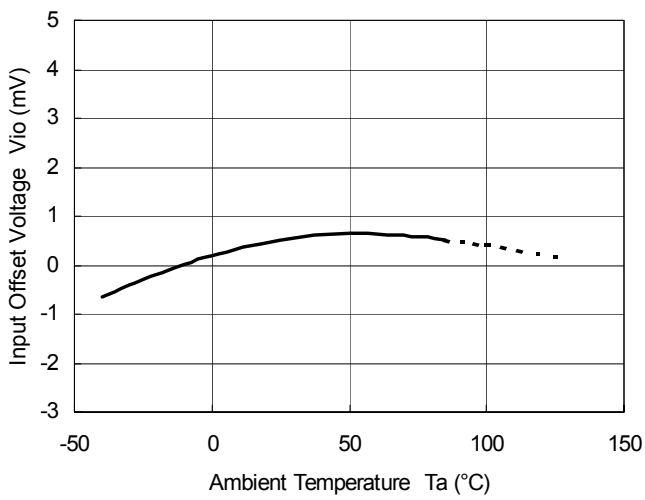
Output Voltage vs. Output Sink Current  
( $V^+/V^- = \pm 2.5V, T_a = 25^\circ C$ )



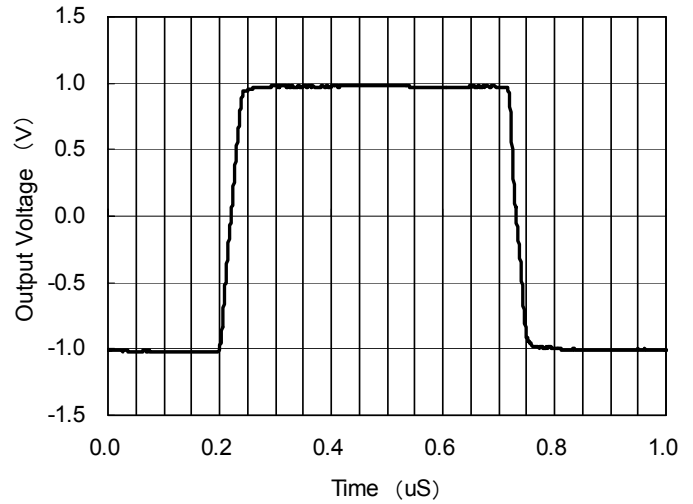
Output Voltage vs. Output Source Current  
( $V^+/V^- = \pm 2.5V, T_a = 25^\circ C$ )



Input Offset Voltage vs. Temperature  
( $V^+ = 5V$ )



Output Voltage vs. Time  
( $V^+/V^- = \pm 2.5V, V_{in} = 2V_{pp}, f = 1MHz, R_L = 10k\Omega, C_L = 10pF, A_v = 0dB$ )



# MEMO

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