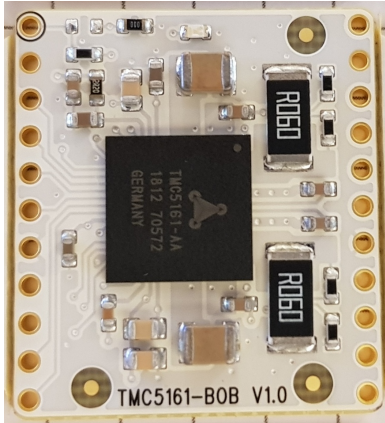


# TMC5161 BOB Description

Document Revision V1.00 • 2021-Feb-01

## Module Top View



## Features and additional Resources

- TMC5161-AA stepper controller
- Supply voltage 12-35V
- $I_{phase,RMS}$  up to 3.5A
- Configuration & Control via SPI
- S/D mode selectable via solder option
- Use with optional lowESR ELCO, ca. 150uF
- Board width 1.0", board height 1.1"
- 2x11 pin 0.1" header rows for pins/connectors
- Link to [additional information and IC data sheet](#)
- Link to [evaluation kit](#)

## Pin List

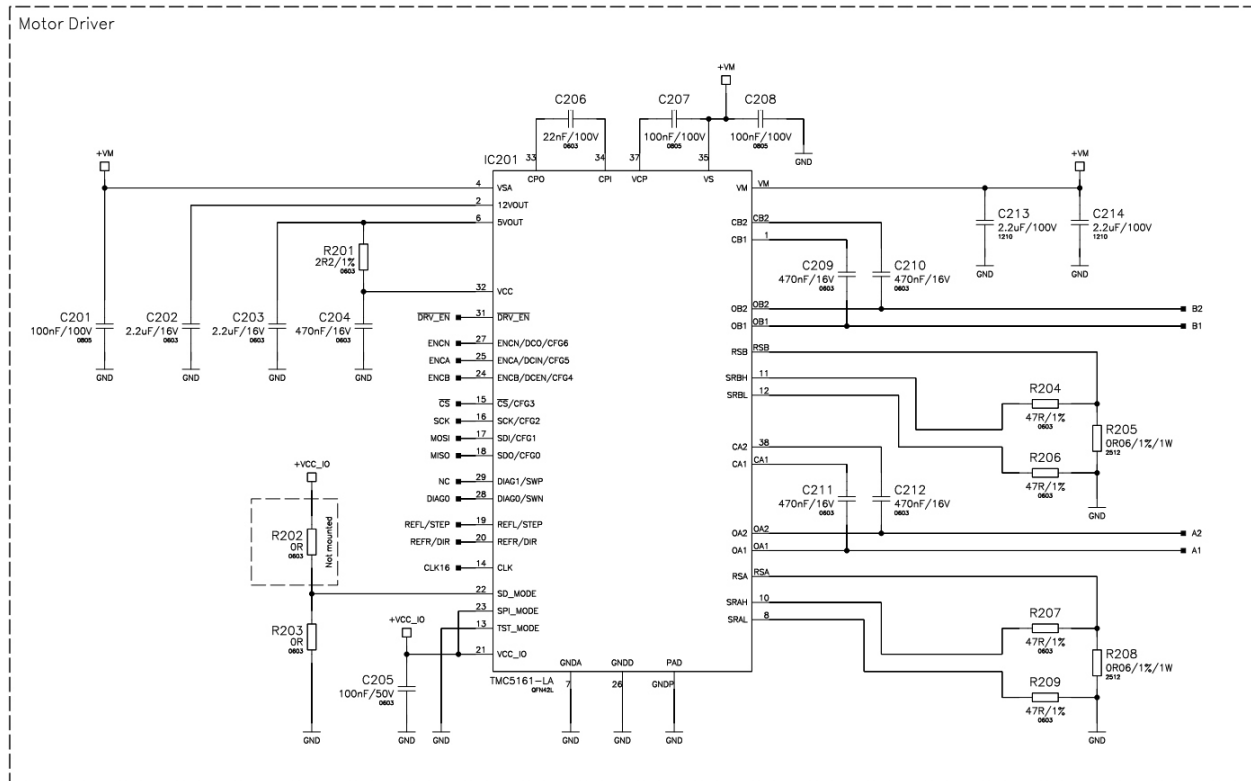
Left	Signal	Right	Signal
1	VCC_IO (3.3V or 5V)	12	VM (9-35V)
2	GND	13	GND
3	CSN (active low)	14	B1 (Motor Phase B)
4	SCK (up to 6MHz with external CLK)	15	B2 (Motor Phase B)
5	MOSI (data in)	16	A1 (Motor Phase A)
6	MISO (data out)	17	A2 (Motor Phase A)
7	GND	18	GND
8	CLK16 (pull to GND for internal CLK)	19	DIAGO (Diagnosis out)
9	DRV_ENN (active low)	20	ENCA (Incremental Enc.)
10	REFL/STEP (Left End Stop or Step in)	21	ENCB (Incremental Enc.)
11	REFR/DIR (Right End Stop or Dir in)	22	ENCN (Incremental Enc.)

## Bill of Materials

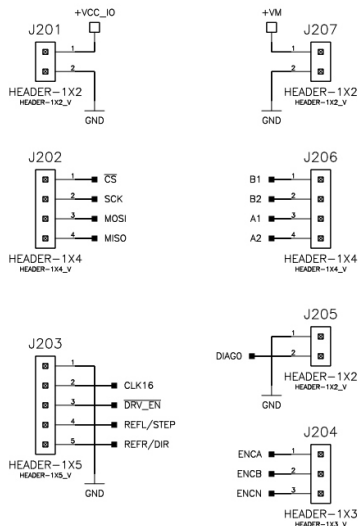
Pcs.	MPN	Value	Footprint	Description
2	HMK325B7225KN-T	2.2uF/100V	1210	Cap, Taiyo Yuden
1	C0603C223K1RACTU	22nF/100V	0603	Cap, Kemet
1	GRM188R71H104KA93D	100nF/50V	0603	Cap, Murata
3	C2012X7R2A104K125AA	100nF/100V	0805	Cap, TDK
5	C0603C474K4RACTU	470nF/16V	0603	Cap, Kemet
2	EMK107BB7225KA-T	2.2uF/16V	0603	Cap, Taiyo Yuden
1	ERJ-3GEY0R00V	0R	0603	Res, Panasonic
1	RC0603FR-072R2L	2R2, 1%	0603	Res, Yaege
4	ERJ-3EKF47R0V	47R, 1%	0603	Res, Panasonic
1	ERJ-3EKF1001V	1k	0603	Res, Panasonic
2	RL2512FK-070R06L	0R06, 1W, 1%	2512	Res, Yaege
1	LTST-C191TBKT-5A	20mA,2.8V,465nm	0603	LED, Lite-On
1	TMC5161-AA	TMC5161-AA	aQFN, 10x10	TRINAMIC



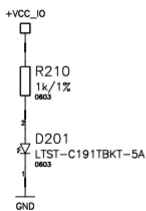
## BOB Schematics



### Connectors



### LED



### Fiducials



## Mode Selection

- Soldering R203 / not R202 = Internal ramp generator active with Trinamic's 6-point-ramp (default mode)
- Soldering R202 / not R203 = Step/Direction interface active for use with external motion controller (STEP = REFL, DIR = REFR)

