Power supply

VDD
VDDA
FB1
220R/100MHz

PWR_FLAG
PWR_FLAG

C5
10u
C11
100n
C6
10u
C10
100n

PWR_FLAG

GND
GND
GND
GND

Murata
BLM18AG221SN1D

SWD connector

VDD

J3
SWD

VTref
RESET — 10
RESET
SWDCLK/TCK — 4 — PA30_SWCLK
SWDIO/TMS — 2 — PA31_SWDIO
SW0/TDO — 6
NC/TDI — 8

GNDDetect
GND

Amphenol
20021121-00010C4LF

GND

MCU

C8
1u
PWR_FLAG

C9
100n

GND

L1
10uH
Coilcraft
LPS3015-103MRB

L1 placed only when the internal buck regulator is in use

VDDA   VDD

U1   ATSAML10E16A-A

PA00_XIN32 — 1 — PA00   VDDANA VDDCORE VDDOUT VDDIO   PA14 — 15 — PA14_XOSC
PA01_XOUT32 — 2 — PA01   9   27   29   30   PA15 — 16 — PA15_XOUT
PA02 — 3 — PA02   PA16 — 17 — PA16
PA03 — 4 — PA03   PA17 — 18 — PA17
PA04 — 5 — PA04   PA18 — 19 — PA18
PA05 — 6 — PA05   PA19 — 20 — PA19
PA06 — 7 — PA06   PA22 — 21 — PA22
PA07 — 8 — PA07   PA23 — 22 — PA23
PA08 — 11 — PA08   PA24 — 23 — PA24
PA09 — 12 — PA09   PA25 — 24 — PA25
PA10 — 13 — PA10   PA27 — 25 — PA27
PA11 — 14 — PA11   PA30 — 31 — PA30_SWCLK
RESET — 26 — RESET   PA31 — 32 — PA31_SWDIO

GND
10

GND

Board I/O headers

VDD

R1 and R2 placed only when the real time crystal oscillator is not used

R9 and R10 placed only when the external crystal oscillator is not used

VDD

J1
Left

1
2 — PA00   R1
3 — PA01   0R DNP   PA00_XIN32
4 — PA02   PA01_XOUT32
5 — PA03   0R DNP
6 — PA04   R2
7 — PA05
8 — PA06
9 — PA07
10 — PA08
11 — PA09
12 — PA10
13 — PA11
14 — LED0
15 — LED1
16

GND

DNP R9
     0R
PA14_XOSC
PA15_XOUT
DNP 0R
     R10

PA14 — 2
PA15 — 3
PA16 — 4
PA17 — 5
PA18 — 6
PA19 — 7
PA22 — 8
PA23 — 9
PA24 — 10
PA25 — 11
PA27 — 12
RESET — 13
PA30_SWCLK — 14
PA31_SWDIO — 15
16

J2
Right

GND

User LEDs

VDD   VDD

R11   R16
330R   330R

D1   D2
LED0   LED1

R12   R13
47k   47k

LED0   LED1

Q1A   Q1B
BC847BDW1   BC847BDW1

R14   R15
100k   100k

GND   GND

External real time oscillator (optional)

C1
12p
R3
0R
PA00_XIN32

Y1
32.768kHz
Abracon
ABS07

12p
C2
0R
R4
PA01_XOUT32

GND

C1 and C2 must be selected to match Y1 specs

External crystal oscillator (optional)

C3
15p
R5
0R
PA14_XOSC

Y2
8MHz
ECS
ECS-80-10-30B-CWN-TR

15p
C4
0R
R6
PA15_XOUT

GND

C3 and C4 must be selected to match Y2 specs

User reset circuit

VDD

R7
330R
R8
10k
RESET

SW1
Reset

C7
100n

GND

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Universal breakout board for ATMSAML1x MCUs

Sheet: /
File: atsaml10-breakout.sch

Title: ATSAML1x Breakout Board

Size: A4   Date: 2020-09-15   Rev: A
KiCad E.D.A. kicad 5.1.6   Id: 1/1