



# Dual 105mW Headphone Amplifier with Digital Volume Control and Shutdown Mode

Low noise Headphone amplifier capable of delivering 105mW per channel of continuous average power into a 16Ω load with 0.1% (THD+N) from a 5V power supply. Project is based on LM4811 chip from boomer series. Project provides high quality output power with a minimal number of external components. Projects features a digital volume control that sets the amplifier's gain from +12dB to -33dB in 16 discrete steps using a two-wire interface or onboard 3 tactile switches. On board jumper implements the shutdown feature. Chip also has an internal thermal shutdown protection mechanism.

## Connector CN1 Audio Input

- Pin 1 Audio Signal Input 1
- Pin 2 GND
- Pin 3 GND
- Pin 4 Audio Signal Input 2

## Connector CN3 Power Supply

- Pin 1 +5V DC Input
- Pin 2 GND

## Features

- Operating Power Supply 5V DC
- Output 105mW Stereo
- On Board Power LED
- Digital Volume Control Range from +12dB to -33dB
- "Click and Pop" Suppression Circuitry
- THD+N at 1kHz, 105mW Continuous Average Output Power into 16Ω 0.1% (typ)
- THD+N at 1kHz, 70mW Continuous Average Power into 32Ω 0.1% (typ)
- Low Shutdown Current
- 3 Tactile Switches to set the Gain
- Optional 3 Pin Header Connector for 2 Wire Interface for Micro-Controller for Gain
- On Board Stereo EP Socket for Easy Headphone Interface
- Optional 2 X Header Connector for Headphone/Speaker Connections
- Header Connector for Power Supply
- Jumper for Shutdown
- PCB Dimensions 39.21 x 37.47mm
- 4 x 2.5MM Mounting Holes





**Connector LS1 and LS2:** Optional Speaker or Headphone Connection

**Connector CN4:** 3.5MM Stereo EP Female socket for Headphone

**Connector CN2:** External/Optional 2 Wire Gain Control

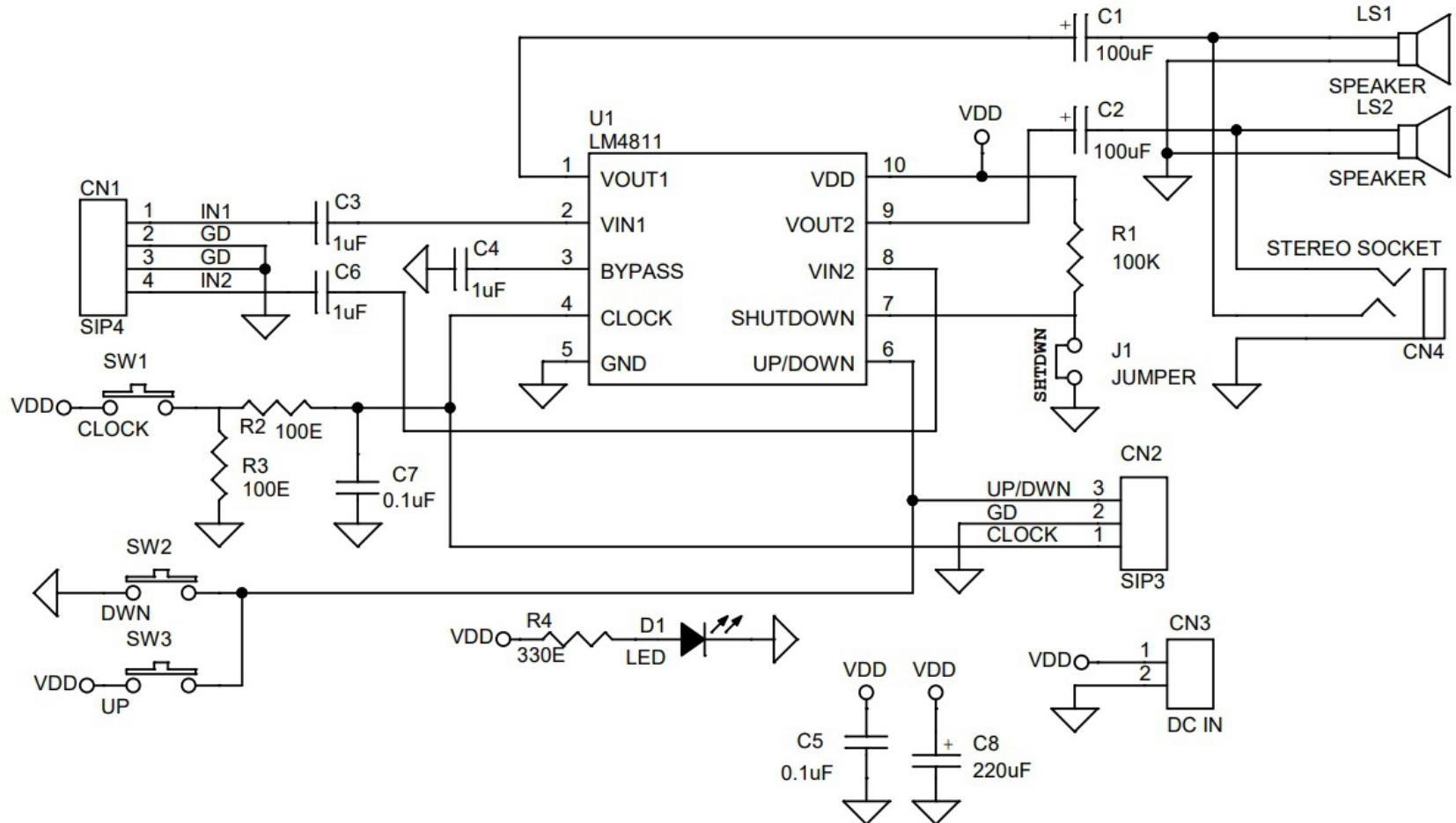
**Jumper J1:** Closes = Enable, J1 Open Shutdown

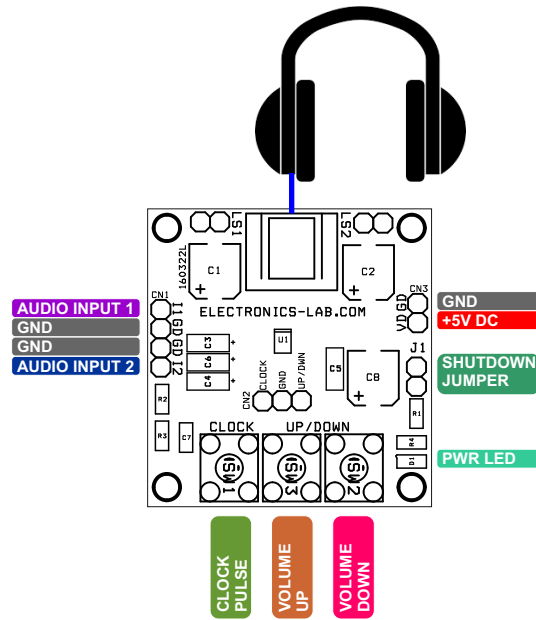
**LED D1:** Power LED

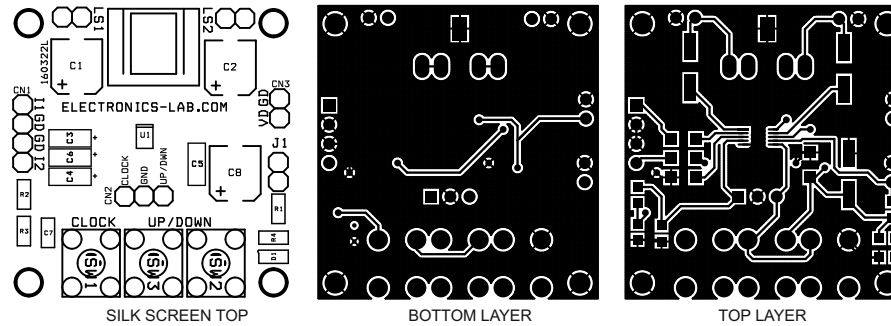
**Switch 1:** Clock Input, Increment Steps

**Switch 2:** Volume Down Operation

**Switch 3:** Volume Up Operation







PCB DIMENSIONS 39.21MM X 37.47MM

BOM						
NO	QNTY.	REF	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	4 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5317-ND
2	1	CN2	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5316-ND
3	1	CN3	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
4	1	CN4	3.5MM STEREO EP SOCKET	CUI AUDIO	DIGIKEY	CP1-3525N-ND
5	2	C1,C2	100uF/25V	UNITED CHECM	DIGIKEY	565-EMHL250ARA101MF80GCT-ND
6	3	C3,C4,C6	1uF/16V SMD SIZE 1206	YAGEO/MURATA	DIGIKEY	
7	2	C5,C7	0.1uF/25V SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	1	C8	220uF/15V SMD SIZE 0805	WURTH	DIGIKEY	732-8524-2-ND
9	1	D1	LED RED SMD SIZE 0805	LITE ON INC	DIGIKEY	160-1427-1-ND
10	1	J1	JUMPER	WURTH	DIGIKEY	732-5315-ND
11	2	LS1,LS2	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
12	1	R1	100K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
13	2	R2,R3	100E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	1	R4	330E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
15	1	SW1	4 PIN TACTILE SWITCH	NKK SWITCH	DIGIKEY	HP0215AFKP2-ND
16	1	SW2	4 PIN TACTILE SWITCH	NKK SWITCH	DIGIKEY	HP0215AFKP2-ND
17	1	SW3	4 PIN TACTILE SWITCH	NKK SWITCH	DIGIKEY	HP0215AFKP2-ND
18	1	U1	LM4811 10VSSOP	TI	DIGIKEY	LM4811MM/NOPBTR-ND
19	1	J1	SHUNT FOR JUMPER	SULLINS CONECT	DIGIKEY	S9001-ND