

NCP2811AFCT1GEVB

NCP2811AFCT1 Evaluation Board User's Manual



ON Semiconductor®

<http://onsemi.com>

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 12-Pin Flip-Chip 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.

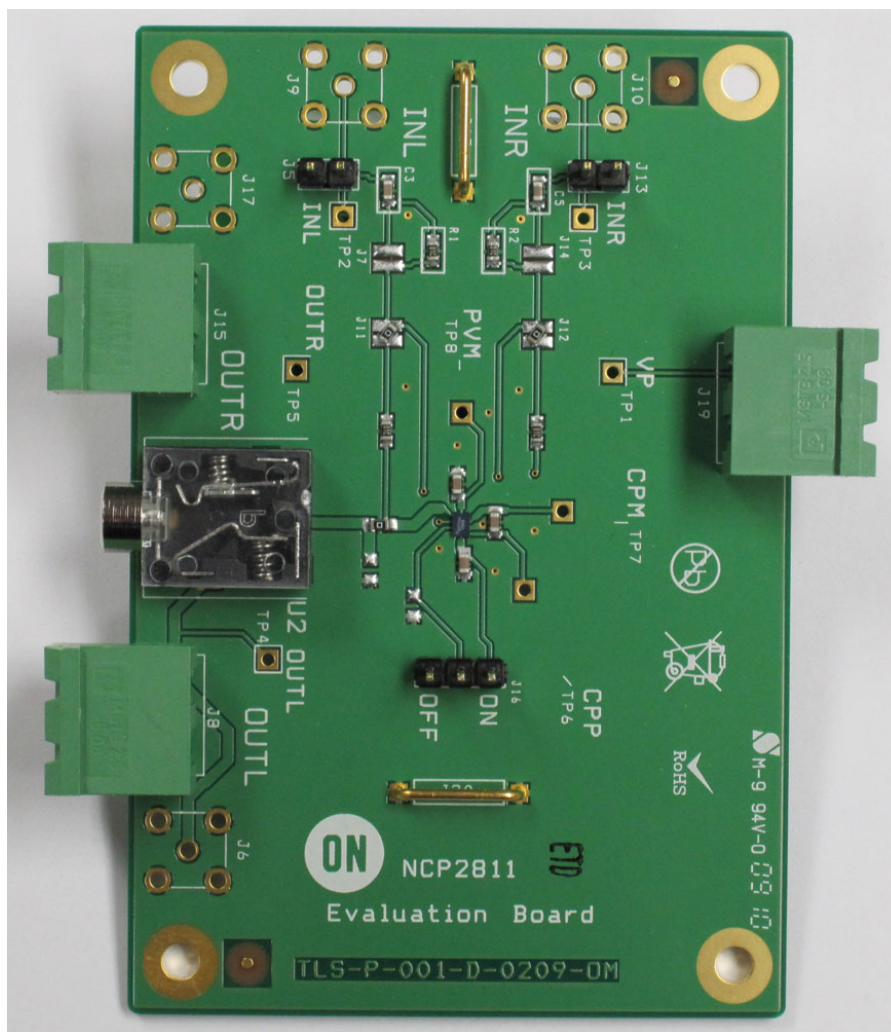


Figure 1. NCP2811AFCT1GEVB Board Picture

NCP2811AFCT1GEVB

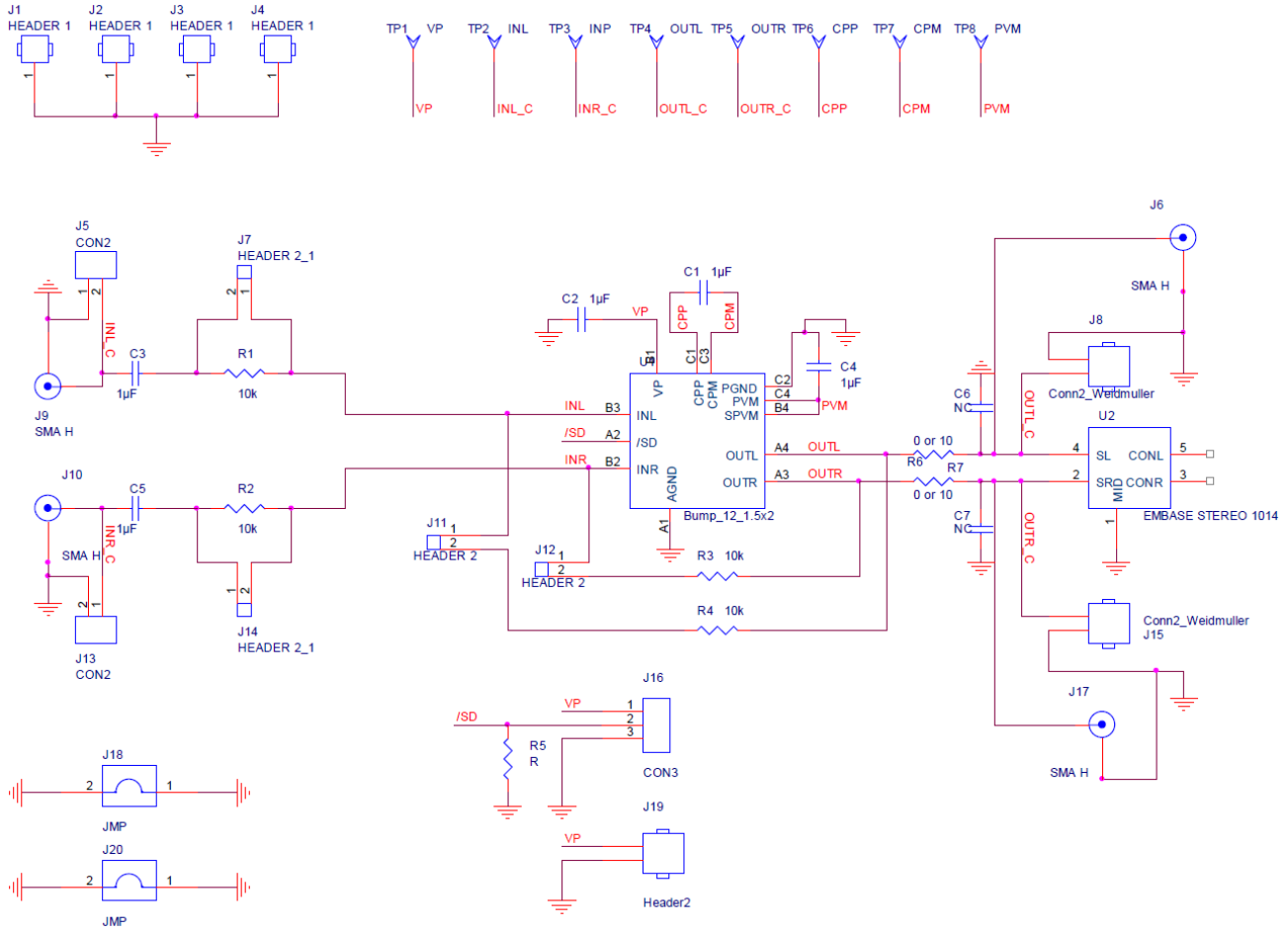


Figure 2. NCP2811AFCT1GEVB Board Schematic

NCP2811AFCT1GEVB

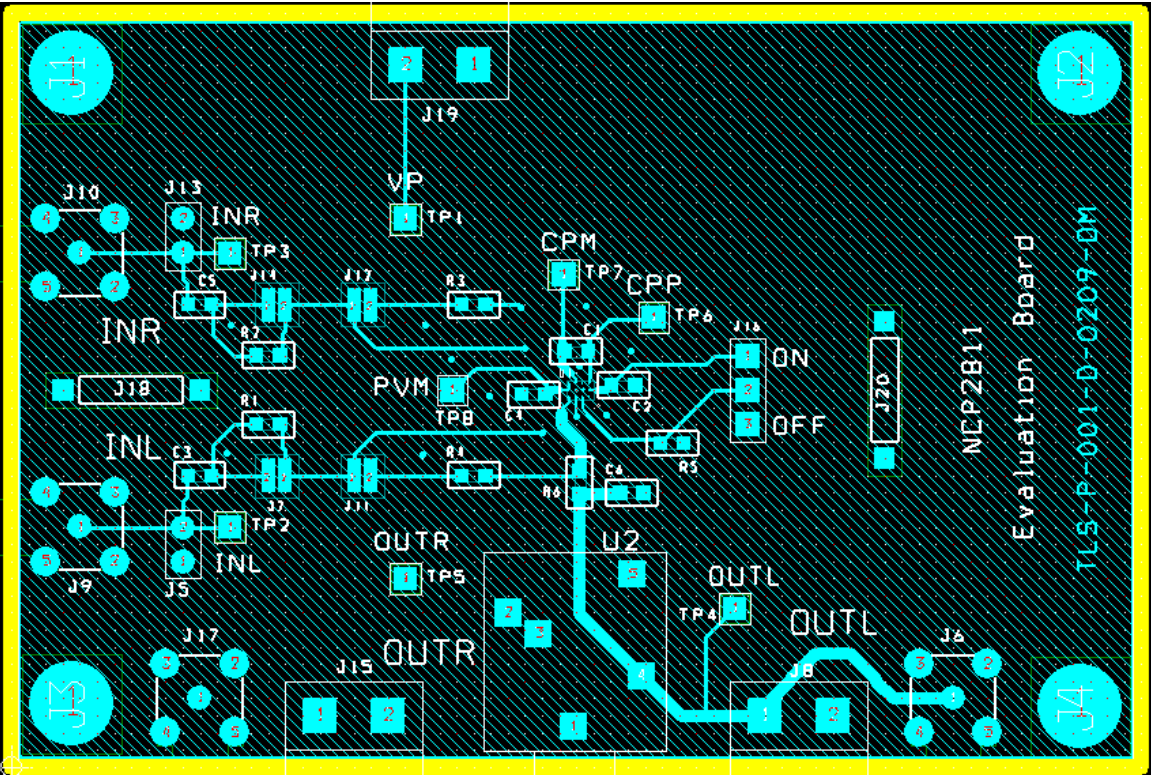


Figure 3. NCP2811AFCT1GEVB Board Layout (Top View)

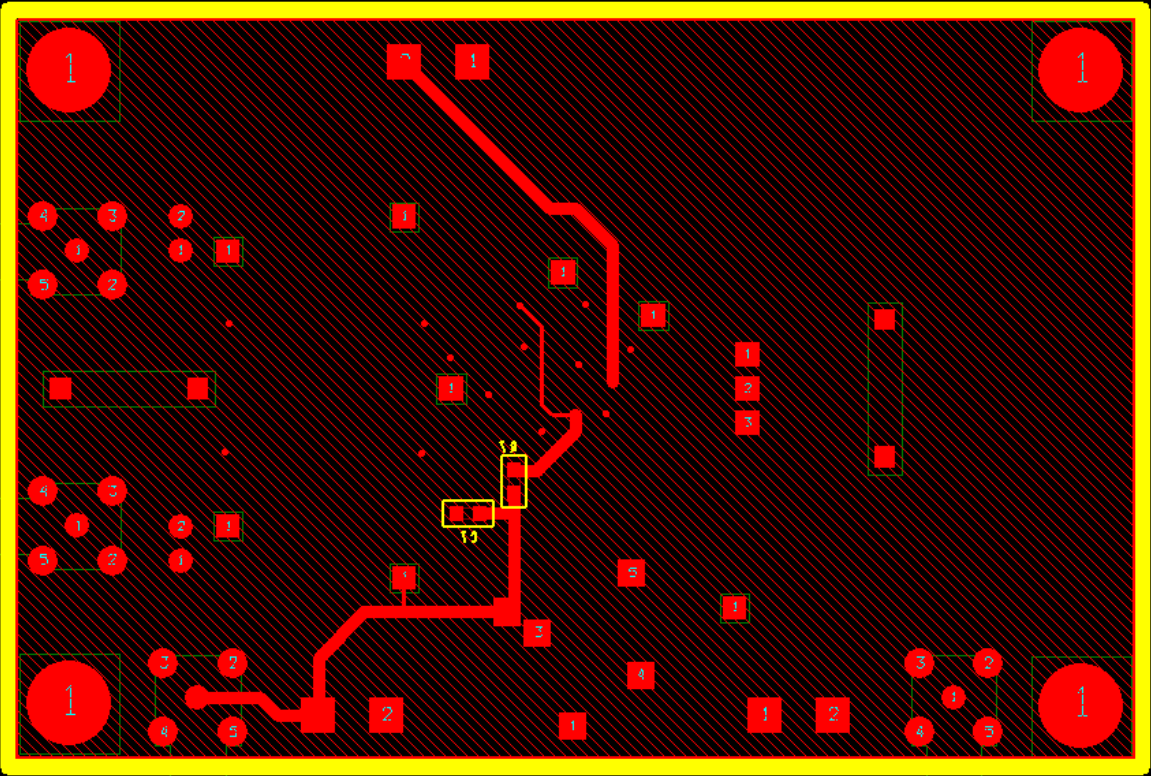


Figure 4. NCP2811AFCT1GEVB Board Layout (Bottom View)

NCP2811AFCT1GEVB

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 J16 closed. You should measure around 6 mA.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

The evaluation board/kit (research and development board/kit) (hereinafter the "board") is not a finished product and is not available for sale to consumers. The board is only intended for research, development, demonstration and evaluation purposes and will only be used in laboratory/development areas by persons with an engineering/technical training and familiar with the risks associated with handling electrical/mechanical components, systems and subsystems. This person assumes full responsibility/liability for proper and safe handling. Any other use, resale or redistribution for any other purpose is strictly prohibited.

THE BOARD IS PROVIDED BY ONSEMI TO YOU "AS IS" AND WITHOUT ANY REPRESENTATIONS OR WARRANTIES WHATSOEVER. WITHOUT LIMITING THE FOREGOING, ONSEMI (AND ITS LICENSORS/SUPPLIERS) HEREBY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES IN RELATION TO THE BOARD, ANY MODIFICATIONS, OR THIS AGREEMENT, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY AND ALL REPRESENTATIONS AND WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, NON-INFRINGEMENT, AND THOSE ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE CUSTOM OR TRADE PRACTICE.

onsemi reserves the right to make changes without further notice to any board.

You are responsible for determining whether the board will be suitable for your intended use or application or will achieve your intended results. Prior to using or distributing any systems that have been evaluated, designed or tested using the board, you agree to test and validate your design to confirm the functionality for your application. Any technical, applications or design information or advice, quality characterization, reliability data or other services provided by **onsemi** shall not constitute any representation or warranty by **onsemi**, and no additional obligations or liabilities shall arise from **onsemi** having provided such information or services.

onsemi products including the boards are not designed, intended, or authorized for use in life support systems, or any FDA Class 3 medical devices or medical devices with a similar or equivalent classification in a foreign jurisdiction, or any devices intended for implantation in the human body. You agree to indemnify, defend and hold harmless **onsemi**, its directors, officers, employees, representatives, agents, subsidiaries, affiliates, distributors, and assigns, against any and all liabilities, losses, costs, damages, judgments, and expenses, arising out of any claim, demand, investigation, lawsuit, regulatory action or cause of action arising out of or associated with any unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of any products and/or the board.

This evaluation board/kit does not fall within the scope of the European Union directives regarding electromagnetic compatibility, restricted substances (RoHS), recycling (WEEE), FCC, CE or UL, and may not meet the technical requirements of these or other related directives.

FCC WARNING – This evaluation board/kit is intended for use for engineering development, demonstration, or evaluation purposes only and is not considered by **onsemi** to be a finished end product fit for general consumer use. It may generate, use, or radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment may cause interference with radio communications, in which case the user shall be responsible, at its expense, to take whatever measures may be required to correct this interference.

onsemi does not convey any license under its patent rights nor the rights of others.

LIMITATIONS OF LIABILITY: **onsemi** shall not be liable for any special, consequential, incidental, indirect or punitive damages, including, but not limited to the costs of requalification, delay, loss of profits or goodwill, arising out of or in connection with the board, even if **onsemi** is advised of the possibility of such damages. In no event shall **onsemi**'s aggregate liability from any obligation arising out of or in connection with the board, under any theory of liability, exceed the purchase price paid for the board, if any.

The board is provided to you subject to the license and other terms per **onsemi**'s standard terms and conditions of sale. For more information and documentation, please visit www.onsemi.com.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales