

## 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

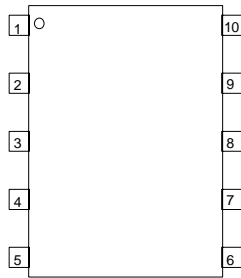


**NJM2761RB2**

### ■ FEATURES

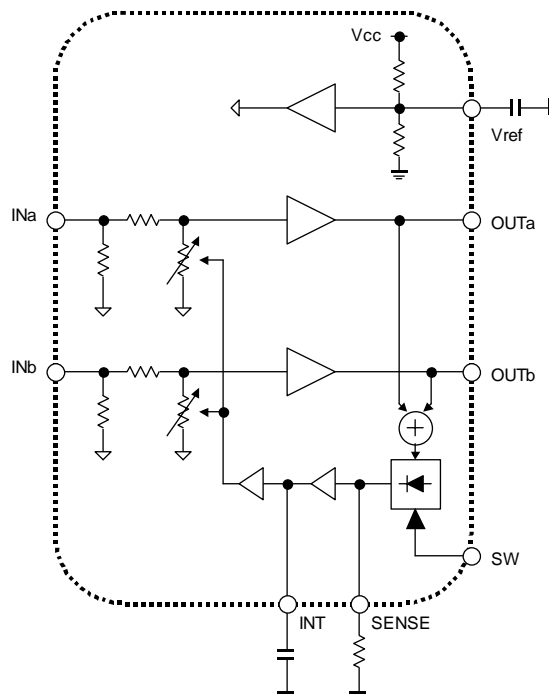
- Wide Operating Voltage +2.7V to +13.0V
- Variable Limit Level by external resistor 0.2 to 1V
- Low Output Noise -90dBV max.
- Bipolar Technology
- Package Outline TVSP10

### ■ PIN CONFIGURATION



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

### ■ BLOCK DIAGRAM



# NJM2761

## ■ABSOLUTE MAXIMUM RATING (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	14	V
Power Dissipation	P <sub>D</sub>	320	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>=1V<sub>rms</sub>/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	mV <sub>rms</sub>
Limit Level 2	G <sub>LIM2</sub>	V <sup>+</sup> =13V, R <sub>sense</sub> =4kΩ	0.7	1.0	1.3	V <sub>rms</sub>
Limit Off	G <sub>OFF</sub>	SW=2V	0.9	1.0	1.1	V <sub>rms</sub>
Output Noise	V <sub>NO</sub>	R <sub>S</sub> =0Ω, A-weighting, V <sub>IN</sub> =2V <sub>rms</sub>	-	-100 (10)	-90 (31.6)	dBV (μV <sub>rms</sub> )
Total Harmonic Distortion	THD+N		-	-	1	%
Cross Talk	CT		-	-	-70	dB
Ripple Rejection	RR	V <sub>ripple</sub> =100mV <sub>rms</sub> , f=1kHz	-	-	-70 (316)	dBV (μV <sub>rms</sub> )

### ● 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(7pin)

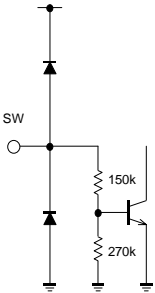

MODE	STATUS	NOTE
Limiter ON	L	Limiter is active.
Limiter OFF	H	Limiter is not active.

## ■TERMINAL DESCRIPTION

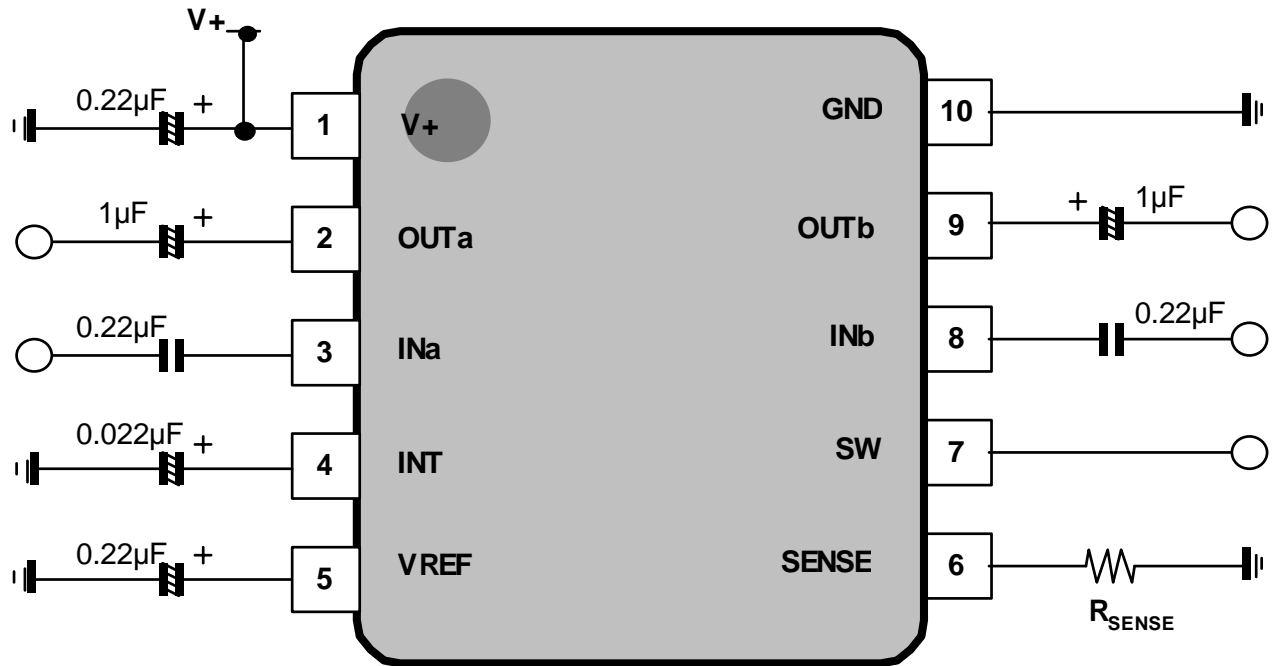
No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT	VOLTAGE
1	V+	Power Supply Terminal	—	-
2 9	OUTa OUTb	Ach Output Terminal Bch Output Terminal		$V+/2$
3 8	INa INb	Ach Input Terminal Bch Input Terminal		$V+/2$
4	INT	Smoothing Capacitor Connection Terminal		0.7V
5	VREFIN	Reference Voltage Stabilizing Capacitor Connection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

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## ■TERMINAL DESCRIPTION

No.	SYMBOL	FUNCTION	EQUIVALENT CIRCUIT	VOLTAGE
6	SENSE	Resister Connection Terminal for Limit Level Setting		0V
7	SW	Limiter ON/OFF Switch	 <p>The diagram shows a terminal labeled 'SW' connected to a switch. The switch is in series with a 150k resistor. This resistor is connected to a node that branches into two paths: one through a diode to ground and another through a 270k resistor to ground. A second diode is connected in parallel with the 150k resistor, also pointing towards the SW terminal.</p>	-
10	GND	Ground Terminal		-

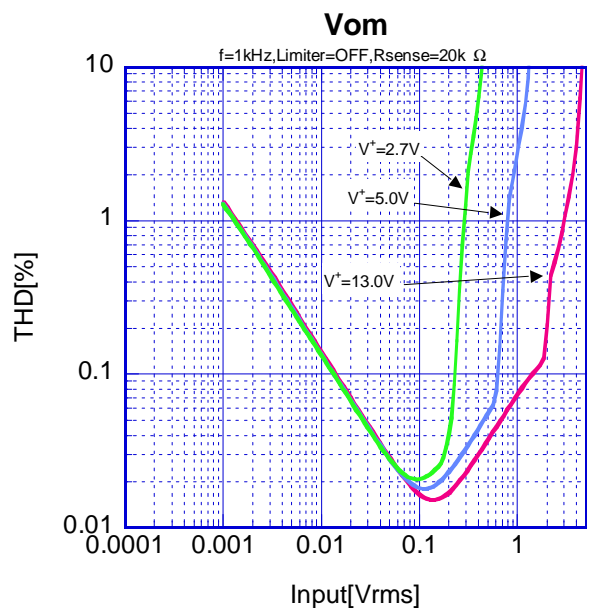
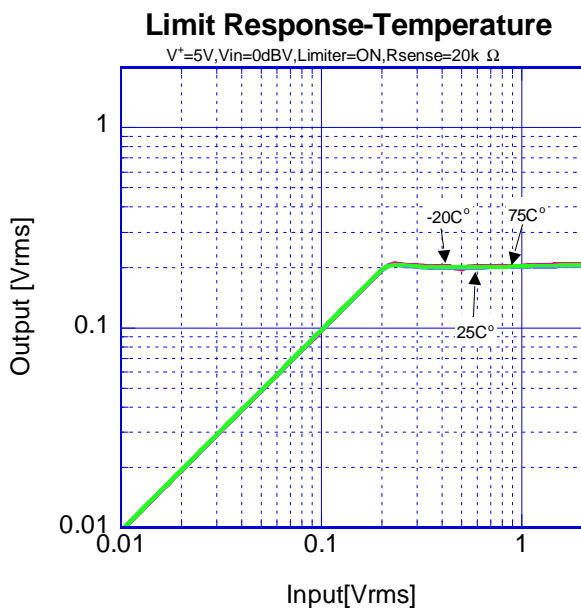
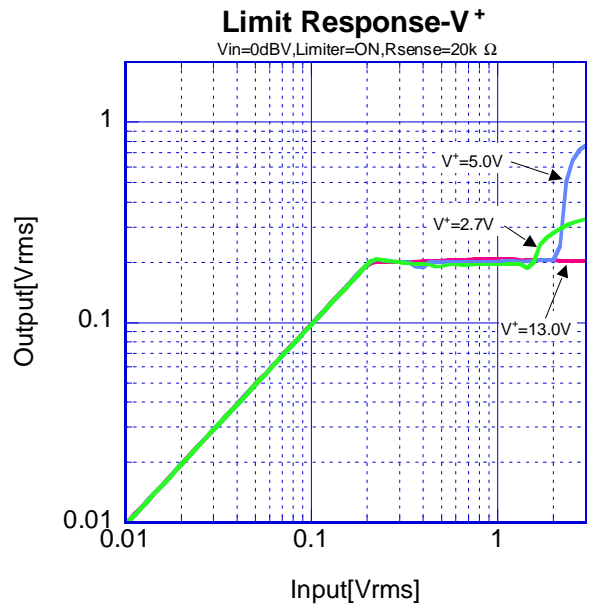
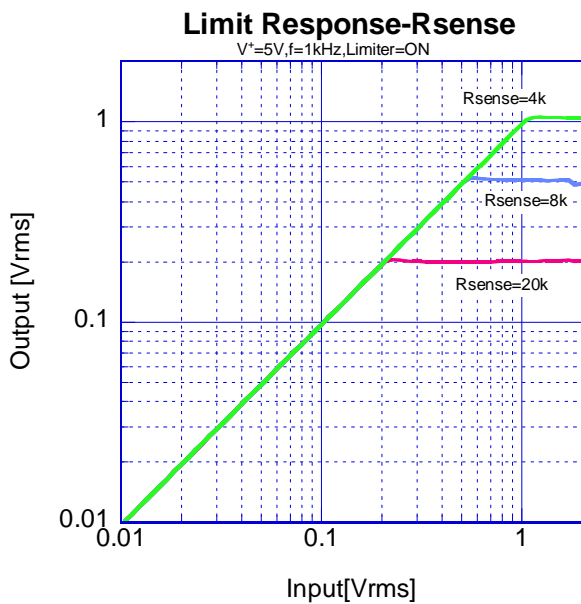
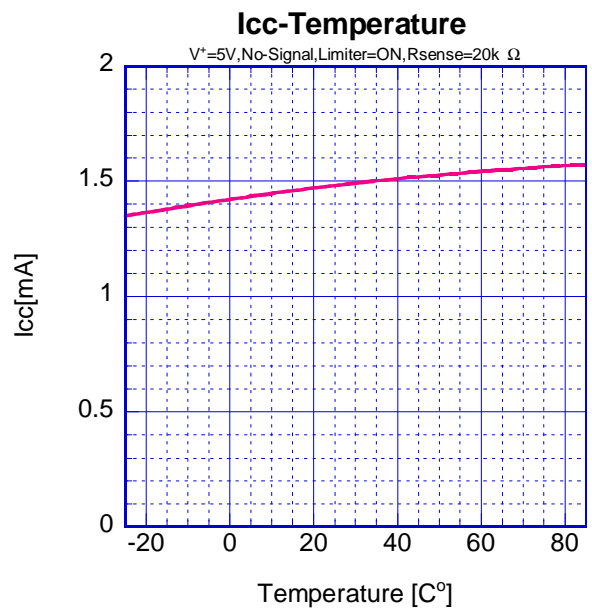
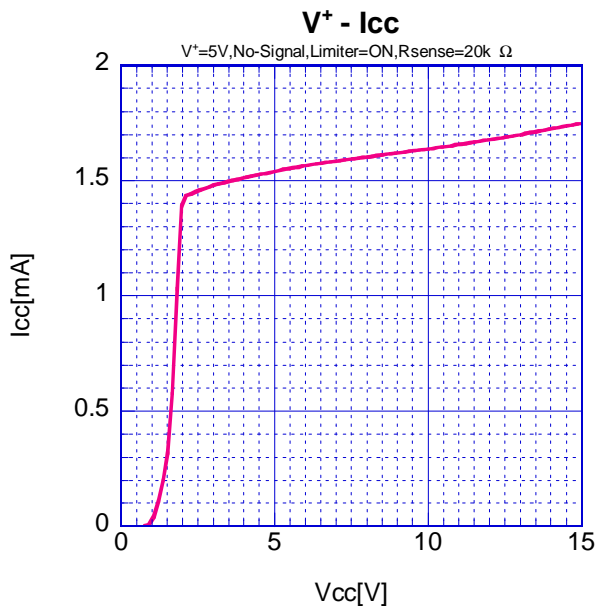
## APPLICATION CIRCUIT



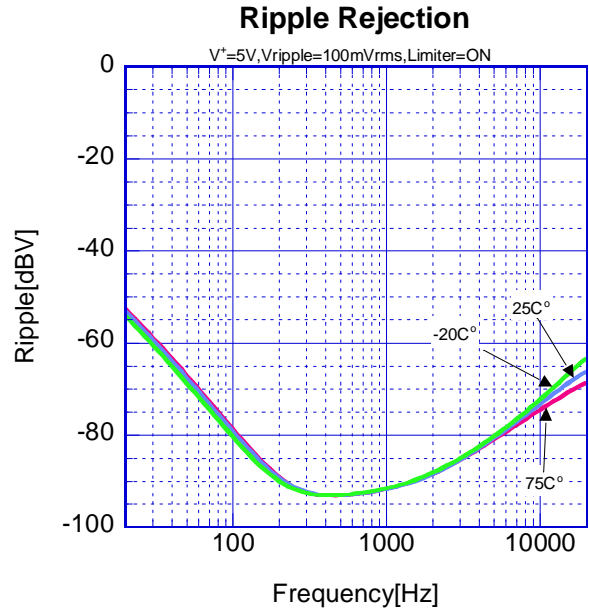
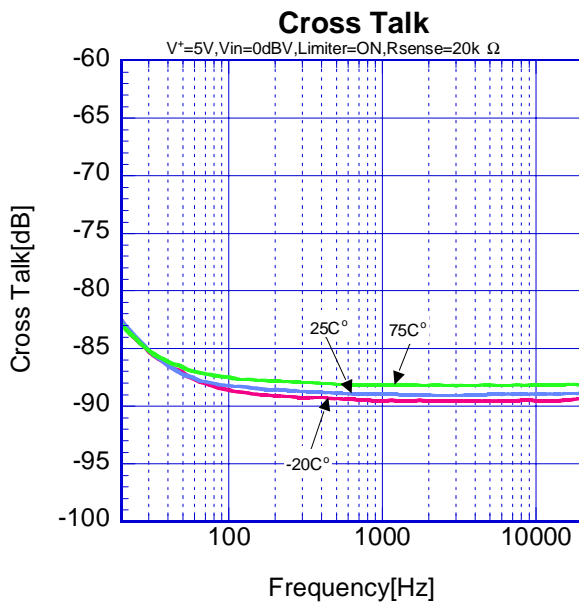
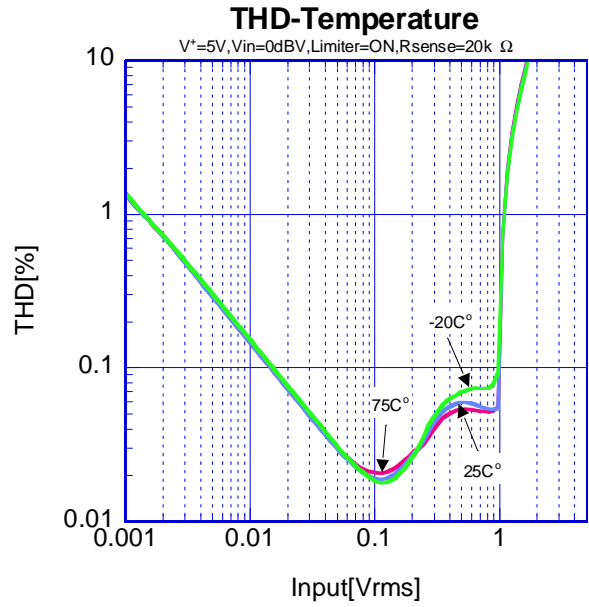
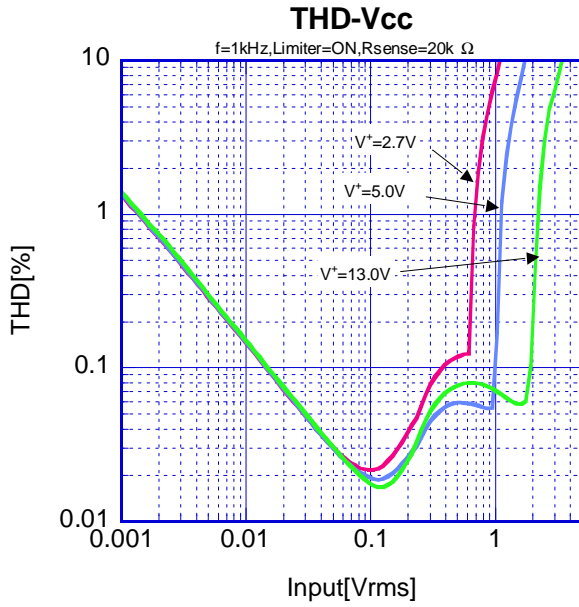
$$R_{SENSE} = 4000 / V_{LIMIT} [\Omega]$$

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## TYPICAL CHARACTERISTICS



## TYPICAL CHARACTERISTICS



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