# ANALOG ACCELEROMETER/INCLINOMETER SCA10XX SENSOR BOARD PCB

SPECIFICATION

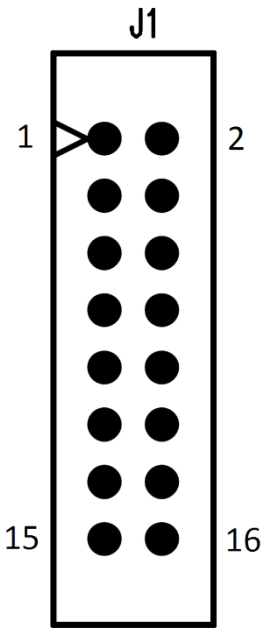
# 1 SCA10XX PCB

The purpose of the SCA10xx PCB is to enable fast prototyping and to serve as a design reference and performance evaluation tool.

SCA10XX PCB includes

- SCA10XX series sensor soldered on PCB
- PCB design # 29875
- Other components and connectors

Refer to corresponding component specific datasheet when using the SCA10xx series PCB.




| Pin | Connection | Direction |
|---|---|---|
| 1 | +V_EXT | IN |
| 2 | DVDD | IN |
| 3 | GND | IN |
| 4 | REG EN | IN |
| 5 | NC | |
| 6 | NC | |
| 7 | ADC $\overline{\text{DRDY}}$ | OUT |
| 8 | TEMP $\overline{\text{CS}}$ | IN |
| 9 | ADC $\overline{\text{CS}}$ | IN |
| 10 | SCK | IN |
| 11 | MOSI | IN |
| 12 | MISO | OUT |
| 13 | DUT $\overline{\text{CS}}$ | IN |
| 14 | NC | |
| 15 | NC | |
| 16 | GND | IN |

Figure 1. SCA10xx PCB ribbon cable connector J1 pin out (top view).

Table 1. BOM of the SCA10xx PCB.

| Item | Qty | Ref | Part Name / type | Value |
|---|---|---|---|---|
| 1 | 1 | ADC1 | ADS1256, 24-bit ADC | |
| 2 | 14 | C1 C4 C7 C10 C12 C14 C16 C18 C22 C25 C28-31 | Capacitor 0603 | 100 nF |
| 3 | 2 | C2-3 | Capacitor 0603 | 10 nF |
| 4 | 4 | C5-6 C23 C26 | Capacitor 0805 | 10 µF |
| 5 | 2 | C8-9 | Capacitor 0603 | 18 pF |
| 6 | 1 | C11 | Capacitor 1210 | 47 µF |
| 7 | 4 | C13 C15 C17 C19 | Capacitor 0603 | 100 pF |
| 8 | 4 | C20-21 C24 C27 | Capacitor 0805 | 1 µF |

| Item | Qty | Ref | Part Name / type | Value |
|---|---|---|---|---|
| 9 | 1 | D1 | Diode GF1M | |
| 10 | 1 | FB1 | Ferrite Bead, 1kOhm @ 100MHz, 500mA, 0805, BLM21AG102SN1D | |
| 11 | 1 | J1 | 16-pin Ribbon Cable Connector, Male, SBH11-PBPC-D08-ST-BK | |
| 12 | 1 | J2 | 2-pin Screw Terminal Block, CTB3051/2BK | |
| 13 | 1 | LED1 | Led 0603, LTST-C190KGKT | |
| 14 | 2 | OPA1-2 | Operational Amplifier OPA2237EA | |
| 15 | 2 | R1 R3 | Resistor 0603 | 5.11 kΩ |
| 16 | 7 | R5 R12 R14 R18 R24 R29-30 | Resistor 0603 | 10 kΩ |
| 17 | 6 | R6 R8 R10 R15-17 | Resistor 0603 | 100 Ω |
| 18 | 2 | R19-20 | Resistor 0603 | 49.9 Ω |
| 19 | 3 | R21-23 | Resistor 0603 | 301 Ω |
| 20 | 1 | R25 | Resistor 0603 | 39 kΩ |
| 21 | 1 | R26 | Resistor 0603 | 12.7 kΩ |
| 22 | 1 | R27 | Resistor 0603 | 698 Ω |
| 23 | 1 | R28 | Resistor 0603 | 33 kΩ |
| 24 | 2 | REG1-2 | LDO Regulator LT1763 | |
| 25 | 4 | S1-4 | Level Shifter SN74LVC1T45 | |
| 26 | 1 | U1 | Murata SCA100T / SCA103T | |
| 27 | 1 | U2 | Temperature Sensor ADT7301 | |
| 28 | 1 | VREF1 | Voltage Reference 2.5V LM4128BMF-2.5 | |
| 29 | 1 | XTAL1 | 7.680MHz Quartz Crystal, 18pF, ECS-76.8-18-5PXEN-TR | |

## 2 Mechanical Specifications

PCB mechanical dimensions:

- Length 60.0 mm
- Width 60.0 mm
- Height 14.5 mm (incl. components and connectors)

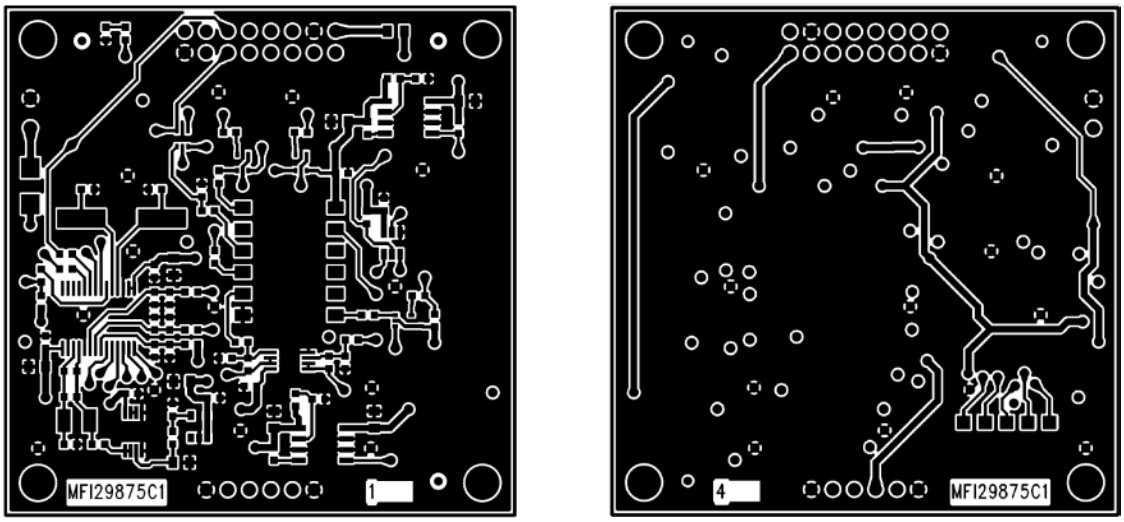



Figure 2. TOP (left) and BOTTOM (right) layout of SCA10xx PCB (aspect ratio not 1:1).

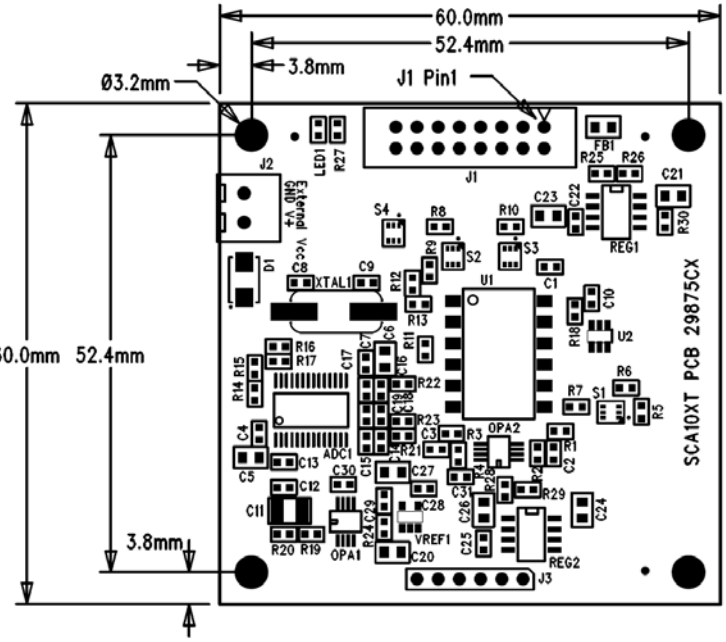



Figure 3. TOP view assembly drawing for SCA10xx PCB (aspect ratio not 1:1).

## 3 Circuit Diagram

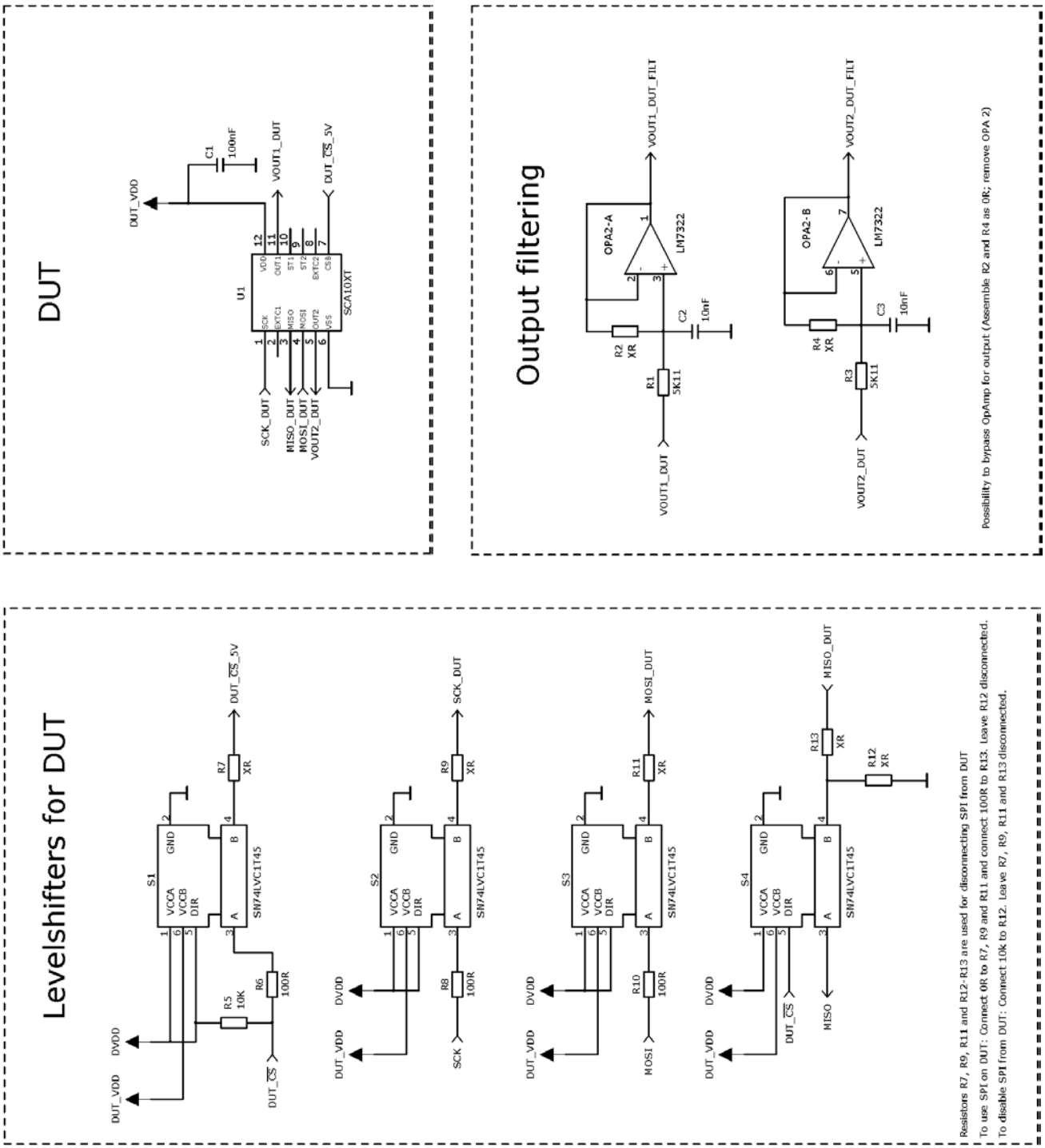



Figure 4. SCA10XX PCB circuit diagram page 1 (DUT, output filtering and level shifters).

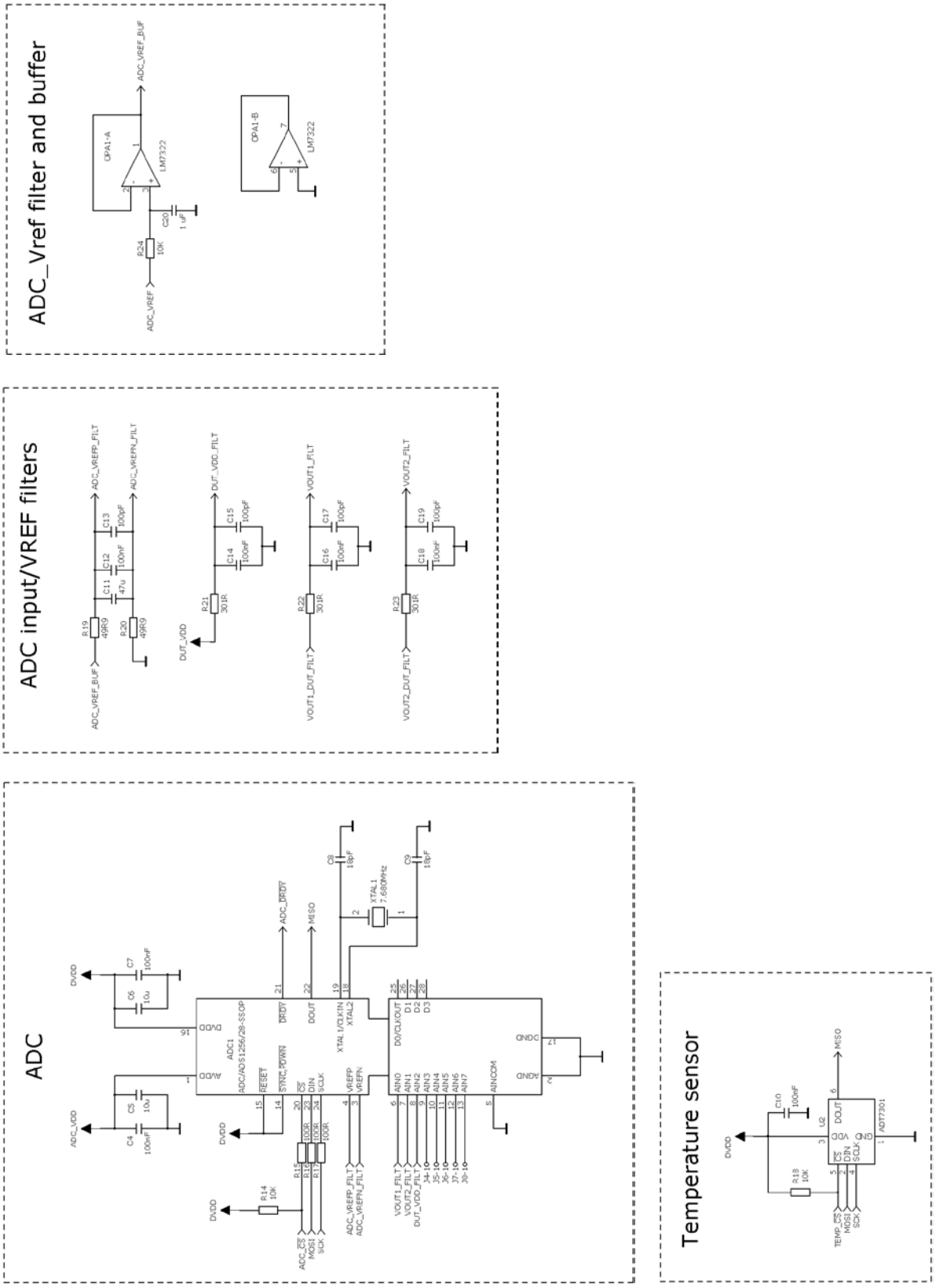



Figure 5. SCA10XX PCB circuit diagram page 2 (ADC and temperature sensor).

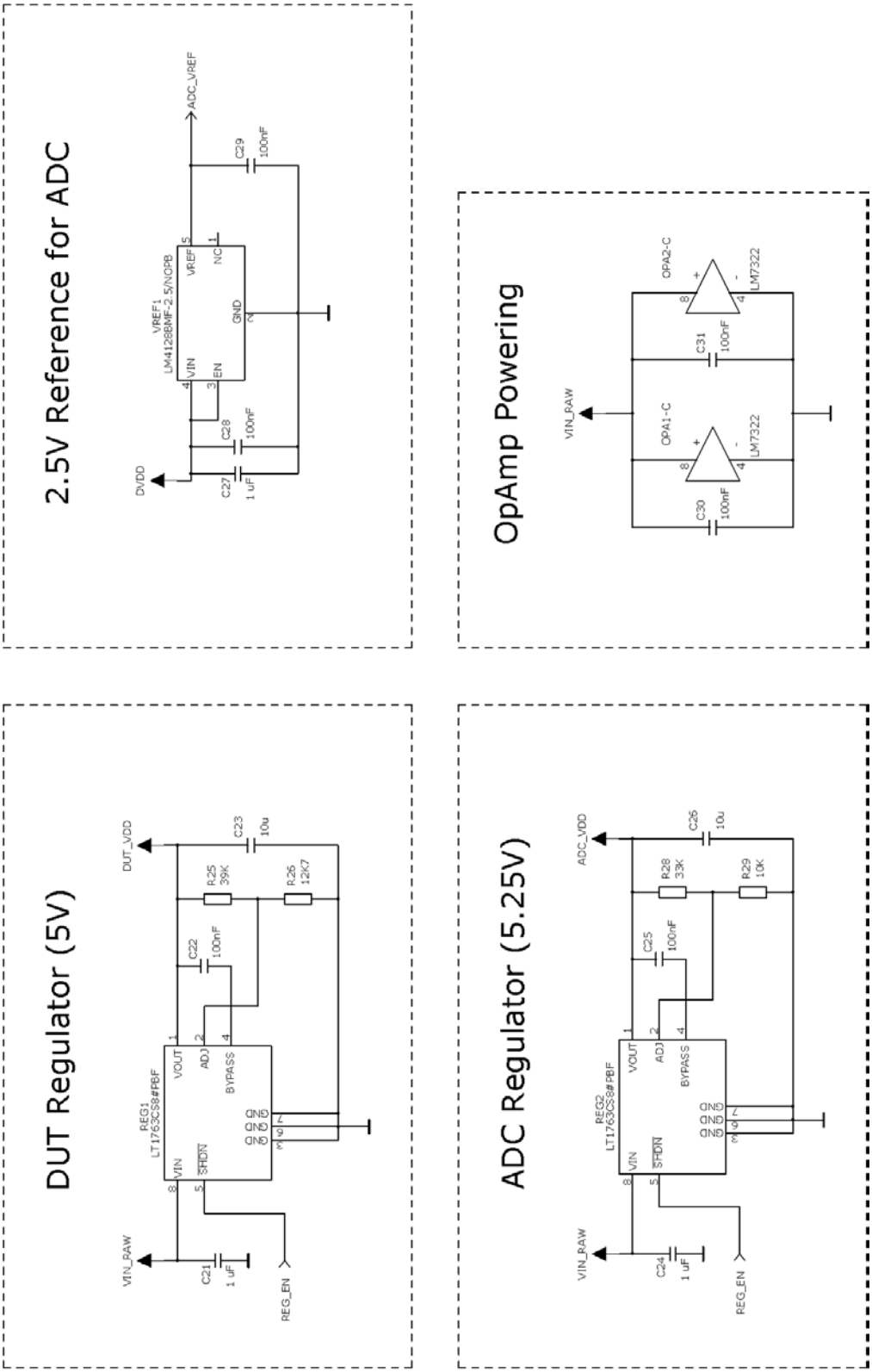



Figure 6. SCA10XX PCB circuit diagram page 3 (Power and reference).

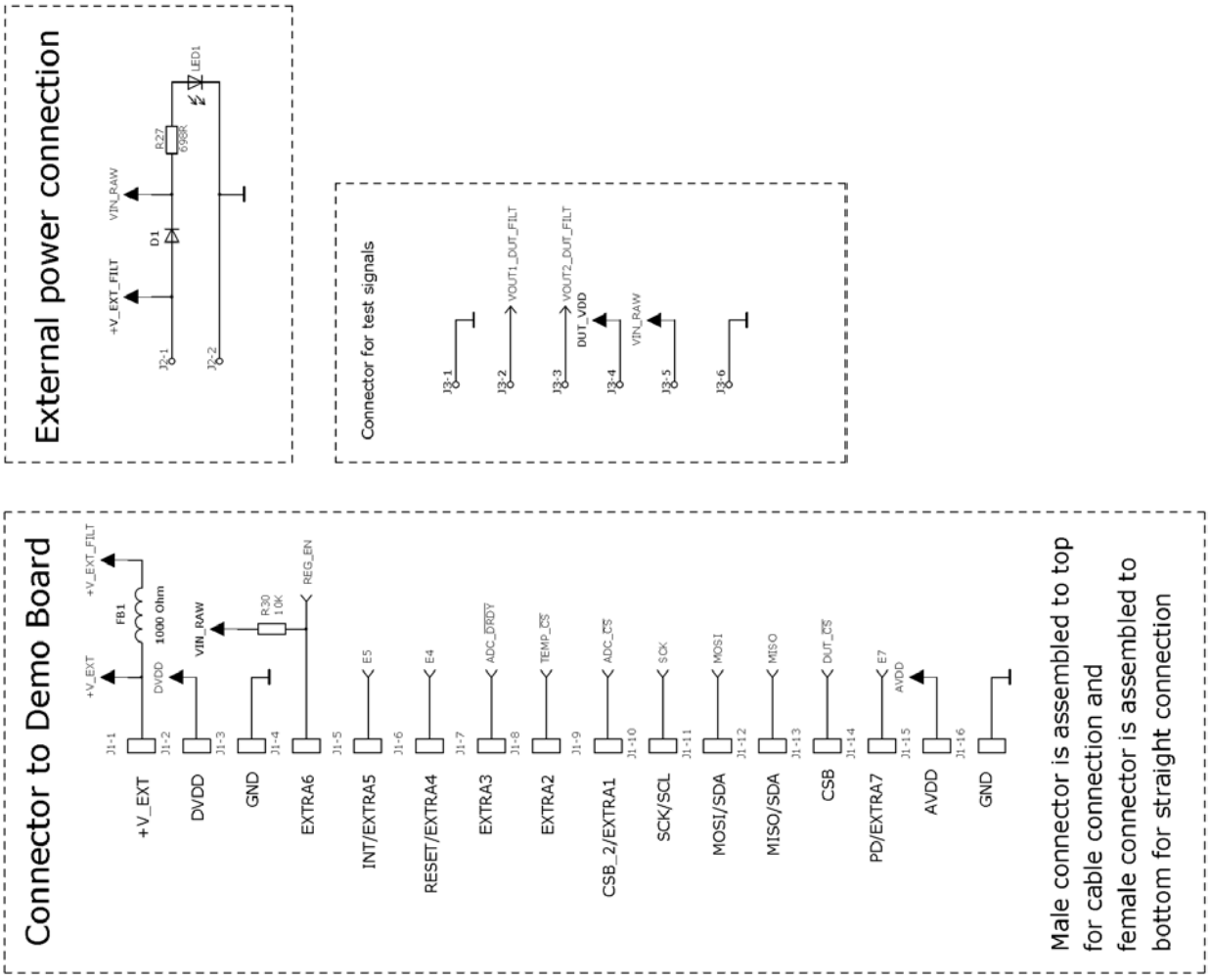



Figure 7. SCA10XX PCB circuit diagram page 4 (Connectors).