

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

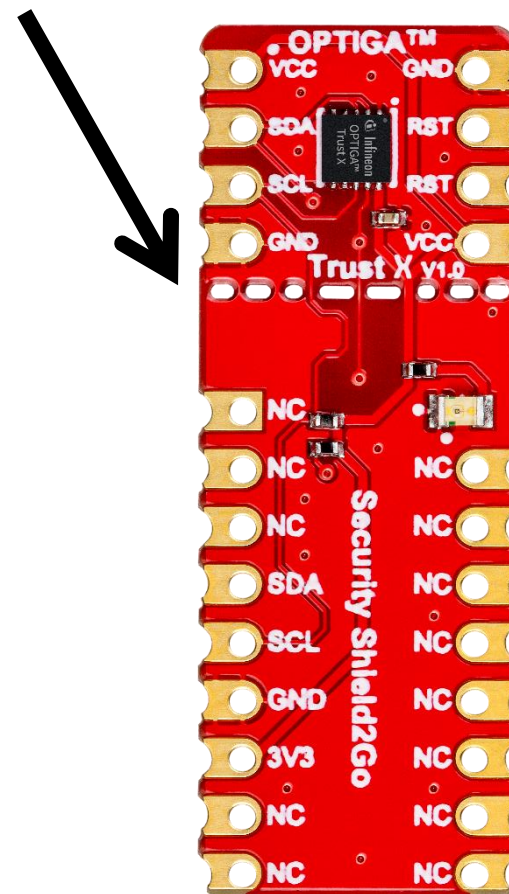
Information

- 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 $VCC + 0.3 \text{ V}$

Breakable

Head



Link to [Board Page](#)

Evaluation Board PCB Details

The

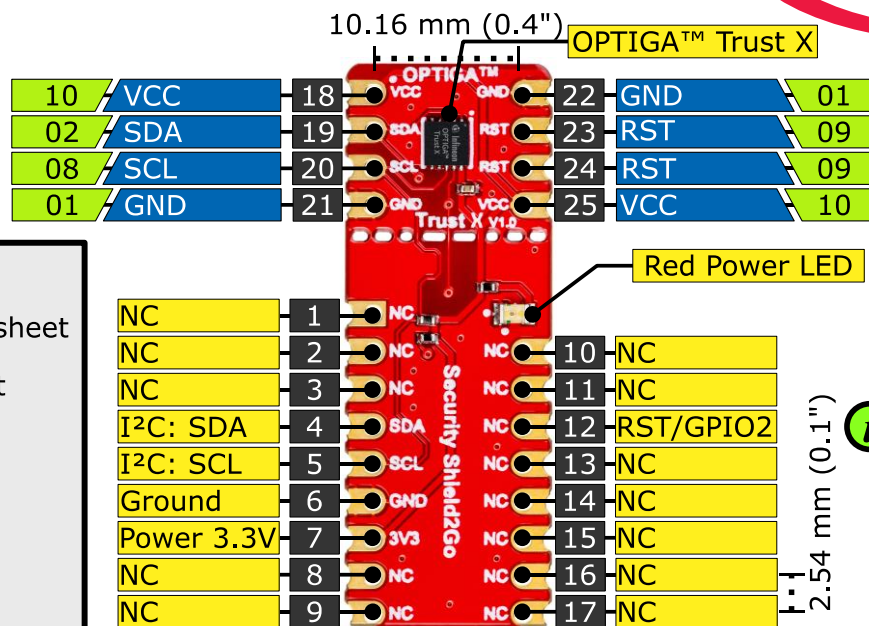
OPTIGA™ Trust X Security Shield2Go



i Ground pins on board connected with each other.

Legend

- Information
- Labelling of Pins in Datasheet
- Pin Number in Datasheet
- Physical Pin Number
- ! Warning
- i Additional Information
- NC Not Connected



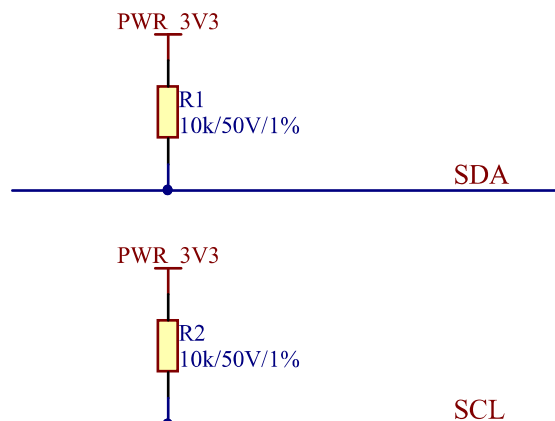
i Although labelled as NC, RST is connected to pin 12. This is a mistake of the labelling.

! The maximum voltage on VCC pin is 7 V, any other pin VCC+0.3 V.

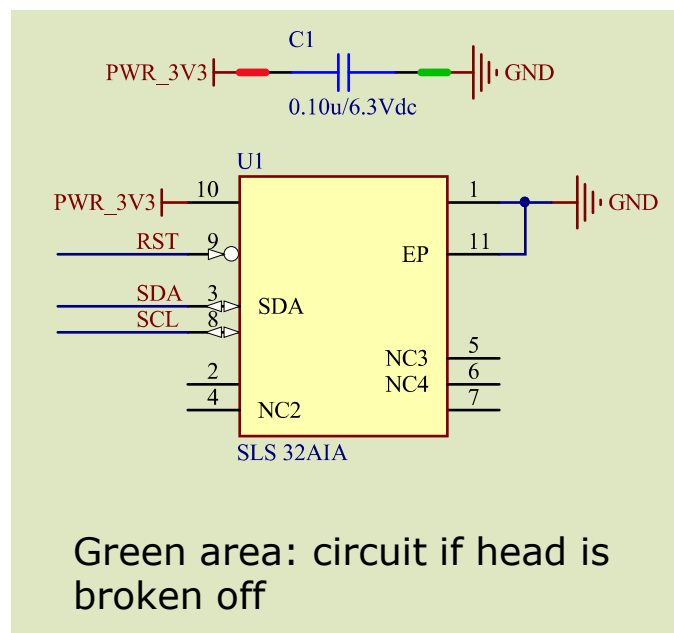
www.infineon.com

Evaluation Board Schematic

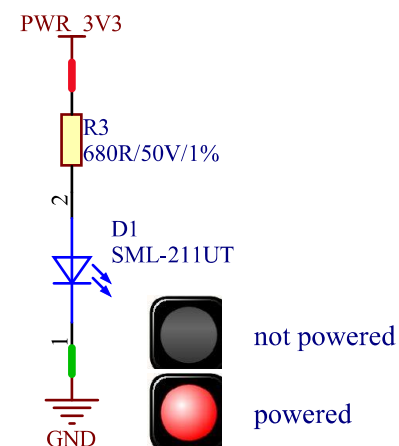
I2C Pull Up



OPTIGA™ Trust X



Power Status Indication



Arduino: The Arduino IDE

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](#)

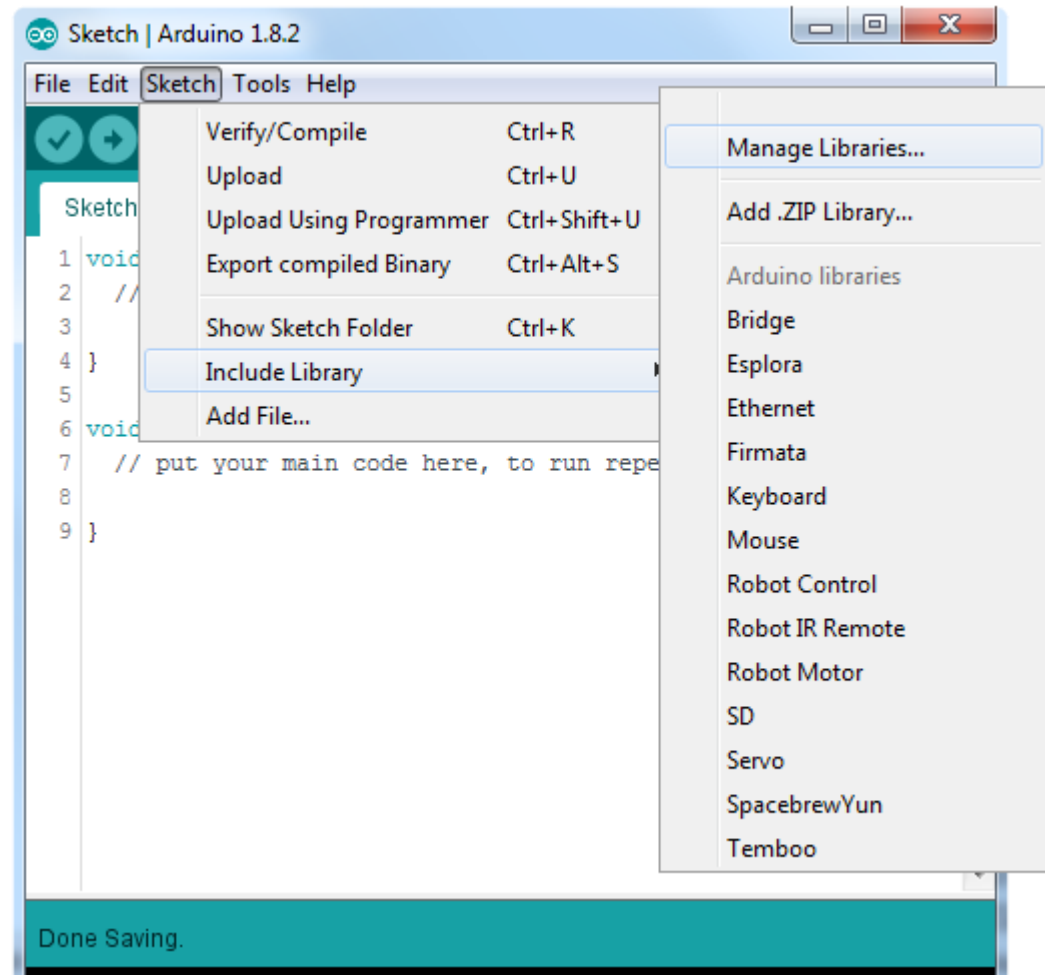
Arduino Quick Start

- 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](https://github.com/Infineon/arduino-optiga-trust-x) and open an issue to get further help

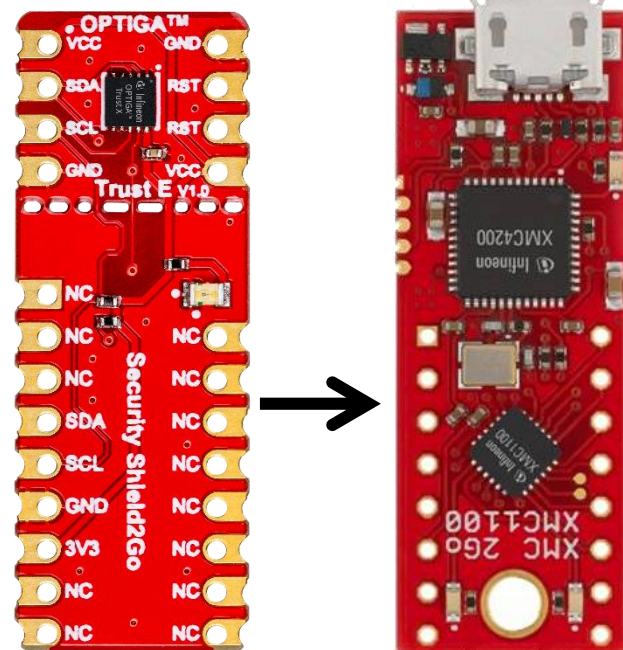


<https://github.com/Infineon/arduino-optiga-trust-x>

Example with XMC 2Go

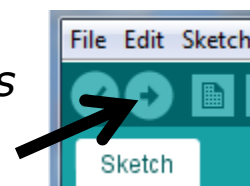
Notes

- The Shield2Go form factor of the Shield2Go evaluation board is directly compatible with the [XMC 2Go](#) 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

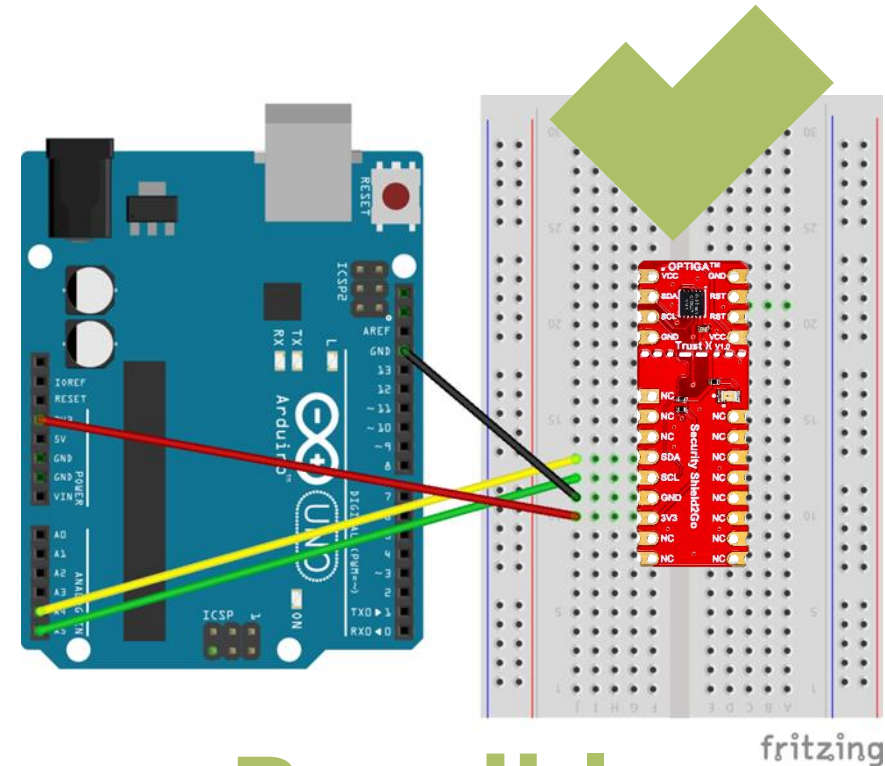
- The OPTIGA™ Trust X has a maximum rating of 7 V on the VCC supply pin
- The input voltage on any pin should not exceed $VCC + 0.3\text{ V}$
- Third party boards with 5 V logic, e.g. the Arduino Uno, can be connected to the OPTIGA™ Trust X Security Shield2Go directly

Additional Software

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



<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>





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