

TLD7002-16ES OTP Programmer

User guide

LITIX™ Pixel Rear
Multi-channel LED driver
Z8F80290554

About this document

Scope and purpose

This user guide provides instructions for using the OTP Programmer board. The OTP Programmer board is used to write/read/emulate the OTP (One Time Programmable) memory of devices such as TLD7002-16ES.

Intended audience

This document is intended for engineers that use the OTP Programmer board.

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1 Installing firmware

1 Installing firmware

To download the SEGGER J-Link firmware, go to www.segger.com [1]. Select the version according to the system it is to be installed on (1). Click Download (2), as shown in the figure below.

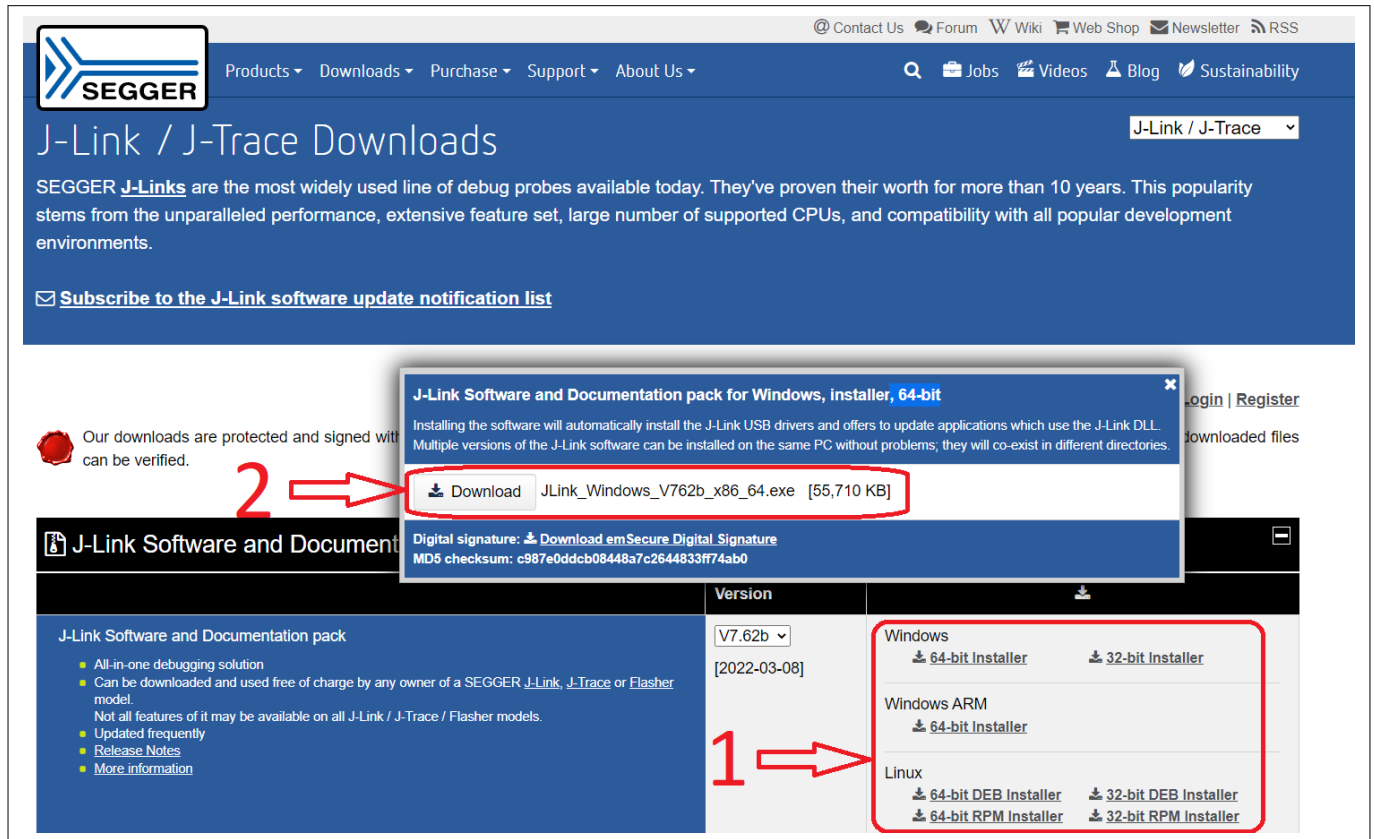


Figure 1 Downloading J-Link software

Install the downloaded .exe software as explained in the figure below.

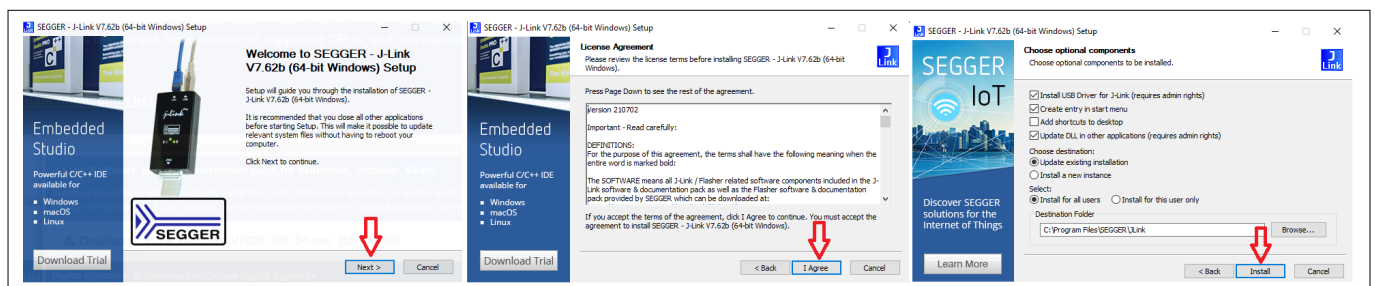


Figure 2 Installing J-Link software

Connect the debug USB port of the XMC4700 evalboard (the red one mounted on the OTP programmer board) with a micro-USB cable to the PC. The LEDs on the XMC4700 evalboard labeled as DEBUG and VDD3.3 turn ON.

1 Installing firmware

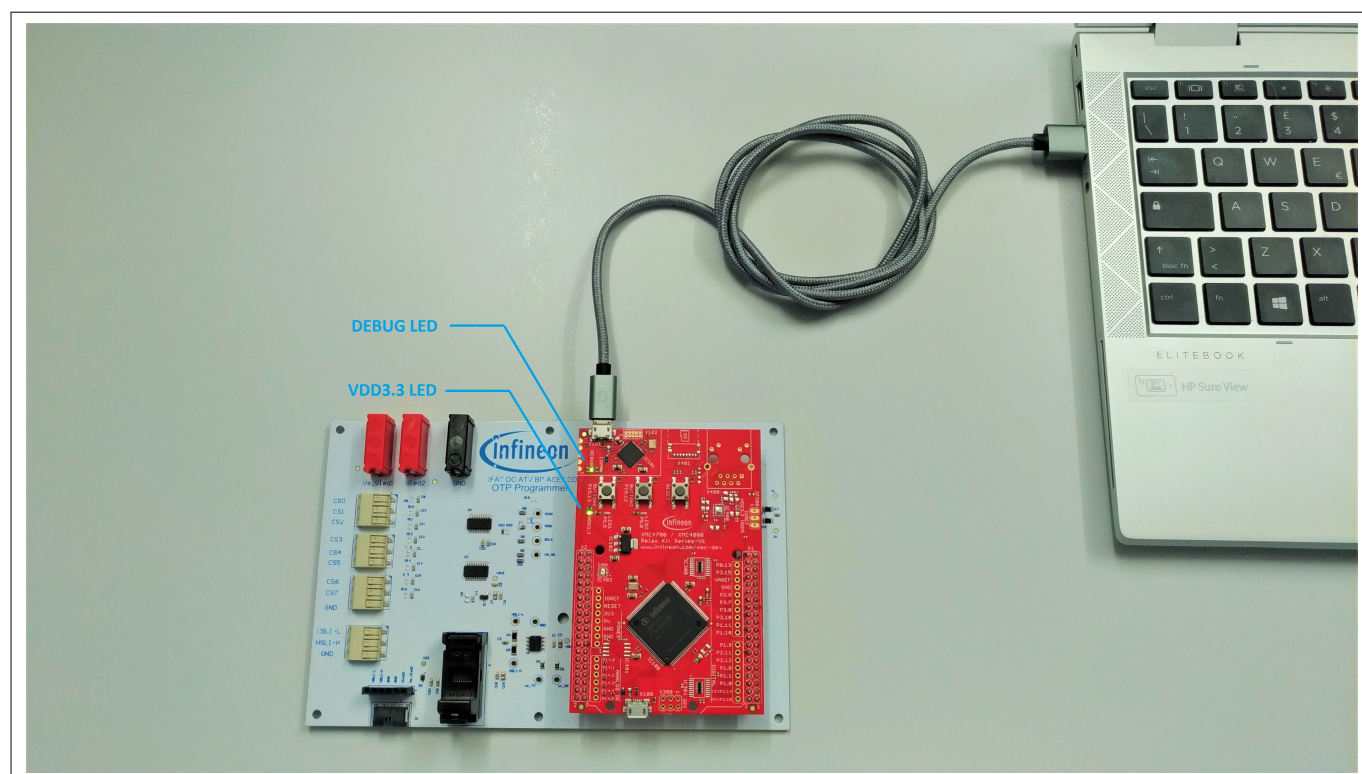


Figure 3 OTP programmer board connection to PC

In the Windows search field, enter J-Flash Lite. When the tool icon appears, click open as shown in the figure below.

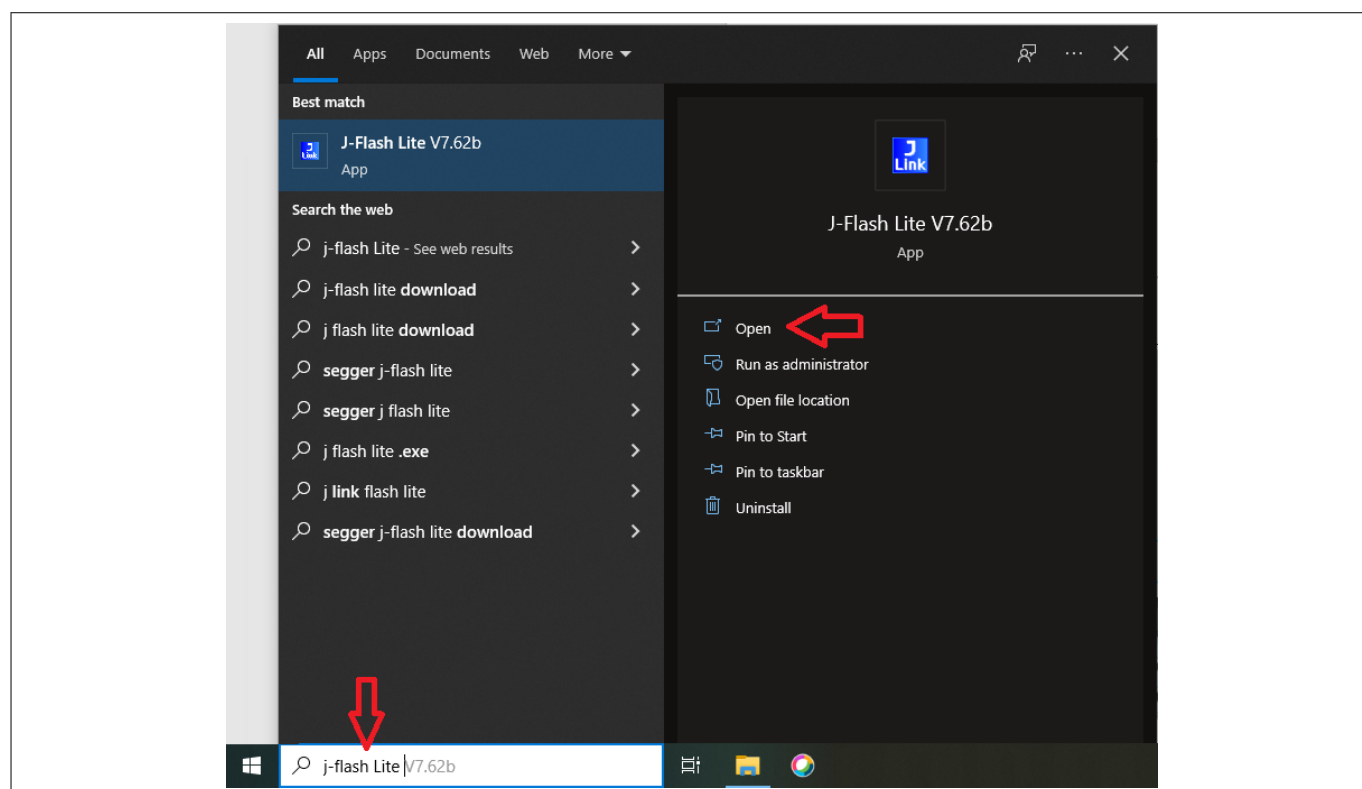


Figure 4 Opening the J-Flash Lite tool

1 Installing firmware

Select the device name on the board. Click ... to open the list of all devices supported and search for XMC4700-2048, as shown in the figure below.

When you find the device, select it and click OK.

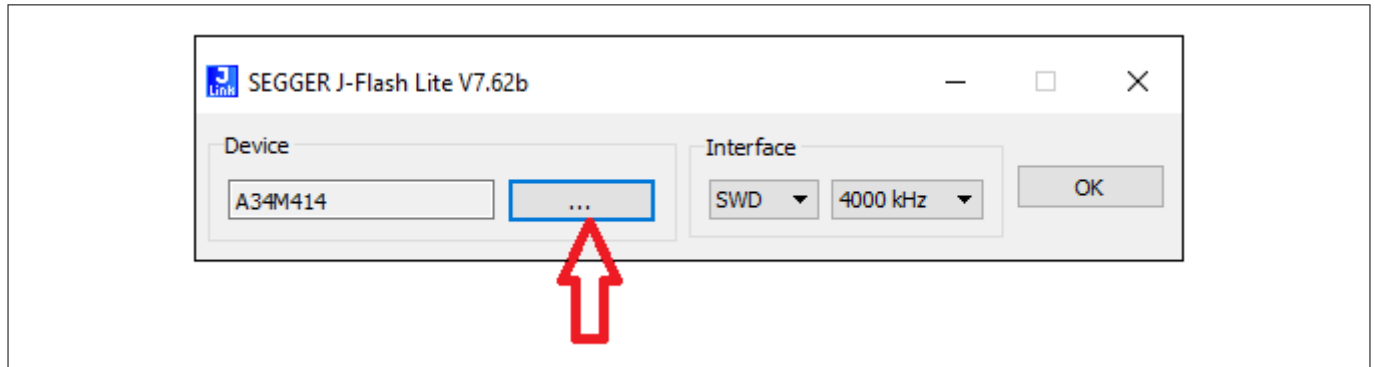


Figure 5 Opening the device list

Confirm your selection as shown in the figure below.

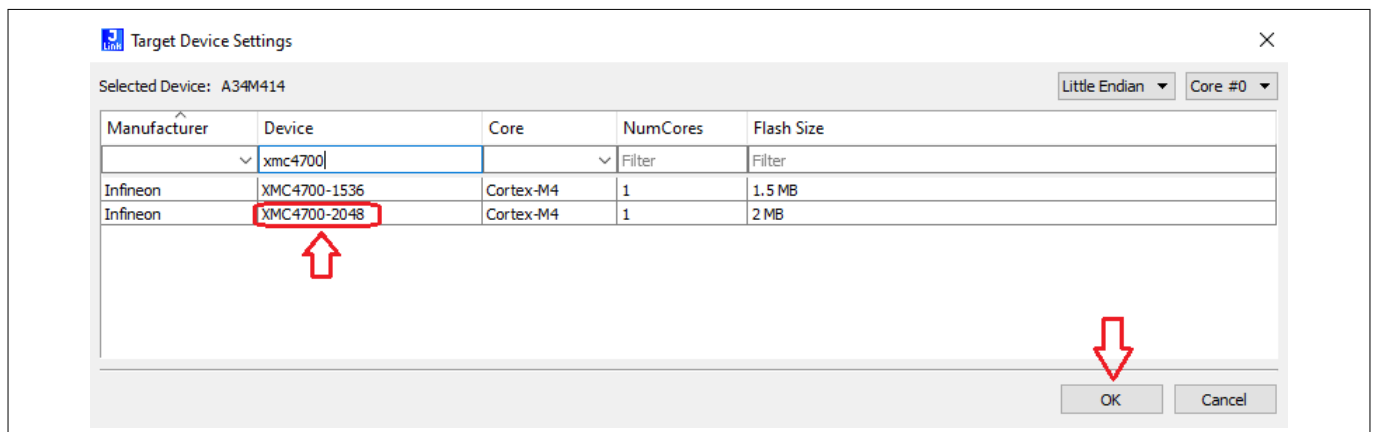


Figure 6 Choosing the correct device

You can now upload the Infineon OTP Programmer firmware into the XMC4700 evalboard. To do this, download the OTP firmware from the Infineon webpage of the OTP Programmer board and save it on your preferred local folder.

Then move on to the J-Flash Lite tool. Click ... , and search for the OTP Programmer firmware that you have downloaded. Select the firmware and click open. Refer to the figure below.

1 Installing firmware

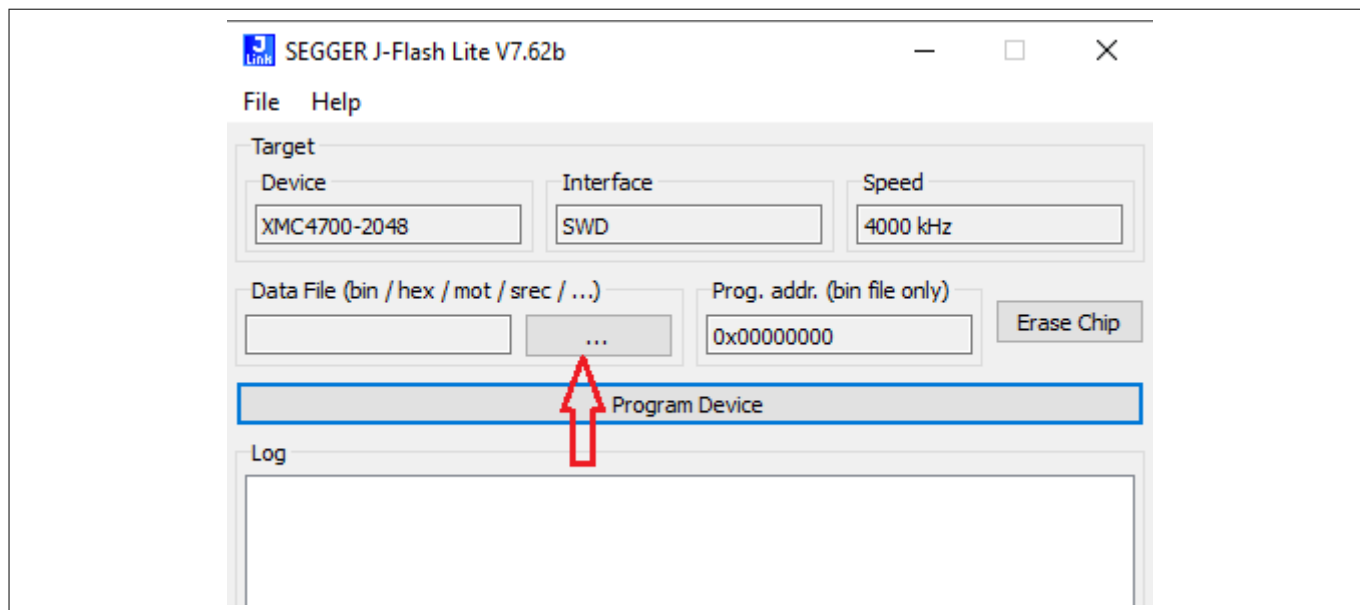


Figure 7 Installing OTP programmer firmware

To install the firmware, click Program Device and wait until the upload has finished. Refer to the figure below.

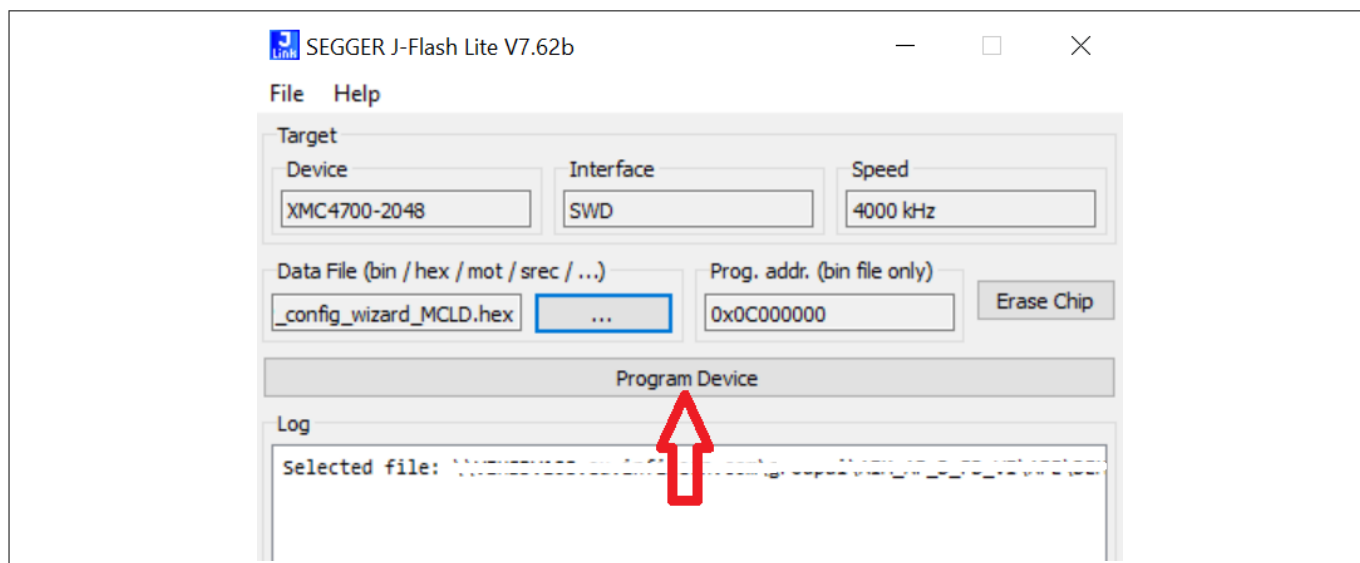


Figure 8 Click Program Device

If there are no errors, the tool concludes the upload and Done appears in the log window. Refer to the figure below.

1 Installing firmware

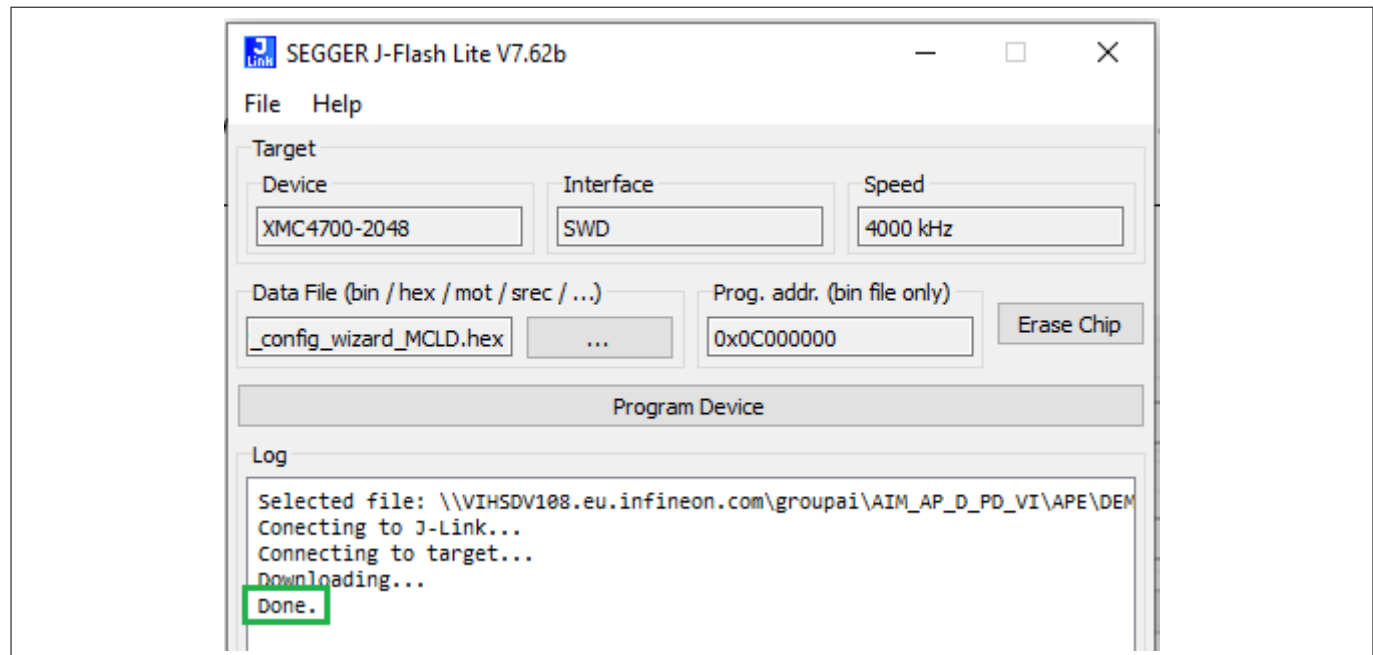


Figure 9 **Success message**

2 Installing the graphical user interface (GUI)

2 Installing the graphical user interface (GUI)

A dedicated graphical user interface (GUI) is required to use the OTP programmer board as a programming board or as an emulator.

To install the Infineon Developer Center Launcher, follow the instructions found at: [Infineon Developer Center Launcher \[2\]](#)

Once you have run the Infineon Developer Center Launcher, click Manage Tools

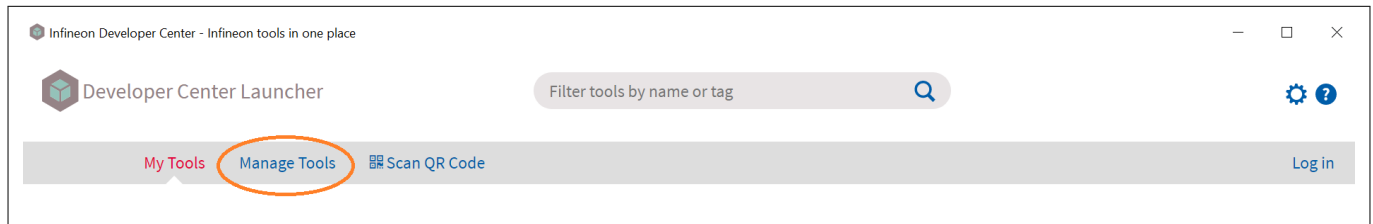


Figure 10 Manage tools

Search for OTP Wizard (1) and click Install (2).

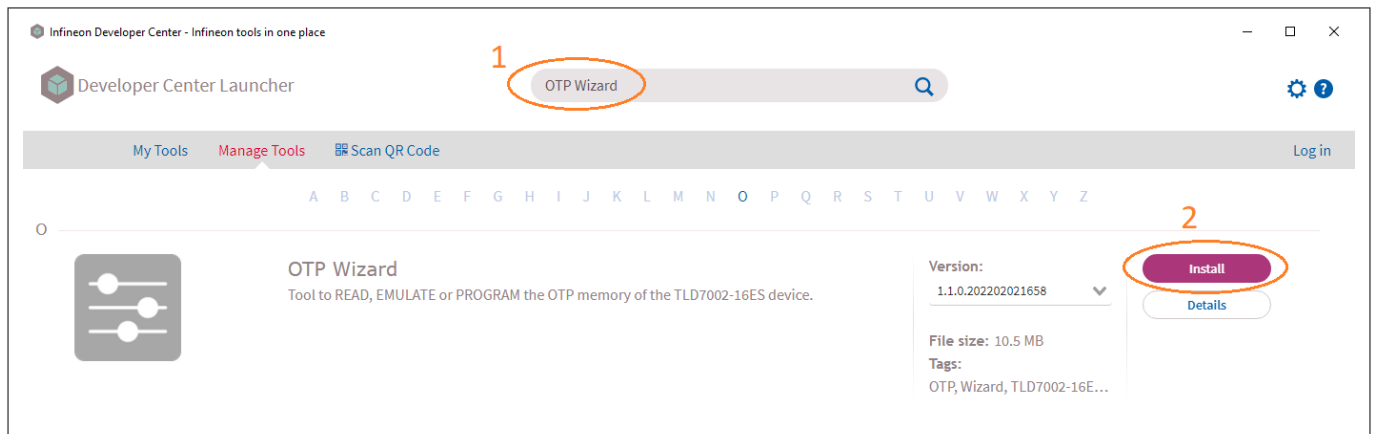


Figure 11 Searching for the tool

When the installation has completed, click My Tools (3) on the Infineon Toolbox, then click Start (4) on the OTP Wizard panel.

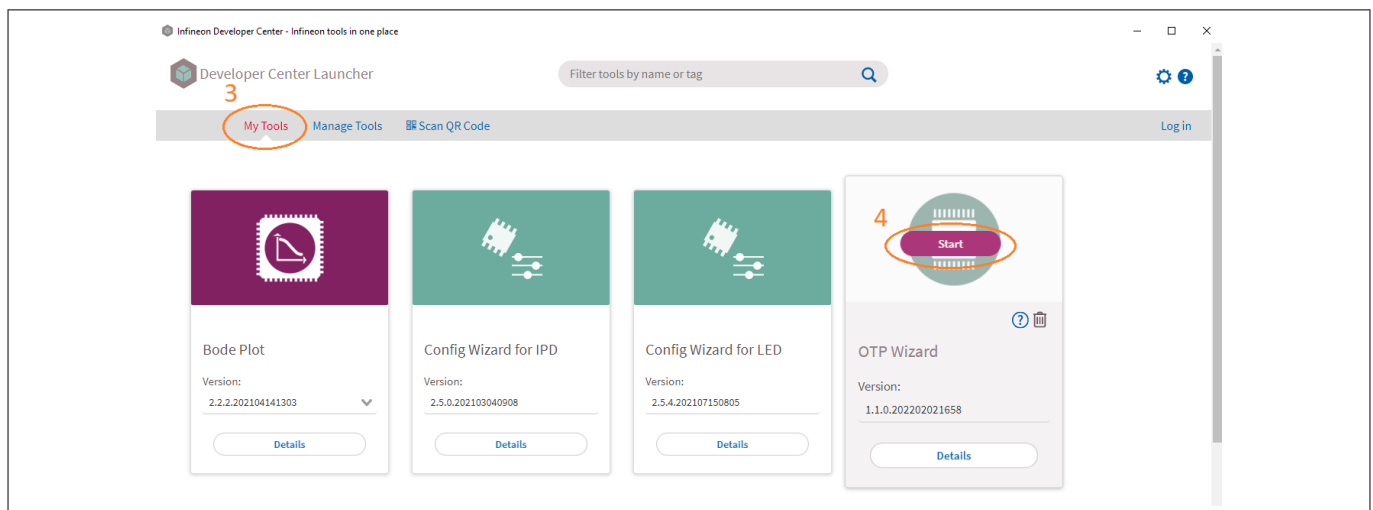


Figure 12 Starting the tool

3 Turning on the OTP Programmer

3 Turning on the OTP Programmer

Remove the USB connection from the debug USB port and connect it to the communication USB port. The PC automatically installs a driver for the device and assigns a COM port to the device.

As outlined in the table below, you apply a voltage across V_S _Vled1 and GND terminals with an external power supply, as shown in the figure below.

Table 1 Voltages applied according to the function of the board

Voltage on V_S	Function of the board
$6\text{ V} < V_S \leq 15\text{ V}$	Emulator/Reader
$15.5\text{ V} < V_S \leq 20\text{ V}$	Programmer of OTP (Emulator and reader functions are also available with this V_S range)

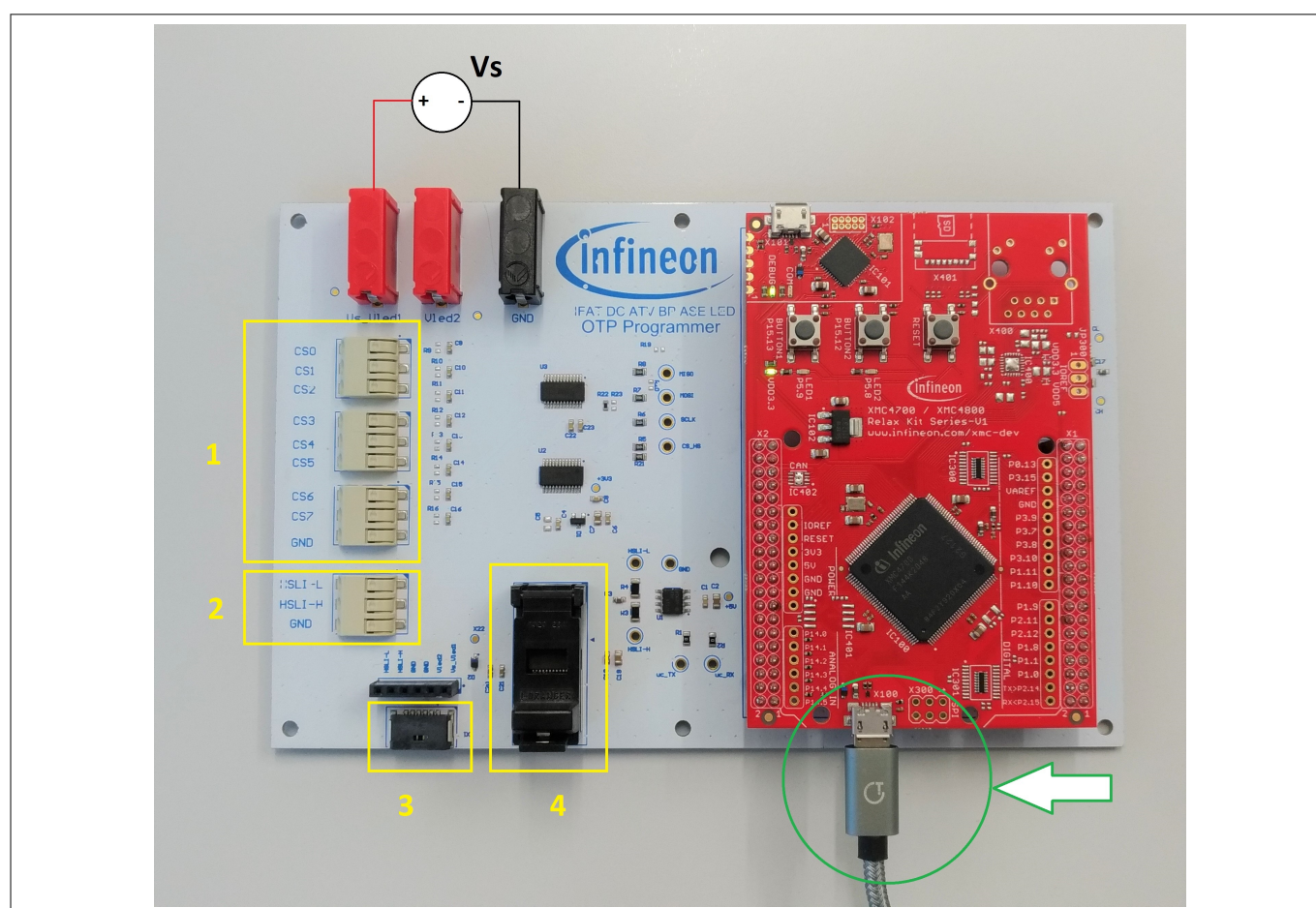


Figure 13 OTP programming setup connection

Table 2 Key components of the OTP Programmer board

Item	Description
1	8 chip select outputs plus GND. Chip select must be set with GUI (see Chapter 4).
2	Access to signals HSLIH and HSLIL
3	Connector for TLD7002-16ES EVALKIT evaluation board
4	Socket-to-program devices

4 Using the graphical user interface (GUI)

4 Using the graphical user interface (GUI)

For more information on using the OTP Wizard GUI, click the ? on the top-right of the OTP Wizard screen. Refer to the figure below.

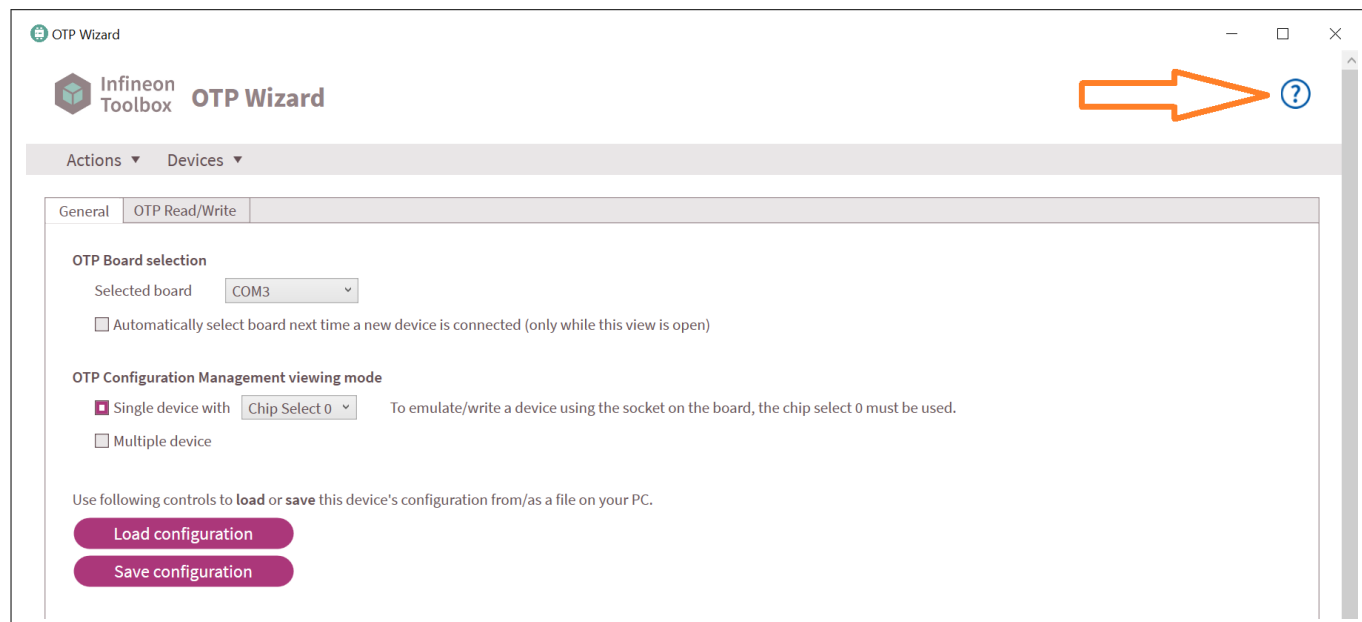


Figure 14 Finding information on the GUI

5 PCB layout

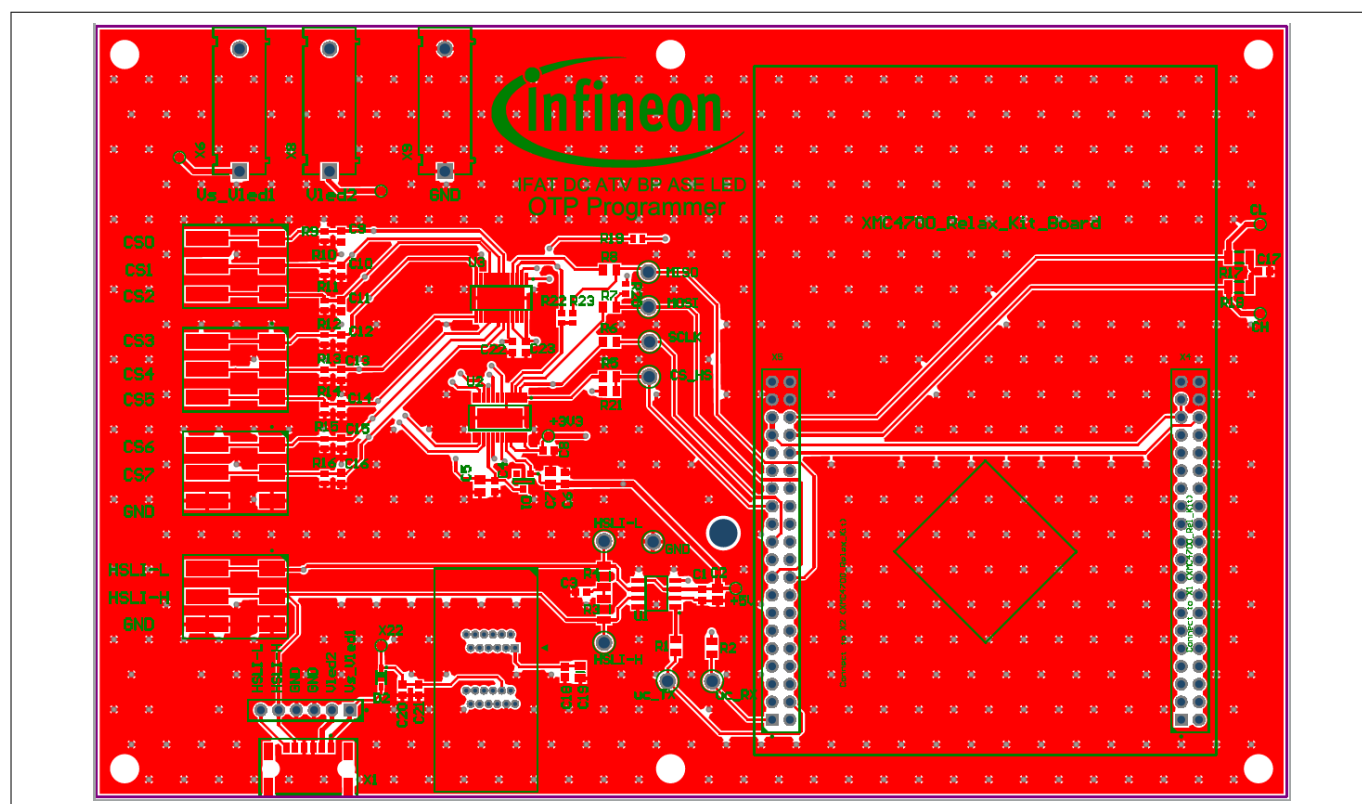


Figure 15 Top layout

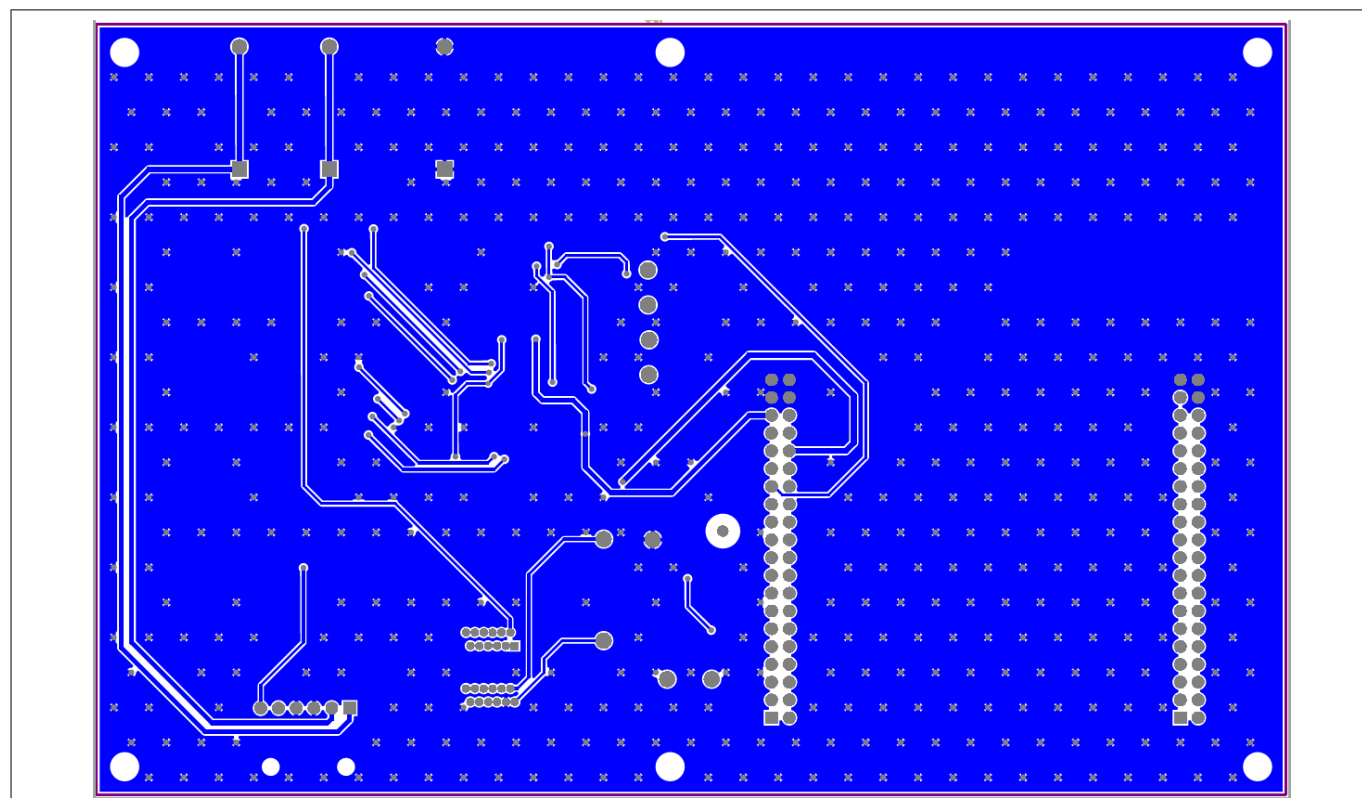


Figure 16 Bottom layout

6 Schematics

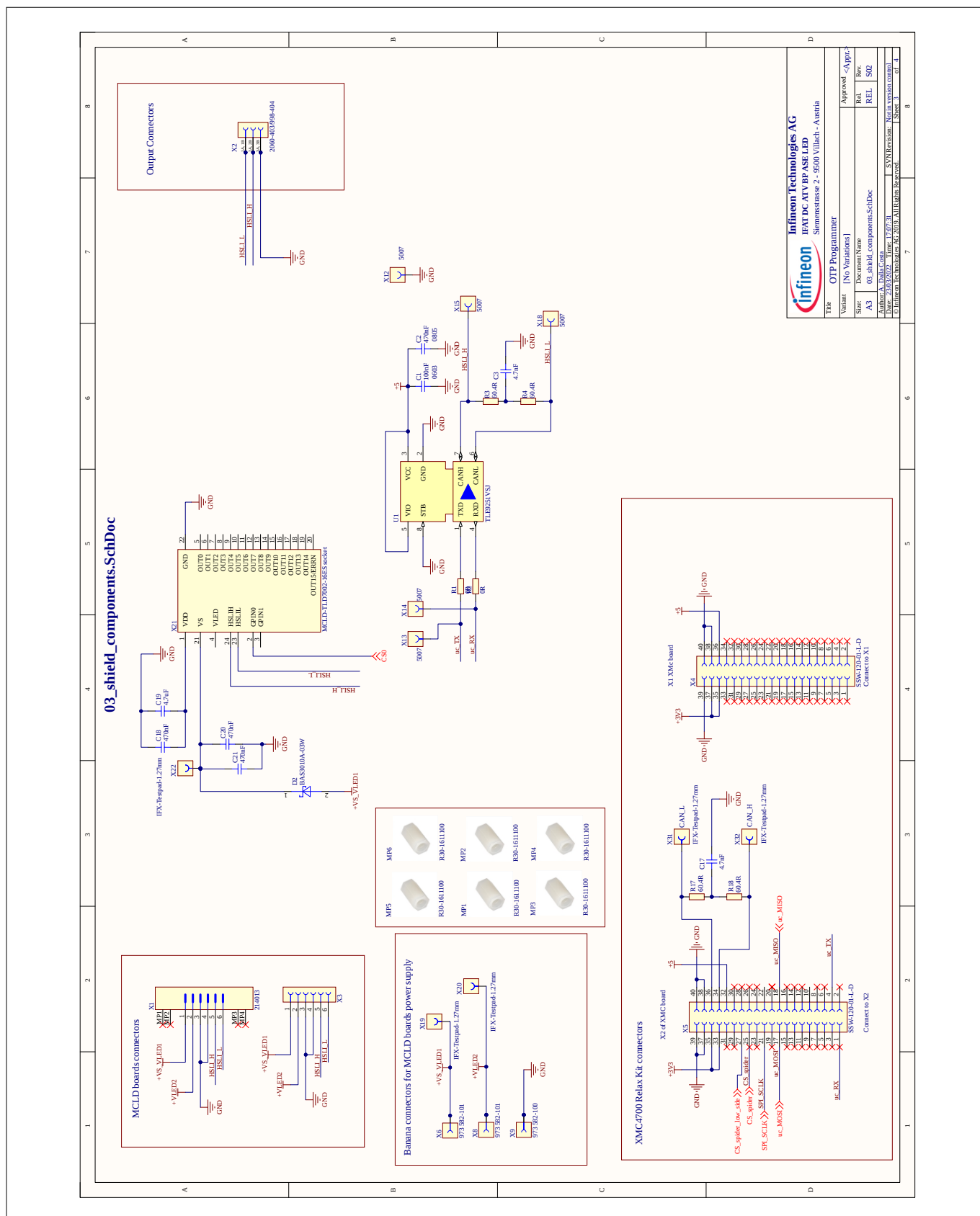


Figure 17 Schematics: Shield components

6 Schematics

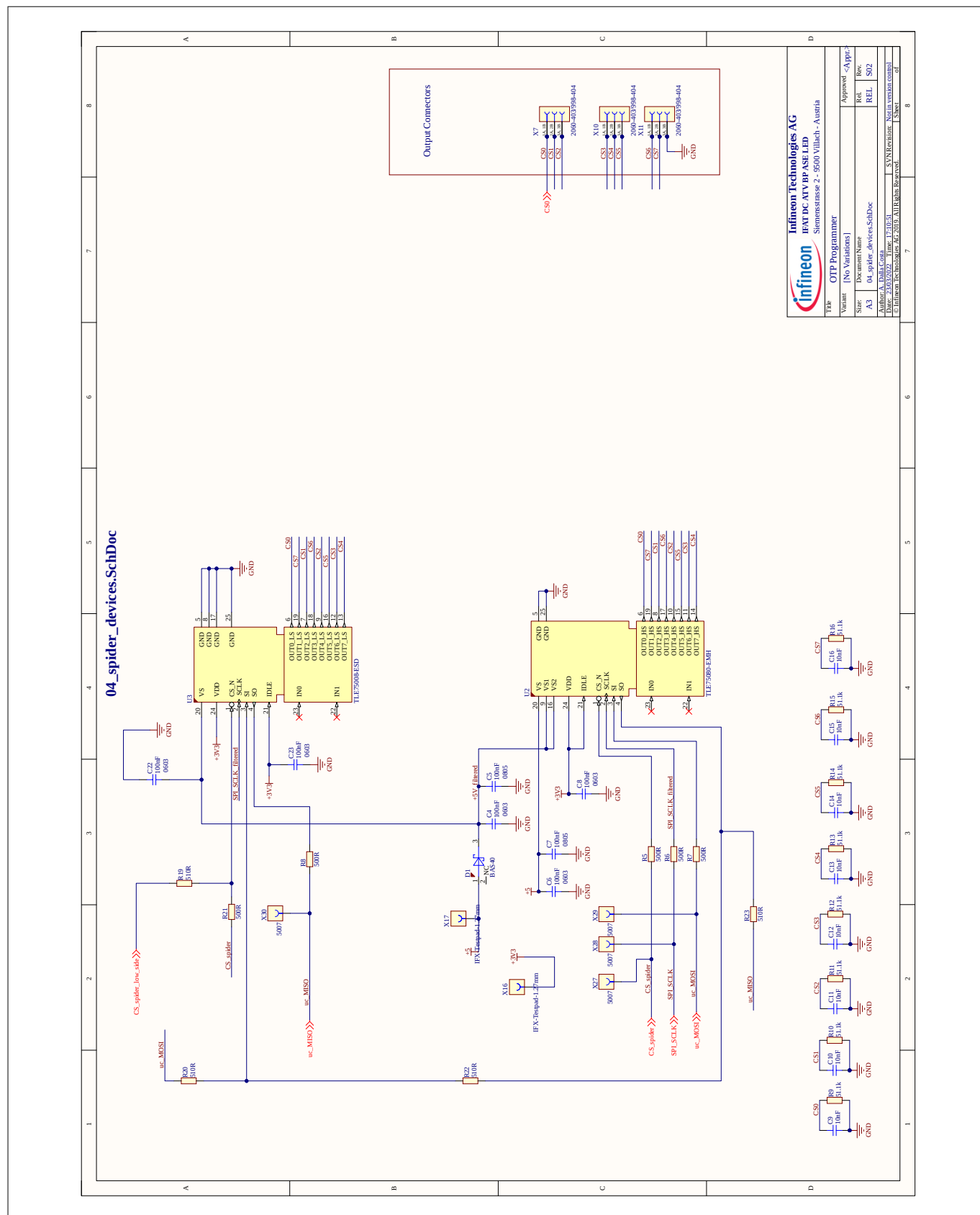


Figure 18 Schematics: SPIDER devices

7 Bill of materials

Table 3 Bill of materials

Designator	Value	Manufacturer	Manufacturer order number
C1, C4, C6, C8, C22, C23	100 nF	AVX	06035C104K4Z2A
C2	470 nF	Kemet	C0805C474K5RACTU
C3, C17	4.7 nF	Kemet	C0603C472F5GACTU
C7	100 nF	TDK Corporation	C2012X7R1H104K085AA
C9, C10, C11, C12, C13, C14, C15, C16	10 nF	AVX	06035C103K4Z2A
C18, C20, C21	470 nF	TDK Corporation	CGA3E3X7R1H474K080AE
C19	4.7 uF	MuRata	GRM21BR71A475KE51
D1	BAS40	Infineon Technologies	BAS40
D2	BAS3010A-03W	Infineon Technologies	BAS3010A-03W
MP1, MP2, MP3, MP4, MP5, MP6	R30-1611100	Harwin	R30-1611100
R1, R2	0 Ω	Yageo	AC0805JR-070RL
R3, R4, R17, R18	60.4 Ω	Vishay	CRCW120660R4FK
R5, R6, R7, R8, R21	500 Ω	Yageo	RC0805FR-07500R
R22	510 Ω	Vishay	CRCW0603510RFK
U1	TLE9251VSJ	Infineon Technologies	TLE9251VSJ
U2	TLE75080-EMH	Infineon Technologies	TLE75080-EMH
U3	TLE75008-EMD	Infineon Technologies	TLE75008-EMD
X1	214013	ERNI	214013
X2, X7, X10, X11	2060-403/998-404	WAGO	2060-403/998-404
X3	SSQ-106-03-F-S	Samtec	SSQ-106-03-F-S
X4, X5	SSW-120-01-L-D	Samtec	SSW-120-01-L-D
X6, X8	973 582-101	Hirschmann Test & Measurement	973 582-101
X9	973 582-100	Hirschmann Test & Measurement	973 582-100
X16, X17, X19, X20, X22, X31, X32	IFX-Testpad-1.27mm	Infineon Technologies	IFX-Testpad-1.27mm
X21	MCLD-TLD7002-16ES socket	Infineon Technologies	MCLD-TLD7002-16ES socket

References

- [1] *www.segger.com* <https://www.segger.com/downloads/jlink>
- [2] *Infineon Developer Center Launcher* <https://www.infineon.com/cms/en/design-support/tools/utilities/infineon-developer-center-idc-launcher/>

Revision history

Document version	Date of release	Description of changes
Rev.1.00	2022-05-07	First release related to OTP programmer board version S02_P02

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