

# **2.9W Mono Class-D Audio Amplifier NAU82011WG\_DEMO\_REV-A**

User Manual

**DESCRIPTION:**

NAU82011WG is a mono high efficiency class-D audio amplifier with variable gain, which is capable of driving a 4Ω load with up to 2.9W output power. This device provides chip enable pin with extremely low standby current and fast start-up time of 4ms.

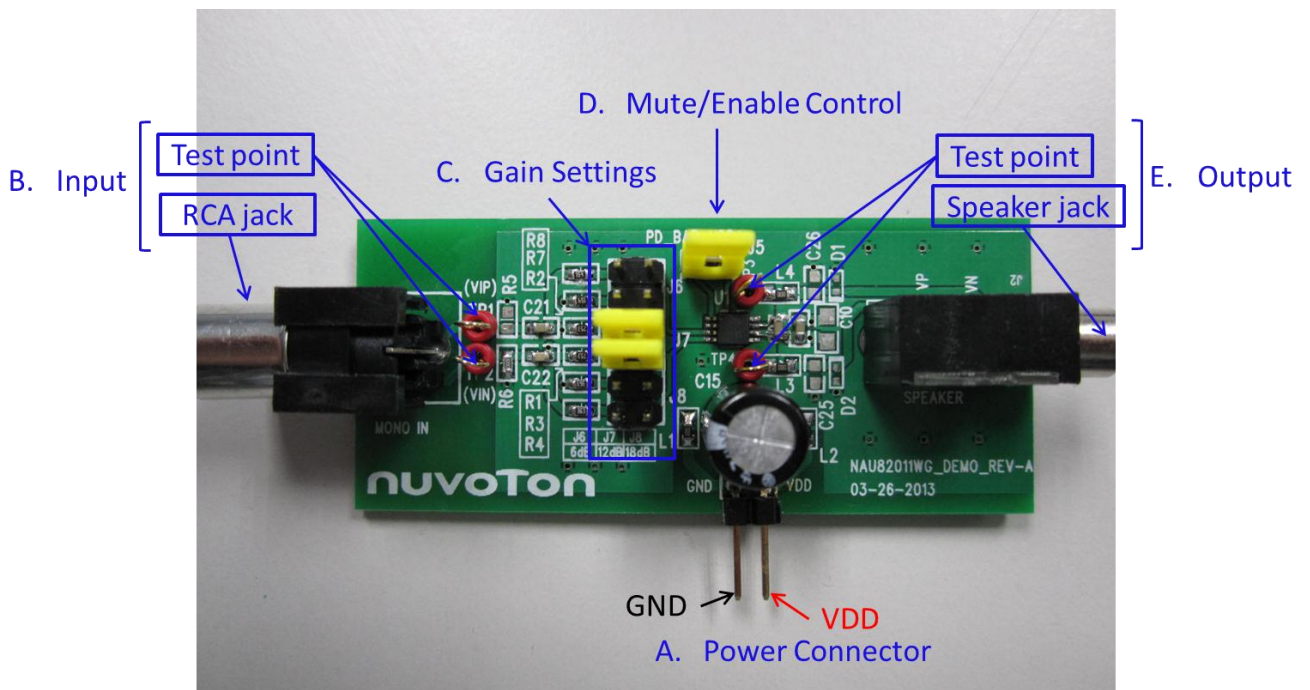
NAU82011WG is ideal for the portable applications of battery drive, as it has advanced features like 91% efficiency, low quiescent current (i.e. 1.2mA at 3,6V) and superior EMI performance. It has the ability to configure the inputs in either single-ended or differential mode.

NAU82011WG is available in MSOP-8 package.

**RECOMMENDED OPERATING CONDITIONS:**

Parameter	Symbol	Min	Typical	Max	Units
Analog Supply Range	VDD	2.50	5.00	5.50	V
Ground	VSS		0		V
Common mode Input voltage range	V <sub>IC</sub>	0		VDD-1.0	V
Load Resistance	R <sub>L</sub>	4			Ω
Input Resistance	R <sub>in</sub>	15			kΩ

**DEMO BOARD OVERVIEW**



**A. POWER CONNECTOR:**

An external DC voltage supply whose voltage is within 2.5V to 5.5V and capable of driving 2A current should be connected to J10. The supply leads should be kept short in order to avoid IxR voltage drop.

**B. INPUT:**

**Test point:** TP1 is the input signal and TP2 is short to ground through R6.

**RCA jack:** A general RCA plug should be inserted into the RCA jack. Ensure the signal source is originally set to the minimum level.

**C. GAIN SETTINGS:**

The gain of NAU82011WG is determined by input resistance and can be expressed as  $300k/R_{in}$ . The demo board offers three on-board gain selections, i.e. 6dB, 12dB and 18dB for users to change gain setting conveniently. Installing the jumpers at the following pins sets the gain of the amplifier as follows:

- J6: 6dB
- J7: 12dB
- J8: 18dB

**D. MUTE/ENABLE CONTROL:**

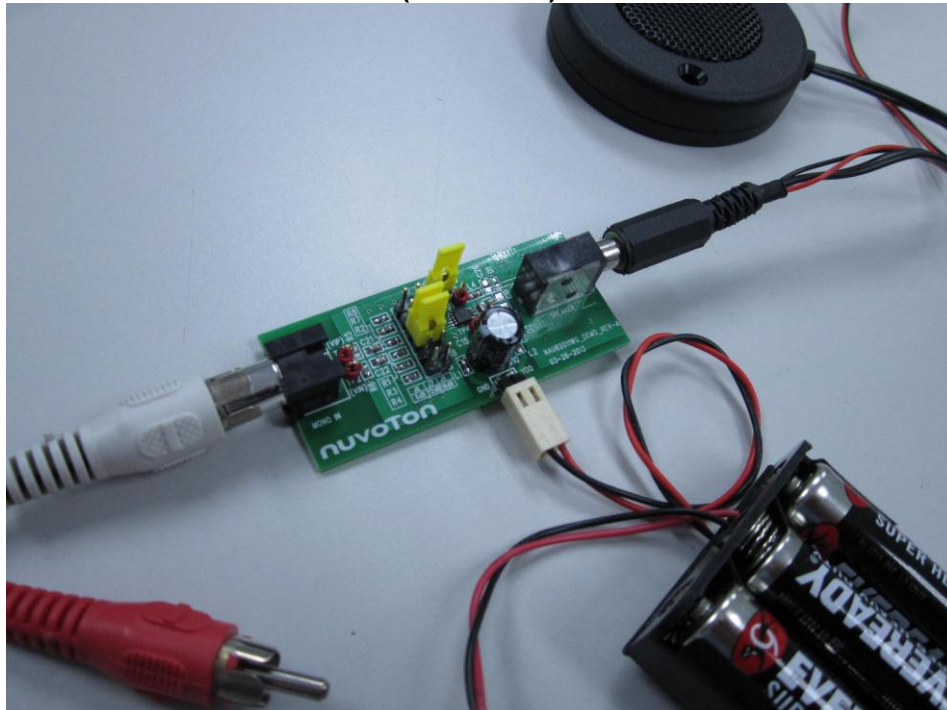
Installing a jumper at J5 will enable the chip; otherwise, the chip is in mute mode.

**E. OUTPUT:**

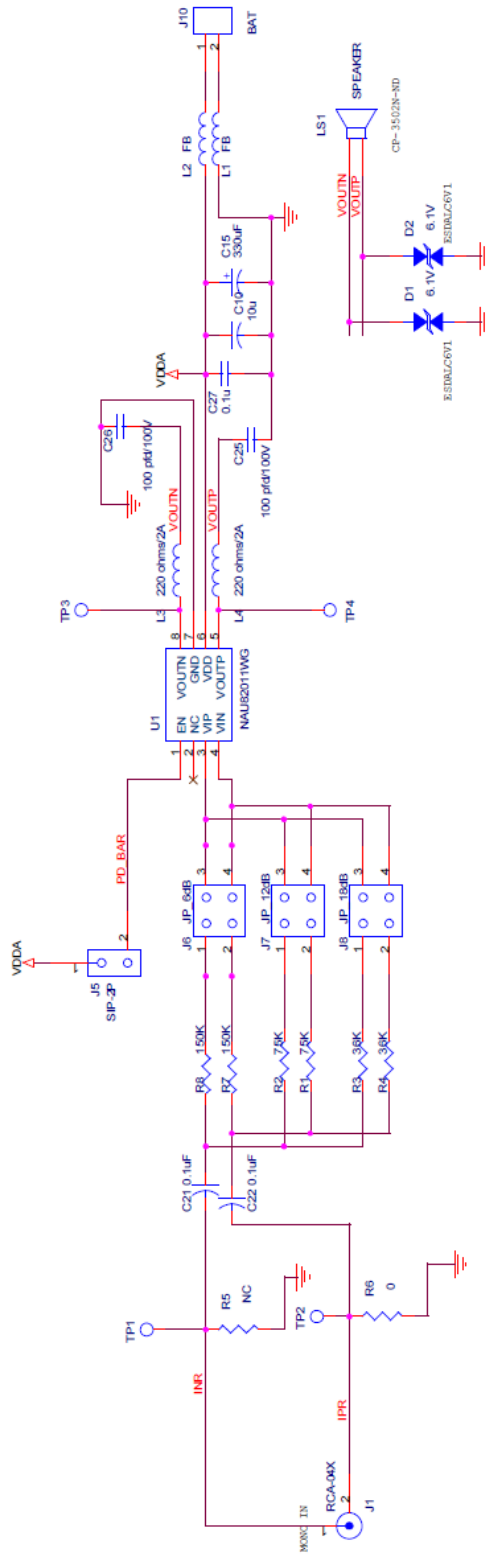
**Test point:** VOUTN (TP3) and VOUTP (TP4) are PWM outputs.

**Speaker jack:** A speaker with impedance equal to or greater than  $4\Omega$  should be inserted in J2.

**NORMAL OPERATION FOR MUSIC PLAYS (12dB GAIN)**



**SCHEMATIC:**



**BILL OF MATERIALS:**

Item	Quantity	Reference	Part	Remark
1	1	C10	10uF	Has been shifted to C27 position*
2	1	C15	330uF	
3	2	C21,C22	0.1uF	
4	2	C25,C26	100 pF/100V	NC
5	1	C27	0.1uF	Has been shifted to the mid-point between U1 and C27*
6	2	D1,D2	6.1V	NC
7	1	J1	RCA-04X	
8	1	J5	SIP-2P	
9	1	J6	JP_6dB	
10	1	J7	JP_12dB	
11	1	J8	JP_18dB	
12	1	J10	BAT	
13	1	J2	SPEAKER	
14	2	L1,L2	FB	
15	2	L3,L4	220 ohms/2A	
16	2	R2,R1	75K	
17	2	R3,R4	36K	
18	1	R5	NC	
19	1	R6	0	
20	2	R8,R7	150K	
21	4	TP1,TP2,TP3,TP4	INR	
22	1	U1	NAU82011WG	

- \* The bypass capacitors are often composed of 0.1uF and 10uF in parallel with ceramic type. The length of trace between NAU82011 power pins and the bypass capacitors should be as short as possible, typically less than 2mm. Further, 0.1uF should be placed more close to NAU82011.