

## 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



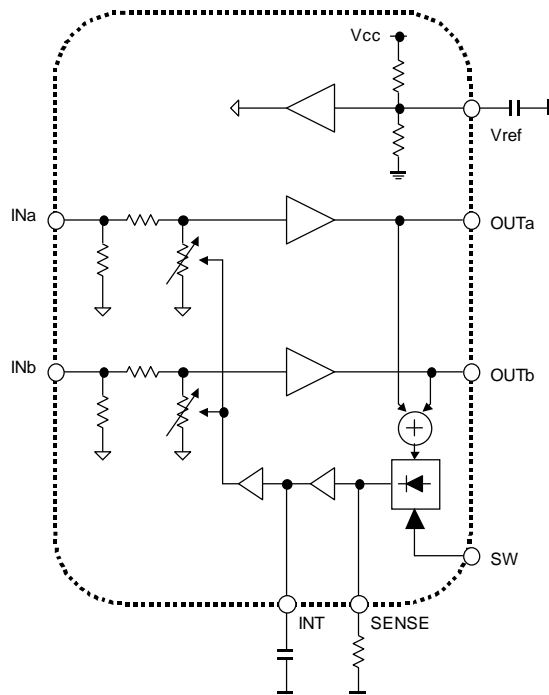
NJM2761RB2

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

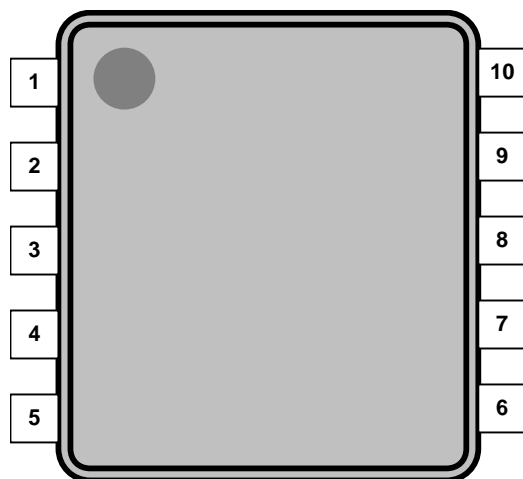
### ■ BLOCK DIAGRAM



# NJM2761

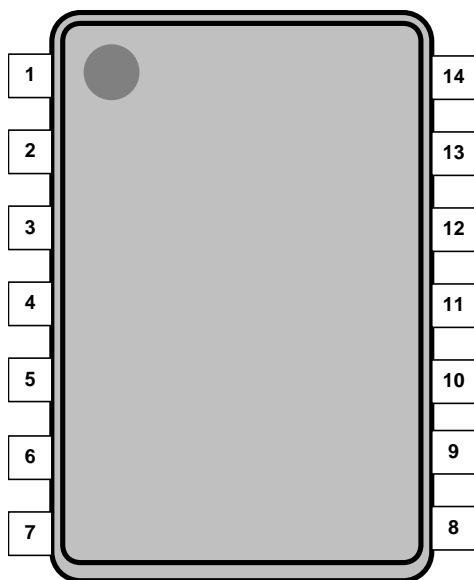
## ■ PIN CONFIGURATION

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) 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 (10)	-90 (31.6)	dBV (μVrms)
Total Harmonic Distortion	THD+N		-	-	1	%
Cross Talk	CT		-	-	-70	dB
Ripple Rejection	RR	V <sub>ripple</sub> =100mVrms, f=1kHz	-	-	-70 (316)	dBV (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.

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## ■ TERMINAL DESCRIPTION

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

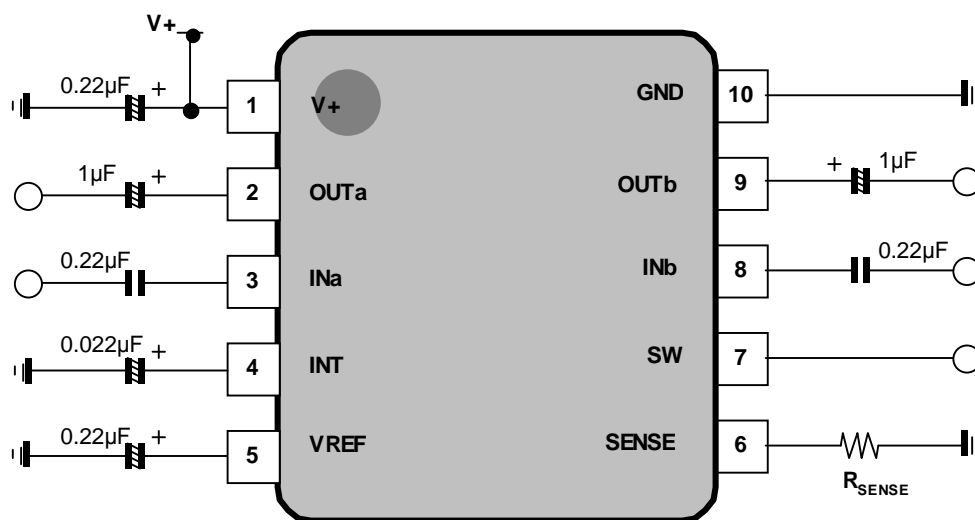
## ■ TERMINAL DESCRIPTION

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

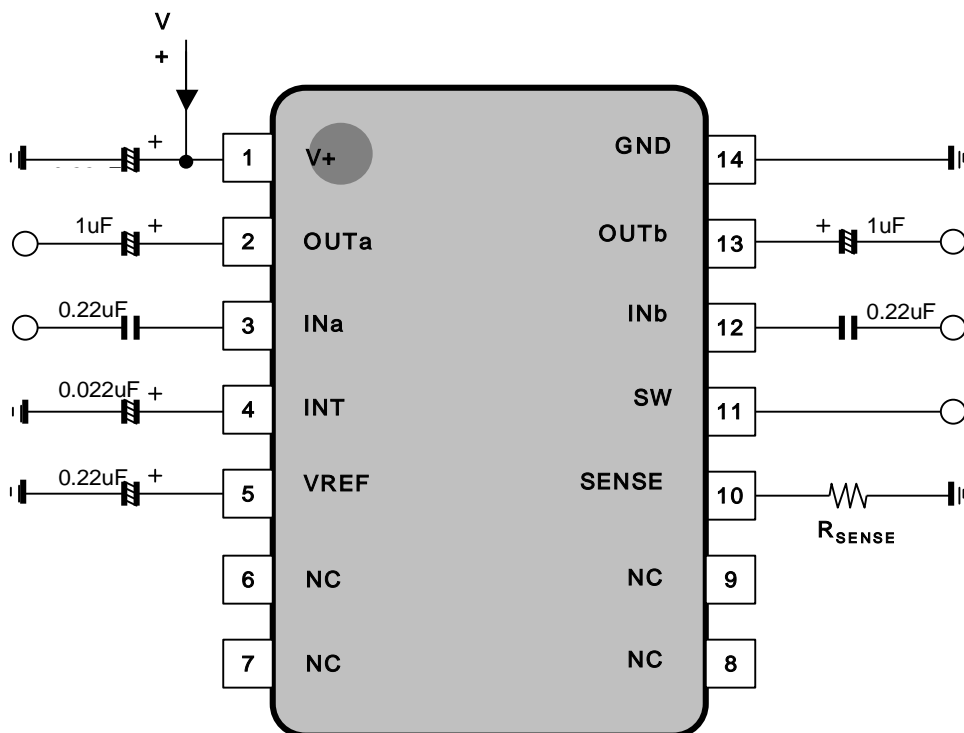
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## APPLICATION CIRCUIT

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.

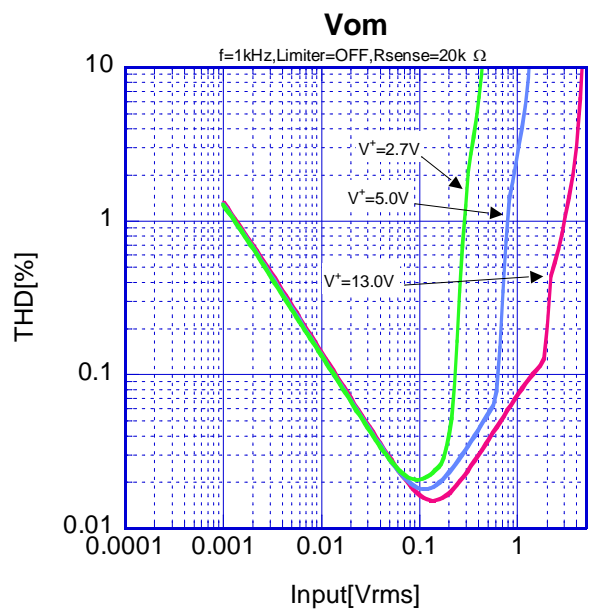
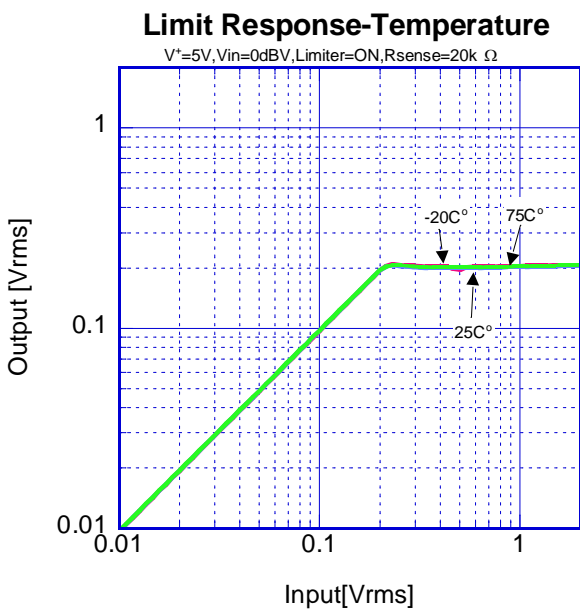
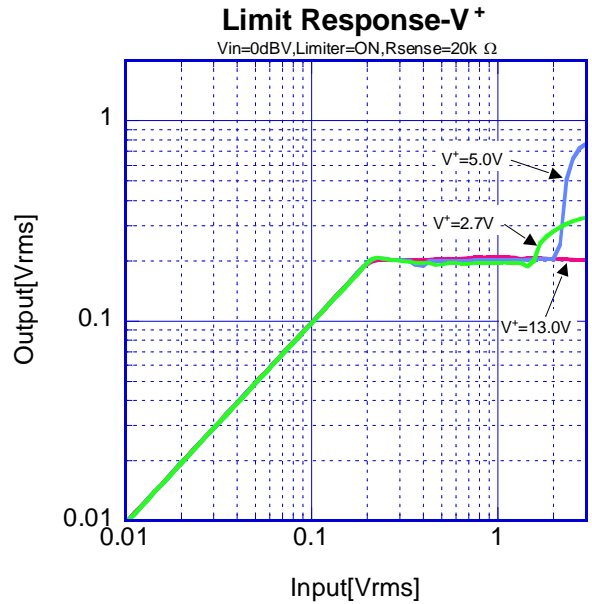
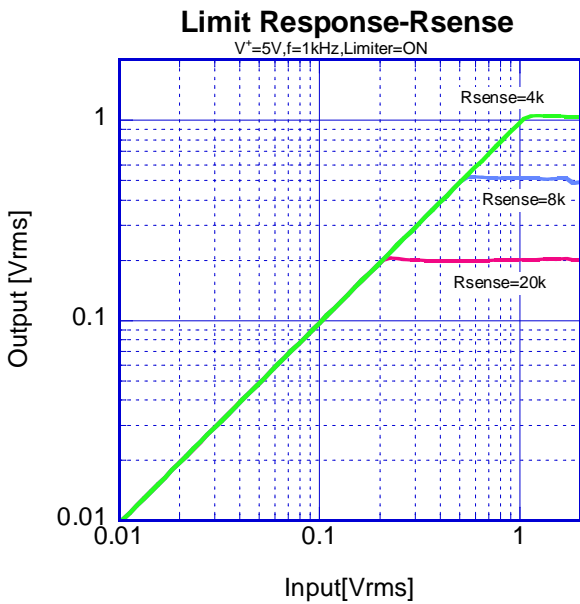
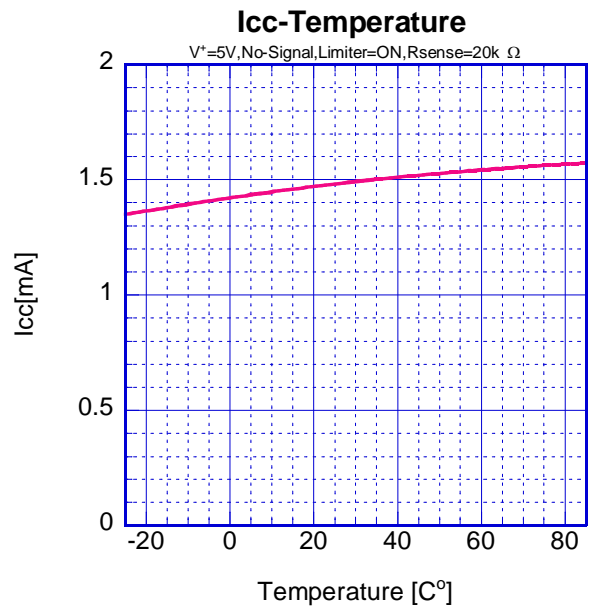
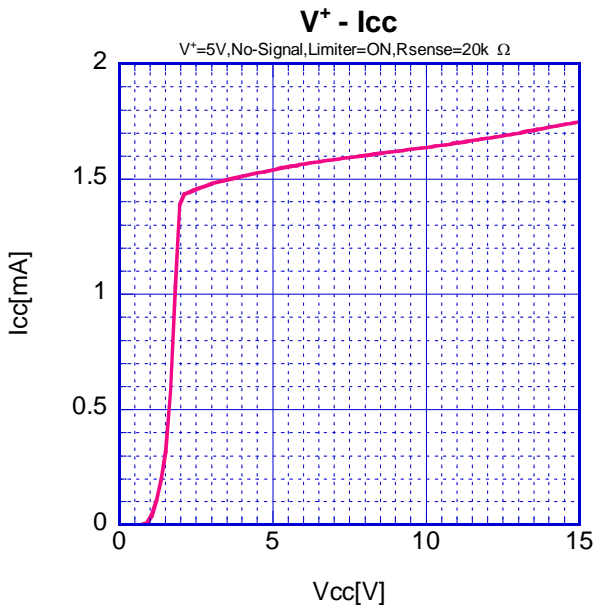
$$R_{SENSE} = 4000 / V_{lim} [\text{Ohm}]$$

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

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

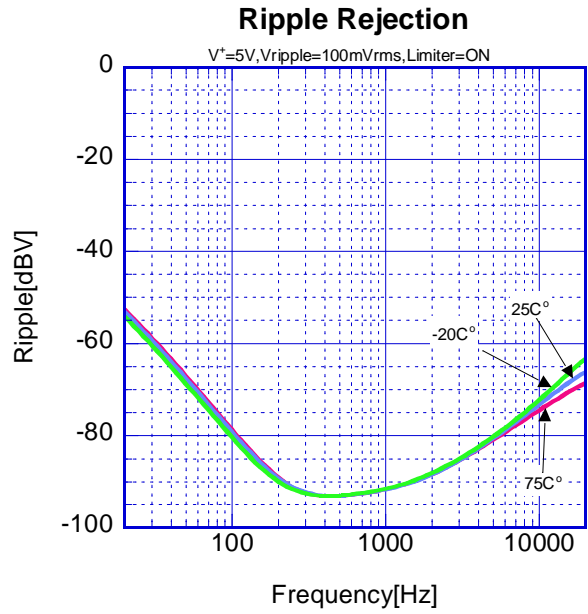
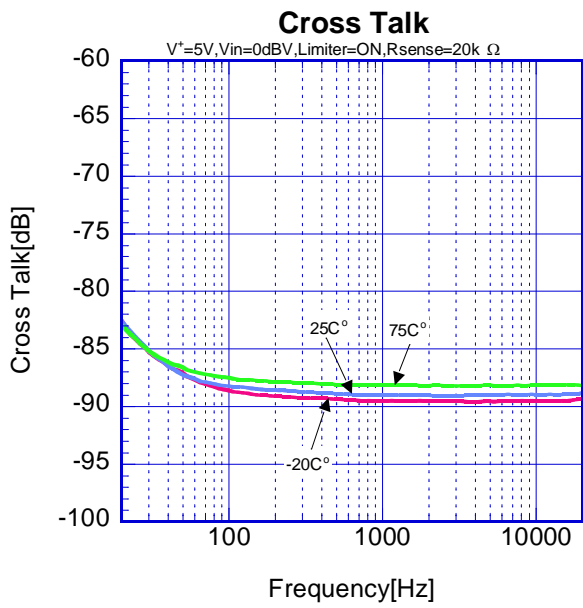
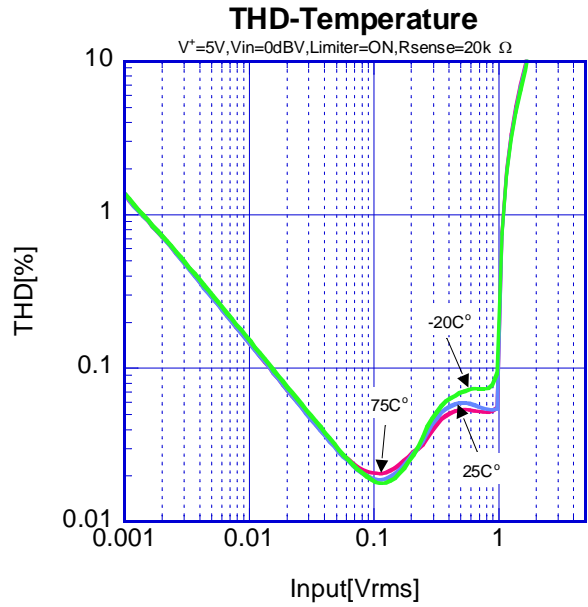
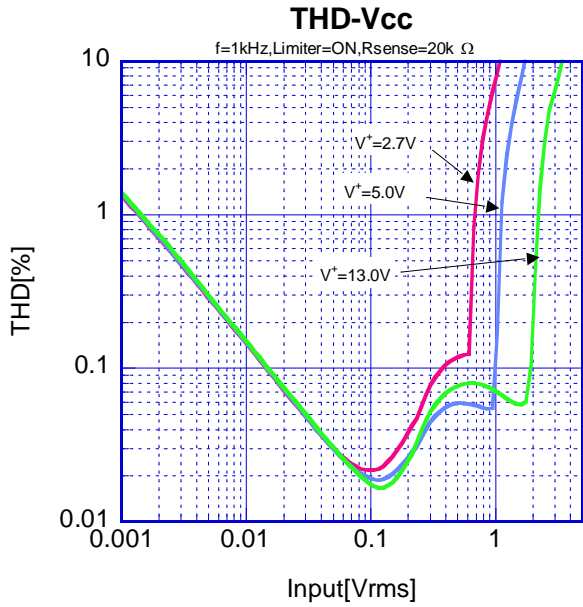
\* Please be careful of leakage current from the surrounding wiring because the INT terminal is high impedance.

## TYPICAL CHARACTERISTICS



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## TYPICAL CHARACTERISTICS



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