CUI UJ2-MIBH2-4-SMT-TR

J3
VCC 1
D- 2   USB_N   1206L050 F1
D+ 3   USB_P
ID 4
GND 5
SHD 6   USB_SHELD
          L3
          BLM18PG471SN1D

USB_N
USB_P

5V   D2   Vin
      1N4148WC

D4 D5
CG0603MLC-05E CG0603MLC-05E

GND

Vin   3V3
                U5   L2   CDRH74NP-101MC-B
        7 +VIN   OUT 8   R9 0603 5K6F
        1 NC   NC   3
        2 NC   FB   4   C16 4.7nF
        6 GND ON/OFF 5
C13   C14 LM2594M-ADJ   D3   R10   C17
68uF x 16V   1uF   1N5817 3K32F 0603   0.1uF
                              SS12   10MQ040(60)   100uF x 10V C15

GND   GND   GND

12V   D6
      US-1G

Vin   D7
      1N4148WC

F2
1206L200

CAN   GND
3V3   C19
            0.1uF
        U6   R12 1206 JP1
CAN_TX 1 TXD   S   8   120R   1 1
       2 GND CANH 7   2 2
       3 VCC CANL 6   Terminator
CAN_RX 4 RXD VREF 5   PLS-2R

                    CANH
                    CANL

GND   C20
        SN65HVD230D 0.1 uF
        50mA @ max DOM
GND

J4
CANH 1 1
CANL 2 2
      3 3
      4 4
         CWF-4

GND

3V3
        C18 0.1uF GND
        R11 0603
        10K
                                    CAN_CS

GND CAN RX   U7
     CAN TX   MCP2515
     RXCAN TXCAN VDD RESET CS
     21 20 19 18 17 16

     1 CLKOUT   SO   15 MISO   MISO
     2 TX0RTS   SI   14 MOSI   MOSI
     3 TX1RTS   NC   13
     4 NC   SCK 12 SCK   SCK
     5 TX2RTS   INT 11 INT   CAN_INT

     OSC2 OSC1 GND RX1BF RX0BF
     6   7   8   9   10

10mA
Y2 KX-K 16 MHZ
C21   C22
22pF   22pF

GND

Title		
Size	Number	Revision
A4		
Date:	07.08.2019	Sheet of
File:	F:\PROJ\..\CAN.SchDoc	Drawn By:

Schematic — U1 SAMD21G18A-AUT

Grid references: 1 2 3 4 (top and bottom), A B C D (left and right margins)

Power decoupling (top):
GND — C1 100nF — 3V3 — C2 1uF — GND
R1 0603 10K — 3V3
C3 0.1uF — GND

FUN / MOSFET (right top):
12V
J1 1 2 — PLS-2 — FUN
Q1 IRLML6402
FUN
R2 0603 10K
GND

Crystal:
NX3215SA-32.768K-STD-MUA-8
C4 22pF
GND
Y1
C6 22pF

L1 / filter:
3V3
L1 BLM18PG471SN1D
C7 100nF
GND

U1 SAMD21G18A-AUT (92 mA)

Top pins: 48 47 46 45 44 43 42 41 40 39 38 37
PB3 PB2 PA31 PA30 VDDIN VDDCORE1 GND3 PA28 RST PA27 PB23 PB22
SWDIO SWCLK TRG_RST

Left pins:
1 PA0
2 PA1
3 PA3 — AREFA
4 PA3
5 GNDANA
6 VDDANA
7 PB8 — IN1 — IN1
8 PB9 — CAN_CS — IN2
9 PA4 — IN2 — TEMP
10 PA5 — IN4
11 PA6 — IN4 — VREF1
12 PA7 — VREF1

Right pins:
36 VDDIO2 — 3V3 — C5 100nF — GND
35 GND2
34 PA25 — USB_P — USB_P
33 PA24 — USB_N — USB_N
32 PA23 — SCL — SCL
31 PA22 — SDA — SDA — ENCODER
30 PA21 — LED — R3 0603 62 — D1 KP-3216 — GND
29 PA20 — FUN
28 PA19 — MISO — MISO
27 PA18 — SCK
26 PA17 — SCK — CAN — MOSI
25 PA16 — MOSI — MOSI

Bottom pins: 13 14 15 16 17 18 19 20 21 22 23 24
PA8 PA9 PA10 PA11 VDDIO1 GND1 PB10 PB11 PA12 PA13 PA14 PA15
VREF2 IN3

CAN_INT

U2 TC1047:
1 VDD — 3V3
2 VOUT
3 GND — GND

VREF2
IN3
C8 100nF
3V3 — GND

SWD connector (right bottom):
SWD
3V3
J2 1 2 3 4 5 — PLS-5
SWCLK
SWDIO
TRG_RST
GND

Title block:
Title
Size A4
Number
Revision
Date: 07.08.2019
File: F:\PROJ\..\Core.SchDoc
Sheet of
Drawn By:

CCW   CW

R4

3V3 ┤ E090   E090 ├ GND

ENCODER   0R

3V3

U3

| 1 | VDD5V | DIR | 8 |
| 2 | VDD3V3 | SCL | 7 | SCL
| 3 | OUT | SDA | 6 | SDA
| 4 | GND | PG0 | 5 |

AS5600

3V3

R5 R6
4K7 4K7

SCL
SDA

C9   C10
100 nF   10uF

100 mA o burn peak
6.5mA @ NOM

GND

GND

STEPPER DRIVER

12V

U4   A4954

| 1 | GND | VBB | 16 |
| 2 | VREF34 | OUT4 | 15 | 2B
| 3 | IN3 | LESS34 | 14 | LESS2 R7   .15RF
| 4 | IN4 | OUT3 | 13 | 2A   1206
| 5 | IN2 | OUT2 | 12 | 1B
| 6 | IN1 | LSS12 | 11 | LESS1 R8   .15RF
| 7 | VREF12 | OUT1 | 10 | 1A   1206
| 8 | GND | VBB | 9 |

VREF2   VREF2
IN3   IN3
IN4   IN4
IN2   IN2
IN1   IN1
VREF1   VREF1

PAD

17

GND

GND

2B   1   1   Lamel
2A   1   1   Lamel
1B   1   1   Lamel
1A   1   1   Lamel

100uF x 35V

+   C11

C12
0.22uF

GND

Comment	Description	Designator	Footprint	LibRef	Quantity
Lamel		1, 2, 3, 4	LAMEL	Lamel	4
100nF		C1, C5, C7, C8	CHIP_C_0603	CHIP_C	4
1uF		C2	CHIP_C_0603	CHIP_C	1
0.1uF		C3, C17, C18, C19	CHIP_C_0603	CHIP_C	4
22pF		C4, C6, C21, C22	CHIP_C_0603	CHIP_C	4
100 nF		C9	CHIP_C_0603	CHIP_C	1
10uF		C10	CHIP_C_0603	CHIP_C	1
100uF x 35V		C11	ALUM_CAP_D	Electrolit	1
0.22uF		C12	CHIP_C_0603	CHIP_C	1
1uF		C13	CHIP_C_0805	CHIP_C	1
68uF x 16V		C14	TANTAL - C	Tantal	1
100uF x 10V		C15	Tantal - B	Tantal	1
4.7nF		C16	CHIP_C_0603	CHIP_C	1
0.1 uF		C20	CHIP_C_0603	CHIP_C	1
KP-3216	LED	D1	CHIP_D_1632	KP-3216	1
1N4148WC		D2, D7	SOD323	1N4148WC	2
10MQ040(60)	Rectifier diode	D3	DO214-AC	10MQ040	1
CG0603MLC-05E		D4, D5	CG0603MLC-05E	SM6T27CA	2
US-1G		D6	DO214-AC	US-1G	1
1206L050		F1	1206Lxxx	miniSMDC014F-2	1
1206L200		F2	1206Lxxx	miniSMDC014F-2	1
PLS-2	Connector	J1	PLS-2	PLS-2	1
PLS-5		J2	PLS2-5	PLS-5	1
CUI UJ2-MIBH2-4-SMT-TR	Micro USB connector	J3	UJ2-MIBH2-4-SMT	USB_micro	1
CWF-4		J4	CWF-4R	CWF-4	1
PLS-2R		JP1	PLS-2R	PLS-2	1
BLM18PG471SN1D		L1, L3	CHIP_R_0603	BLM	2
CDRH74NP-101MC-B		L2	CDRH74	CDRH74	1
IRLML6402	p-chanal MOSFET	Q1	SOT23	IRLML6402	1
10K		R1, R2, R11	CHIP_R_0603	RES_0603	3
62		R3	CHIP_R_0603	RES_0603	1
0R		R4	0R 0603 selector	Selector_0603	1
4K7		R5, R6	CHIP_R_0603	RES_0603	2
.15RF	Resistor	R7, R8	CHIP_R_1206	RES_1206	2
5K6F		R9	CHIP_R_0603	RES_0603	1
3K32F		R10	CHIP_R_0603	RES_0603	1
120R		R12	CHIP_R_1206	RES_1206	1
SAMD21G18A-AUT		U1	LQFP48	SAMD21G18A-AUT	1
TC1047	Temperature Sensor	U2	SOT23	TC1047	1
AS5600	program magnetic rotary position sensor	U3	SOIC8	AS5600	1
A4954	DMOS PWM Motor Driver	U4	TSSOP-16P	A4954	1
LM2594M-ADJ		U5	SOIC8	LM2594	1
SN65HVD230D		U6	SOIC8	TJA1050	1
MCP2515		U7	QFN20	MCP2515_QFN	1
NX3215SA-32.768K-STD-MUA-8		Y1	NX3215SA	Quartz	1
KX-K 16 MHZ		Y2	CHIP_CRYSTAL_5032	Quartz	1