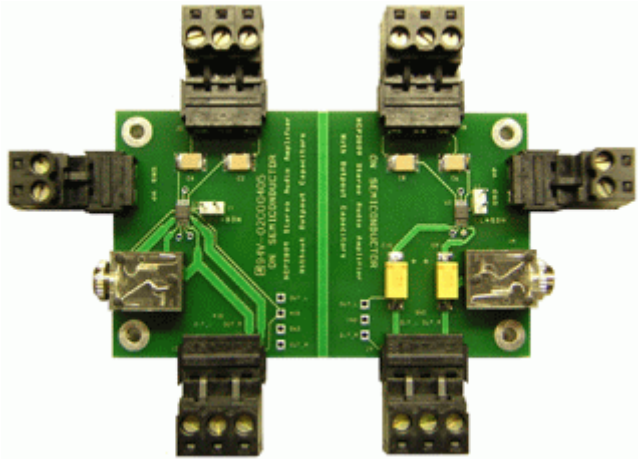


Stereo Audio Amplifier Evaluation Board

Part Number: NCP2809AEVB



ON Semiconductor



Evaluation/Development Tool Description

The NCP2809A is a cost-effective fixed gain stereo audio power amplifier capable of delivering 135 mW of continuous average power per channel into 16 ohm loads. This device has been specifically designed to provide high quality output power from low supply voltage, requiring very few external components. The device incorporates a proprietary virtual ground circuit which allows the speakers to be directly connected to the amplifier without the need for bulky DC blocking capacitors.

Since NCP2809 does not require bootstrap capacitors or snubber networks, it is optimally suited for low-power portable systems. The NCP2809A has an internal gain of 0 dB.

The demo board consists of two circuit configurations to demonstrate operation with and without the output DC blocking capacitors.

Features

- 135 mW to a 16 ohm Load from a 5.0 V Power Supply
- Excellent PSRR (85 dB Typical): Direct Connection to the Battery
- Pop and Click Noise Protection Circuit
- Ultra Low Current Shutdown Mode
- 2.2 V - 5.5 V Operation
- Outstanding Total Harmonic Distortion + Noise (THD+N): < 0.01%
- Thermal Overload Protection Circuitry

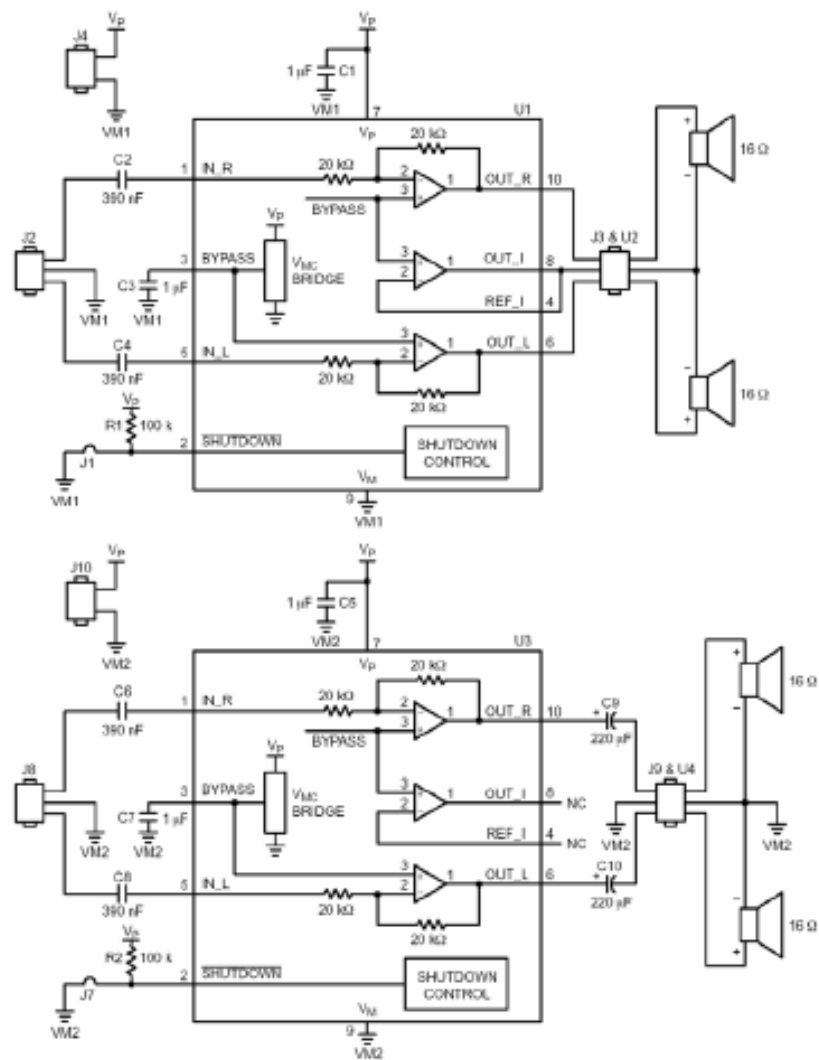


Bill of Materials for the NCP2809A Evaluation Board

| Designator | Quantity | Description | Value | Tolerance | Footprint | Manufacturer | Manufacturer Part Number | Substitution Allowed | Lead Free |
|----------------|----------|----------------------------------|------------------------|-----------|-----------|------------------|--------------------------|----------------------|-----------|
| U1,U3 | 2 | Stereo Headphone Power Amplifier | 135 mW | - | Micro10 | ON Semiconductor | NCP2809ADMR2G | No | Yes |
| R1, R2 | 2 | Thick Film Chip Resistor | 100 k Ω , 150 V | 1% | 0805 | Vishay | CRCW08051003FE3 | Yes | Yes |
| C2, C4, C6, C8 | 4 | Ceramic Chip Capacitor | 390 nF, 50 V | 20% | 1812 | Kemet | C1812C394M5UAC | Yes | Yes |
| C1, C3, C5, C7 | 4 | Ceramic Chip Capacitor | 1 μ F, 16 V | 10% | 1206 | Murata | GRM42-6 X7R 105K 16V | Yes | Yes |
| C9, C10 | 2 | Tantalum Chip Capacitor | 220 μ F, 10 V | 10% | 7343-43 | Kemet | T495X227K010AT | Yes | Yes |
| J4, J10 | 2 | PCB Header, 2-poles | - | - | - | Weidmuller | 1514960000 | Yes | Yes |
| J4, J10 | 2 | PCB Plug, 2-poles | - | - | - | Weidmuller | 1526460000 | Yes | Yes |
| J2, J3, J8, J9 | 2 | PCB Header, 3-poles | - | - | - | Weidmuller | 1515060000 | Yes | Yes |
| J2, J3, J8, J9 | 2 | PCB Plug, 3-poles | - | - | - | Weidmuller | 1526560000 | Yes | Yes |
| U2, U4 | 2 | 3.5 mm PCB Jack Connector | - | - | - | CUI Inc | SJ-3515N | Yes | Yes |
| J1, J7 | 2 | Pin Strip Header | - | - | - | Any | - | Yes | Yes |
| NA | 7 | Test Points, Red | - | - | - | Keystone | 5000 | Yes | Yes |



Schematic for the NCP2809A Evaluation Board





Test Procedure for the NCP2809A Evaluation Board

Equipment Needed:

- DC Power Supply
- Function Generator
- Oscilloscope
- Digital Multimeter

The procedure described below can be used for each schematic.

- Set $V_p = 5\text{ V}$ to power supply connector.
- Set two 16 Ohm loads (resistance) on the 3 points of output connector J3 and J9.
- With your Function Generator, set a sinewave signal at 1kHz and 1Vrms for the input signal. Connect it to the input connector (J2 & J8): between IN_R and GND for the right output and once measured, between IN_L and GND for the left one.
- In case of the big output capacitors schematic, place 1 oscilloscope probe on each output (Right & Left) and you should get a 1Vrms output signal with a "perfect sinewave". That is to say no clipping at the minimum and maximum of the sinewave.
- In case of the capless schematic, place 2 oscilloscope probes on each output (Right & Left) and the virtual ground and you should get a 1 Vrms differential output signal with a "perfect sinewave". That is to say no clipping at the minimum and maximum of the sinewave.
- **During the test with the capless schematic, be careful not to connect the ground to the virtual ground on the output! If you do so, you'll need to solder another NCP2809A.**

This is the only test performed. You could also check the quiescent current. Place two 16 Ohm loads, no input signal, V_p set to 5V and you should measure around 1.9 mA.