OPTIGA™ Trust X Security Shield2Go

Quick Start
V1.0.0

Introduction

The OPTIGA™ Trust X is the best-fit security solution for IoT devices, to protect your business as well as your customers' data and IP. With an advanced set of features, the OPTIGA™ Trust X supports a broad range of use cases: mutual authentication, secure communication, data store protection, key provisioning, life-cycle management, power management, secure updates, and platform integrity protection.

The product is easy to integrate and work with, reducing your design effort for faster time-to-market.The turnkey set-up comes with full system integration and all key material preprogrammed, and the high-end security controller with OS, embedded application and complete host side integration support.

Features also include a high-end certified security controller with advanced cryptographic algorithms implemented in hardware (ECC256, AES128, SHA-256, TRNG, DRNG), up to 10 kBytes user memory, I2C communication interface, standard (-25°C to 85°C) and extended (-40°C to 105°C) temperature ranges, and a Cryptographic Tool Box based on ECC NIST P256, P384 and SHA256 for flexible implementations.
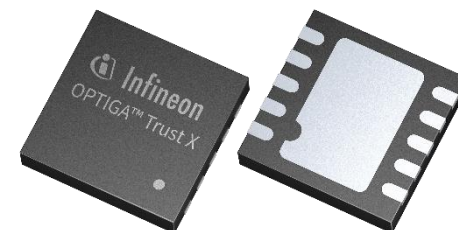
Link to Datasheet and Product Page

Evaluation Board Notes

Information

- Supply voltage VCC is max. 7 V, please refer to the OPTIGA™ Trust X datasheet for more details about maximum ratings
- Pin out on top (head) is directly connected to the pins of the OPTIGA™ Trust X
- If head is broken off, only one capacitor is connected to the OPTIGA™ Trust X
- Software compatible with Arduino and library fully integrated into the Arduino IDE
- Sales Name S2GO SECURITY OPTIGA X and OPN S2GOSECURITYOPTIGAXTOBO1
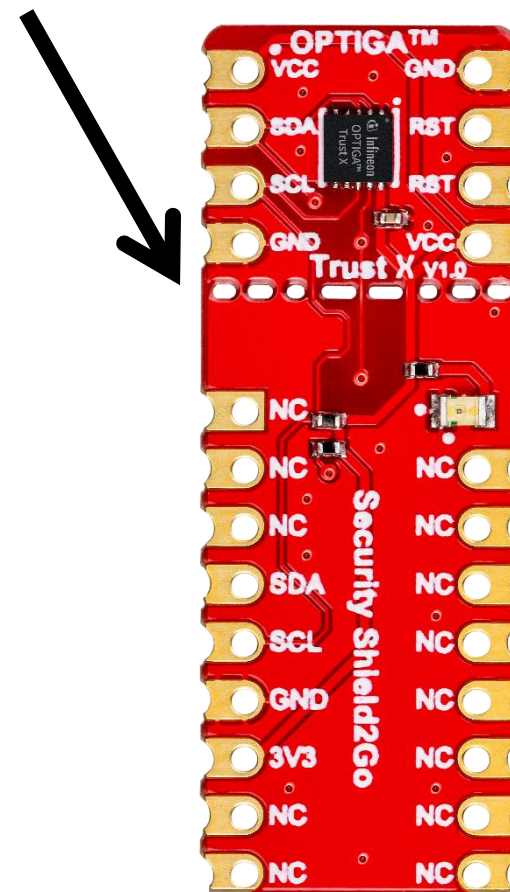
Ensure that no voltage applied to any of the pins exceeds the absolute maximum rating of VCC + 0.3 V

Breakable   Head

Link to Board Page

The

OPTIGA™ Trust X Security Shield2Go

10.16 mm (0.4")

OPTIGA™ Trust X

(i) Ground pins on board connected with each other.

10	VCC	18		22	GND	01
02	SDA	19		23	RST	09
08	SCL	20		24	RST	09
01	GND	21		25	VCC	10

Red Power LED

Legend

	Information
	Labelling of Pins in Datasheet
	Pin Number in Datasheet
	Physical Pin Number
⚠	Warning
(i)	Additional Information
NC	Not Connected

NC	1		
NC	2		
NC	3		
I²C: SDA	4		
I²C: SCL	5		
Ground	6		
Power 3.3V	7		
NC	8		
NC	9		

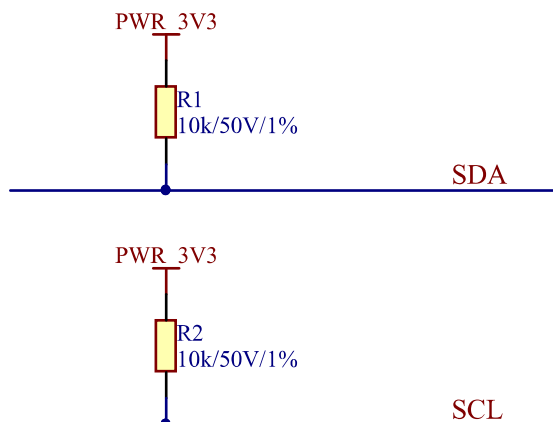| | 10 | NC |
	11	NC
	12	RST/GPIO2
	13	NC
	14	NC
	15	NC
	16	NC
	17	NC

2.54 mm (0.1")
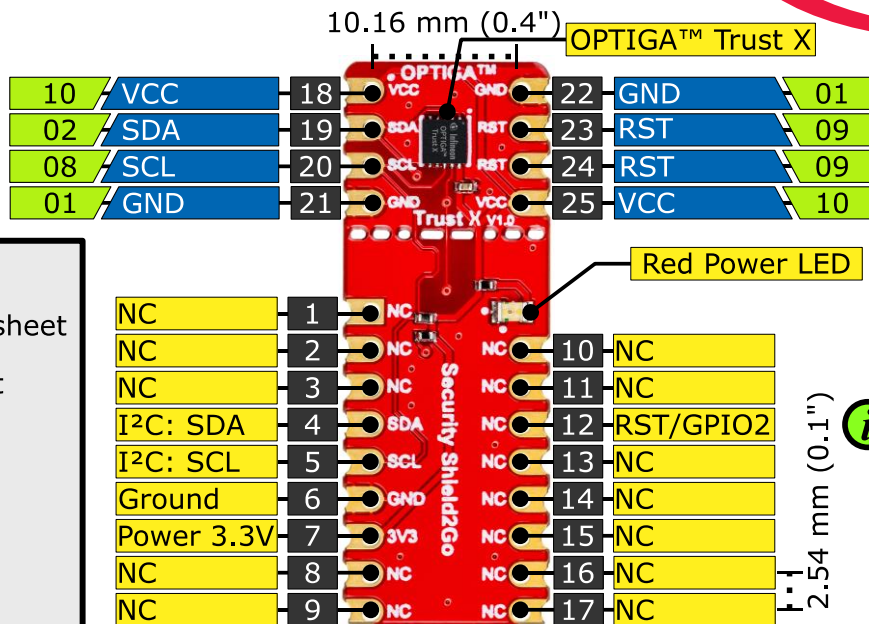
(i) Although labelled as NC, RST is connected to pin 12. This is a mistake of the labelling.

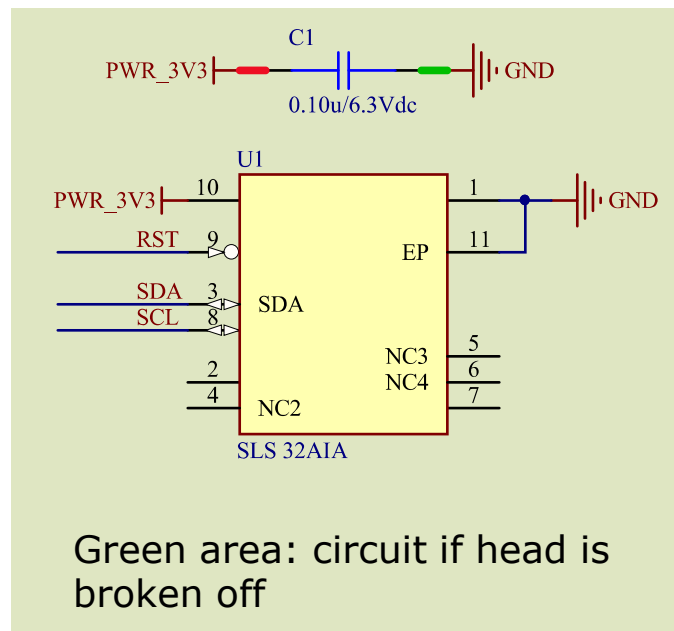⚠ The maximum voltage on VCC pin is 7 V, any other pin VCC+0.3 V.
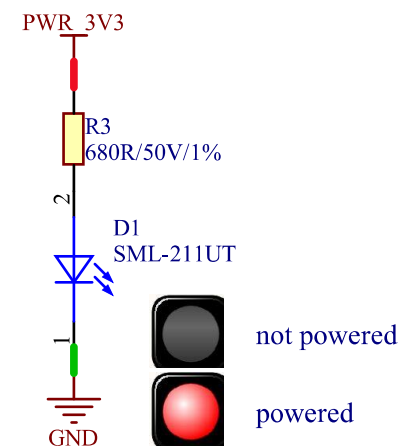
www.infineon.com

Evaluation Board Schematic

I2C Pull Up

OPTIGA™ Trust X

Power Status Indication

Green area: circuit if head is broken off

Arduino IDE

Arduino is a hardware-software prototyping environment IDE developed by arduino.cc:

- Installation Details for Windows:
  Click here
- Installation Details for Linux:
  Click here
- Installation Details for Mac OS:
 Click here
- Installation Details for Portable IDE:
  Click here

Arduino Quick Start

- What is Arduino? Click here
- Extended information about the Arduino environment. Click here
- How to import libraries? Click here
- How to install additional boards? Click here
- Problems related to Arduino? Click here for troubleshooting

How to download the library for Arduino - 1

Notes

- Open the Arduino IDE
- Navigate to
  Sketch – Include Library – Manage Libraries
- The Arduino library manager will be opened (see next slide for further instructions)
- Additional notes for installation can be found in the GitHub repository, e.g. if the library manager is not used

https://github.com/Infineon/arduino-optiga-trust-x
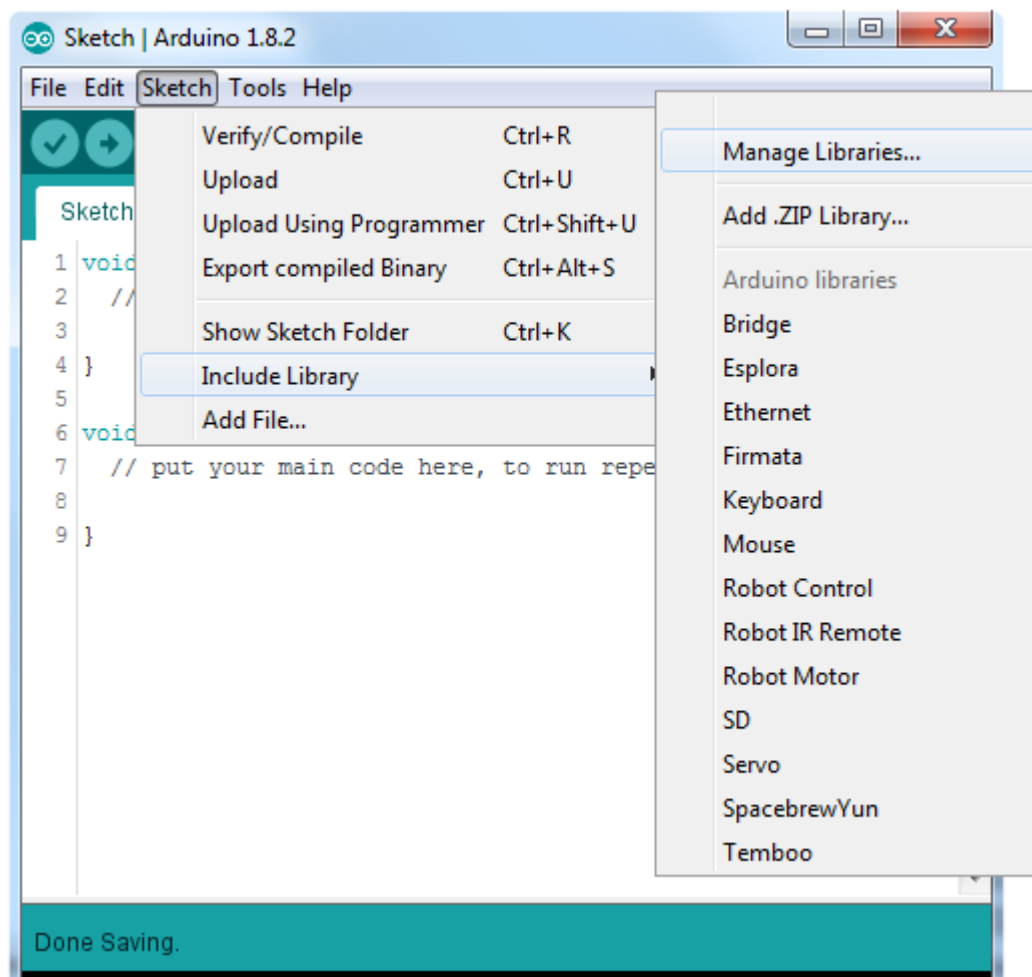
How to download the library for Arduino - 2

Notes

- The Arduino library manager is a comprehensive tool to install external libraries for Arduino
- Search for *OPTIGA Trust X* in the *Filter your search…* field
- Select as *Type: All* and *Topic: All* when searching for *OPTIGA Trust X*
- As shown in the picture, please choose the respective library and install it
- Regularly check your installed libraries for updates
- In case of problems, please visit also our GitHub repository and open an issue to get further help

 https://github.com/Infineon/arduino-optiga-trust-x

Example with XMC 2Go

Notes

- The Shield2Go form factor of the Shield2Go evaluation board is directly compatible with the [XMC 2Go](XMC 2Go) board
- Stack the OPTIGA™ Trust X Security Shield2Go board on top of the XMC 2Go as shown in the picture
- The additional pin on the left-top side (designated with NC) is left floating
- Using the XMC-for-Arduino Arduino integration, the Arduino library for the OPTIGA™ Trust X can be directly used
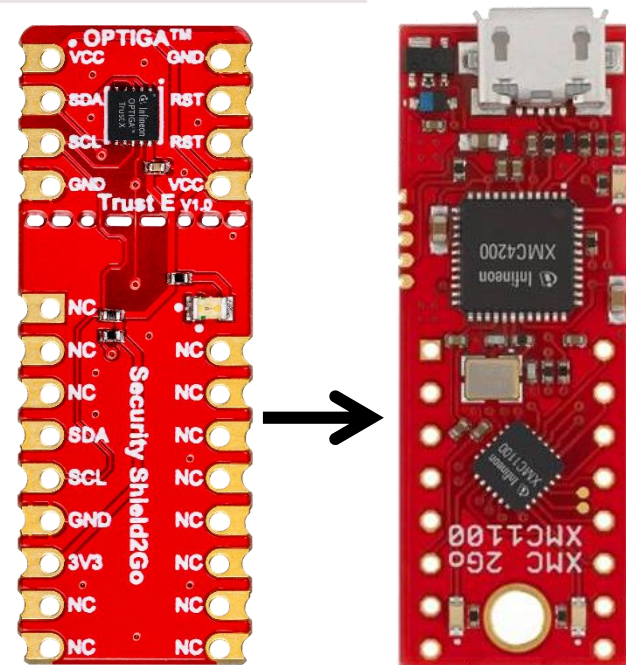
Steps

- Open one of the examples for the OPTIGA™ Trust X from *File – Examples* and select as board *XMC1100 XMC2Go*
- Connect the stacked boards to the PC and press the *Upload* button
- Select the related COM port from *Tools – Port* and open the serial monitor with the set baud rate (see sketch/code with Serial.begin(<BAUDRATE>);)

https://github.com/Infineon/XMC-for-Arduino
https://github.com/Infineon/arduino-optiga-trust-x
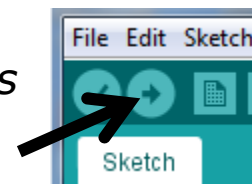
Additional Notes

Important Note

- The OPTIGA™ Trust X has a maximum rating of 7 V on the VCC supply pin
- The input voltage on any pin should not exceed VCC+0.3 V
- Third party boards with 5 V logic, e.g. the Arduino Uno, can be connected to the OPTIGA™ Trust X Security Shield2Go directly

Additional Software

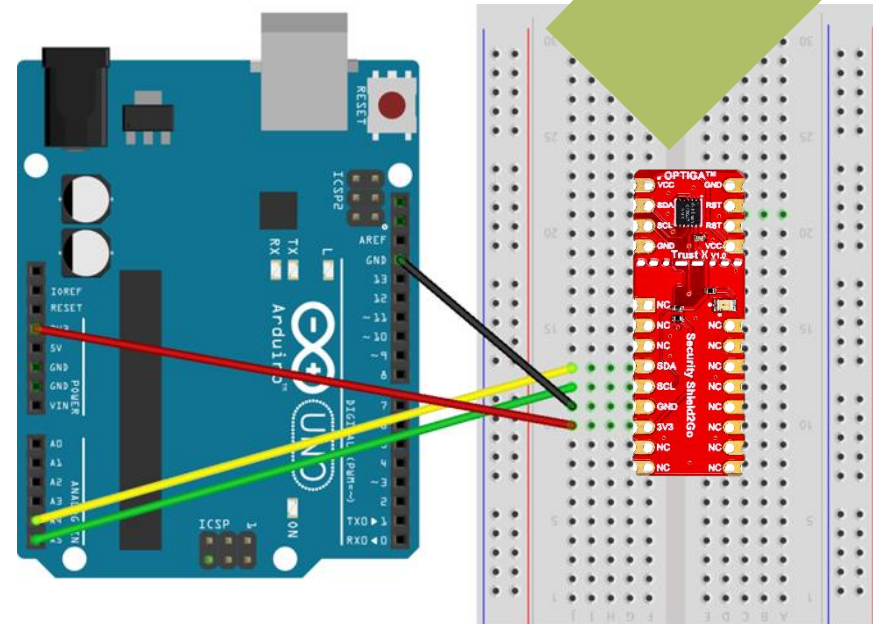- There exist more repositories with additional software for OPTIGA™ Trust X

Possible

https://github.com/Infineon/appnotes-optiga-trust-x
https://github.com/Infineon/mbedtls-optiga-trust-x
https://github.com/Infineon/optiga-trust-x
https://github.com/Infineon/onchipdtls-optiga-trust-x