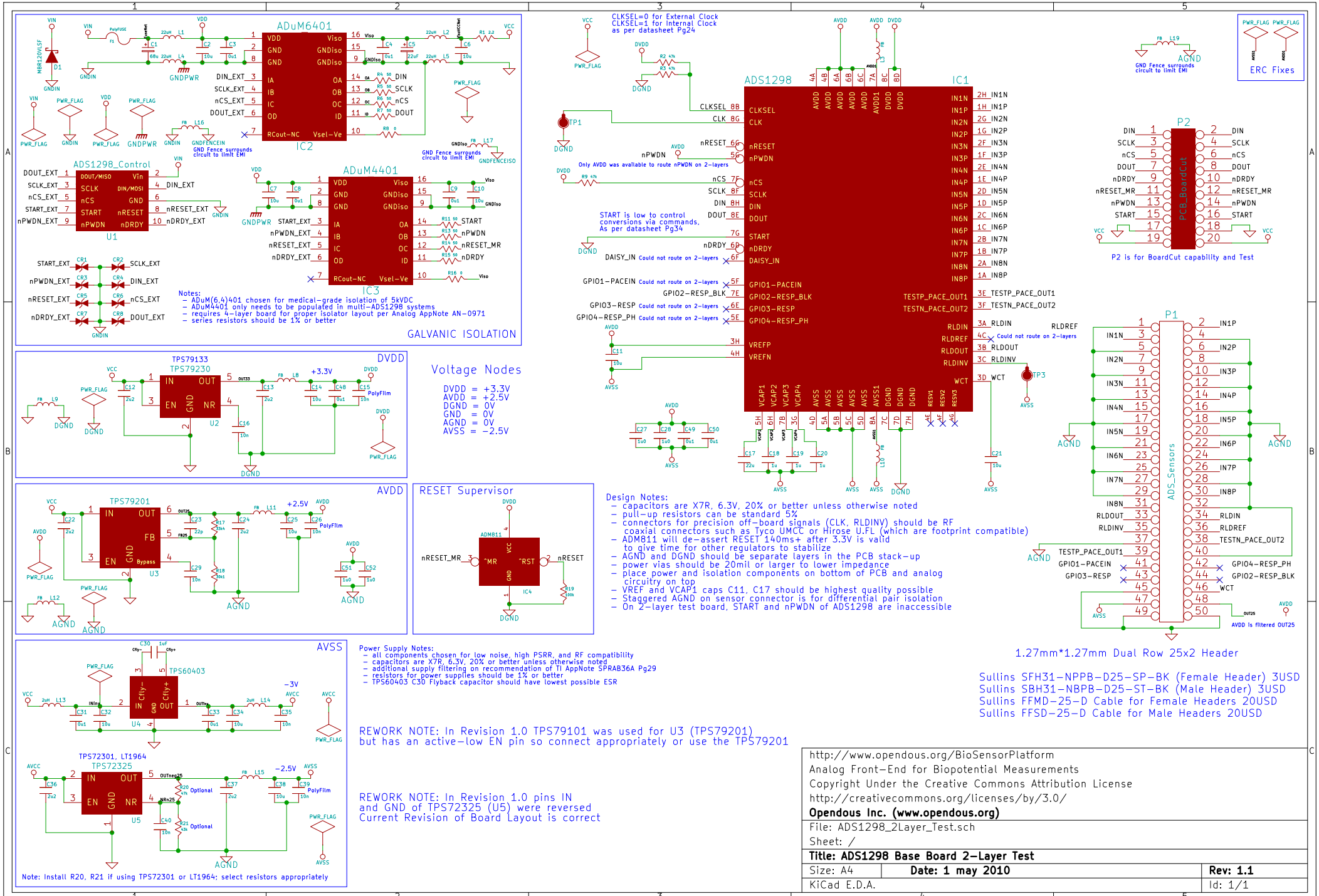
ADuM6401
IC2
ADS1298_Control
U1
ADuM4401
IC3
GALVANIC ISOLATION
Notes:
– ADuM(6,4)401 chosen for medical-grade isolation of 5kVDC
– ADuM4401 only needs to be populated in multi-ADS1298 systems
– requires 4-layer board for proper isolator layout per Analog AppNote AN-0971
– series resistors should be 1% or better
DVDD
TPS79133
TPS79230
U2
Voltage Nodes
DVDD = +3.3V
AVDD = +2.5V
DGND = 0V
GND = 0V
AGND = 0V
AVSS = -2.5V
AVDD
TPS79201
U3
RESET Supervisor
ADM811
IC4
AVSS
TPS60403
U4
TPS72301, LT1964
TPS72325
U5
Note: Install R20, R21 if using TPS72301 or LT1964; select resistors appropriately
Power Supply Notes:
– all components chosen for low noise, high PSRR, and RF compatibility
– capacitors are X7R, 6.3V, 20% or better unless otherwise noted
– additional supply filtering on recommendation of TI AppNote SPRAB36A Pg29
– resistors for power supplies should be 1% or better
– TPS60403 C30 flyback capacitor should have lowest possible ESR
REWORK NOTE: In Revision 1.0 TPS79101 was used for U3 (TPS79201)
but has an active-low EN pin so connect appropriately or use the TPS79201
REWORK NOTE: In Revision 1.0 pins IN
and GND of TPS72325 (U5) were reversed
Current Revision of Board Layout is correct
CLKSEL=0 for External Clock
CLKSEL=1 for Internal Clock
as per datasheet Pg24
ADS1298
IC1
Only AVDD was available to route nPWDN on 2-layers
START is low to control
conversions via commands,
As per datasheet Pg34
Could not route on 2-layers
P2
PCB_BoardCut
P2 is for BoardCut capability and Test
P1
ADS_Sensors
AVDD is filtered OUT25
Design Notes:
– capacitors are X7R, 6.3V, 20% or better unless otherwise noted
– pull-up resistors can be standard 5%
– connectors for precision off-board signals (CLK, RLDINV) should be RF
coaxial connectors such as Tyco UMCC or Hirose U.FL (which are footprint compatible)
– ADM811 will de-assert RESET 140ms+ after 3.3V is valid
to give time for other regulators to stabilize
– AGND and DGND should be separate layers in the PCB stack-up
– power vias should be 20mil or larger to lower impedance
– place power and isolation components on bottom of PCB and analog
circuitry on top
– VREF and VCAP1 caps C11, C17 should be highest quality possible
– Staggered AGND on sensor connector is for differential pair isolation
– On 2-layer test board, START and nPWDN of ADS1298 are inaccessible
1.27mm*1.27mm Dual Row 25x2 Header
Sullins SFH31-NPPB-D25-SP-BK (Female Header) 3USD
Sullins SBH31-NBPB-D25-ST-BK (Male Header) 3USD
Sullins FFMD-25-D Cable for Female Headers 20USD
Sullins FFSD-25-D Cable for Male Headers 20USD
ERC Fixes
http://www.opendous.org/BioSensorPlatform
Analog Front-End for Biopotential Measurements
Copyright Under the Creative Commons Attribution License
http://creativecommons.org/licenses/by/3.0/
Opendous Inc. (www.opendous.org)
File: ADS1298_2Layer_Test.sch
Sheet: /
Title: ADS1298 Base Board 2-Layer Test
Size: A4
Date: 1 may 2010
Rev: 1.1
KiCad E.D.A.
Id: 1/1