

NCP2811AMTTXGEVB

NCP2811AMTTX Evaluation Board User's Manual



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EVAL BOARD USER'S MANUAL

Description

NCP2811 is a dual audio power amplifier designed for portable communication device applications such as mobile phones. This board showcases the A version of this part in the WQFN12 package. This part is capable of delivering 27 mW of continuous average power into a 16 Ω load from a 2.7 V power supply with a THD+N of 1%.

Based on the power supply delivered to the device, an internal power management block generates a symmetrical positive and negative voltage. Thus, the internal amplifiers provide outputs referenced to Ground. In this True Ground configuration, the two external heavy coupling capacitors can be removed. It offers significant space and cost savings compared to a typical stereo application.

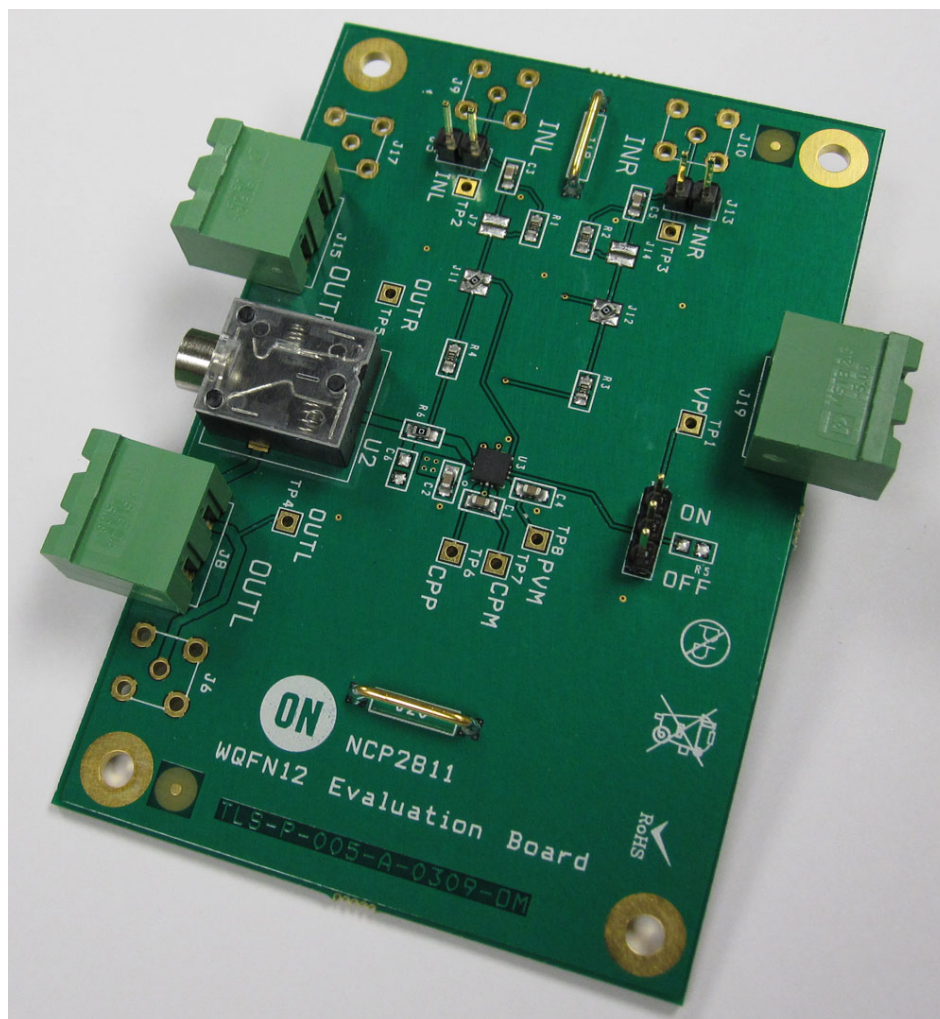


Figure 1. NCP2811AMTTXGEVB Board Picture

NCP2811AMTTXGEVB

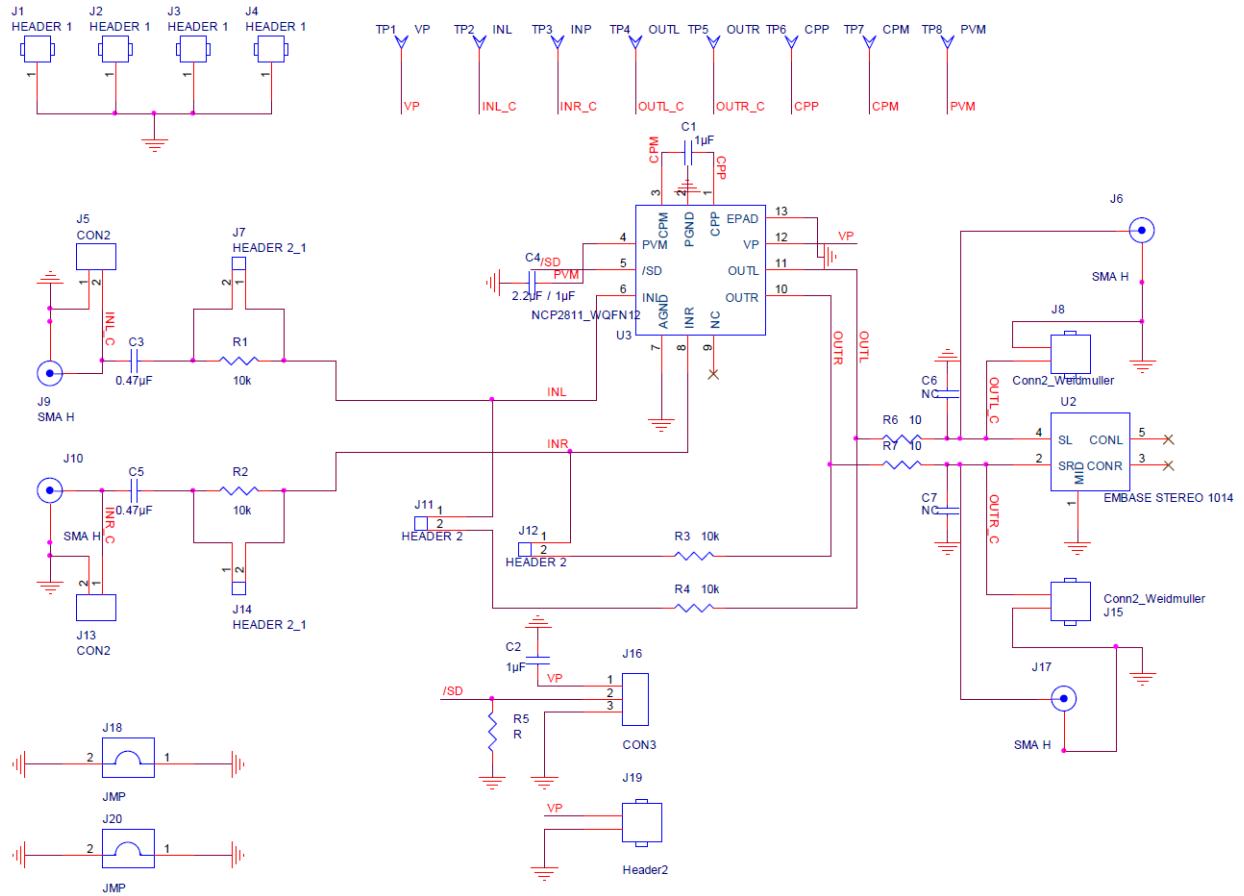


Figure 2. NCP2811AMTTXGEVB Board Schematic

NCP2811AMTTXGEVB

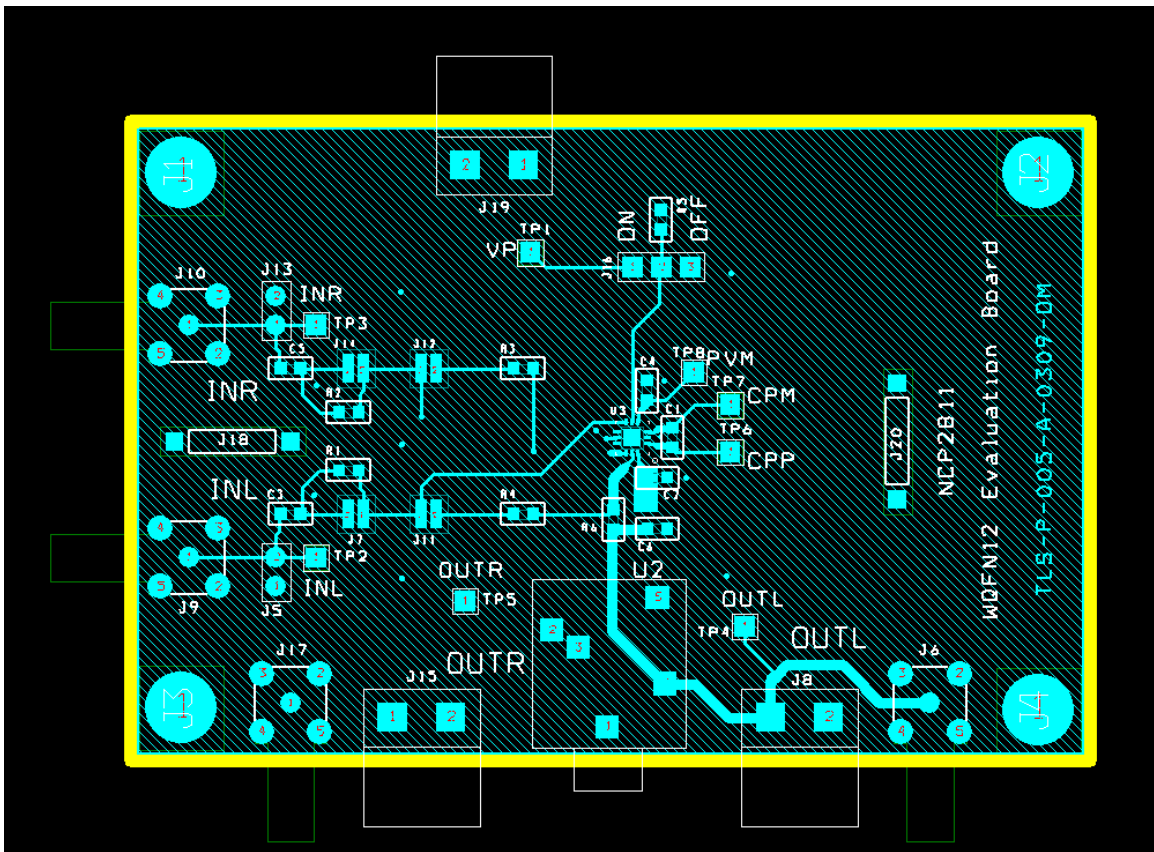


Figure 3. NCP2811AMTTXGEVB Board Layout (Top View)

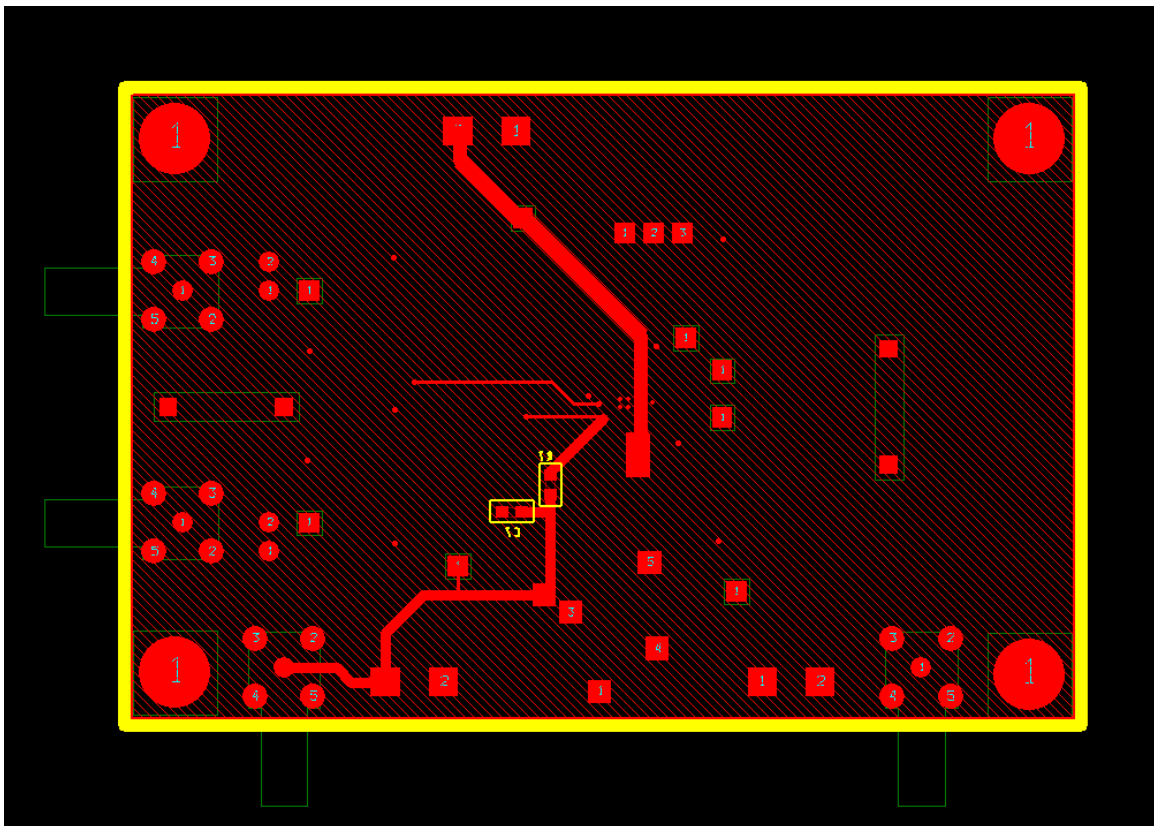


Figure 4. NCP2811AMTTXGEVB Board Layout (Bottom View)

NCP2811AMTTXGEVB

Table 1. BILL OF MATERIALS

| Item | Part Description | Ref. | PCB Footprint | Manufacturer | Manufacturer Reference |
|------|--|------------------------------|---------------|------------------------|------------------------|
| 1 | NCP2811 Audio Amplifier | | | ON Semiconductor | NCP2811 |
| 2 | SMD Resistor 10K Ω | R1, R2, R3, R4 | 0603 | Panasonic | ERJ-3GEY103V |
| 3 | Ceramic Capacitor 1 μ F 6.3 V X5R | C1, C2, C3, C4, C5 | 0603 | Murata | GRM185R60J105KA01 |
| 4 | Stereo Connector | U2 | | CUI Inc. | SJ1-3515N |
| 5 | Jumper Header Vertical Mount, 2 positions, 100mils | J16 | 100 mils | Tyco Electronics / AMP | 5-826629-0 |
| 6 | I/O Connector, 2 positions | J8, J19, J15 | 200 mils | Phoenix Contact | 1757242 |
| 7 | Jumper Connector | J18, J20 | 400 mils | Harwin | D3082-B01 |
| 8 | Not Mounted | R5, J9, J10, J6, J17, C6, C7 | | | |
| 9 | Shorted | R6, R7 | 0603 | | |

NCP2811A OR NCP2811B CONFIGURATION

V.1 NCP2811A

Connect J11, J12. Put 10kohms on R1, R2, R3, R4. Disconnect J7, J14.

V.1 NCP2811B

Connect J7, J14. Disconnect J11, J12, R1, R2, R3, R4.

NCP2811 TEST PROCEDURE

Output Power:

1. Set $V_p = 3.6$ V to power supply connector (J16).
2. Set an 16 Ω load (resistance) on the output connectors (J8 and J17).
3. With the function generator, set a single ended signal at 1 kHz and 0.5 V_{rms} input signal on the left and right inputs. Apply this signal J5 and J13 connectors.

- a. On the NCP2811A, as $R1 = R2 = R3 = R4 = 10k$, OUTL_C and OUTR_C will see 0.5 V_{rms}. Place an oscilloscope probe on each output. You should get 0.5 V_{rms} output signal with a “perfect sine wave”. That is to say no clipping at the minima and maxima of the sine wave.
- b. On the NCP2811B, the gain is internally set to -1.5 V/V, OUTL_C and OUTR_C will see 0.75 V_{rms}. Place an oscilloscope probe on each output. You should get 0.75 V_{rms} output signal with a “perfect sine wave”. That is to say no clipping at the minima and maxima of the sine wave.

Quiescent Current:

Check the quiescent current. Place an 16 Ω load on each output (J8, J17); no input signal. V_p set to 3.6 V and J6 closed. You should measure around 6 mA.

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