Introducing an additional I2S input port on the S/PDIF Interface Board
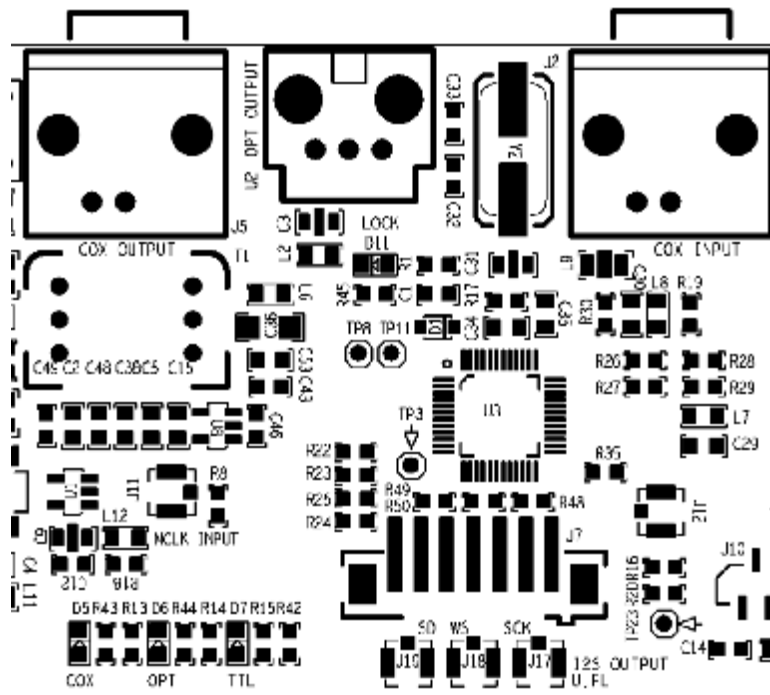
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Descriptions

With FIFO board firmware V3.80 or higher, the S/PDIF Interface Board will support a reserved I2S input. This new feature will make it possible to switch between S/PDIF sources and I2S source for the FIFO KIT. However, users have to tap a connector by themselves to use this additional I2S input port.

Signals of the reserved I2S port

The reserved I2S port was terminated by R22, R23, R25 and R24.

Terminal Resistor	I2S Singles	Operating
R22	MCLK	Tied to GND
R23	SCK	Tap signal
R25	SD	Tap signal
R24	WS	Tap signal

Signals are 3.3 LVTTL level with TTL level compatible.   Please see the picture below for the locations.

Operating and indicating

Working with FIFO board firmware V3.80 or higher, the additional I2S source will be included into the source selecting loop. The source selecting button S1 loop will become:

OPT (default) -> COX -> TTL -> I2S ….

All of the three LED D5, D6 and D7 will turn on to indicate the I2S source is selected.

Steps to tap connector header to the reserved I2S input port

Unfortunately no connector footprint was placed on the S/PDIF Interface Board PCB for this reserved I2S port. So, user has to tap a PH2.0 mm SMT connector (Digikey P/N: 455-1736-1-ND) to include those I2S signals.

Step1:   Remove R22, R23, R24, R25 from PCB. SMT soldering station is recommended tool, but normal solder iron is still OK.

Setp2:   Cover the GND pads of R23, R24 and R25 with fine cut high temperature tape to avoid signals short to GND. Please keep the GND pad of R22 open.

Setp3:   Solder the 4P SMT PH2.0 header, Pin1 (WS) to R24 signal pad, Pin2 (SD) to R25 signal pad, Pin3 (SCK) to R23 signal pad and Pin4 to both R22 signal pad and GND pad,

Step4:   Peel the solder mask paint a bit beside the two support pads of the header to appear small area of GND copper plate, please be careful no touching any other circuit route.

Step5:   Solder the support pads of the header to the appeared GND copper plate.   Solder iron with higher power may require. For enough support force, applying compound of strong glue (such as epoxy) is highly suggested for the double support.

Step6:   Make an I2S cable to introduce an additional I2S input source. The Digikey P/Ns are:
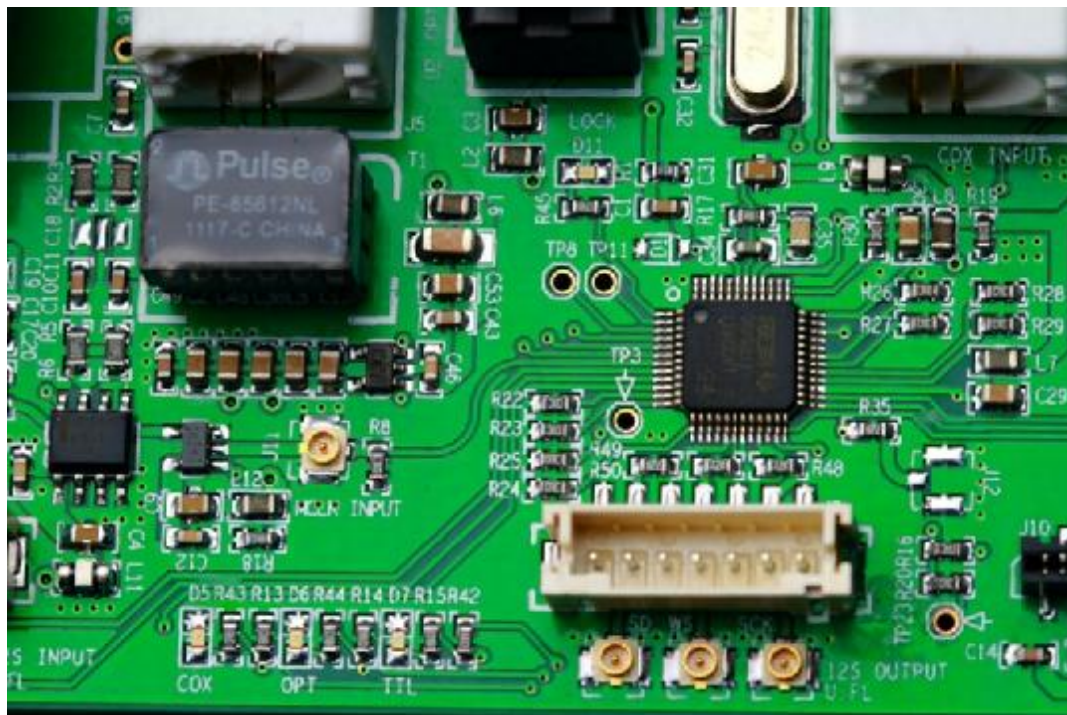
House: 455-1164-ND

Terminal pin: 455-1127-2-ND

Note* Step4 and step5 are very important. Pads were not originally designed for the connector herder, so there is no enough force to support it when the connector is pulled out. In this case, it's very easy to get the PCB damaged. Care has to be taken to pull out the connector even the step 4 and 5 has already been finished very well.
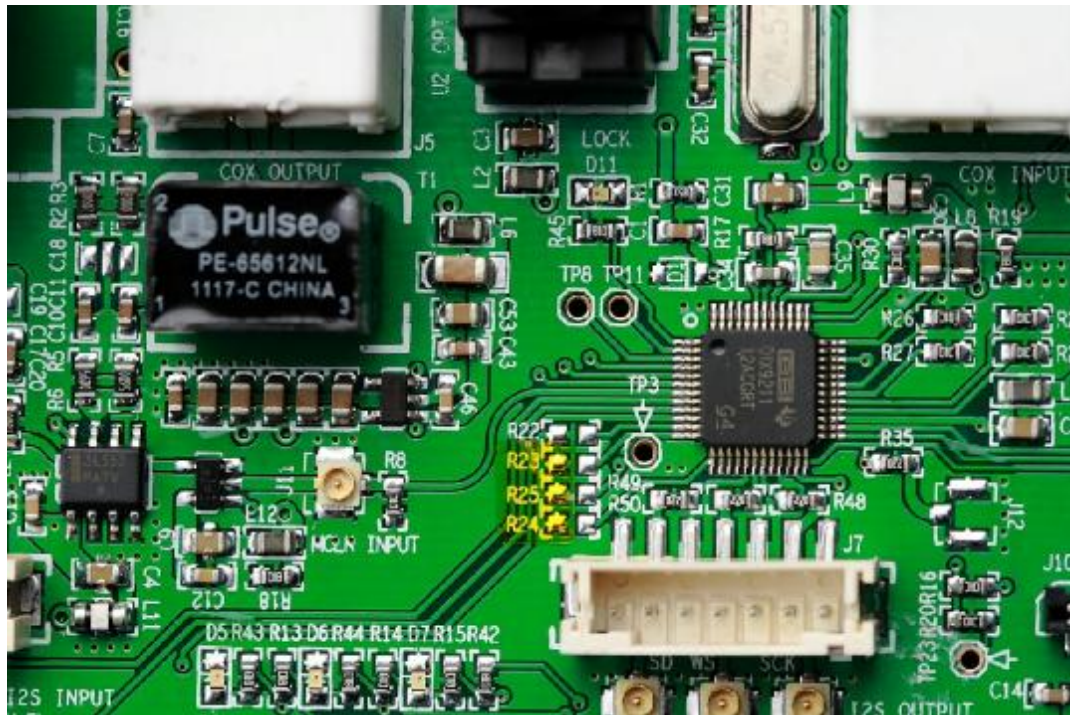
Signals of the connector and the cable

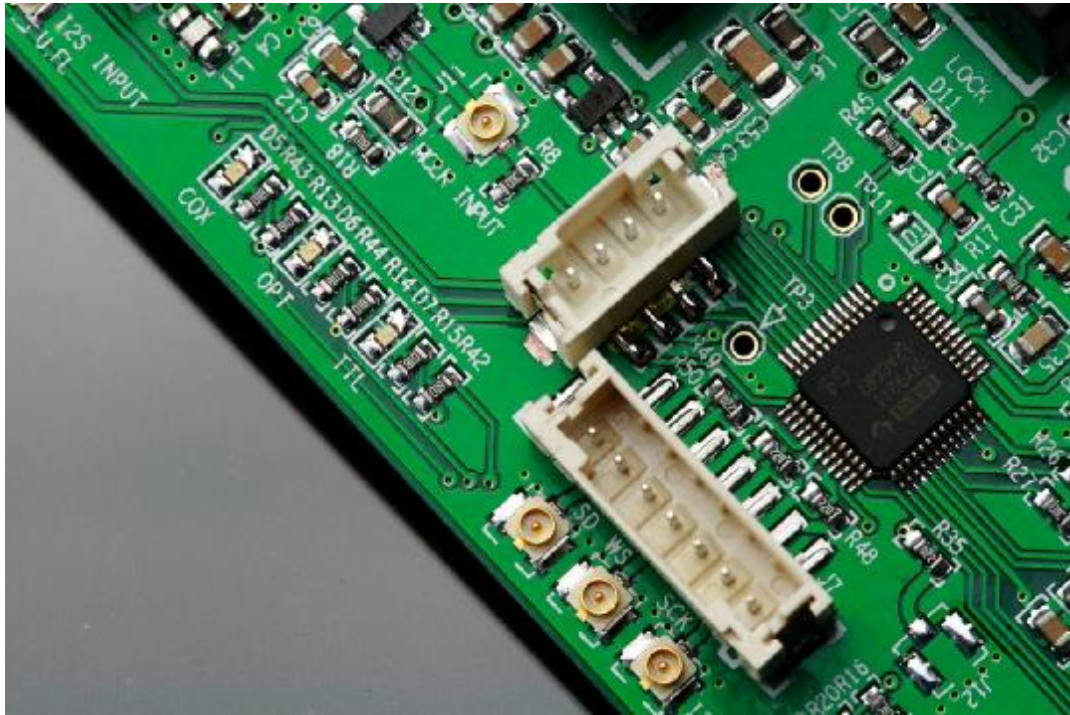| Pin of connector and cable	I2S Singles	Correspond resistor reference
4	GND	R22
3	SCK	R23
2	SD	R25
1	WS	R24

Pictures
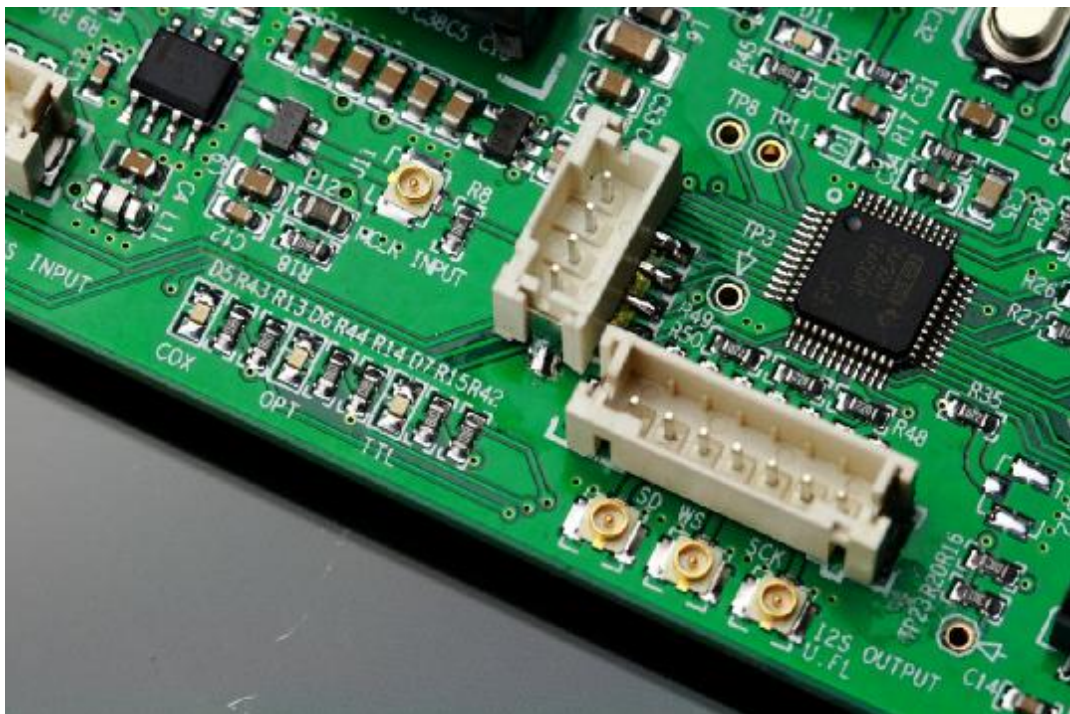

Position of the reserved I2S Port

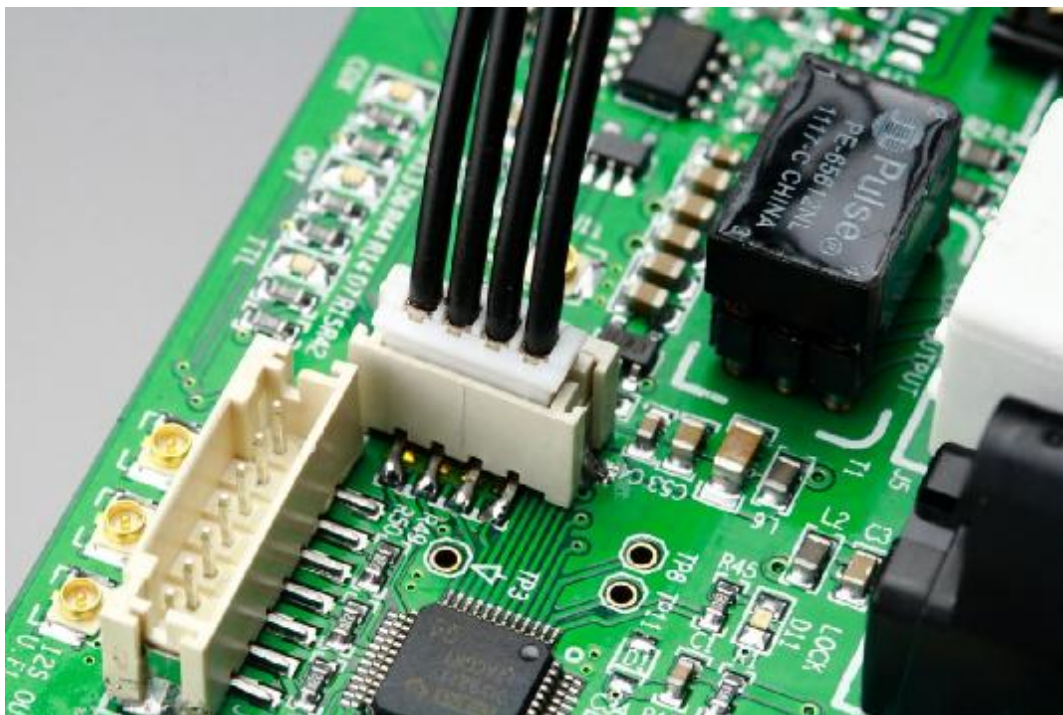Remove resistors and cover the three GND pad with high temperature tape

Solder the 4 pin Ph2.0 mm SMT connector header on the PCB

Peel the solder mask paint appearing the copper plate beside the GND pads

Solder the GND pads to the copper plate

Input I2S signals by plugging the I2S cable

Tips

Separate the SCK signal from WS and SD with GND wires in between will reduce the crosstalk. For higher Fs, that would be very important.