LOW VOLTAGE HEADPHONE AMPLIFIER for PORTABLE AUDIO

■ GENERAL DESCRIPTION

The **NJM2171A** is a low voltage headphone amplifier designed for portable audio items.

The **NJM2171A** operates directly for battery supply. It includes mute and standby circuit which require few external components and realize low current consumption and very low turn-noise at standby mode.

It is suitable for portable Mini-Disc, portable Compact-Disc, and other headphone amplifier application.

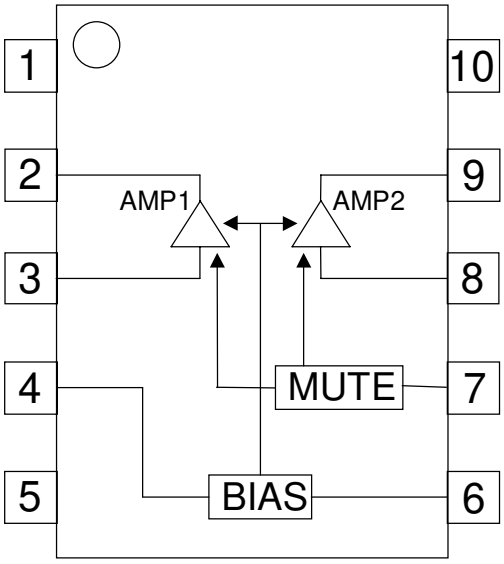
■ PACKAGE OUTLINE

NJM2171AR

■ FEATURES

- Operating Voltage V^+1=1.8 to 4.5V
  V^+2=0.9 to 4.5V
- Operating Current 450μA typ. @V^+1=2.3V
  700μA typ. @V^+2=1.2V
- Supply Current in Power Down Mode
  10μA typ. @V^+1=2.3V
  25μA typ. @V^+2=1.2V
- Output Power Exceeds 5mW R_L=16Ω @THD=10%
- Fixed Voltage Gain 11.5dB typ.
- Package Outline VSP10
- Bipolar Technology

■ PIN CONFIGURATION



PIN FUNCTION
1.V^+2
2.OUT1
3.IN1
4.STBY
5.V^+1
6.V_{REF}
7.MUTE
8.IN2
9.OUT2
10.GND

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	5	V
Power Dissipation	P_D	(VSP8) 320	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 Range1	V^+1	1.8	2.3	4.5	V
Operating Voltage Range2	V^+2	0.9	1.2	4.5	V

■ ELECTRICAL CHARACTERISTICS (V^+1=2.3V,V^+2=1.2V,Rg=600Ω,R_L=16Ω,f=1kHz,Ta=25°C)

PARAMEETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Current	$I_{CC}0$	V^+1=0V(1pin)	-	-	1	μA
	$I_{CC}1$	STANDBY ON,MUTE ON(1pin)	-	25	40	
	$I_{CC}2$	STANDBY ON,MUTE ON(5pin)	-	10	15	
	$I_{CC}3$	No signal(1pin)	-	700	1200	
	$I_{CC}4$	No signal(5pin)	-	450	700	
	$I_{CC}5$	P_O=0.5mW+0.5mW(1pin)	-	5.5	-	mA
	$I_{CC}6$	P_O=0.5mW+0.5mW(5pin)	-	0.8	-	
Reference Voltage	V_{REF}	No signal	0.55	0.60	0.65	V
Closed Loop Gain	G_V	V_{IN}=-30dBV	10.5	11.5	12.5	dB
Output Power	P_O1	THD=10%	5.0	8.5	-	mW
	P_O2	V^+1=1.8V,V^+2=0.9V,THD=10%	2.0	4.0	-	
Total Harmonic Distortion	THD1	Po=1mW,R_L=16Ω	-	0.15	0.3	%
	TED2	Po=5mW,R_L=16Ω	-	0.4	0.6	
Output Noise Voltage	V_{NO}	A-Weighted	-	-100	-96	dBV
Crosstalk	CT	V_{IN}=-30dBV	-	-80	-70	dBV
Mute Level	MUTE	MUTE-ON,V_{IN}=-30dBV,A-Weighted	-	-95	-80	dBV
Supply Voltage Rejection Ratio	SVR1	V^+1=1.8V+0.1Vrms, V^+2=0.9V	60	70	-	dB
	SVR2	V^+1=1.8V, V^+2=0.9V+0.1Vrms	60	70	-	

■ CONTROL TERMINAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
High Level Input Voltage	V_{IH}	STBY(4pin), MUTE(7pin)	1.2	-	V^+1	V
Low Level Input Voltage	V_{IL}	STBY(4pin), MUTE(7pin)	0	-	0.3	V

■ CONTROL TERMINAL EXPLANATION

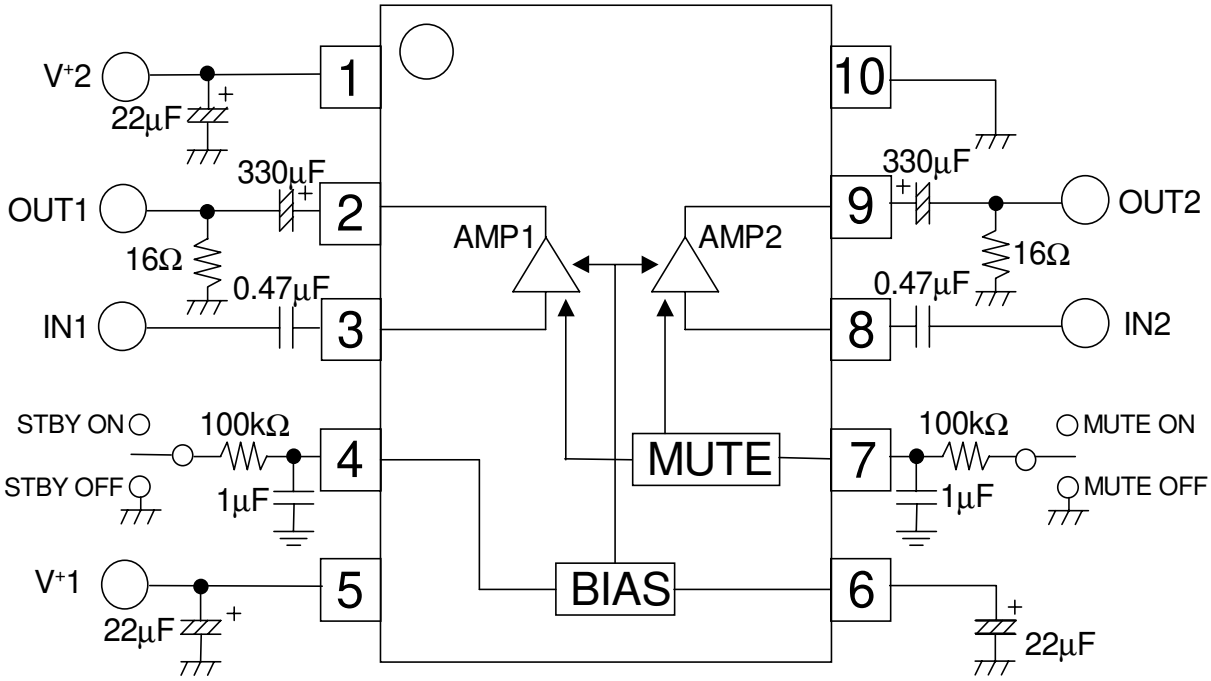
•STBY (4Pin)

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

•MUTE (7Pin)

PARAMETER	CONTROL SIGNAL	STATUS
MUTE ON	H	IC doesn't output the signal.
MUTE OFF	L	IC output the signal.

■ APPLICATION CIRCUIT



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