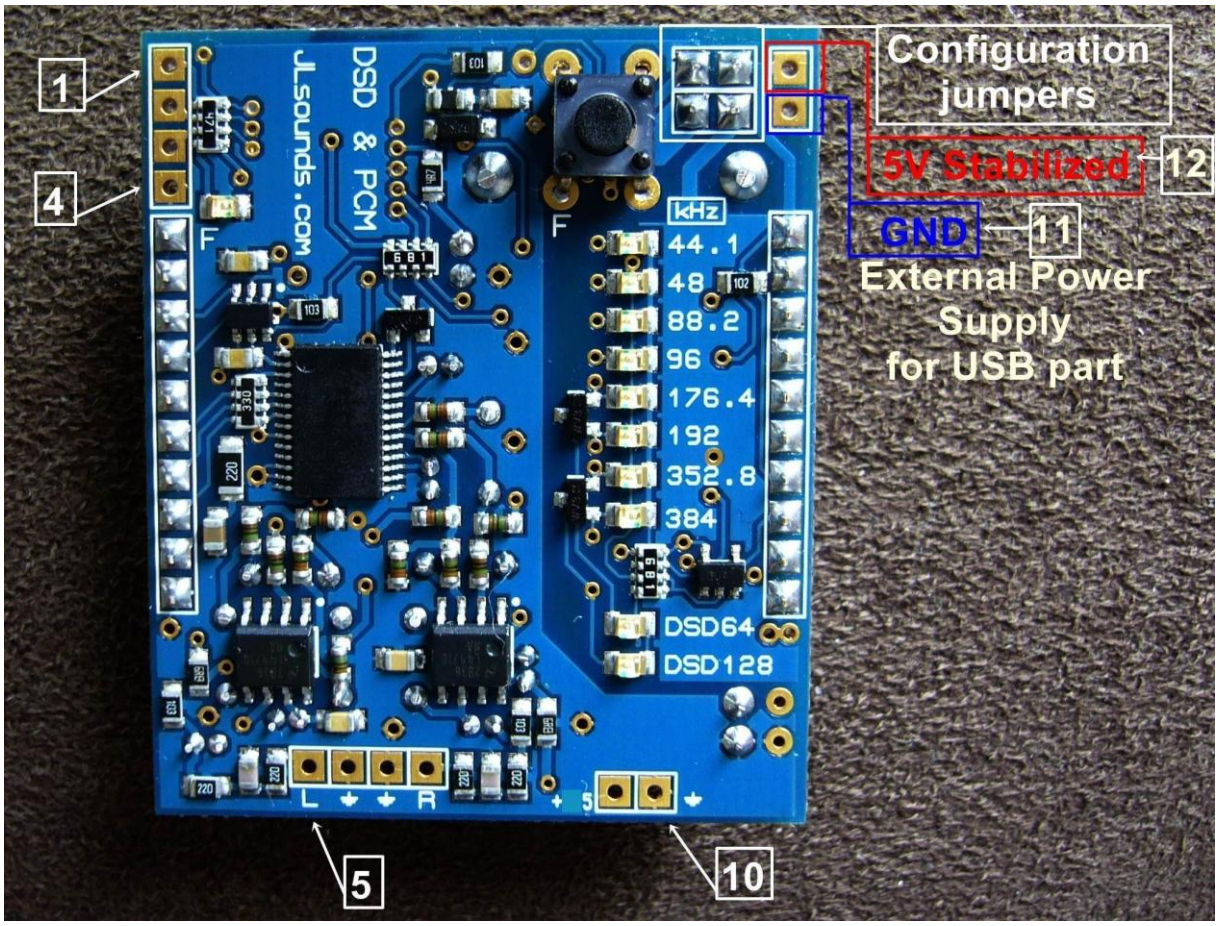
AK4396 board



Pin #	Signal
1	Button
2	Mute output. *work – 0V; mute – 3.3V*
3	Indication LED F
4	GND
5	Left analog DAC output
6	GND
7	GND
8	Right analog DAC output
9	Input **5.2V/0.2A** stabilized external power supply.
10	GND

Configuration jumpers – If jumpers are installed, the board is USB powered. If jumpers are open then you must provide external stabilized power supply to pin9 and pin10.

Our recommendation is to use external power supply (pin9 and pin10) for better sound quality.

Analog outputs are 2.8Vpp (5V power supply).

AK4396 plays Fs from 44.1 kHz to 192kHz and DSD64 according to its' datasheet; Proprietary solution for 352.8 kHz, 384 kHz and DSD128.

Configuration from PCM to DSD data format and back, is done by PIC1823 microcontroller, which 0.5sec after his work is done, is putted on sleep mode not to insert disturbances.

By pressing the button once, one changes the state of roll-off filter. If Led F is on – Slow roll-off filter. If Led F is off – Sharp roll-off filter.

If one wants the AK4396 to be in power-down mode (PDN), one has to press and hold the button down until the Led F starts to blink. In this mode S/PDIF output of I2SoverUSB board is working. Hence disturbances from AK4396 are reduced. Getting out of PDN mode is done by holding the button down until the Led F starts to blink.

The AK4396 remember his old filter state.

Reconstruction filter is made of MELF Vishay resistors and polyester capacitors.

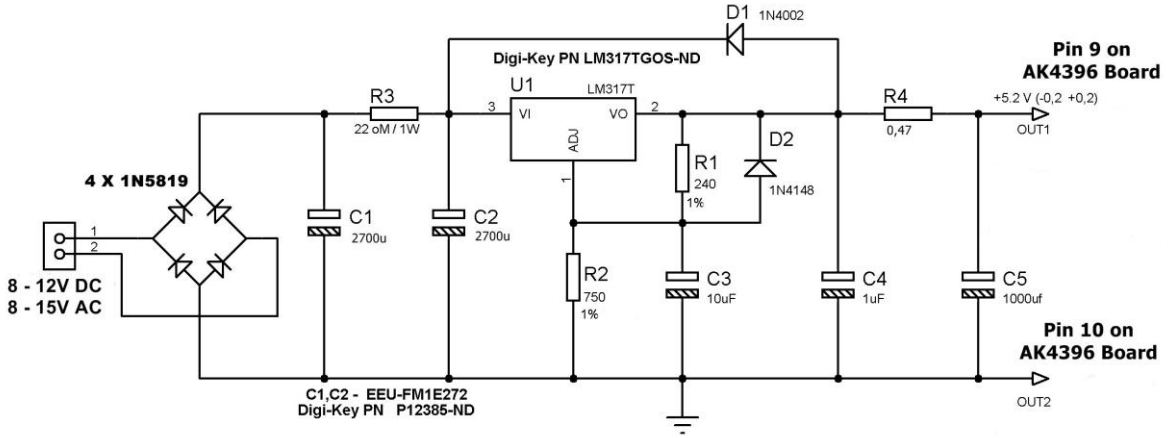
If you use **both** boards together there are three ways for power supply.

1. Two boards are powered from USB bus. Default state. Galvanic isolation is avoided (on I2SoverUSB board, USB jumper is installed and on AK4396 board, configuration jumpers are installed).

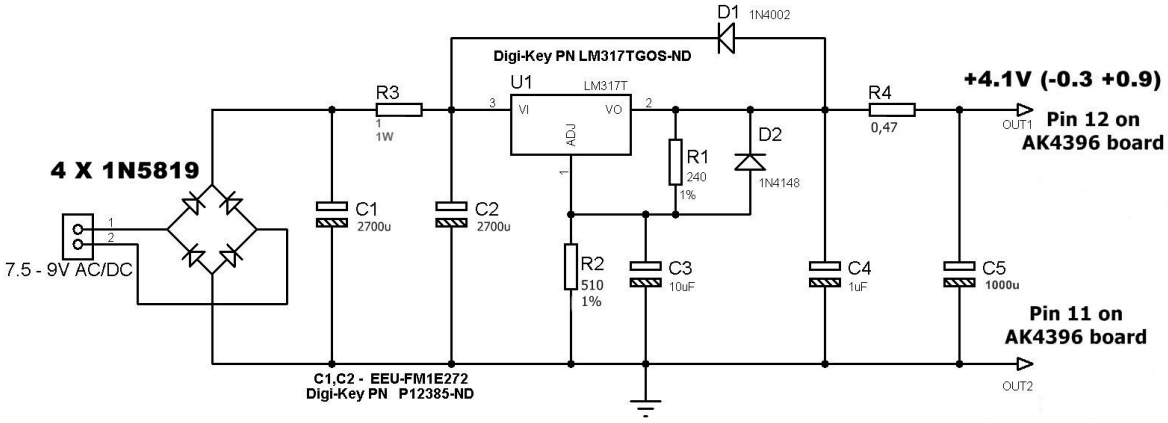
2. External power supply for the AK4396 board: **5.2V/0.2A** on pin9 and pin10. This power supply is feeding AK4396 and generators and reclocks on I2SoverUSB board. On I2SoverUSB board, USB jumper is installed and on AK4396 board, configuration jumpers are opened.

3. External power supply for the AK4396 board: **5.2V/0.2A** on pin9 and pin10. This power supply is feeding AK4396 and generators and reclocks on I2SoverUSB board. External power supply for USB part **3.8V** to **5.0V/0.4A** on pin11 and pin12. On I2SoverUSB board, USB jumper is opened and on AK4396 board, configuration jumpers are opened. In this way I2SoverUSB board consumes less than 10mA from USB host.

Recommended minimum requirement schemes of external power supplies



External power supply for AK4396 and generators and reclocks on I2SoverUSB board.



External power supply for USB part.

If the two boards are powered from USB bus and the voltage from the USB host drops below 4.8V, 352.8kHz, 384kHz and DSD128 might not work (allowable minimum power supply for AK4396 is 4.8V). The solution is to use external power supply for the AK4396 board, oscillators and reclock (pin9 and pin10).

For the AK4396 board, we highly recommend external power supply for high quality sound.