NewAE Technology

NewAE Technology Inc.
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SAML11 UFO Target

Product Datasheet
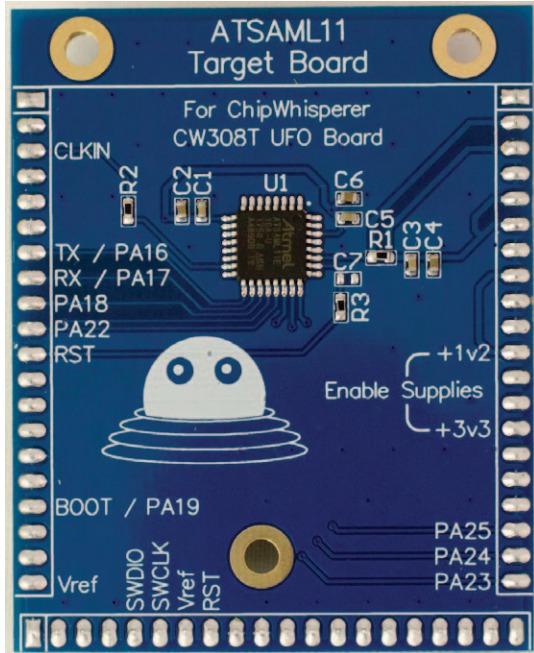
The SAML11 board features the ATSAML11 from Microchip. This device has a Cortex-M23 core, which features many advanced security features including TrustZone-M.

This board requires an external programmer (such as Atmel ICE or OpenOCD) to be used. The example firmware will bring up the AES peripheral (which does not have DPA countermeasures) along with running other normal demos.

The design files are available as part of the open-source ChipWhisperer example targets.

CW308 UFO Baseboard REQUIRED for use!

JTAG/SWD Programmer REQUIRED for use!

Product Highlights

Microchip ATSAML11E16A in TQFP-32 package.

JTAG port on CW308 UFO baseboard breaks out SWD pins to standard 20-pin JTAG header.

SAML11 works extremely well with voltage glitching demos using the ChipWhisperer-Lite/Pro.

Many security features including TrustZone-M, and silent access modes for FLASH and RAM can be investigated.

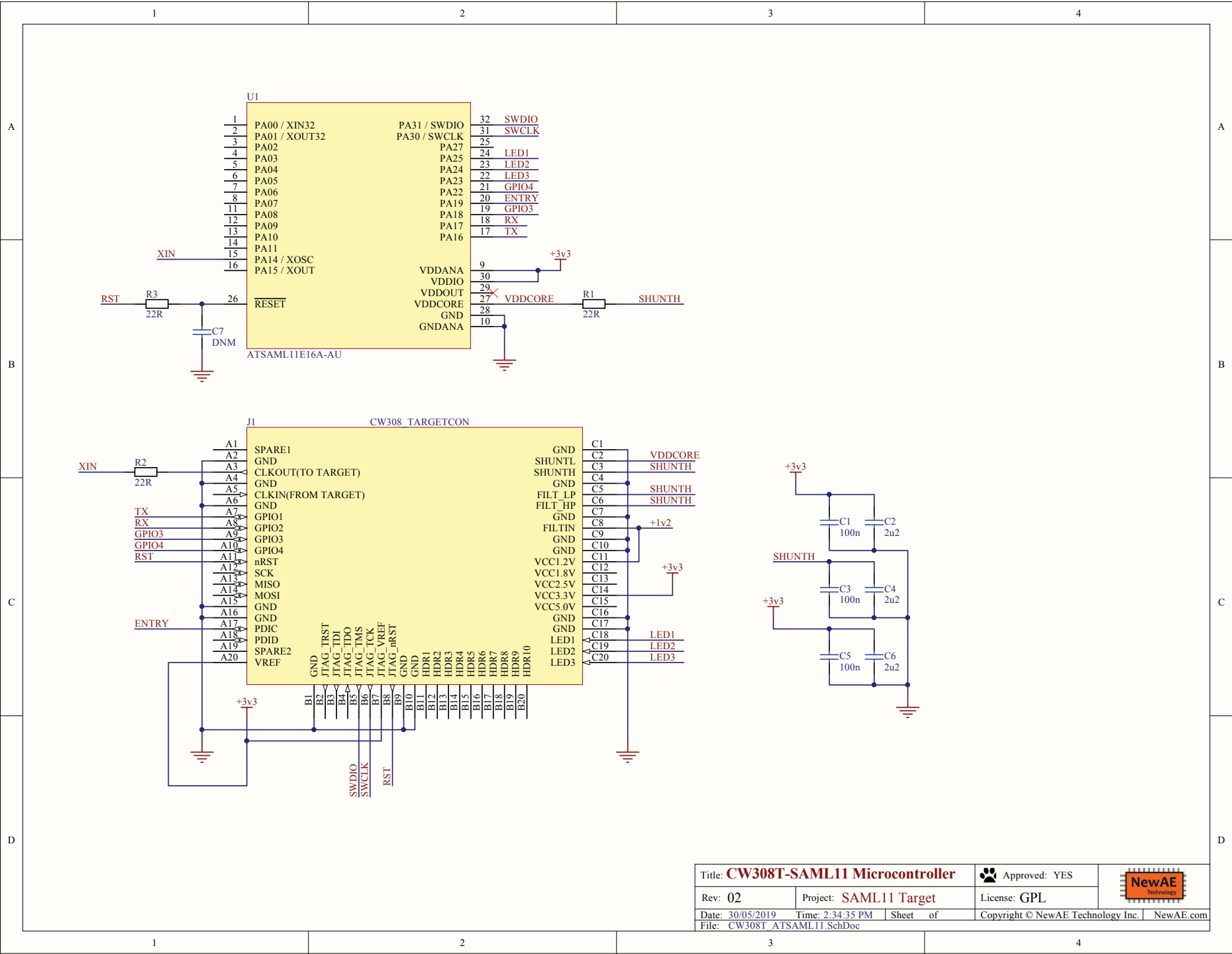Full design files are available under an open-source license.

Ordering Summary

NAE-CW308T-ATSAML11 Microchip ATSAML11E16A UFO Target Board.

Product Links

Full Documentation   https://wiki.newae.com/CW308T-ATSAML11
Hardware Design   https://github.com/newaetech/chipwhisperer-target-cw308t
Firmware Example   https://github.com/newaetech/chipwhisperer/tree/develop/hardware/victims/firmware/

Schematic

U1

ATSAML11E16A-AU

Pin	Signal		Signal	Pin	Net
1	PA00 / XIN32		PA31 / SWDIO	32	SWDIO
2	PA01 / XOUT32		PA30 / SWCLK	31	SWCLK
3	PA02		PA27	25	
4	PA03		PA25	24	LED1
5	PA04		PA24	23	LED2
6	PA05		PA23	22	LED3
7	PA06		PA22	21	GPIO4
8	PA07		PA19	20	ENTRY
11	PA08		PA18	19	GPIO3
12	PA09		PA17	18	RX
13	PA10		PA16	17	TX
14	PA11				
15	PA14 / XOSC		VDDANA	9	+3v3
16	PA15 / XOUT		VDDIO	30	
26	RESET		VDDOUT	29	
			VDDCORE	27	VDDCORE
			GND	28	SHUNTH
			GNDANA	10	

XIN

RST — R3 22R

C7 DNM

R1 22R

J1 — CW308_TARGETCON

Pin	Signal		Signal	Pin	Net
A1	SPARE1		GND	C1	
A2	GND		SHUNTL	C2	VDDCORE
A3	CLKOUT(TO TARGET)		SHUNTH	C3	SHUNTH
A4	GND		GND	C4	
A5	CLKIN(FROM TARGET)		FILT_LP	C5	SHUNTH
A6	GND		FILT_HP	C6	SHUNTH
A7	GPIO1		GND	C7	
A8	GPIO2		FILTIN	C8	+1v2
A9	GPIO3		GND	C9	
A10	GPIO4		GND	C10	
A11	nRST		VCC1.2V	C11	
A12	SCK		VCC1.8V	C12	
A13	MISO		VCC2.5V	C13	
A14	MOSI		VCC3.3V	C14	+3v3
A15	GND		VCC5.0V	C15	
A16	GND		GND	C16	
A17	PDIC		GND	C17	
A18	PDID		LED1	C18	LED1
A19	SPARE2		LED2	C19	LED2
A20	VREF		LED3	C20	LED3

XIN — R2 22R

TX
RX
GPIO3
GPIO4
RST
ENTRY

GND, JTAG_TRST, JTAG_TD1, JTAG_TDO, JTAG_TMS, JTAG_TCK, JTAG_VREF, JTAG_nRST, GND, GND, HDR1, HDR2, HDR3, HDR4, HDR5, HDR6, HDR7, HDR8, HDR9, HDR10

B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13, B14, B15, B16, B17, B18, B19, B20

+3v3

SWDIO
SWCLK
RST

Decoupling capacitors:

+3v3 — C1 100n — C2 2u2

SHUNTH — C3 100n — C4 2u2

+3v3 — C5 100n — C6 2u2

Title: CW308T-SAML11 Microcontroller   Approved: YES

Rev: 02   Project: SAML11 Target   License: GPL

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