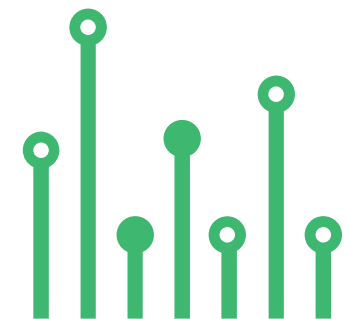


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Stereo 2-Vrms Line Driver and Headphone Amplifier



SKU: EL154240

AUDIO

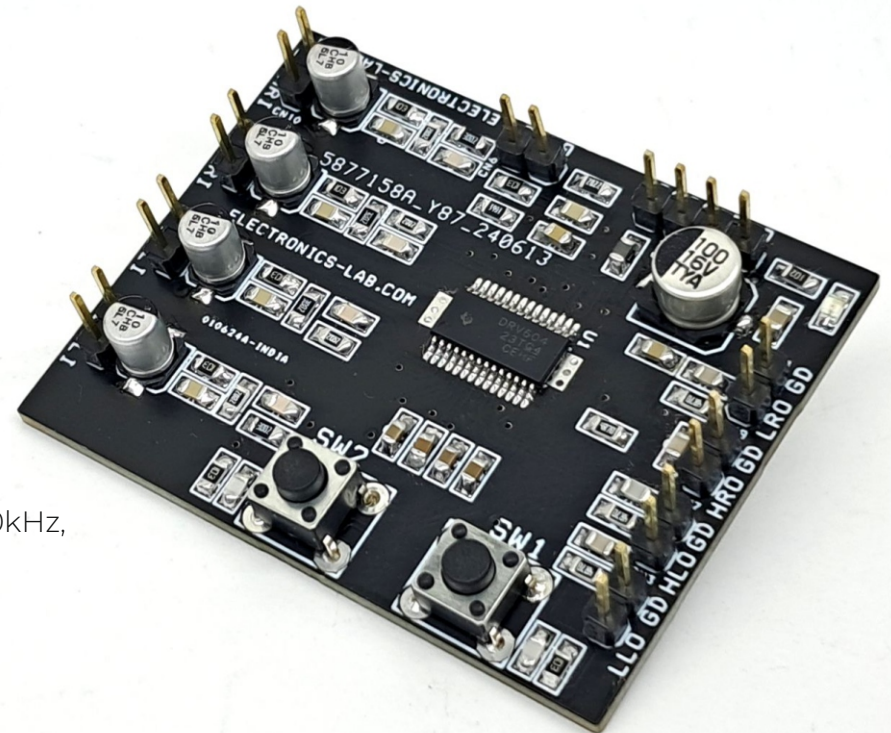
Stereo 2-Vrms Line Driver and Headphone Amplifier



This is a 2Vrms Pop-Free stereo line driver with a stereo headphone driver designed to allow the removal of the output DC-blocking capacitors for reduced component count and cost. The project is based on the DRV604 chip which is ideal for single supply electronics where size and cost are critical design parameters. The project is capable of driving 2Vrms into a 5k Ω load and a clean 40mW into a 32 Ω headphone with a single 3.3V supply voltage. Line and headphone outputs have ± 8 kV IEC ESD protection. The device has built-in shutdown control for pop-free on/off control. The DRV604 does not require a power supply greater than 3.3V to generate its 5.6Vpp output, nor does it require a split rail power supply. The DRV604 integrates its charge pump to generate a negative supply rail that provides a clean, pop-free ground biased 2Vrms output. This project is configured with single-ended header input connectors for analog input, headphones, and line output. The power supply is connected via a four-pin 2.54mm pin header.

Features

- Power Supply 3.3V (Range 3V To 3.7V)
- VSUP 3.3V Enables the Output
- Number of Channels 4
- Single-ended analog input and output
- Load Impedance: Line Min 5K Ohms
- Load Impedance: Headphone Min 32 Ohms
- Up to 2-Vrms Line Output
- Output Power: Headphone 40mW
- Dynamic Range > 103dB
- Eliminates Pop/Clicks
- Low Noise and THD DESCRIPTION– SNR > 109dB, Typical $V_n < 7\mu$ Vrms 20–20kHz,
- Single-ended analog input and output
- Shutdown Switch for Line and Headphone
- Power Sense UVP for Brown Out Protection
- Short Circuit and Thermal Protection
- PCB Dimensions 50.64X39.85MM



Dual Stereo Line Driver

The Headphone stereo amplifier can also be used as Line Driver and has the same high output voltage capability as the Line amp when driving $5k\Omega$ load impedances.

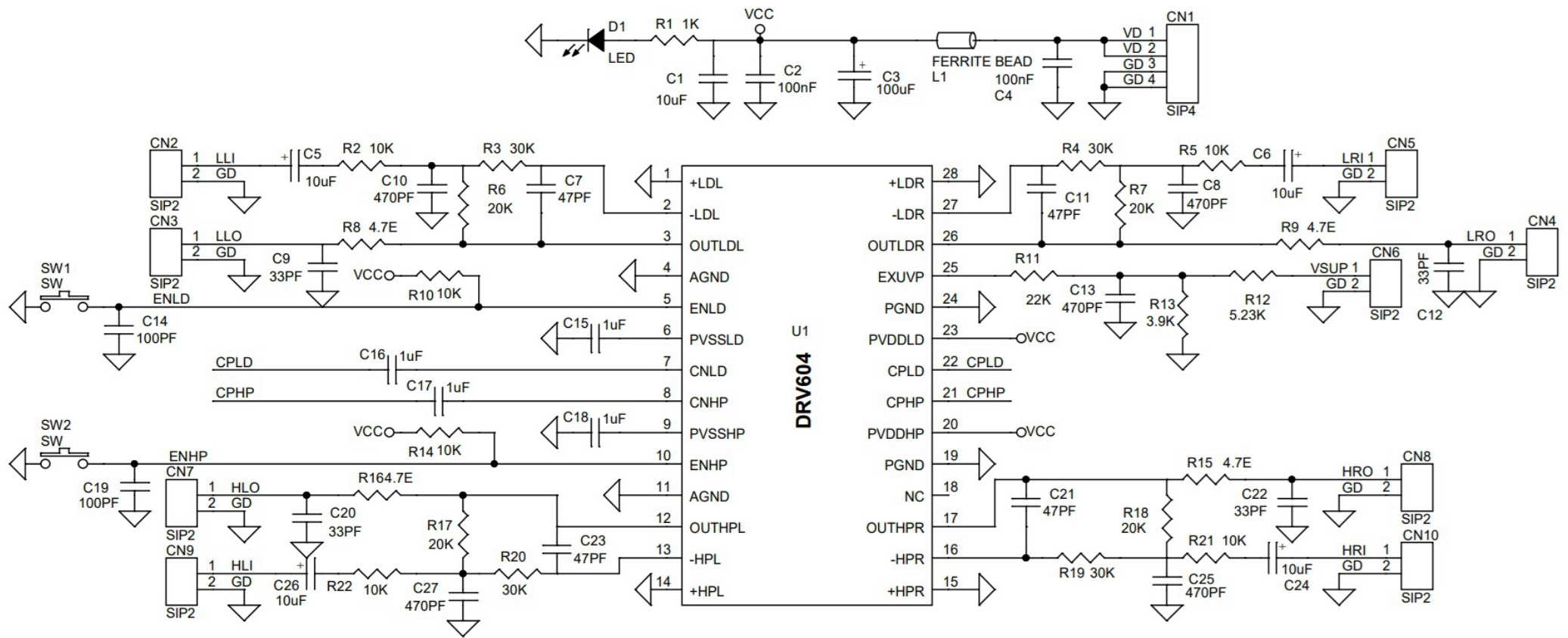
On/Off Sequence

For minimum click and pop during power on and power off, the DRV604 Enable inputs, pin 5 and pin 10, should be kept low.

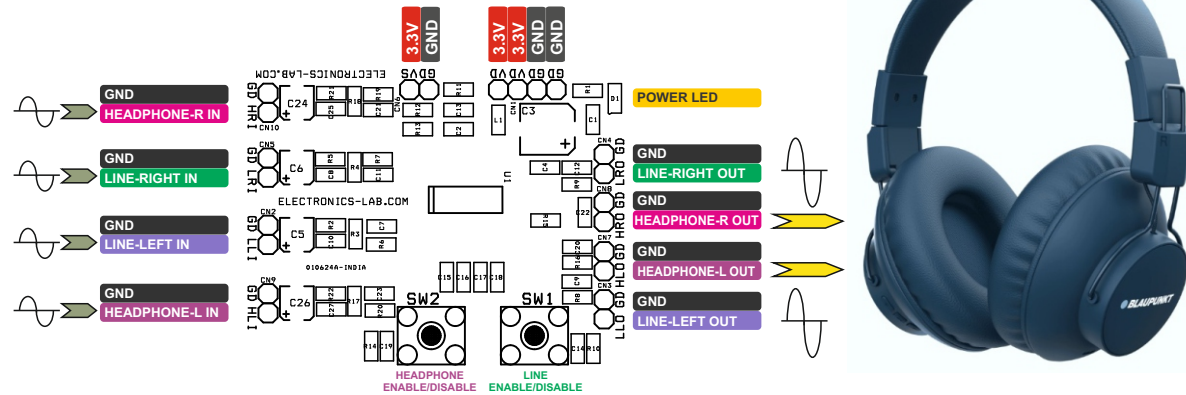
Pop-Free Power Up

Pop-free power up is ensured by keeping the EN_LD and EN_HP and/or Ex_UVP low during power supply ramp up and down. The pins should be kept low until the input AC-coupling capacitors are fully charged before asserting the EN_xx pins high, this way proper pre-charge of the ac-coupling is performed and pop-less power-up is achieved.

Schematic



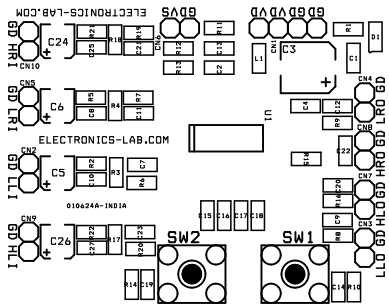
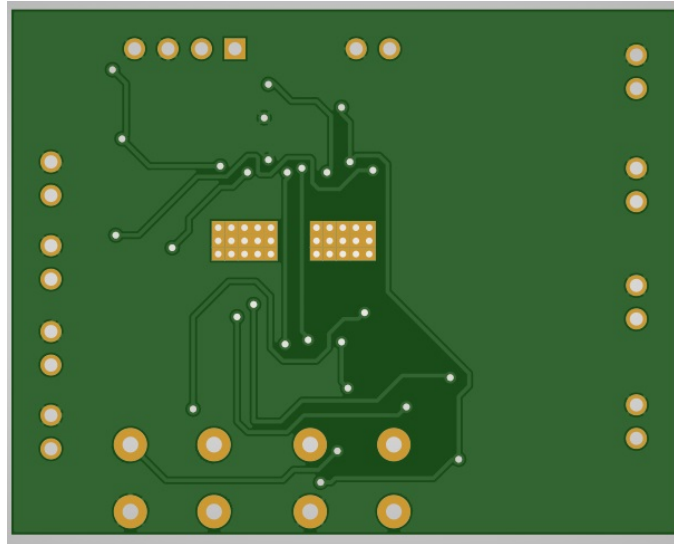
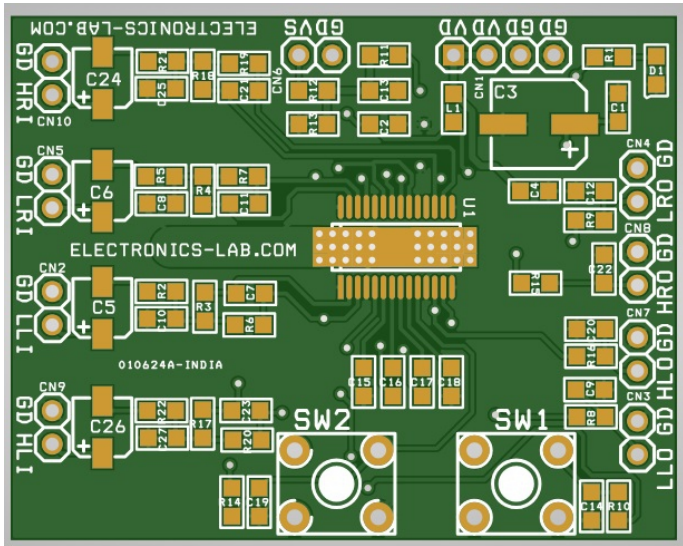
Connections



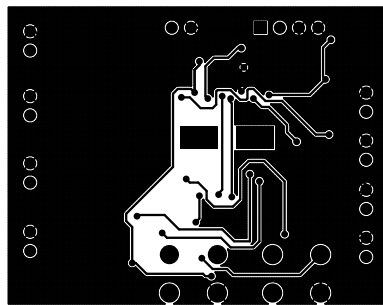
Connections

- CN1: Pin 1,2 = VDD 3.3V, Pin 3,4 = GND
- CN2: Pin 1 = Line Input Left Channel, Pin 2 = GND
- CN3: Pin 1 = Line Output Left Channel, Pin 2 = GND
- CN4: Pin 1 = Line Output Right Channel, Pin 2 = GND
- CN5: Pin 1 = Line Input Right Channel, Pin 2 = GND
- CN6: Pin 1 = VSUP 3.3V, Enable/Disable for Pop free Output (3.3V=Enable)
- CN7: Pin 1 = Headphone Left Channel, Pin 2 = GND
- CN8: Pin 1 = Headphone Right Output, Pin 2 = GND
- CN9: Pin 1 = Headphone Left Channel Input, Pin 2 = GND
- CN10: Pin 1 = Headphone Right Channel Input, Pin 2 = GND
- SW1: Line Input Enable/Disable, Normally Enabled
- SW2: Headphone Enable/Disable, Normally Enabled
- D1: Power LED

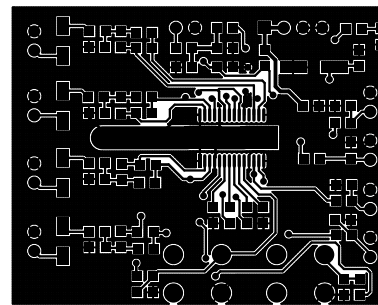
PCB



SILK SCREEN TOP



BOTTOM LAYER



TOP LAYER

PCB DIMENSIONS 50.64X39.85MM

Parts List

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	9	CN2,CN3,CN4,CN5,CN6,CN7,CN8,CN9,CN10	2 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5315-ND
3	4	C5,C6,C24,C26	10uF/25V ELECTROLYTIC	PANASONIC	DIGIKEY	PCE3895CT-ND
4	2	C2,C4	100nF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
5	1	C3	100uF/16V ELECTROLYTIC	PANASONIC	DIGIKEY	PCE3783CT-ND
6	4	C7,C11,C21,C23	47PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
7	5	C8,C10,C13,C25,C27	470PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
8	4	C9,C12,C20,C22	33PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
9	2	C14,C19	100PF/50V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
10	4	C15,C16,C17,C18	1uF/25V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
11	1	D1	LED RED SMD SIZE 0805	OSRAM	DIGIKEY	475-1278-1-ND
12	1	L1	FERRITE BEAD 600 OHM SMD SIZE 0805	LAIRD	DIGIKEY	240-2390-1-ND
13	1	R1	1K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
14	6	R2,R5,R10,R14,R21,R22	10K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
15	4	R3,R4,R19,R20	30K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
16	4	R6,R7,R17,R18	20K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
17	4	R8,R9,R15,R16	4.7E 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
18	1	R11	22K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
19	1	R12	5.23K 1% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
20	1	R13	3.9K 5% SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	
21	2	SW1,SW2	TACTILE SWITCH	C&K	DIGIKEY	CKN9085CT-ND
22	1	U1	DRV604	TI	DIGIKEY	DRV604PWP-ND
23	1	C1	10uF/10V CERAMIC SMD SIZE 0805	YAGEO/MURATA	DIGIKEY	

Notes

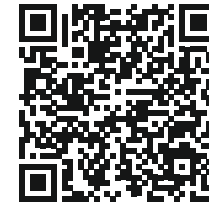


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