

## Audio Limiter

### ■ GENERAL DESCRIPTION

The **NJM2761** is the audio limiter for speaker protection.  
 The limit level is adjustable by external resistor.  
 It is suitable for PC, portable audio and others.

### ■ PACKAGE OUTLINE



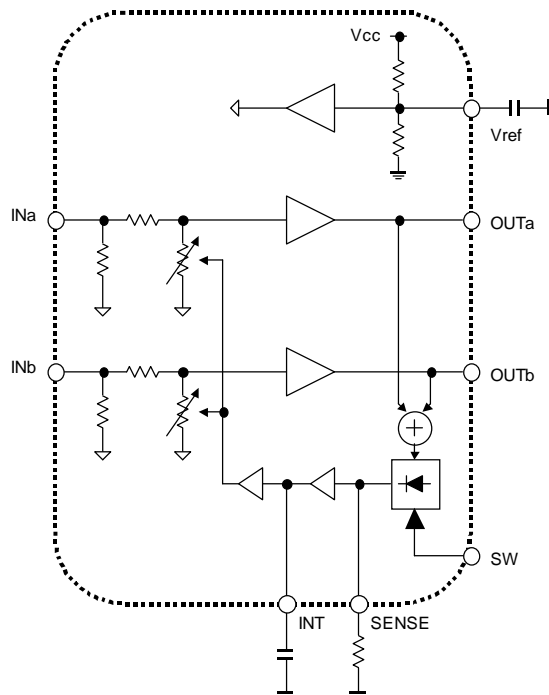
**NJM2761RB2**

**NJM2761V**

### ■ FEATURES

- Wide Operating Voltage +2.7V to +13.0V
- Variable Limit Level by external resistor 0.2 to 1V
- Low Output Noise -90dBV max.
- Bipolar Technology
- Package Outline TVSP10, SSOP14

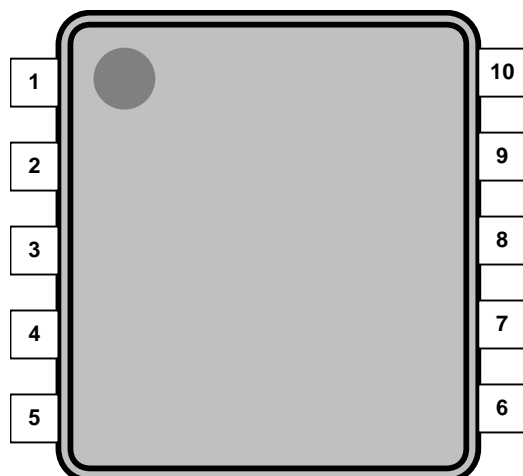
### ■ BLOCK DIAGRAM



# NJM2761

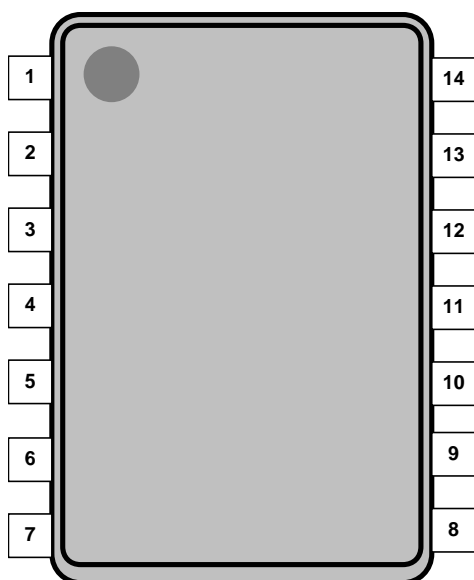
## ■ PIN CONFIGURATION

TVSP10



1. V+
2. OUTa
3. INa
4. INT
5. VREF
6. SENCE
7. SW
8. INb
9. OUTb
10. GND

SSOP14



1. V+
2. OUTa
3. INa
4. INT
5. VREF
6. NC
7. NC
8. NC
9. NC
10. SENCE
11. SW
12. INb
13. OUTb
14. GND

## ■ABSOLUTE MAXIMUM RATING (Ta=25°C)

| PARAMETER                   | SYMBOL           | RATINGS                    | UNIT |
|-----------------------------|------------------|----------------------------|------|
| Supply Voltage              | V <sup>+</sup>   | 14                         | V    |
| Power Dissipation           | P <sub>D</sub>   | 320(TVSP10)<br>300(SSOP14) | mW   |
| Operating Temperature Range | T <sub>opr</sub> | -20 to +75                 | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -40 to +125                | °C   |

## ■ELECTRICAL CHARACTERISTICS

### ● POWER SUPPLY (Ta=25°C, V<sup>+</sup>=5V unless otherwise specified)

| PARAMETER         | SYMBOL           | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-------------------|------------------|----------------|------|------|------|------|
| Operating Voltage | V <sup>+</sup>   | -              | 2.7  | 5.0  | 13.0 | V    |
| Operating Current | I <sub>CC</sub>  | No Signal      | -    | 1.5  | 2.0  | mA   |
| Reference Voltage | V <sub>ref</sub> | No Signal      | 2.2  | 2.5  | 2.7  | V    |

### ● AC CHARACTERISTICS

(Ta=25°C, V<sup>+</sup>=5V, V<sub>IN</sub>=1Vrms/f=1kHz, R<sub>sense</sub>=20kΩ, BW=400-30kHz unless otherwise specified)

| PARAMETER                 | SYMBOL            | TEST CONDITION   | MIN. | TYP.         | MAX.          | UNIT           |
|---------------------------|-------------------|--|------|--------------|---------------|----------------|
| Limit Level 1             | G <sub>LIM1</sub> |  | 150  | 200          | 250           | mVrms          |
| Limit Level 2             | G <sub>LIM2</sub> | V <sup>+</sup> =13V, R <sub>sense</sub> =4kΩ, V <sub>IN</sub> =2Vrms | 0.7  | 1.0          | 1.3           | Vrms           |
| Limit Off                 | G <sub>OFF</sub>  | SW=2V  | 0.9  | 1.0          | 1.1           | Vrms           |
| Output Noise              | V <sub>NO</sub>   | R <sub>S</sub> =0Ω, A-weighting,                                     | -    | -100<br>(10) | -90<br>(31.6) | dBV<br>(μVrms) |
| Total Harmonic Distortion | THD+N             |  | -    | -            | 1             | %              |
| Cross Talk                | CT                |  | -    | -            | -70           | dB             |
| Ripple Rejection          | RR                | V <sub>ripple</sub> =100mVrms, f=1kHz                                | -    | -            | -70<br>(316)  | dBV<br>(μVrms) |

### ● CONTROL CHARACTERISTICS (Ta=25°C, V<sup>+</sup>=5V unless otherwise specified)

| PARAMETER                | SYMBOL          | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------------|-----------------|----------------|------|------|------|------|
| Low Level Input Voltage  | V <sub>IL</sub> | -              | -    | -    | 0.5  | V    |
| High Level Input Voltage | V <sub>IH</sub> | -              | 2.0  | -    | -    | V    |


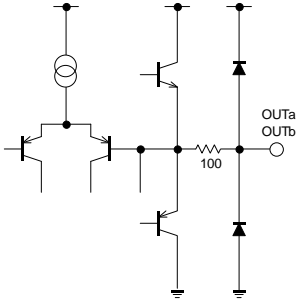
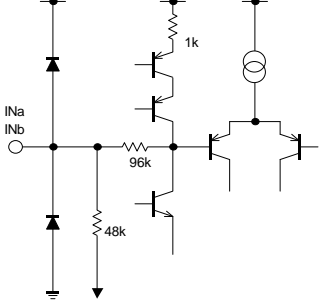
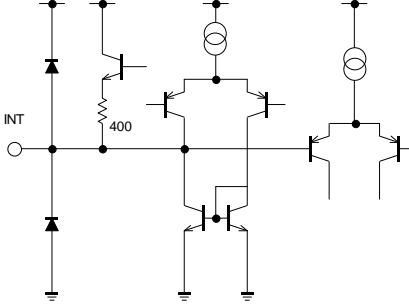
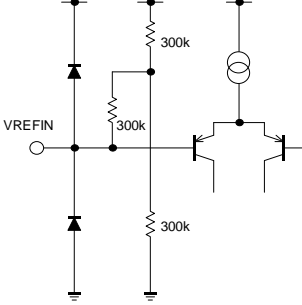
## ■CONTROL TERMINAL EXPLANATION

SW(TVSP10:7pin, SSOP14:11pin)

| MODE        | STATUS | NOTE                   |
|-------------|--------|------------------------|
| Limiter ON  | L      | Limiter is active.     |
| Limiter OFF | H      | Limiter is not active. |

# NJM2761

## ■ TERMINAL DESCRIPTION

| No.<br>TVSP10(SSOP14) | SYMBOL       | FUNCTION   | EQUIVALENT CIRCUIT   | VOLTAGE |
|-----------------------|--------------|--|--|---------|
| 1                     | V+           | Power Supply Terminal  |   | -       |
| 2<br>9(13)            | OUTa<br>OUTb | Ach Output Terminal<br>Bch Output Terminal                     |    | V+/2    |
| 3<br>8(12)            | INa<br>INb   | Ach Input Terminal<br>Bch Input Terminal                       |   | V+/2    |
| 4                     | INT          | Smoothing Capacitor<br>Connection<br>Terminal                  |  | 0.7V    |
| 5                     | VREFIN       | Reference Voltage Stabilizing<br>Capacitor Connection Terminal |  | V+/2    |

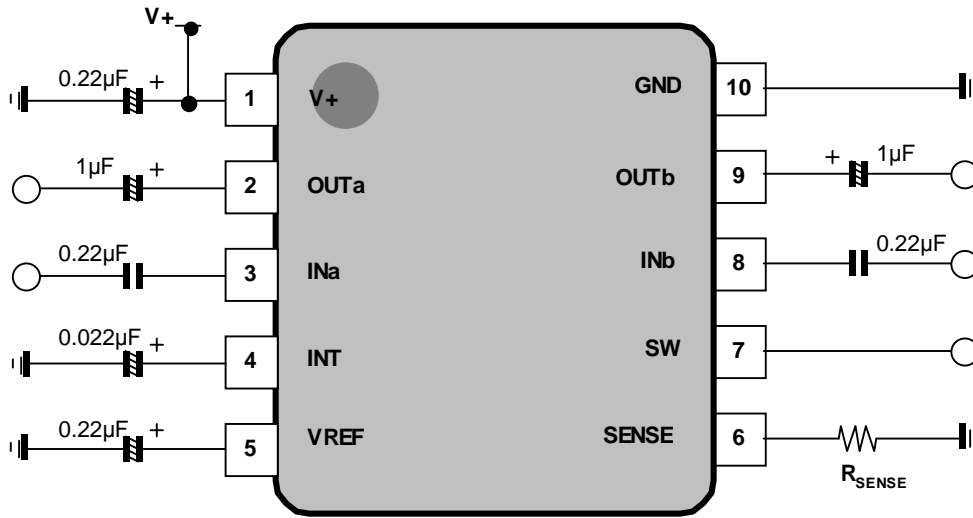
## ■ TERMINAL DESCRIPTION

| No.<br>TVSP10(SSOP14) | SYMBOL | FUNCTION  | EQUIVALENT CIRCUIT | VOLTAGE |
|-----------------------|--------|---|--------------------|---------|
| 6(10)                 | SENSE  | Resister Connection Terminal<br>for Limit Level Setting |                    | 0V      |
| 7(11)                 | SW     | Limiter ON/OFF Switch                                   |                    | -       |
| 10(14)                | GND    | Ground Terminal   |                    | -       |

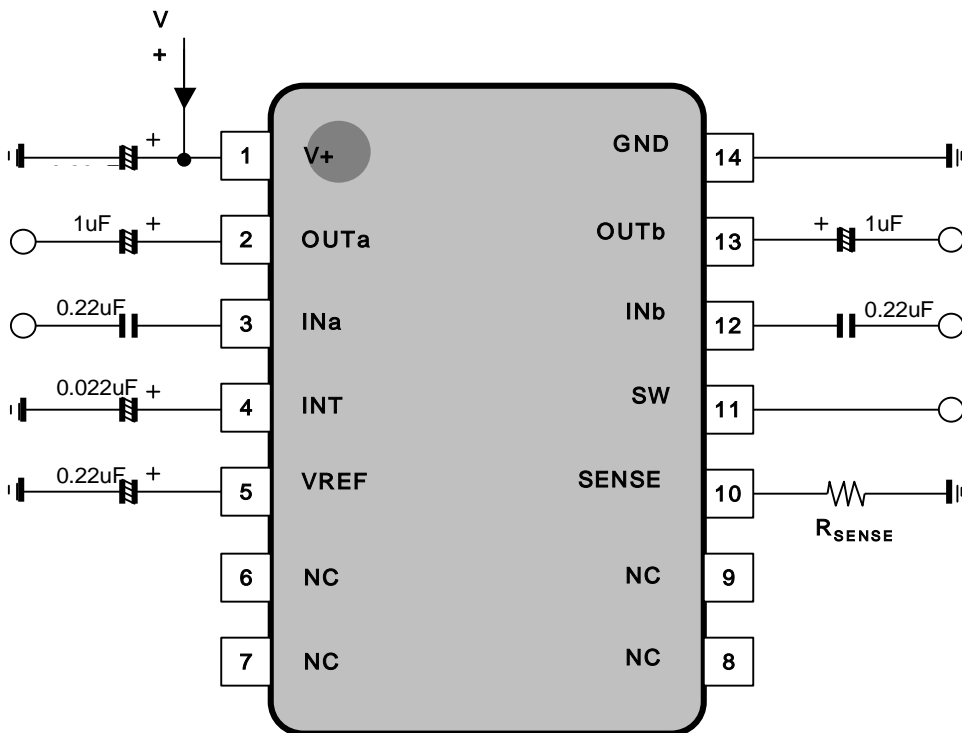
# NJM2761

## APPLICATION CIRCUIT

TVSP10



SSOP14



\* The limit level is twice as much as set point when a signal is input into a either one channel of Ach or Bch.

\* For the above reason, monaural signal should input both INa and INb.

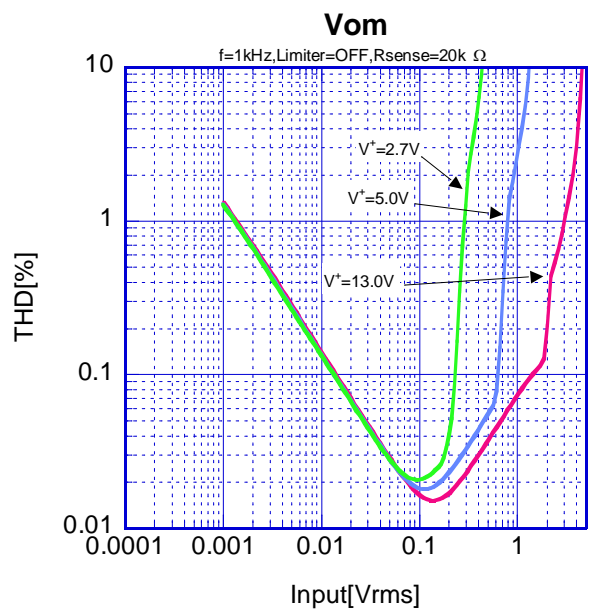
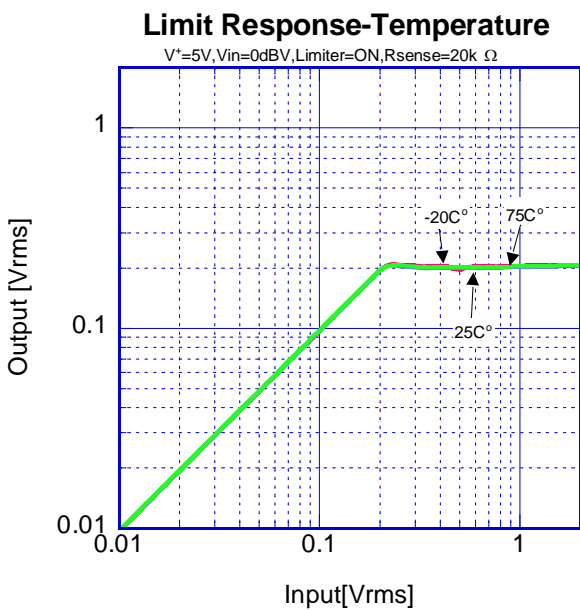
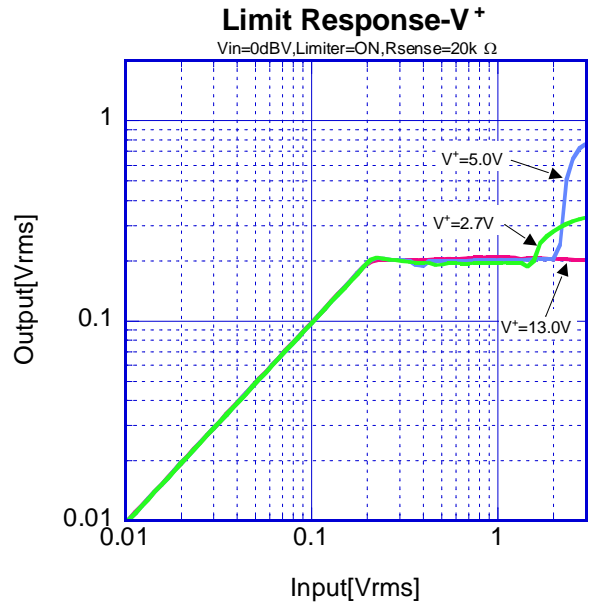
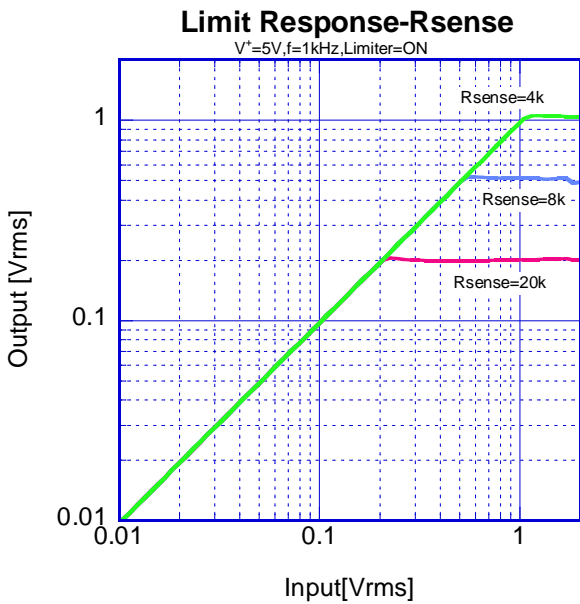
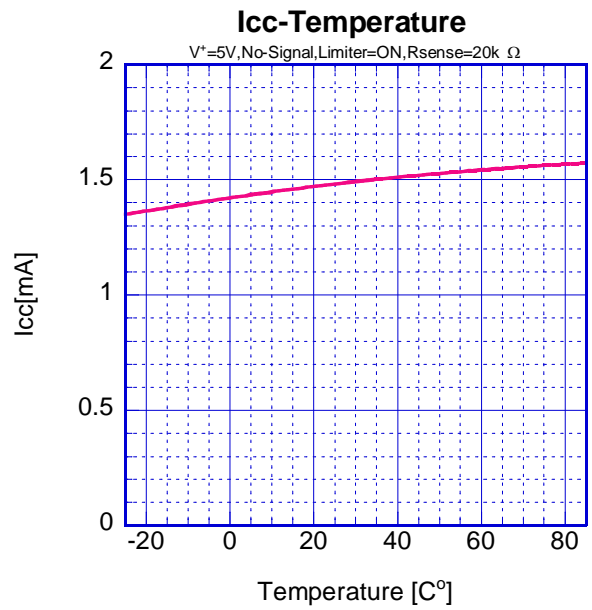
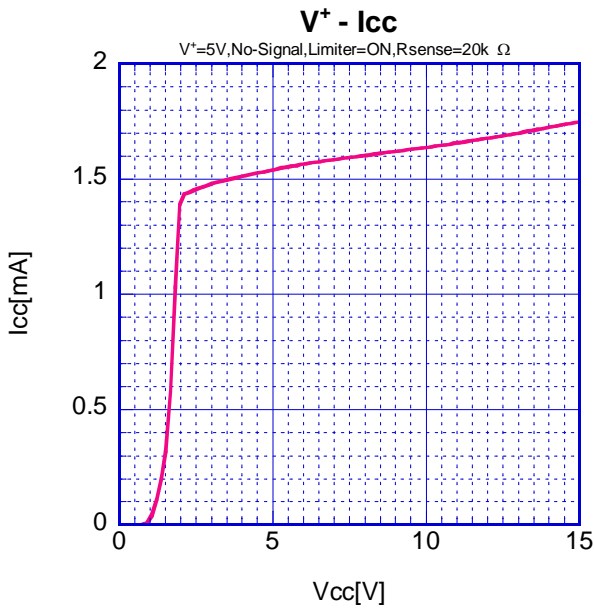
$$R_{SENSE} = 4000 / V_{lim} [\text{Ohm}]$$

V<sub>lim</sub>: Limit level (V<sub>rms</sub>)

Limit range: 200mV<sub>rms</sub> to 1V<sub>rms</sub> (20k to 4kOhm)

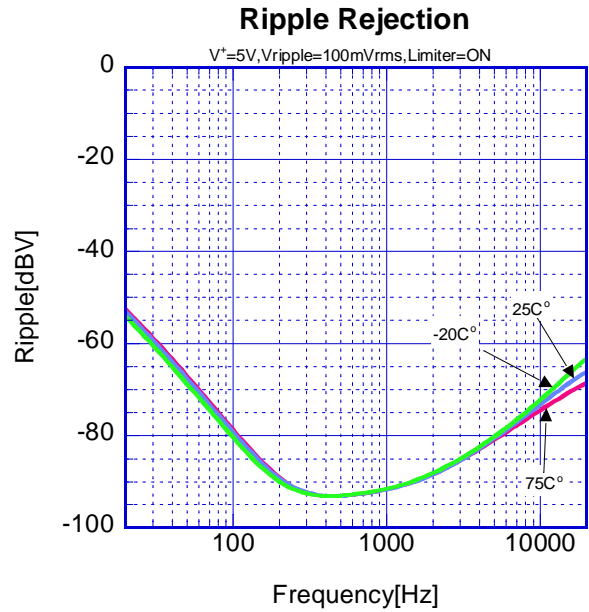
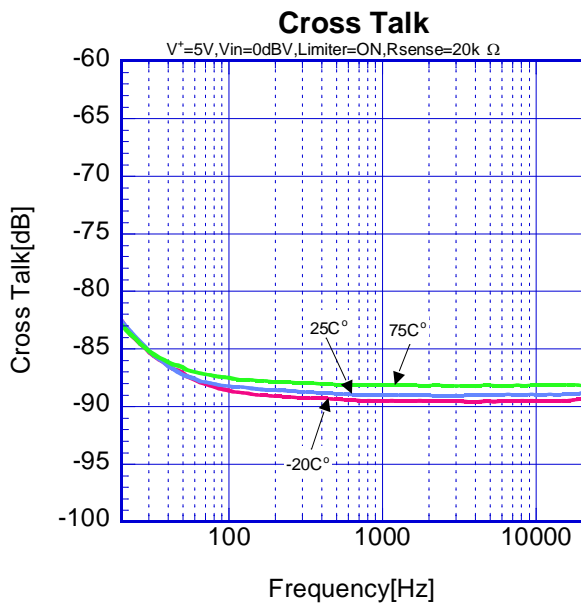
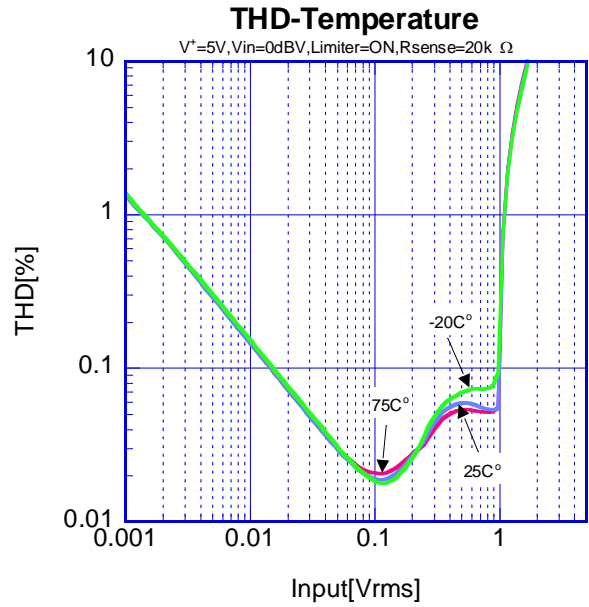
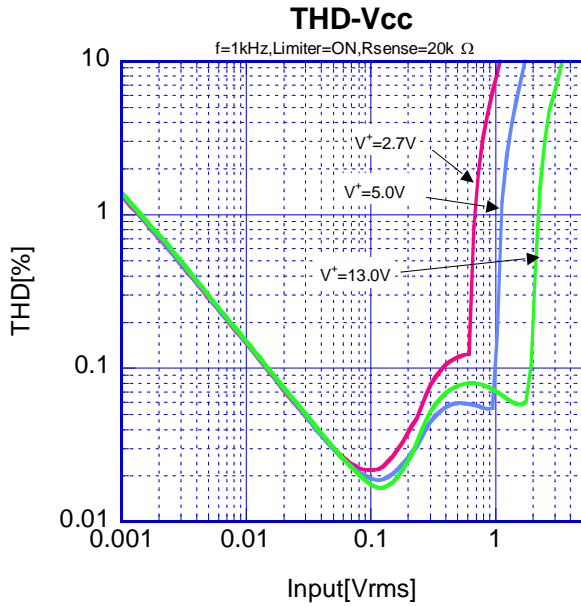
\* Please be careful of leakage current from the surrounding wiring because the INT terminal is high impedance.

## TYPICAL CHARACTERISTICS



# NJM2761

## TYPICAL CHARACTERISTICS



**[CAUTION]**  
 The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [Audio Amplifiers](#) category:*

*Click to view products by [Nisshinbo](#) manufacturer:*

Other Similar products are found below :

[LV47002P-E](#) [NCP2811AFCT1G](#) [NCP2890AFCT2G](#) [SSM2377ACBZ-R7](#) [IS31AP4915A-QFLS2-TR](#) [NCP2820FCT2G](#) [TDA1591T](#)  
[TDA7563AH](#) [SSM2529ACBZ-R7](#) [MAX9890AETA+T](#) [TS2012EIJT](#) [NCP2809BMUTXG](#) [NJW1157BFC2](#) [SSM2375CBZ-REEL7](#)  
[IS31AP4996-GRLS2-TR](#) [STPA002OD-4WX](#) [NCP2823BFCT1G](#) [MAX9717DETA+T](#) [MAX9717CETA+T](#) [MAX9724AEBC+TG45](#)  
[LA4450L-E](#) [IS31AP2036A-CLS2-TR](#) [MAX9723DEBE+T](#) [TDA7563ASMTR](#) [AS3561-DWLT](#) [SSM2517CBZ-R7](#) [MP1720DH-12-LF-P](#)  
[SABRE9601K](#) [THAT1646W16-U](#) [MAX98396EWB+](#) [PAM8965ZLA40-13](#) [BD37532FV-E2](#) [BD5638NUX-TR](#) [BD37512FS-E2](#) [BD37543FS-](#)  
[E2](#) [BD3814FV-E2](#) [TPA3140D2PWPR](#) [TS2007EIJT](#) [IS31AP2005-DLS2-TR](#) [SSM2518CPZ-R7](#) [AS3410-EQFP-500](#) [FDA4100LV](#)  
[MAX98306ETD+T](#) [TS4994EIJT](#) [NCP2820FCT1G](#) [NCP2823AFCT2G](#) [NCS2211MNTXG](#) [CPA2233CQ16-A1](#) [OPA1604AIPWR](#)  
[OPA1612AQDRQ1](#)