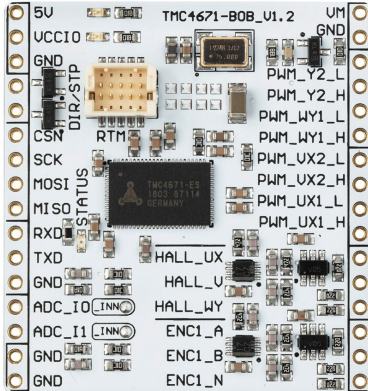


TMC4671 BOB Description

Document Revision V1.00 • 2018-May -16

Module Top View



Pin List

| Left | Signal | Right | Signal |
|------|--------------|-------|--------------|
| 1 | +5V | 17 | VM (0...80V) |
| 2 | VCCIO (3.3V) | 18 | GND |
| 3 | GND | 19 | PWM_Y2_L |
| 4 | STP | 20 | PWM_Y2_H |
| 5 | DIR | 21 | PWM_WY1_L |
| 6 | CSN | 22 | PWM_WY1_H |
| 7 | SCK | 23 | PWM_VX2_L |
| 8 | MOSI | 24 | PWM_VX2_H |
| 9 | MISO | 25 | PWM_UX1_L |
| 10 | RXD | 26 | PWM_UX1_H |
| 11 | TXD | 27 | HALL_UX |
| 12 | GND | 28 | HALL_V |
| 13 | ADC_IO | 29 | HALL_WY |
| 14 | ADC_I1 | 30 | ENC1_A |
| 15 | GND | 31 | ENC1_B |
| 16 | GND | 32 | ENC1_N |

Features and additional Resources

- TMC4671-LA Hardware Servo Controller
- Supply and I/O voltage 3.3V and 5V (with blue LED indicator)
- Motor supply voltage input to measure motor supply (0...80V)
- Communication and configuration via SPI and UART interface
- Real-time Monitoring Interface for live debugging and tuning using [Trinamic's RTMI adapter](#)
- Additional Step/Direction Interface from a motion controller
- Encoder- and Hall-Feedback
- Supply and status indicator LEDs
- Board width 1.5", board height 1.6"
- 2x16 pin 0.1" header rows for pins/connectors, distance of rows 1.4"
- Link to [additional information and IC data sheet](#)
- Link to [evaluation kit](#)

RTMI Connector

The real-time monitoring interface connector is used to connect to [Trinamic's RTMI adapter](#) for live monitoring and tuning of the TMC4671 control loops at control loop sampling frequency.

The onboard connector itself is of type [Hirose DF20F-10DP-1V\(56\)](#).

The mating female counter part is of type [Hirose DF20A-10DS-1C](#). A connecting cable comes with the USB-2-RTMI adapter.

| Left | Signal | Right | Signal |
|------|--------------|-------|-------------|
| 1 | +3.3V | 2 | n.c. |
| 3 | DBG_SPI_nSCS | 4 | DBG_SPI_TRG |
| 5 | DBG_SPI_SCK | 6 | GND |
| 7 | DBG_SPI_MOSI | 8 | GND |
| 9 | DBG_SPI_MISO | 10 | GND |

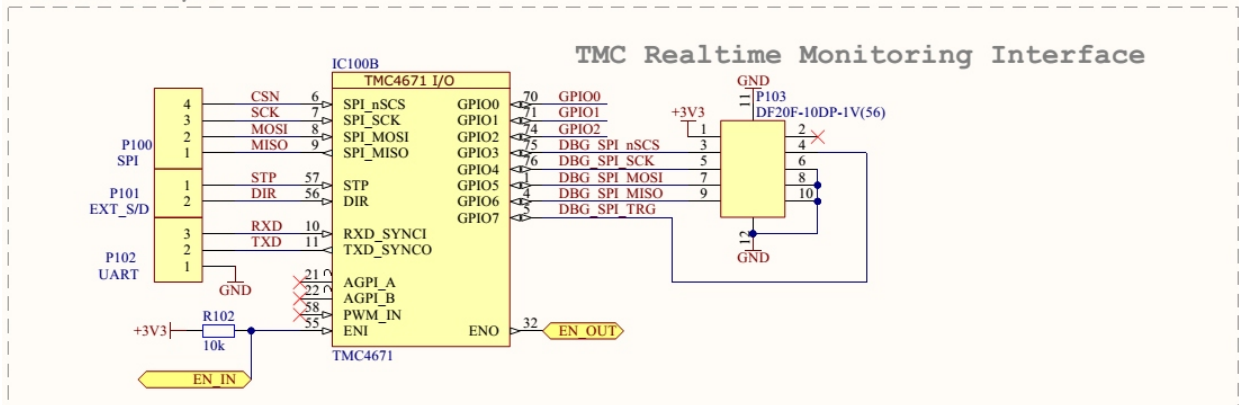


Bill of Materials

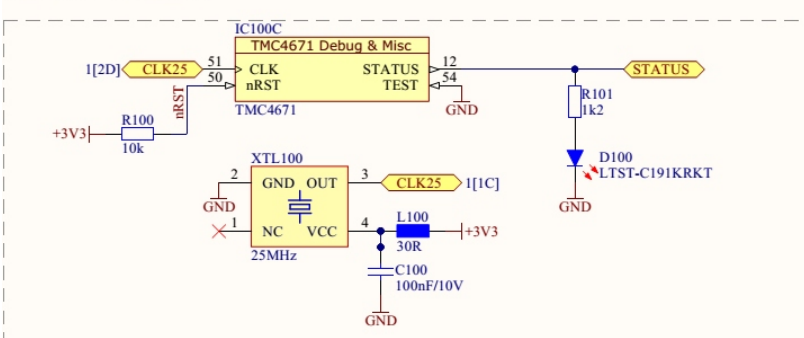
| Pcs. | MPN | Value | Footprint | Description |
|------|--------------------|---|--------------------------|-----------------------------------|
| 13 | MC0603B104K100CT | 100nF, 10V | 0603 | Cap, Multicomp |
| 8 | MC0603N101J500CT | 100pF, 50V, 5% | 0603 | Cap, Multicomp |
| 1 | MCSH18B103K100CT | 10nF, 10V | 0603 | Cap, Multicomp |
| 1 | GRM31CR61A476ME15L | 47uF, 10V | 1206 | Cap, Murata |
| 1 | MC0603B104K100CT | 100nF, 10V | 0603 | Cap, Multicomp |
| 1 | MC0603X474K160CT | 470nF, 16V | 0603 | Cap, Multicomp |
| 1 | MC0603X475K100CT | 4.7uF, 10V | 0603 | Cap, Multicomp |
| 1 | LTST-C191KRKT | $V_f = 2V @ I_f = 20mA$ | 0603 | LED, Lite-On |
| 3 | BAT54S | 30V, 200mA | SOT95P237X130-3N | SS Schottky, Taiwan Semiconductor |
| 2 | LTST-C191TBKT | $V_f = 2.8V @ I_f = 20mA$ | 0603 | LED, Lite-On |
| 1 | TMC4671-LA | Integrated Servo Controller IC | QFN40P1050X650X90_HS-77N | TRINAMIC Motion Control |
| 2 | SN74LVC3G17DCUR | triple schmitt trigger, 1.65V-5.5V | TSSOP50P310X90-8L | Texas Instruments |
| 1 | MF8-160808-0030PQ | 30R | 0603 | MECMARCOM |
| 1 | DF20F-10DP-1V(56) | Wire-2-board header, 1mm pitch, 10pins, | DF20 series, SMD | Hirose Electric Co Ltd |
| 6 | MC0063W0603110K | 10k | 0603 | Res, Multicomp |
| 1 | MCWR06X1201FTL | 1k2 | 0603 | Res, Multicomp |
| 6 | MCWR06X22R0FTL | 22R, 1/10W, 1% | 0603 | Res, Multicomp |
| 6 | WR06X4701FTL | 4k7, 1/10W, 1% | 0603 | Res, Walsin |
| 2 | MCWR06X1000FTL | 100R | 0603 | Res, Multicomp |
| 1 | MCWR06X1501FTL | 1k5 | 0603 | Res, Multicomp |
| 1 | MCWR06X1003FTL | 100k | 0603 | Res, Multicomp |
| 2 | MC0063W060311K | 1k, 1/10W, 1% | 0603 | Res, Multicomp |
| 2 | SRV05-4.TCT | TVS, 17.5V | SOT95P280X145-6N | ESD Prot. diode, SEMTECH |
| 1 | FOX924B-25.000 | 25MHz, 2.5ppm, 3.3V | 4-SMD, no lead | Oscillator, FOX Electronics |

BOB Schematics

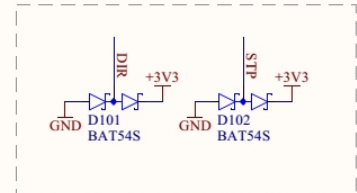
TMC4671 I/O



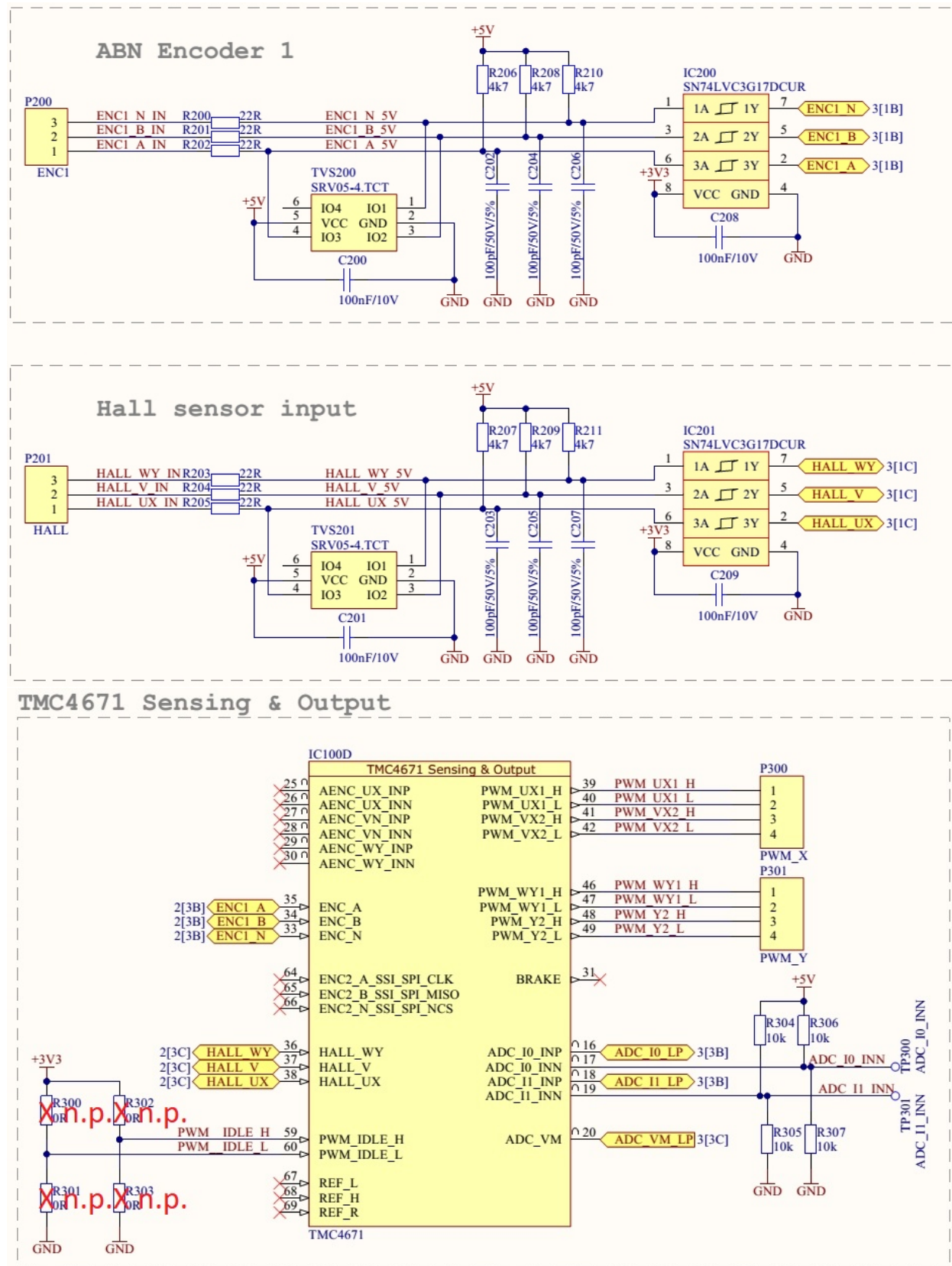
Clock & Misc



STEP/DIR TVS

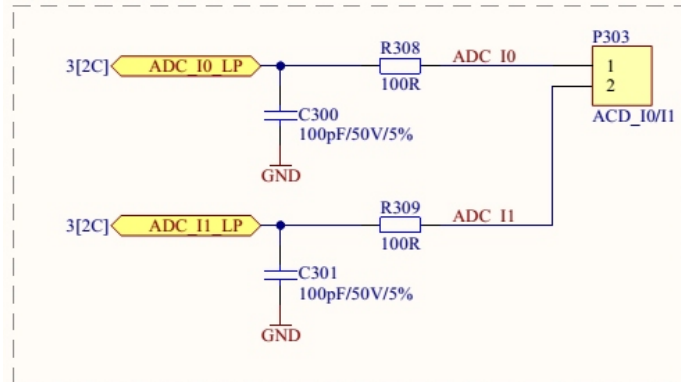


BOB Schematics

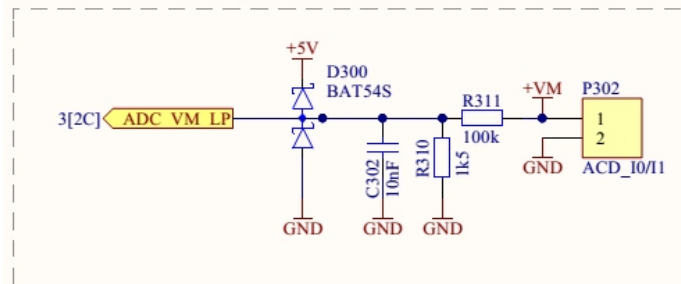


BOB Schematics

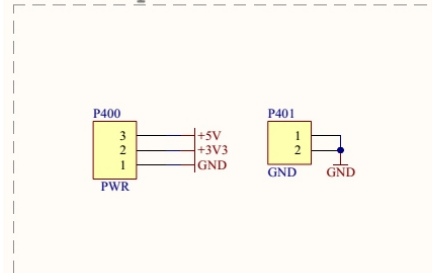
ADC Filter



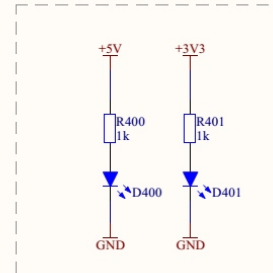
VM ADC Filter



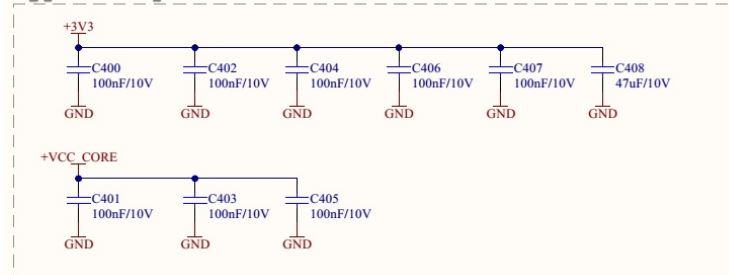
Power input



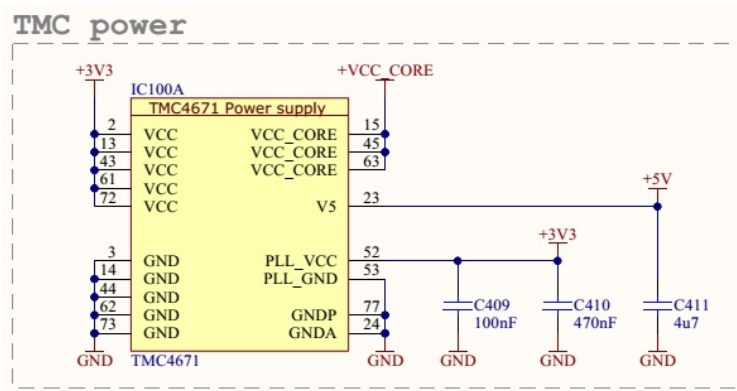
Power indicators



Bypass capacitors



BOB Schematics



Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Trinamic:

TMC4671-BOB