

10W Class-D Stereo Audio Amplifier with Mute, Shutdown and Four Gain Settings

This is a Class-D Stereo audio amplifier project that provides 10W stereo output. The amplifier includes Gain control using 2 x Jumpers, Mute function, and shutdown function. RCA female connectors are provided for the audio source input, screw terminals are provided for an easy interface with speakers and power supply input. The project was built using a TPA3125D2 chip from TI.

The TPA3125D2 is a 10-W (per channel), efficient, class-D audio power amplifier for driving stereo speakers in a single-ended configuration; or, a mono speaker in a bridge-tied-load configuration. The TPA3125D2 can drive stereo speakers as low as 4 Ω. The efficiency of the TPA3125D2 eliminates the need for an external heat sink when playing music. The gain of the amplifier is controlled by two gain select pins. The gain selections are 20, 26, 32, and 36 dB. The patented start-up and shutdown sequences minimize pop noise in the speakers without additional circuitry.

Gain Setting Jumper J3 & J4 (J3=Gain1 & J4=Gain0) OFF Denotes Jumper Removed/Open, On Denotes Jumper Closed/Installed

Gain-1 ON + Gain-0 ON = Amplifier Gain (dB) 20
 Gain-1 ON + Gain-0 OFF = Amplifier Gain (dB) 26
 Gain-1 OFF + Gain-0 ON = Amplifier Gain (dB) 32
 Gain-1 OFF + Gain-0 OFF = Amplifier Gain (dB) 20

Input Resistance

Changing the gain setting can vary the input resistance of the amplifier from its smallest value, 9Kohms +/-20%, to the largest value, 60Kohms +/-20%.

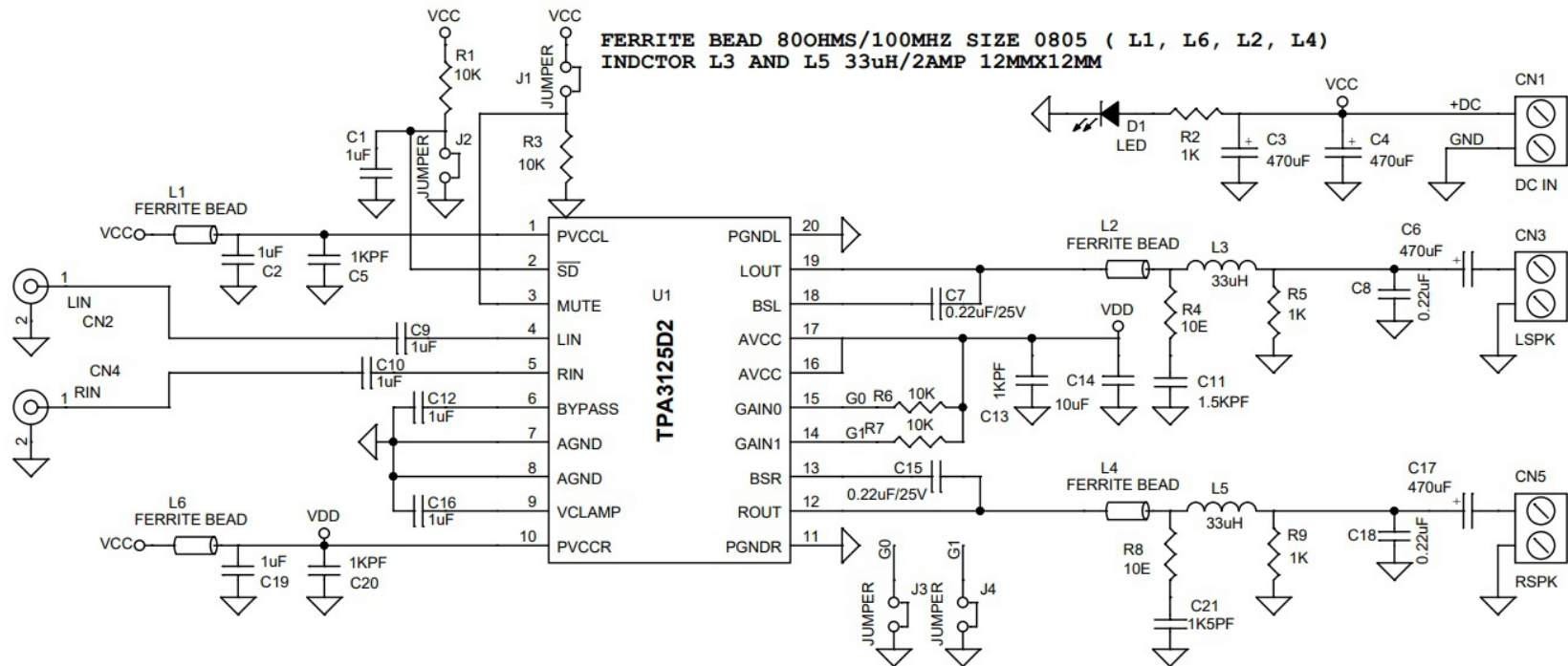
Mute and Shutdown Function (Jumper J1-Mute & J2-Shutdown)

- Jumper J1 Open Normal Operation, J1 Closed Mute On
- Jumper J2 Open Normal Operation, J2 Closed Shutdown On

Features

- Power Supply 12V DC (Range 10V to 26V DC)
- Supply Current 3Amps
- Output 10W (24V DC Supply)
- Speaker 8 Ohms (Minimum Speaker Load 4 Ohms)
- 2 X Single Ended Audio Signal Input
- Jumper J1 Mute Function
- Jumper J2 Shutdown Function
- Four Selectable Gain Settings (Jumper J3 and J4)
- Thermal and Short Circuit Protection with Auto Recovery
- PCB Dimensions 52.71 X 63.82 mm

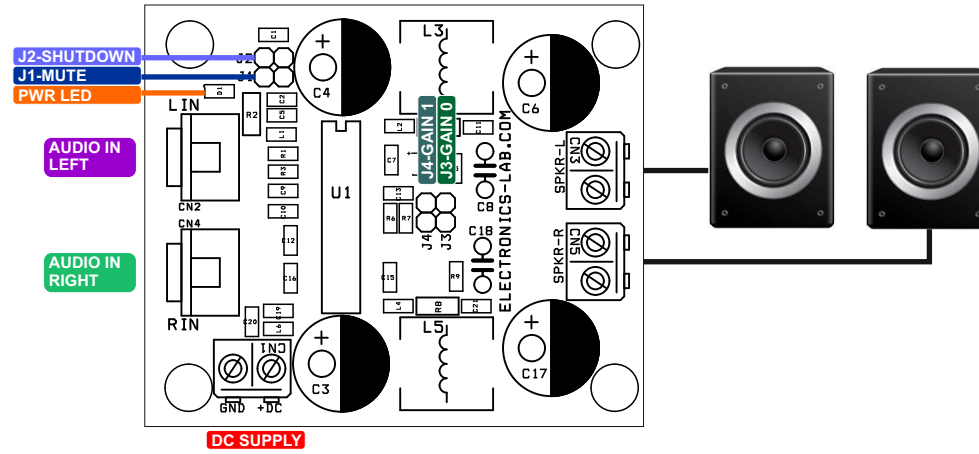


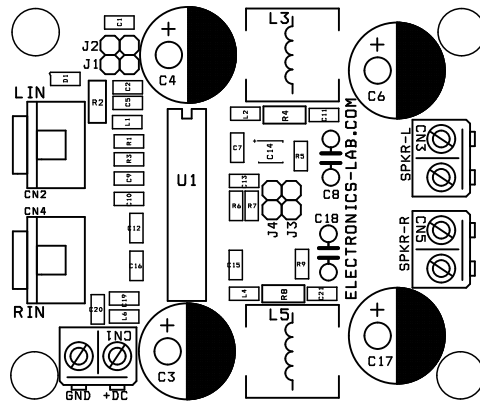




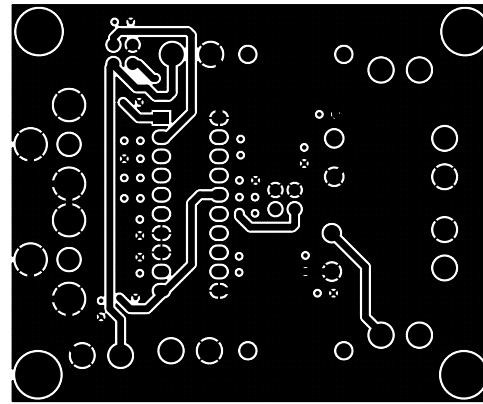
BOM						
NO	QNTY	REF	DESC	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
2	1	CN2	RCA FEMALE	CUI DEVICES	DIGIKEY	CP-1405-ND
3	1	CN3	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
4	1	CN4	RCA FEMALE	CUI DEVICES	DIGIKEY	CP-1405-ND
5	1	CN5	2 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1247-ND
6	7	C1,C2,C9,C10,C12,C16,C19	1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
7	4	C3,C4,C6,C17	470uF/35V	NICHICOM	DIGIKEY	493-12005-1-ND
8	3	C5,C13,C20	1KPF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
9	2	C7,C15	0.22uF/25V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
10	2	C8,C18	0.22uF/63V BOX	EPCOS-TDK	DIGIKEY	495-2492-ND
11	1	C11	1.5KPF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
12	1	C14	10uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
13	1	C21	1K5PF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
14	1	D1	LED SMD SIZE 0805	LITE ON INC	DIGIKEY	160-1427-1-ND
15	4	J1,J2,J3,J4	2 PIN HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
16	4	L1,L2,L4,L6	FERRITE BEAD 800HMS/100MHZ SIZE 0805	TDK	DIGIKEY	445-2187-1-ND
17	2	L3,L5	33uH /2AMP	COIL CRAFT	COILCRAFT	DO3316P-333MLD
18	4	R1,R3,R6,R7	10K 5% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
19	3	R2,R5,R9	1K 5% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
20	2	R4,R8	10E 5% SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
21	1	U1	TPA3125D2	TI	DIGIKEY	296-24090-5-ND
22	4	SHUNT	SHUNT FOR JUMPERS	SULINS INC	DIGIKEY	S9001-ND



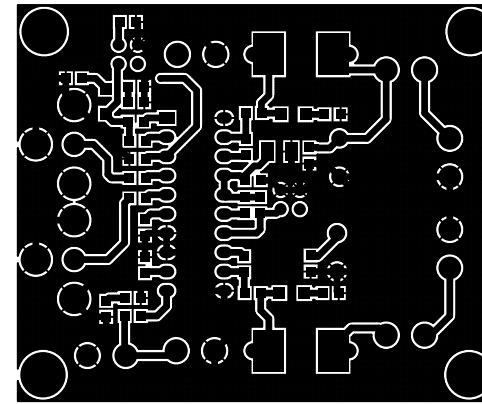




SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 52.71MM X 63.82MM