U1
ATSAMD21GA-MUT
ATSAMD21G18A-MUTCT-ND

SWDIO 46 PA31
SWCLK 45 PA30
41 PA28
D+ 39 PA27
D- 34 PA25
SCL 32 PA24
SDA 31 PA23
PA21 30 PA21
PA20 29 PA20
D12 28 PA19
D10 27 PA18
D13 26 PA17
D11 25 PA16
24 PA15
23 PA14
22 PA13
MISO 21 PA12
D0 16 PA11
D1 15 PA10

PA00 1
PA01 2
PA02 3
PA03 4
PA04 10 A4 A4
PA05 11 PWM D8
PA06 12
PA07 13 O2POW D4
PA08 14
PA09 37
PB22 38
PB23 7
PB08 8
PB09 19 MOSI
PB10 20 SCK
PB11 47 LED1
PB02 48
PB03

CS2
CS
INT1
INT2
CS_LIS
D5

6 VDDANA
43 VDDCORE
44 VDDIN
17 VDDIO
36 VDDIO
40 RESETN

5 GNDANA
18 GND
35 GND
42 GND

GND GND GND

L1 3000hm
SD_POW VCC
C5 0.1uF
C7 0.1uF VCC
0.1uF
C9 0.1 uF VCC
C8 0.1 uF
R1 10K
RESET
VCC

C1 GND
10248-2-ND
*1
XTAL_ABS06
22.5pF
C2 GND
22.5pF

D4
VCC R7 330X A K LED1
LED_0603

U7
LIS2DS12
497-16261-2-ND

SCK_1.8 1 SCL/SPC INT1 12 INT1_1.8
CS_LIS_1.8 2 CS INT2 11 INT2_1.8
MISO_1.8 3 SDO/SA0 VDD_IO 10
MOSI_1.8 4 SDA/SDI VDD 9
5 NC GND 8 GND
GND 6 GND GND 7 GND

GND C17 100nF V1.8
+C18 10uF V1.8
C19 100nF
GND GND

U8
Level Shifter
568-8404-2-ND

V1.8 1 VCCL VCCH 14 VCC
MOSI_1.8 2 L1 H1 13 MOSI
SCK_1.8 3 L2 H2 12 SCK
MISO_1.8 4 L3 H3 11 MISO
CS_LIS_1.8 5 L4 H4 10 CS_LIS
6 nc nc 9
GND 7 GND OE 8 VCC

U9
Level Shifter
568-8404-2-ND

V1.8 1 VCCL VCCH 14 VCC
INT1_1.8 2 L1 H1 13 INT1
INT2_1.8 3 L2 H2 12 INT2
4 L3 H3 11
5 L4 H4 10
6 nc nc 9
GND 7 GND OE 8 VCC

Winbond NOR Flash
https://github.com/Marzogh/SPIMemory
U3
W25Q256JVEIQ_TR

CS2 1 CS VCC 8 VCC
SCK 6 CLK
MOSI 5 DI(IO0) EXP 9
MISO 2 DO(IO1)
VCC 3 IO2
VCC 7 IO3 GND 4 GND

P1
microSD
95W1520

1 1
2 2 CS
3 3 MOSI
4 4 SD_VCC
5 5 SCK
6 6 GND
7 7 MISO
8 8

3.3 V LDO
U2 LP3985IM5-3.3

VIN 1 IN OUT 5
SD_POW 3 EN BYP 4 GND
GND
C3 1.0uF SD_VCC
C4 10nF GND
GND

I2C 0x76
U10
MS5837
223-1704-1-ND

1 GND GND
2 VDD
3 SCL SCL
4 SDA SDA
C20 0.1uF VCC
GND

I2C 0x30 (part MMC33160MT)
U11
MMC33160MT

1 VCC GND 10 GND
VCC C10 1.0uF
2 NC SDA 9 SDA
3 NC VCC 8 VCC
4 C+ SCL 7 SCL
5 C- CAP 6
C21 C0603 10uF GND

SDA R8 4.7k VCC
SCL R9 4.7k VCC

3.3 V LDO
U4 LP3985IM5-3.3

VIN 1 IN OUT 5
3 EN BYP 4 GND
GND
C11 1.0uF VCC
C12 10nF GND
GND

GND C14 1uF
VBUS
R6 330X A K
D3 LED_0603

U6
MCP73831T-2DCI/OT

4 VDD VBAT 3 V_BATT
PROG 5 R5 2k GND
1 STAT VSS 2 GND
GND
C15 1uF

VIN R2 100k R3 100k GND
A4

U5
TPS62740

VCC 1 VIN EN 12 VCC
2 SW VSEL1 11 GND
GND 3 GND VSEL2 10 GND
GND 4 CTRL VSEL3 9 GND
V1.8 5 VOUT VSEL4 8 GND
6 LOAD PG 7

C13 C0603 10uF
L5 2.2uH
C16 C0603 10uF
GND

P5
HDR_4x1_2mm
1 1 D+ GND
2 2 D-
3 3 VBUS
4 4

P2
1x2 1.27mm
1 1 PWM
2 2 GND

*2
Reed_MK24
374-1075-2-ND
V_BATT 1 IN OUT 2 VIN

P6
HDR_2x1_2mm
1 1 V_BATT
2 2 GND

P4
Cortex Debug
VCC 9 VCC SWDIO/TMS 10 SWDIO
GND 7 GND SWDCLCK/TCK 8 SWCLK
GND 5 GND SWO/TDO 6
3 KEY NC/TDI 4
1 GNDDTCT NRESET 2 RESET

GND R4 RESET
Do not place

Title: TTFT2
Size A3
Number
Loggerhead Instruments
Revision 0.1
Date: 12/16/2019
File: C:\w\TTFT\TTFT2\TTFT2.SchDoc
Sheet 1of 2
Drawn By: D Mann

Comment	Description	Designator	Footprint	LibRef	Quantity
XTAL_ABS06		*1	XTAL-ABS06	XTAL_ABS06	1
Reed_MK24		*2	Reed MK24-B-3	Reed_MK24	1
22.5pF	Ceramic Chip Capacitor - Standard	C1, C2	0402	C0402	2
1.0uF	Ceramic Chip Capacitor - Standard	C3, C10, C11	0402	C0402	3
10nF	Ceramic Chip Capacitor - Standard	C4, C12	0402	C0402	2
0.1uF	Ceramic Chip Capacitor - Standard	C5, C6, C7, C20	0402	C0402	4
0.1 uF	Ceramic Chip Capacitor - Standard	C8, C9	0402	C0402	2
C0603	Ceramic Chip Capacitor - Standard	C13, C16, C21	0603	C0603	3
1uF		C14, C15	Tant0805	Tant0805	2
100nF	Ceramic Chip Capacitor - Standard	C17, C19	0402	C0402	2
10uF		C18	Tant0805	Tant0805	1
LED_0603		D3, D4	Diode0603	LED_0603	2
300Ohm	Ferrite 25mOhm@DC, 60 Ohm@100MHz	L1	0805 (M2125) Ferrite	Ferrite 0805(M2125) 3A	1
2.2uH		L5	Inductor KLZ1608AHR	Inductor KLZ1608	1
microSD		P1	Molex microSD	microSD Molex tiny	1
1x2 1.27mm		P2	Header1x2 1.27mm	Header 1x2 1.27mm	1
Cortex Debug		P4	Header_2x5_50mil	CortexDebug	1
HDR_4x1mm		P5	Hdr_4x1_2mm	HDR_4x1_2mm	1
HDR_2x1_2mm		P6	HDR_2x1_2mm	HDR_2x1_2mm	1
10K	Precision Thick Film Chip Resistor, 10 Ohm to 1M Ohm Range, 1% and 0.5% Tolerance, 0603 Size, 0.063 W	R1	3-0603	ERJ3RK	1
100k	Precision Thick Film Chip Resistor, 10 Ohm to 1M Ohm Range, 1% and 0.5% Tolerance, 0603 Size, 0.063 W	R2, R3	3-0603	ERJ3RK	2
Do not place	Precision Thick Film Chip Resistor, 10 Ohm to 1M Ohm Range, 1% and 0.5% Tolerance, 0603 Size, 0.063 W	R4	3-0603	ERJ3RK	1
2k	Precision Thick Film Chip Resistor, 10 Ohm to 1M Ohm Range, 1% and 0.5% Tolerance, 0603 Size, 0.063 W	R5	3-0603	ERJ3RK	1
330X	Precision Thick Film Chip Resistor, 10 Ohm to 1M Ohm Range, 1% and 0.5% Tolerance, 0603 Size, 0.063 W	R6, R7	3-0603	ERJ3RK	2
4.7k	Precision Thick Film Chip Resistor, 10 Ohm to 1M Ohm Range, 1% and 0.5% Tolerance, 0603 Size, 0.063 W	R8, R9	3-0603	ERJ3RK	2
ATSAMD21GA-MUT		U1	QFN127P600-8N	ATSAMD21G18	1
LP3985IM5-3.3	Micropower, 150mA Low-Noise Ultra Low-Dropout CMOS Voltage Regulator, 5-pin SOT-23	U2, U4	MF05A_N	LP3985IM5-3.3	2
W25Q256JVEIQ_TR	Ic Flash 256mbit 104mhz 8wson	U3	*SON127P800X600X80-9N	W25Q256JVEIQ_TR	1
TPS62740		U5	TPS6274x	TPS6274x	1
MCP73831T-2DCI/OT	Miniature Single-Cell, Fully Integrated Li-Ion, Li-Polymer Charge Management Controller, 4.2V, 5-Pin SOT-23, Industrial Temperature, Tape and Reel	U6	SOT-23-OT5_N	MCP73831T-2DCI/OT	1
LIS2DS12		U7	LGA-12	LIS2DS12	1
Level Shifter	Voltage level translator	U8, U9	DHVQFN14	NTB0104	2
MS5837	Pressure/Temp	U10	MS5837	MS5837	1
MMC33160MT		U11	MMC33160MT	MMC33160MT	1