

Balanced Line Driver for High Speed Digital and Video Signal

The project presented here is a differential driver for the transmission of high-speed signals over low-cost twisted pair or coaxial cables. The project was built using the **AD8132** chip. It can be used to transmit either analog or digital video signals or another high-speed data transmission.

The board is capable of driving either a **Category 3** or **Category 5** twisted pair or coaxial cable with minimal line attenuation. It is capable of operating with a 10 meters of Category 5 cable. This board converts single-ended Video/Digital signals into a balanced output that can be paired with "**Balanced Line Receiver for Digital Signal Over Twisted Pair CAT-5 Cable**" as the receiver, published on our website.

This board has adjustable gain. You may also refer to a similar project "**Single-ended Video/Digital input to differential output driver (High Speed Differential Driver)**" with fixed gain published on our website. Gain Setting: Default gain is **G= +2**, refer to the datasheet of AD8132 to learn more about gain settings and gain change. Resistors R4, R5, R8, and R9 are used for gain adjustment.

<https://www.electronics-lab.com/project/balanced-line-receiver-for-digital-signal-over-twisted-pair-cat-5-cable/>

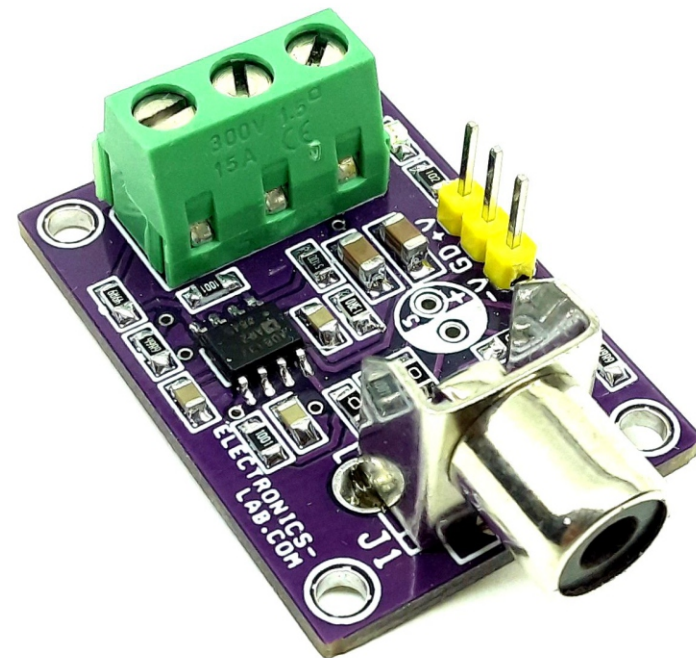
Project has adjustable gain option. Refer to similar project with fixed gain published on our website:

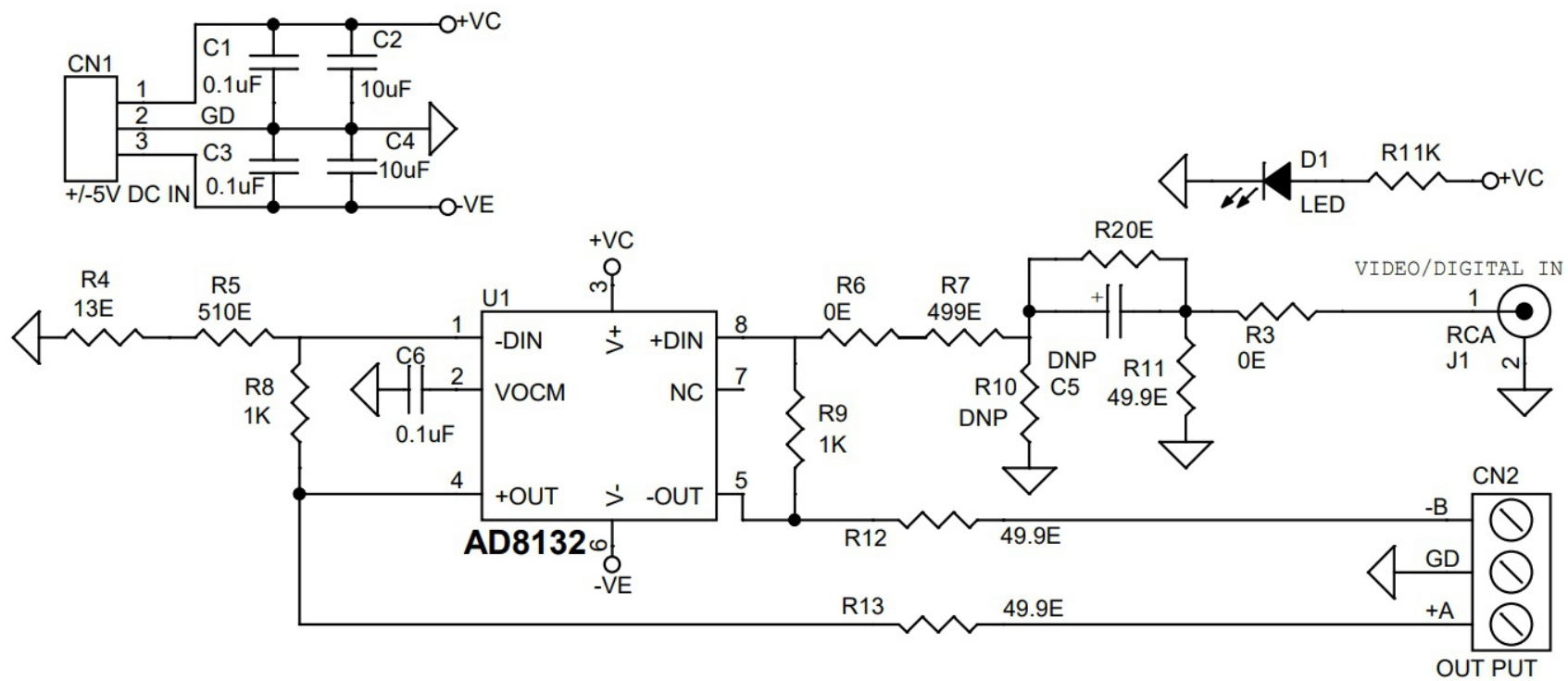
<https://www.electronics-lab.com/project/single-ended-video-digital-input-to-differential-output-driver-high-speed-differential-driver/>

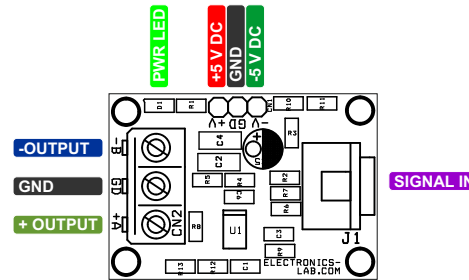
Gain: Default gain $G = +2$, refer data sheet of AD8132 to know more about gain settings and gain change. Resistor R4, R5, R8 and R9 are responsible for gain change.

Features

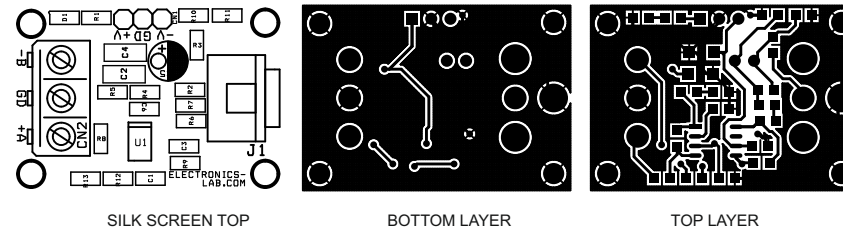
- Power supply $\pm 5V$ DC (Range: $+2.7V$ to $\pm 5.5V$)
- Low power: 20 mA @ 5 V
- Maximum Output Swing $\pm 3.6V$
- High speed 350 MHz, -3 dB bandwidth
- 1200 V/ μs slew rate
- Resistor set gain (Resistor R8 and R9) **Default Gain $G = +2$**
- Internal common-mode feedback
- Improved gain and phase balance: -68 dB @ 10 Mhz
- Separate input to set the common-mode output voltage
- Low distortion: -99 dBc SFDR @ 5 MHz, 800 Ω load
- PCB Dimensions 36.04 x 25.08 mm







BOM						
NO.	QNTY.	REF.	DESC.	MANUFACTURER	SUPPLIER	SUPPLIER PART NO
1	1	CN1	3 PIN MALE HEADER PITCH 2.54MM	WURTH	DIGIKEY	732-5316-ND
2	1	CN2	3 PIN SCREW TERMINAL PITCH 5.08MM	PHOENIX	DIGIKEY	277-1248-ND
3	3	C1,C3,C6	0.1uF/50V SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
4	2	C2,C4	10uF/16V SMD SIZE 1206	MURATA/YAGEO	DIGIKEY	
5	2	C5,R10	DNP			
6	1	D1	LED SMD SIZE 0805	LITE ON INC	DIGIKEY	160-1427-1-ND
7	1	J1	RCA FEMALE	CUI DEVICE	DIGIKEY	CP-1405-ND
8	3	R1,R8,R9	1K 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
9	3	R2,R3,R6	0E SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
10	1	R4	13E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
11	1	R5	510E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
12	1	R7	499E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
13	3	R11,R12,R1	49.9E 1% SMD SIZE 0805	MURATA/YAGEO	DIGIKEY	
14	1	U1	AD8132 SMD SOIC8	ANALOG DEVICES	CHIP1STOP	C1S103100521348



PCB DIMENSIONS 36.04MM X 25.08MM

Video
Or Digital
Output

Differential
Line Receiver



-OUTPUT
GND
+ OUTPUT

