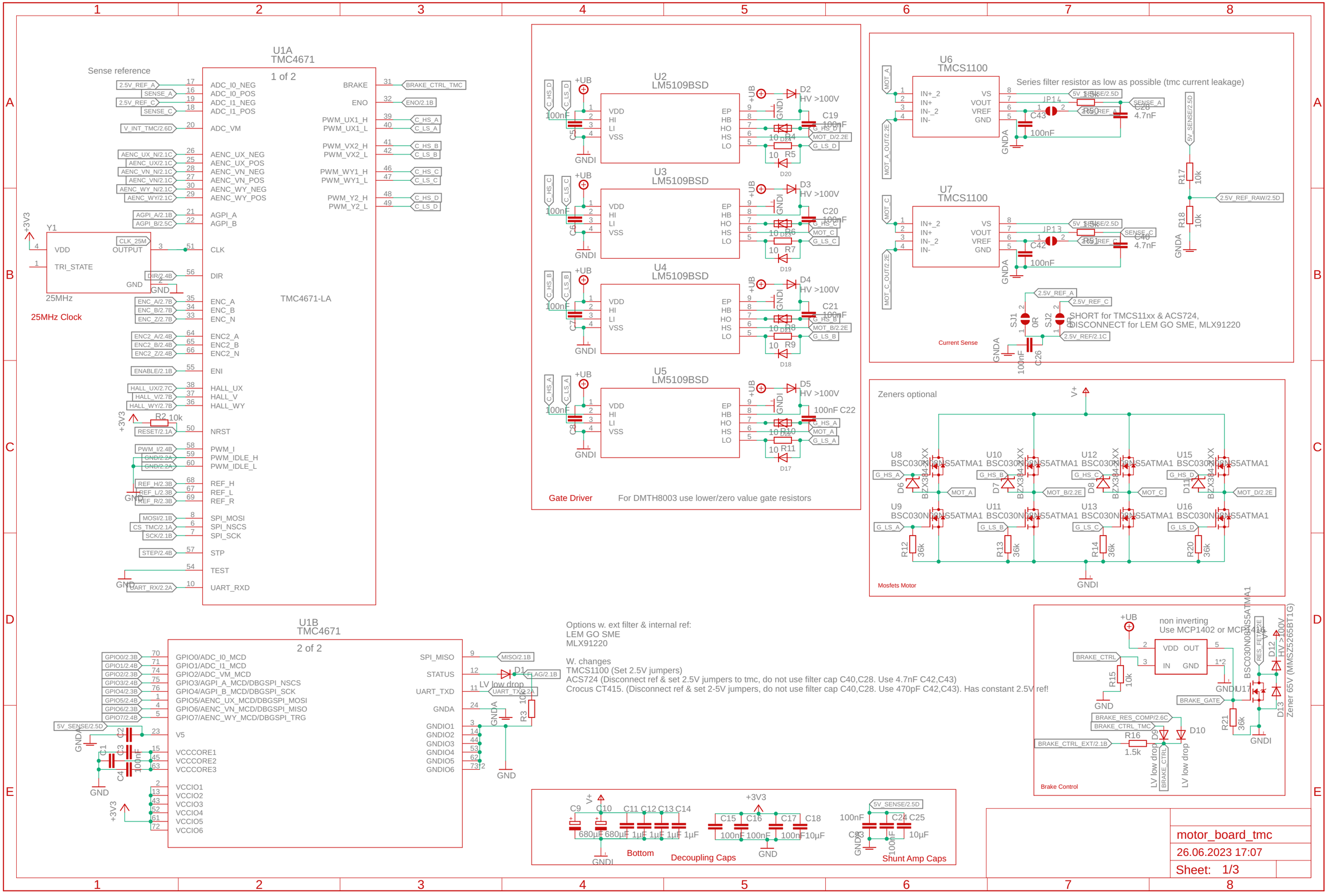
U1A
TMC4671
1 of 2
Sense reference
2.5V_REF_A
SENSE_A
2.5V_REF_C
SENSE_C
V_INT_TMC/2.6D
ADC_I0_NEG
ADC_I0_POS
ADC_I1_NEG
ADC_I1_POS
ADC_VM
AENC_UX_N/2.1C
AENC_UX/2.1C
AENC_VN_N/2.1C
AENC_VN/2.1C
AENC_WY_N/2.1C
AENC_WY/2.1C
AENC_UX_NEG
AENC_UX_POS
AENC_VN_NEG
AENC_VN_POS
AENC_WY_NEG
AENC_WY_POS
AGPI_A/2.1B
AGPI_B/2.5C
AGPI_A
AGPI_B
+3V3
Y1
VDD
TRI_STATE
CLK_25M
OUTPUT
GND
25MHz
25MHz Clock
CLK
DIR/2.4B
DIR
TMC4671-LA
ENC_A/2.7B
ENC_B/2.7B
ENC_Z/2.7B
ENC_A
ENC_B
ENC_N
ENC2_A/2.4B
ENC2_B/2.4B
ENC2_Z/2.4B
ENC2_A
ENC2_B
ENC2_N
ENABLE/2.1B
ENI
HALL_UX/2.7C
HALL_V/2.7B
HALL_WY/2.7B
HALL_UX
HALL_V
HALL_WY
R2 10k
RESET/2.1A
NRST
PWM_I/2.4B
GND/2.2A
GND/2.2A
PWM_I
PWM_IDLE_H
PWM_IDLE_L
REF_H/2.3B
REF_L/2.3B
REF_R/2.3B
REF_H
REF_L
REF_R
MOSI/2.1B
CS_TMC/2.1A
SCK/2.1B
SPI_MOSI
SPI_NSCS
SPI_SCK
STEP/2.4B
STP
TEST
UART_RX/2.2A
UART_RXD
BRAKE
BRAKE_CTRL_TMC
ENO
ENO/2.1B
PWM_UX1_H
PWM_UX1_L
C_HS_A
C_LS_A
PWM_VX2_H
PWM_VX2_L
C_HS_B
C_LS_B
PWM_WY1_H
PWM_WY1_L
C_HS_C
C_LS_C
PWM_Y2_H
PWM_Y2_L
C_HS_D
C_LS_D
U2
LM5109BSD
U3
LM5109BSD
U4
LM5109BSD
U5
LM5109BSD
VDD
HI
LI
VSS
EP
HB
HO
HS
LO
+UB
100nF
GNDI
D2
D3
D4
D5
HV >100V
C19
C20
C21
C22
100nF
R5
R7
R9
R11
10
D20
D19
D18
D17
G_HS_D
G_LS_D
MOT_D/2.2E
G_HS_C
G_LS_C
MOT_C
G_HS_B
G_LS_B
MOT_B/2.2E
G_HS_A
G_LS_A
MOT_A
Gate Driver
For DMTH8003 use lower/zero value gate resistors
U6
TMCS1100
U7
TMCS1100
MOT_A
MOT_A_OUT/2.2E
MOT_C
MOT_C_OUT/2.2E
IN+_2
IN+
IN-_2
IN-
VS
VOUT
VREF
GND
Series filter resistor as low as possible (tmc current leakage)
5V_SENSE/2.5D
15k
JP14
JP13
C43
C42
100nF
C28
C40
4.7nF
GNDA
R17 10k
R18 10k
2.5V_REF_RAW/2.5D
SJ1
SJ2
0R
2.5V_REF_A
2.5V_REF_C
2.5V_REF/2.1C
SHORT for TMCS11xx & ACS724,
DISCONNECT for LEM GO SME, MLX91220
Current Sense
C26
Zeners optional
V+
U8
U9
U10
U11
U12
U13
U15
U16
BSC030N03LS5ATMA1
BSC030N03NS5ATMA1
BZX384-XX
D6
D7
D8
D11
R12 36k
R13 36k
R14 36k
R20 36k
Mosfets Motor
U1B
TMC4671
2 of 2
GPIO0/2.3B
GPIO1/2.4B
GPIO2/2.3B
GPIO3/2.4B
GPIO4/2.3B
GPIO5/2.4B
GPIO6/2.3B
GPIO7/2.4B
GPIO0/ADC_I0_MCD
GPIO1/ADC_I1_MCD
GPIO2/ADC_VM_MCD
GPIO3/AGPI_A_MCD/DBGSPI_NSCS
GPIO4/AGPI_B_MCD/DBGSPI_SCK
GPIO5/AENC_UX_MCD/DBGSPI_MOSI
GPIO6/AENC_VN_MCD/DBGSPI_MISO
GPIO7/AENC_WY_MCD/DBGSPI_TRG
5V_SENSE/2.5D
V5
VCCCORE1
VCCCORE2
VCCCORE3
VCCIO1
VCCIO2
VCCIO3
VCCIO4
VCCIO5
VCCIO6
C1
C2
C3
C4
100nF
SPI_MISO
STATUS
UART_TXD
GNDA
GNDIO1
GNDIO2
GNDIO3
GNDIO4
GNDIO5
GNDIO6
MISO/2.1B
D1
FLAG/2.1B
LV low drop
UART_TXD/2.2A
R3 10k
Options w. ext filter & internal ref:
LEM GO SME
MLX91220
W. changes
TMCS1100 (Set 2.5V jumpers)
ACS724 (Disconnect ref & set 2.5V jumpers to tmc, do not use filter cap C40,C28. Use 4.7nF C42,C43)
Crocus CT415. (Disconnect ref & set 2-5V jumpers, do not use filter cap C40,C28. Use 470pF C42,C43). Has constant 2.5V ref!
C9
C10
680µF
C11
C12
C13
C14
1µF
Bottom
Decoupling Caps
+3V3
C15
C16
C17
C18
100nF
10µF
5V_SENSE/2.5D
C23
C24
C25
Shunt Amp Caps
+UB
non inverting
Use MCP1402 or MCP1412
VDD
OUT
IN
GND
BRAKE_CTRL
R15 10k
BRAKE_GATE
BRAKE_RES_COMP/2.6C
BRAKE_CTRL_TMC
BRAKE_CTRL_EXT/2.1B
R16 1.5k
D9
D10
LV low drop
R21 36k
U17
BSC030N03LS5ATMA1
RES_FET/2.2E
D12
HV >100V
D13
Zener 65V (MMSZ5265BT1G)
Brake Control
motor_board_tmc
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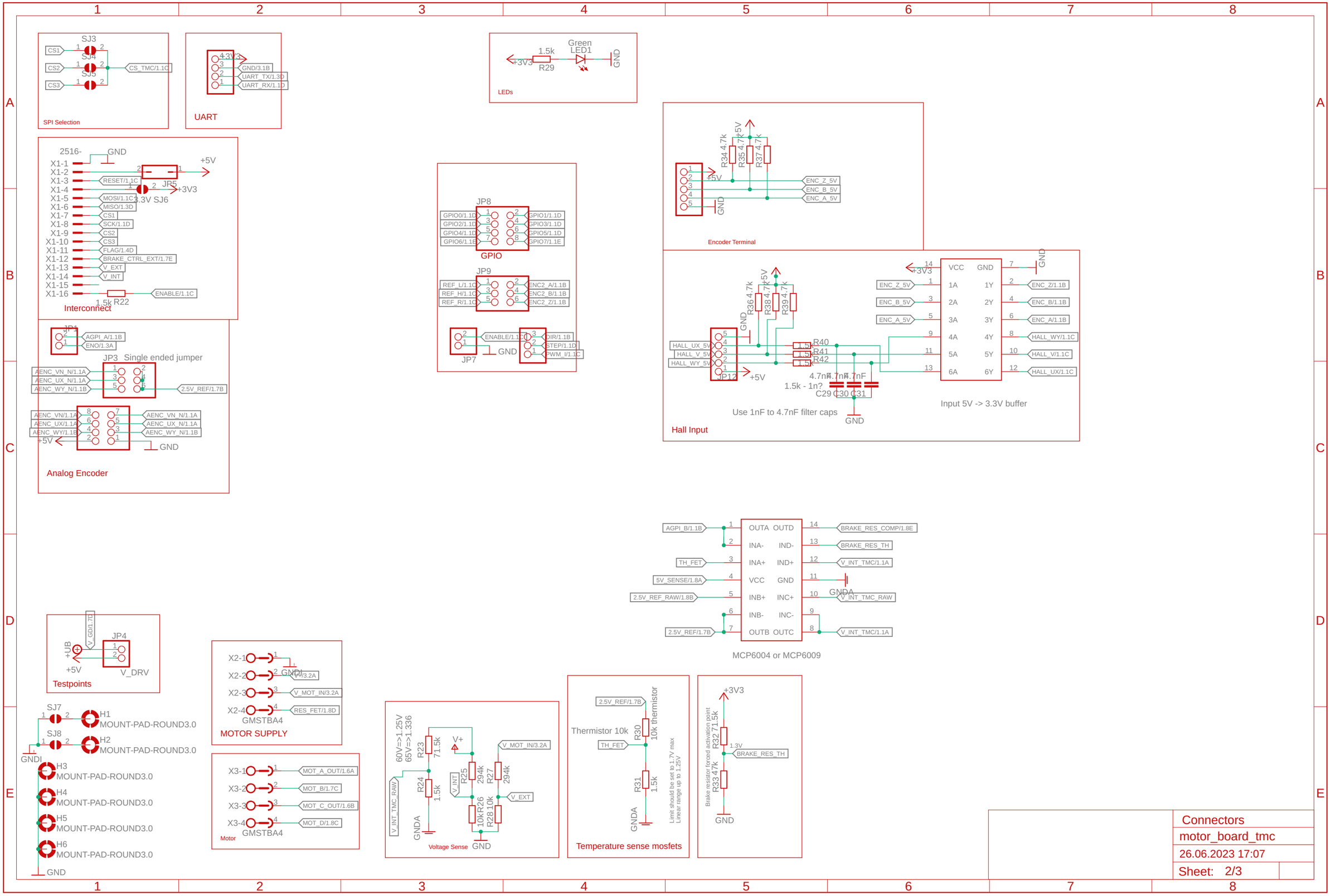
Sheet: 1/3



Connectors	
motor_board_tmc	
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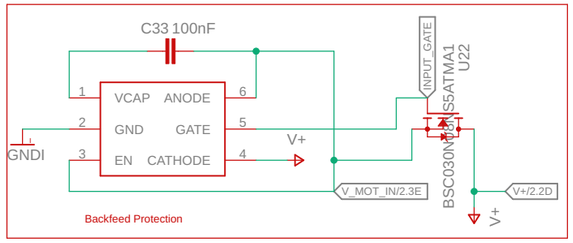
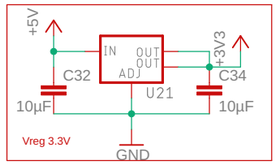
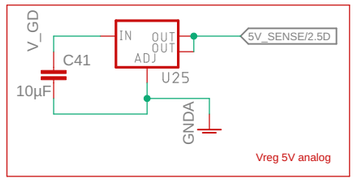
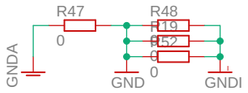
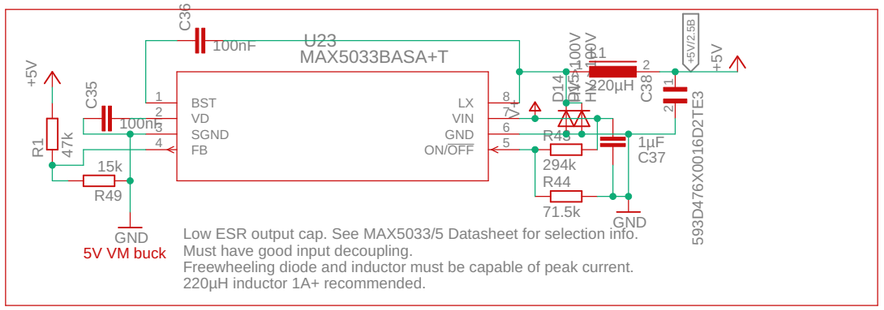
Sheet: 2/3	





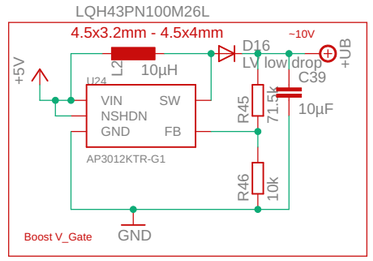






https://datasheets.maximintegrated.com/en/ds/MAX5033.pdf
MAX5033/5

Note:
When using adjustable D use R1 41k, R49 15k. When using fixed 5v B use R1 0R and leave R49 open



motor_board_tmc	
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