

## LOW-VOLTAGE HEADPHONE AMPLIFIER for PORTABLE-AUDIO

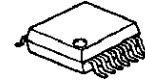
### ■ GENERAL DESCRIPTION

The **NJM2772** is a low voltage headphone amplifier for portable audio.

The **NJM2772** includes mute circuit, center amplifier and beep input, reduce the external parts, standby circuit and center amplifier with ON/OFF, applies to low current consumption. The mute function reduces the turn-noise at standby mode.

The NJM2772 is suitable for portable MD, CD, and others portable audio system with headphone amplifier.

### ■ PACKAGE OUTLINE

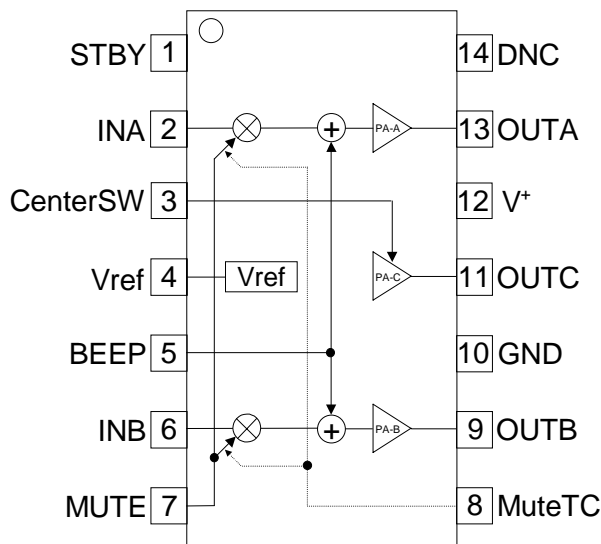


NJM2772V

### ■ FEATURES

- Operating Voltage  $V^+=1.8-4.5V$
- Operating Current 1.2mA typ. @Center Amp. Off  
2.0mA typ. @Center Amp. On
- Low Standby Current 18 $\mu$ A typ.
- High Output Power 6mWmin. @ $R_L=16\Omega$ , THD=10%
- Fixed Gain 11.5dB typ.
- Package Outline SSOP14
- Bipolar Technology

### ■ PIN CONFIGURATION & BLOCK DIAGRAM



Pin Function	
1.	STBY
2.	INA
3.	CenterSW
4.	$V_{REF}$
5.	BEEP
6.	INB
7.	MUTE
8.	MuteTC
9.	OUTB
10.	GND
11.	OUTC
12.	$V^+$
13.	OUTA
14.	DNC

Note)DNC(14pin):Do not connect

## ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sup>+</sup>	5	V
Power Dissipation	P <sub>D</sub>	(SSOP14) 300	mW
Operating Temperature Range	Topr	-20 to +75	°C
Storage Temperature Range	Tstg	-40 to +125	°C

## ■ RECOMMENDED OPERATING CONDITIONS

(Ta=25°C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Operating Voltage Range	V <sup>+</sup>	1.8	2.3	4.5	V

## ■ ELECTRICAL CHARACTERISTICS

(V<sup>+</sup>=2.3V, R<sub>g</sub>=600Ω, R<sub>L</sub>=16Ω, f=1kHz, STBY-OFF, MUTE-OFF, CA-ON, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	I <sub>CC1</sub>	STANDBY-ON, MUTE-ON	-	18	26	μA
	I <sub>CC2</sub>	No signal, CA-OFF	-	1.2	2.0	mA
	I <sub>CC3</sub>	No signal	-	2.0	4.0	mA
	I <sub>CC4</sub>	P <sub>O</sub> =0.5mW+0.5mW, CA-OFF	-	5.8	-	mA
	I <sub>CC5</sub>	P <sub>O</sub> =0.5mW+0.5mW	-	11.7	-	mA
	I <sub>CC6</sub>	P <sub>O</sub> =0.1mW+0.1mW, CA-OFF	-	3.0	-	mA
	I <sub>CC7</sub>	P <sub>O</sub> =0.1mW+0.1mW	-	5.9	-	mA
Reference Voltage	V <sub>REF</sub>	No signal	0.70	0.75	0.80	V
Voltage Gain	G <sub>V</sub>	V <sub>IN</sub> =-30dBV	10.5	11.5	12.5	dB
Output Power	P <sub>O1</sub>	THD=10%	6.0	8.0	-	mW
	P <sub>O2</sub>	V <sup>+</sup> 1=1.8V, THD=10%	3.0	4.0	-	
Total Harmonic Distortion	THD	V <sub>IN</sub> =-30dBV	-	0.1	0.5	%
Output Noise Voltage	V <sub>NO</sub>	A-Weighted	-	-98 (12.6)	-94 (20)	dBV (μVrms)
Cross-talk	CT	V <sub>IN</sub> =-30dBV, V <sub>O</sub> =-18.5dBV	-	-40	-24	dB
Mute Level	MUTE	MUTE-ON, V <sub>IN</sub> =-30dBV, A-Weighted	-	-95	-80	dBV
Beep Output Voltage	V <sub>BEEP</sub>	BEEP-IN=2Vpp	-55	-50	-45	dBV
Supply Voltage Rejection Ratio	SVR	V <sup>+</sup> =1.8V+0.1Vrms:1kHz	65	70	-	dB

## ■ CONTROL TERMINAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
H Level Input Voltage	V <sub>IH</sub>	STBY(1Pin), CSW(3Pin), MUTE(7Pin)	0.8	-	V <sup>+</sup>	V
L Level Input Voltage	V <sub>IL</sub>	STBY(1Pin), CSW(3Pin), MUTE(7Pin)	0	-	0.3	V
H Level Input Voltage	V <sub>BH</sub>	BEEP(5Pin)	0.8	-	V <sup>+</sup>	V
L Level Input Voltage	V <sub>BL</sub>	BEEP(5Pin)	0	-	0.3	V

## CONTROL TERMINAL EXPLANATION

### ◆ STBY (1Pin)

PARAMETER	CONTROL SIGNAL	STATUS
STANDBY ON	L	IC is standby.
STANDBY OFF	H	IC is active.

### ◆ Center-SW (3Pin)

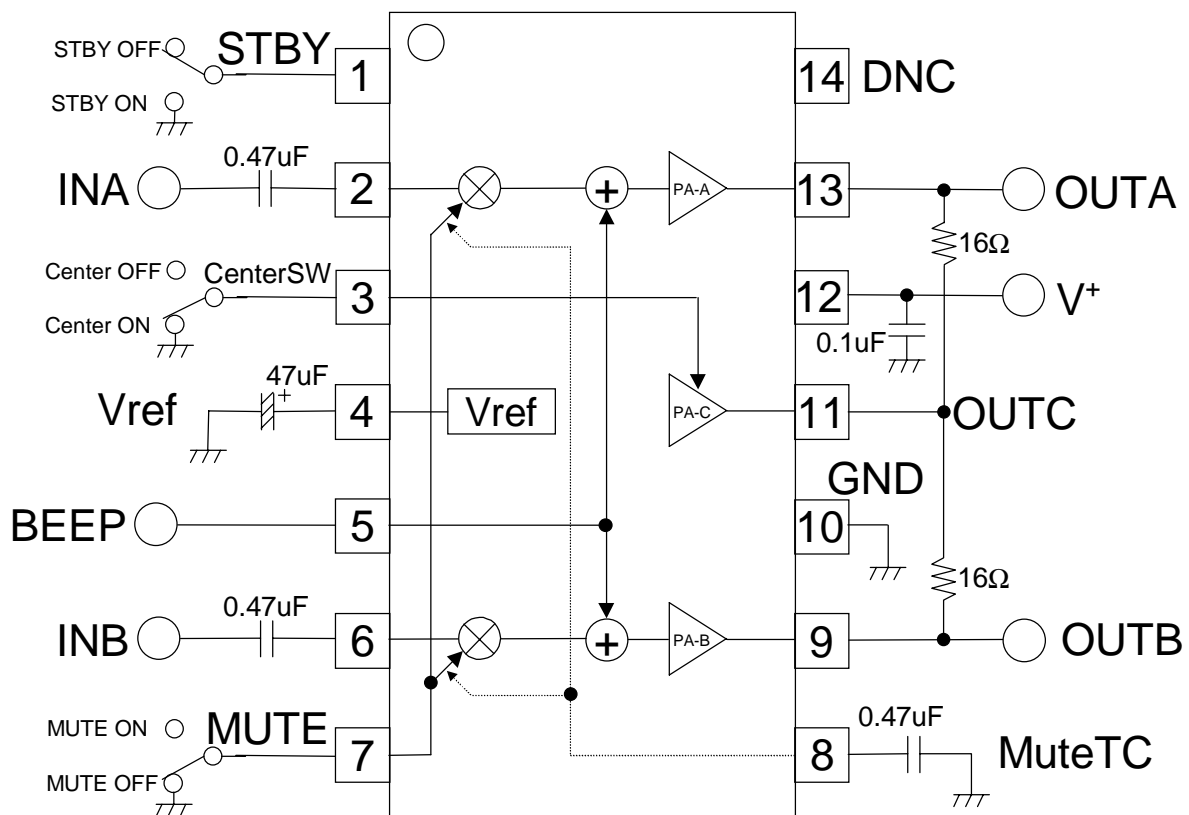
PARAMETER	CONTROL SIGNAL	STATUS
Center Amp. ON	L	Center Amp. is active. Can operate output coupling capacitor less.
Center Amp. OFF	H	When output coupling capacitor is used, realize low current consumption to be Center Amp. OFF.

### ◆ MUTE (7Pin)

PARAMETER	CONTROL SIGNAL	STATUS
MUTE ON	H	IC output no signal.
MUTE OFF	L	IC output the signal.

## APPLICATION CIRCUIT

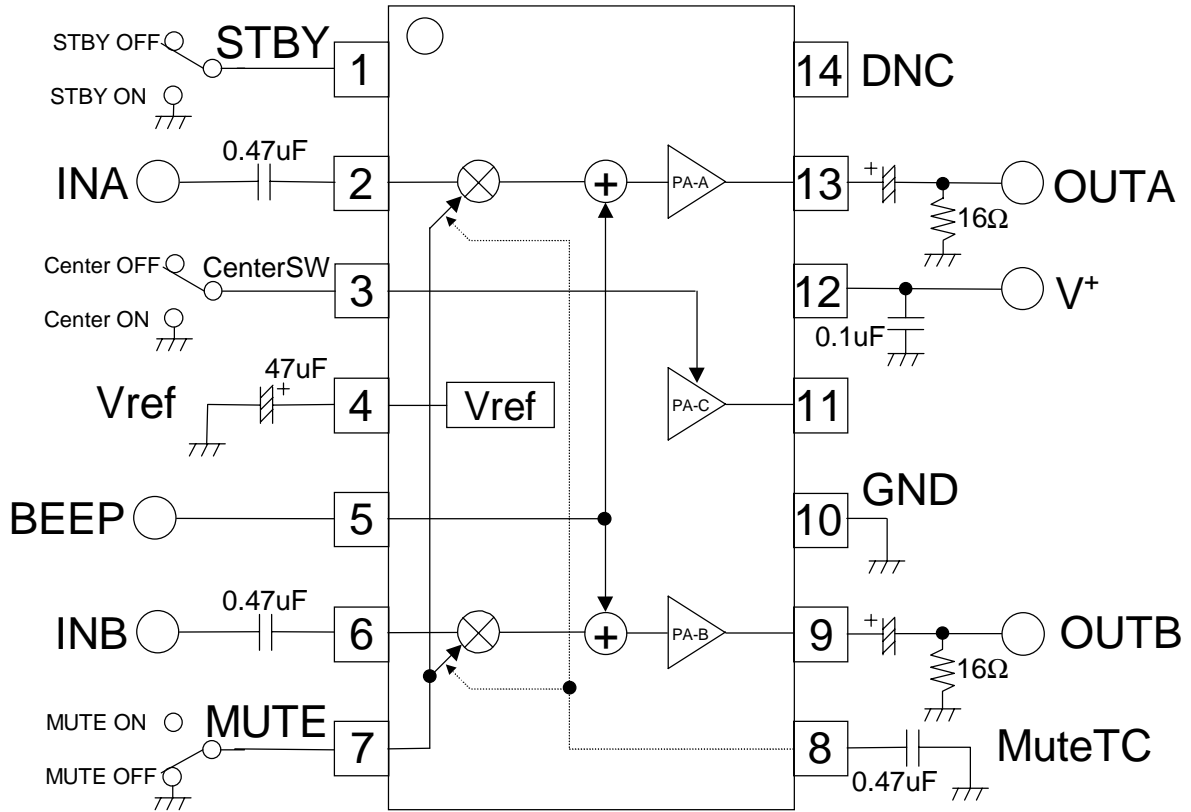
### 1) Center Amp. On Mode



# NJM2772

## APPLICATION CIRCUIT

### 2) Center Amp. Off Mode



Note) When the BEEP terminal (5pin) is useless, short to GND.

[CAUTION]  
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