USB / Voltage Regulator

Simulator Brain (Main Microcontroller)

U$17

P$2	5V	SDA	P$3 SDA_PI
P$4	5V	SCL	P$5 SCL_PI
P$1	3.3V		
P$17	3.3V	TXO	P$8
		RXI	P$10
P$29	GP5		
P$31	GP6	SCLK	P$23 SCK
P$32	GP12	MISO	P$21 MISO
P$33	GP13	MOSI	P$19 MOSI
P$36	GP16	CE0	P$24 CS0
P$35	GP19	CE1	P$26
P$38	GP20		
P$40	GP21	GP4	P$7 D6_GPIO4_PI
P$37	GP26	GP17	P$11 D9_GPIO17_CPRSTAT
		GP18#	P$12
P$6	GND	GP22	P$15
P$9	GND	GP23	P$16
P$14	GND	GP24	P$18
P$20	GND	GP25	P$22
P$25	GND	GP27	P$13
P$30	GND		
P$34	GND	ID_SD	P$27
P$39	GND	ID_SC	P$28

GND

PI_SMTTOP_WITH_OUTLINE

JP4 D15_SS JUMPER-SMT_2_NC_PASTE_SILK

5V
3.3V_PI
3.3V
SJ5
SOLDERJUMPERNC
SJ12
SOLDERJUMPERNC
5V
3.3V_PI
VIN

VSYS
JUMPER-SMT_2_NO_NO-SILK

F2
VIN_USB
500mA

VIN
VIN Range: 3.5-6.0V
V_REG_AP2112K
IN OUT
EN
GND NC
3.3V

C6 10µF
1.0uF
JUMPER-SMT_2_NO_NO-SILK
JP10
C7 10µF
C8 2.2uF
JUMPER-SMT_2_NO_NO-SILK
3.3V
GND
GND

AP2112K-3.3V

Iout (max): 600mA
Vin (max): 6.5V
Vdrop (max): 250mV
Iq: 55uA

3.3V
RX_D0
TX_D1
MISO_PI

CSPI1
SCK_PI
MOSI_PI

N$1

CSPI0 CSPI1

D15_SS
JUMPER-SMT_2-NC_PASTE_SILK

SDA
JP3
D12_SDA
R6 4k7
SDA_PI 3.3V
JUMPER-SMT_2-NC_PASTE_SILK

SCL
JP2
D13_SCL
R5 4k7
SCL_PI 3.3V

VSYS
R4 1k
D1 YELLOW
GND

D5_HEALTH_LED
R3 330Ω
D3 BLUE
GND

3.3V
R2 470Ω
D2 GREEN
GND

D14_HB
R9 330Ω
HB_LED RED
GND

D6_SLAVE_LED
R1 330Ω
HB_LED ORANGE
GND

Pull-ups
3.3V
R19
R20
4k7

VSYS
C5 10µF
C18 10µF
C19 10µF
C20 10µF
C22 10µF
GND

5V
10µF
GND

Cortex Debug/Program Connector

3.3V
JP5

1	VCC	SWDIO/TMS	2 SWDIO/2.4E
3	GND	SWDCLK/TCK	4 SWCLK/2.4E
5	GND	SWO/TDO	6
7	KEY	NC/TDI	8
9	GND DTCT	NRESET	10 RESET/2.1B

CORTEX_DEBUGPTH
GND

SensorHub outline
SensorHub outline

RobotPatient Baby MainBoard M4 Pro Version with Pi Slave board

https://github.com/BriscoeTech/Arduino-FreeRTOS-SAMD51

RobotPatient Main Board
with ECG Simulator (Basic)

TITLE: BabyMainBoard_Samd51_SPI_2.3.1_fram_pro_jun2022

Document Number:
http://www.mosaic-industries.com/embedded-systems/microcontroller-projects/electronic-circuits/push-button-switch-turn-on/switching-battery-power#figx1

REV:

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J1
VCC 1 VIN_USB
D- 2 USB_D_N
D+ 3 USB_D_P
ID 4
GND 5
SHIELD 6*8
10103594-0001LF
GND

+3V3
C4 10uF
C7 1uF
C3 10uF
C8 10uF
GND GND GND GND

AREF
C14 1uF
GND

+3V3
C11 10uF
C13 1uF
C12 1uF
GND

RESET

RESET
SW1
KMR2
GND

3.3V
R16 10K
U1
QSPI_SCK 6 SCK VCC 8 3.3V
QSPI_DATA[0] 5 MOSI
QSPI_DATA[1] 2 MISO
QSPI_CS 1 SSEL
QSPI_DATA[2] 3 WP#/IO2
QSPI_DATA[3] 7 HOLD#/IO3 VSS 4
2MB Flash
GND

GND
C15 1uF
RESET 52 RESET VDDIO_0 21
R17 10K 8 VDDANA VDDIO_1 34
+3V3 VDDIO_2 48
VDDIO_3 56
+3V3
53 VDDCORE
L2 10uH
C17 1uF C16 10uF 55 VSW
POWER
GND_0 7*2
GND_1 22
GND_2 33
GND_3 47
GND_4 54
GND

PCC:
 DEN1: SDA
 DEN2: SCL
 CLK: D6
 D0: D11
 D1: D13
 D2: D10
 D3: D12
 D4: MISO
 D5: D5
 D6: MOSI
 D7: SCK

SPI:
 SERCOM1 DOPO = 0x3, SCK.1 & MO.3, MI.2

I2C:
 SERCOM2 or 4

UART:
 SERCOM5, TX on .0 & RX on .1

SPI Flash:
 QSPI (dual io)

I2S:
 SCK0: A2
 FS0: MISO
 SDI: MOSI
 SDO: D5

TCC1:
 WO0: D11
 WO1: D13
 WO2: D10
 WO3: D12
 WO4: MISO
 WO5: D5
 WO6: MOSI
 WO7: SCK

+3V3
WS2812B
DI VDD DO
GND
D8_NEOPIX
GND

V_DIV 61 PB00/I0/AIN12/SERCOM5.2 PB08/I8/AIN2/SERCOM4.0 11 A2
62 PB01/I1/AIN13/SERCOM5.3 PB09/I9/AIN3/SERCOM4.1 12 A3
D8_NEOPIX 63 PB02/I2/AIN14/SERCOM5.0 PB10/I10/SERCOM4.2/I2SDI 23 QSPI_SCK
5 PB03/I3/AIN15/SERCOM5.1 PB11/I11/SERCOM4.3/I2SFS1 24 QSPI_CS
6 PB04/I4/AIN6 PB12/I12/SERCOM4.0/I2SCK1 25 CAN1_TX
9 PB05/I5/AIN7 PB13/I13/SERCOM4.1/I2SMCK1 26 CAN1_RX
10 PB06/I6/AIN8 PB14/I14/SERCOM4.2/PCC8 27 CAN1_TX
PB07/I7/AIN9 PB15/I15/SERCOM4.3/PCC9 28 CAN1_RX

PB16/I0/SERCOM5.0/I2SCK0 39 TX_D1
PB17/SERCOM5.1/I2SMCK0 40 RX_D0
PB22/I6/SERCOM1+5.2 49 MISO
PB23/I7/SERCOM1+5.3 50 MOSI
PB30/I14/SERCOM5.1/SWO 59
PB31/I15/SERCOM5.0 60
PORT B

C10 22pF
+3V3 GND
X2 32.768
S1 C9 22pF
DAC0 D14_HB 3 PA00/EINT0/SERCOM1.0 PA16/I2C/I0/SERCOM1.0+3.1 35 D5_HEALTH PCCD0
AREF 2 PA01/EINT1/SERCOM1.1 PA17/I2C/I1/SERCOM1.1+3.0 36 SCK PCCD1
D18_INT 4 PA02/EINT2/AIN0/VOUT0 PA18/I2/SERCOM1+3.2 37 D6_SLAVE PCCD2
DAC1 D15_SS 13 PA03/I3/VREFA/AIN1 PA19/I3/SERCOM1+3.3 38 D9_GPIO1 PCCD3
D19_INT 14 PA04/I4/VREFB/AIN4/SERCOM0.0 PA20/I4/SERCOM3+5.2/I2SFS0 41 D10_INT PCCD4
+3V3 15 PA05/I5/AIN5/VOUT1/SERCOM0.1 PA21/I5/SERCOM3+5.3/I2SDO 42 D11_INT PCCD5
16 PA06/I6/VREFC/AIN6/SERCOM0.2 PA22/I2C/I6/SERCOM3.0+5.1/I2SDI 43 D12_SDA PCCD6
PA07/I7/AIN7/SERCOM0.3 PA23/I2C/I7/SERCOM3.1+5.0/SOF/I2SFS1 44 D13_SCL PCCD7

QSPI_DATA[0] 17 PA08/I2C/AIN8/SERCOM0.0+2.1/I2SMCK PA24/I8/SERCOM3+5.2/D- 45 USB_D_N
QSPI_DATA[1] 18 PA09/I2C/I9/AIN9/SERCOM0.1+2.0/I2SFS0 PA25/I9/SERCOM3+5.3/D+ 46 USB_D_P
QSPI_DATA[2] 19 PA10/I10/AIN10/SERCOM0+2.2/I2SCK PA27/I11 TP1
QSPI_DATA[3] 20 PA11/I11/AIN11/SERCOM0+2.3/I2SDO PA30/I14/SERCOM1.2/SWCLK 57 SWCLK 10K
PCCDEN1 SDA 29 PA12/I12/I2C/SERCOM2.0+4.1 PA31/I15/SERCOM1.3/SWDIO 58 SWDIO R25 +3V3
PCCDEN2 SCL 30 PA13/I13/I2C/SERCOM2.1+4.0
PCCLK D4_INT 31 PA14/I14/SERCOM2+4.2 TP6
32 PA15/I15/SERCOM2+4.3 PORT A

BREAKOUTS

VBUS VBAT
EN
D13
D12
D11
D10
D9
D6
D5
SCL
SDA

+3V3 RESET
AREF
A0
A1
A2 GND
A5
SCK
MISO
MOSI
RX_D0
TX_D1
D4

CAN0_TX
CAN0_RX

adafruit
INDUSTRIES

BabyMainBoard_Samd51_SPI_2.3.1_fram_pro_jun2022
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Adafruit Industries

U$2

P1_VSYS
P2_GND
P3_3.3V
P4_SCL
P5_SDA
P6_INT

VSYS P1
GND P2
3.3V P3
SCL P4
SDA P5
P6 D10_INT

U$3

P1_VSYS
P2_GND
P3_3.3V
P4_SCL
P5_SDA
P6_INT

VSYS P1
GND P2
3.3V P3
SCL P4
SDA P5
P6 D19_INT

U$5

P1_VSYS
P2_GND
P3_3.3V
P4_SCL
P5_SDA
P6_INT

VSYS P1
GND P2
3.3V P3
SCL P4
SDA P5
P6 D4_INT

U$6

P1_VSYS
P2_GND
P3_3.3V
P4_SCL
P5_SDA
P6_INT

VSYS P1
GND P2
3.3V P3
SCL P4
SDA P5
P6 D18_INT

U$24

P1_VSYS
P2_GND
P3_3.3V
P4_SCL
P5_SDA

5V P1
GND P2
3.3V P3
RX_D0 P4
TX_D1 P5

U$22

P1_VSYS
P2_GND
P3_3.3V
P4_SCL
P5_SDA
P6_INT

VSYS P1
GND P2
3.3V P3
SCL P4
SDA P5
P6 D11_INT