

IMXQSUG

i.MX 配置工具的快速入门指南

Rev. 13 — 18 September 2025

User guide

Document information

Information	Content
Keywords	MCUXpresso配置工具, i.MX
Abstract	i.MX 配置工具 MCUXpresso 配置工具的一部分，是一套评估和配置工具，可指导用户完成从首次评估到生产软件开发的整个流程。使用 i.MX 配置工具可轻松简便地配置 i.MX 处理器设备的引脚和 DDR。一般而言，该软件使您能够创建、检查、更改和修改设备的引脚配置和多路复用方面的任何内容。它还允许您配置和验证 DDR 设置。本文档介绍了 i.MX 配置工具的基本组件，并列出了配置和使用它们来配置引脚和 DDR 的步骤。



1 简介

i.MX 配置工具是一套用于配置 NXP i.MX Cortex-A 和 Cortex-M 处理器的工具套件。

使用引脚工具可以自定义设备的引脚路由配置，包括配置所有相关引脚信号的电气特性，并创建适用于设备初始化的源代码，可以是寄存器的直接初始化或 SDK API 代码和/或设备树代码片段（如果支持）。

使用 **DDR** 工具可以配置和验证双倍数据速率 RAM 配置。

使用可信执行环境 (TEE) 工具可以配置内存区域、总线主控和外设的安全策略，以隔离和保护应用程序的敏感区域。

2 开始新配置

首次启动 i.MX 配置工具时，您将看到开始开发窗口。您可以使用此窗口创建新配置或加载现有配置。

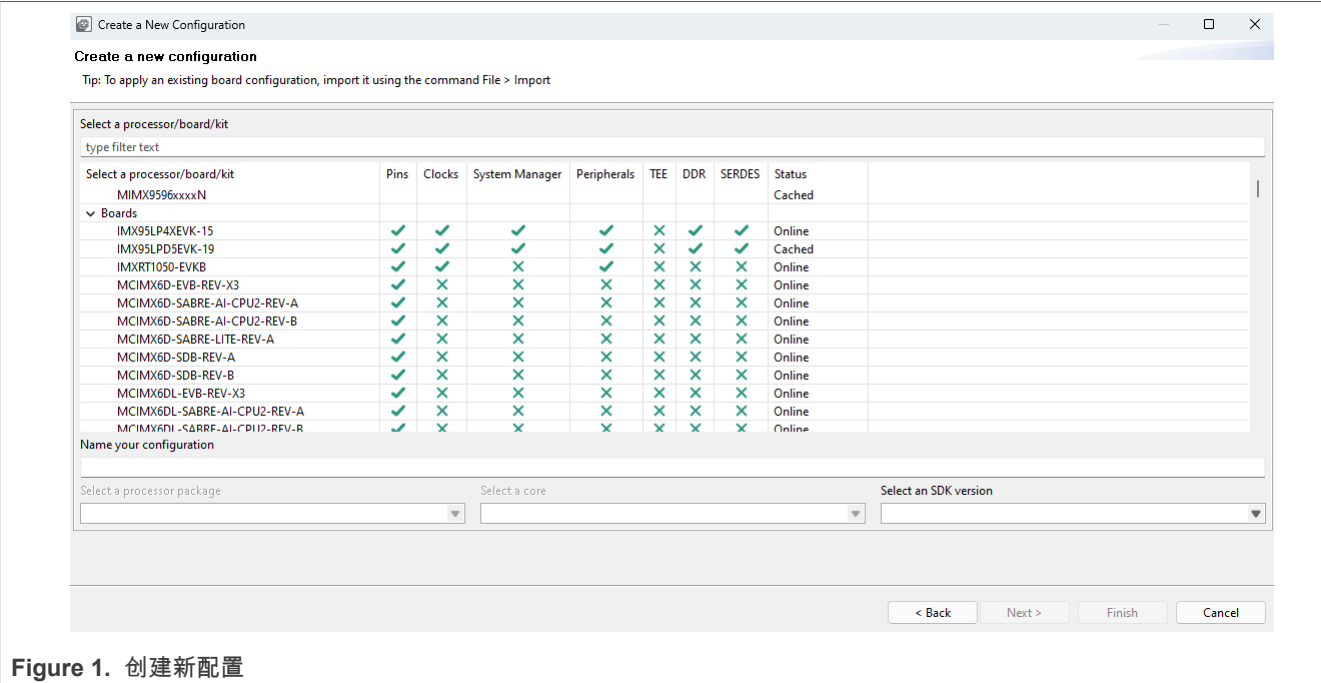


Figure 1. 创建新配置

- 要为选定的处理器、开发板或套件创建新配置，请执行以下操作：
1. 启动工具或选择文件 > 新建。
 2. 选择选项为处理器、开发板或套件创建新配置。
 3. 选择下一步。
 4. 展开树形结构并选择任何处理器、开发板或套件配置。您也可以使用过滤器字段快速查找所需项目。
 5. 自定义配置名称并选择完成。
- 使用文件 > 保存将现有配置保存到磁盘。

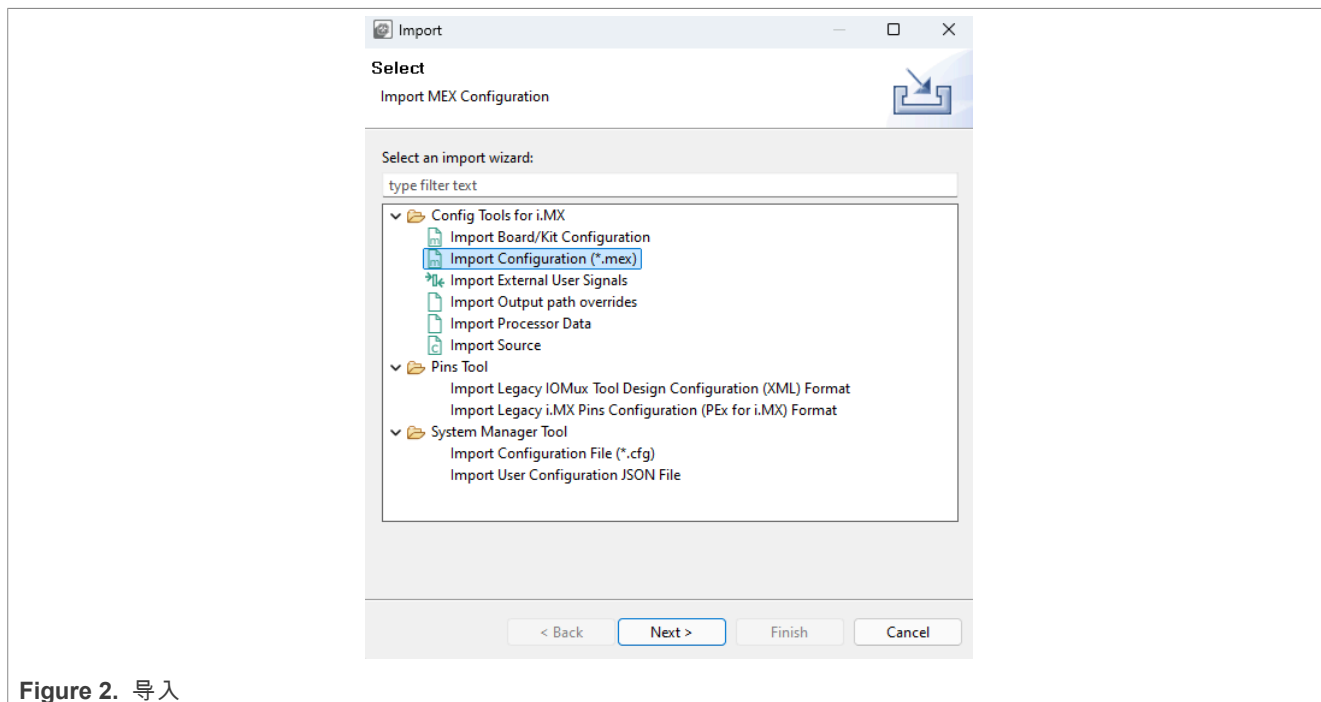
3 导入现有配置

您还可以使用内置的导入向导导入现有配置，从传统项目格式（IO Mux 工具设计配置 XML 或 i.MX 的 PEX）或另一个已存在的配置文件 (MEX) 或引脚工具生成的包含 YAML 配置详细信息的源文件中获取引脚和 DDR 配置。

要导入现有配置：

1. 选择文件 > 导入。
2. 选择导入向导，选择下一步并按照说明操作。
3. 选择浏览，然后选择所需的输入文件。
4. 选择完成以导入文件。

如果导入成功完成，将创建新配置，然后使用文件 > 保存将其保存到磁盘。



4 引脚工具

在引脚工具中，您可以显示和配置所选处理器的引脚。基本配置可以在引脚、外设信号或封装视图中完成。

更高级的设置（引脚电气特性和功能）可以在路由引脚视图中查看和配置。

此外，i.MX 配置工具允许您在硬件级别验证给定功能组内来自不同电源轨（如果为给定处理器指定）的引脚配置可能存在的电压电平问题。支持的电源组的各个电压电平可以在电源组视图中为当前配置进行全局配置。

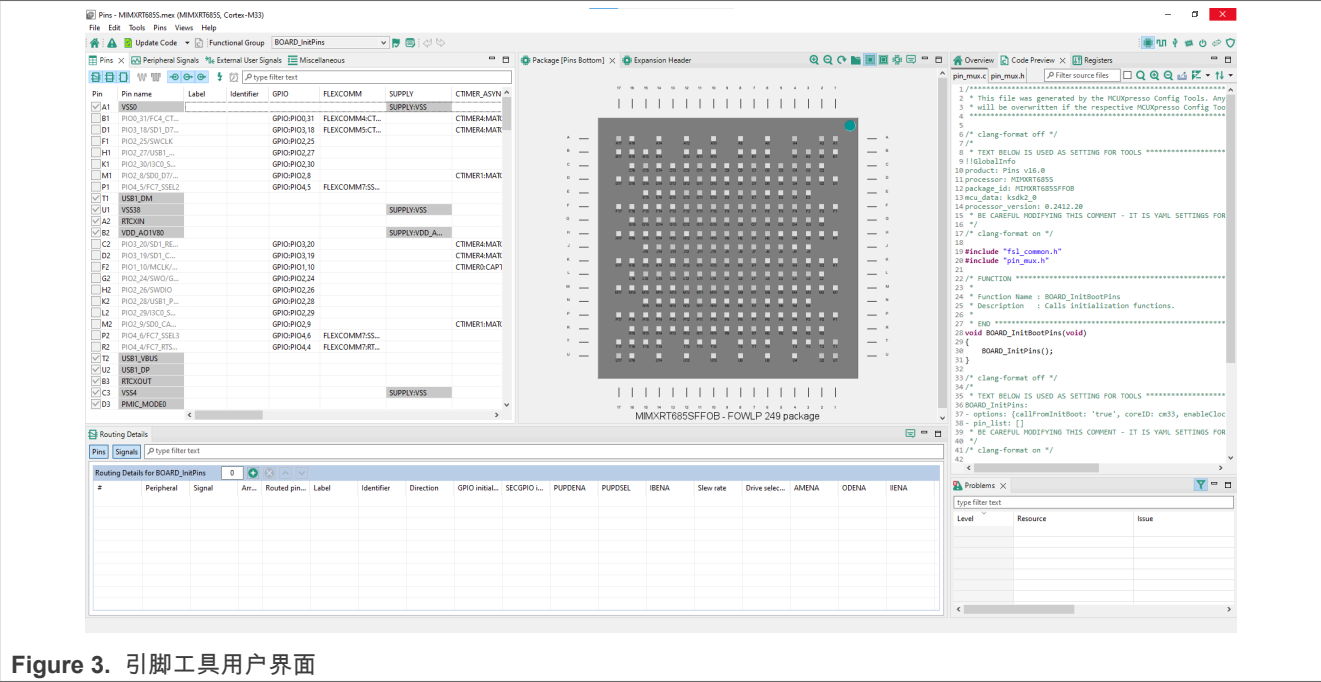


Figure 3. 引脚工具用户界面

5 DDR 工具

在 **DDR** 视图中，您可以查看和配置基本 DDR 属性，如内存类型、频率、通道数等。

在验证视图中，您可以将 DDR 配置提交给各种测试。指定连接类型后，您可以选择场景、在这些场景中运行的测试，并查看测试结果、日志和摘要。

6 可信执行环境工具

在可信执行环境或 **TEE** 工具中，您可以配置内存区域、总线主控和外设的安全策略，以隔离和保护应用程序的敏感区域。

您可以在安全访问配置及其子视图中设置应用程序不同部分的安全策略，并在内存属性映射、访问概览和域概览视图中查看这些策略。使用用户内存区域视图可以创建内存区域及其安全级别的便捷概览。

您还可以在寄存器视图中查看 **TEE** 工具处理的寄存器，并在代码预览工具中检查代码。

注意： 为了使您的配置生效，请确保您已在安全访问配置视图的杂项子视图中启用了相关的启用安全检查选项。

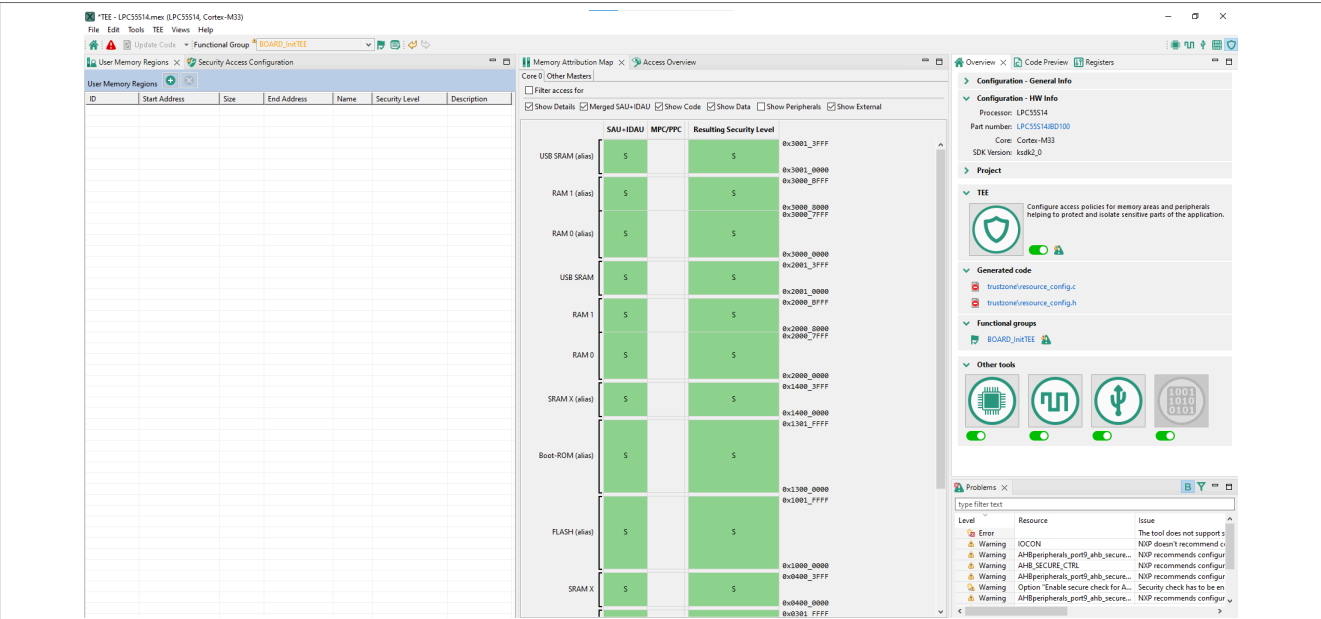


Figure 4. TEE 工具用户界面 (SAU+IDAU)

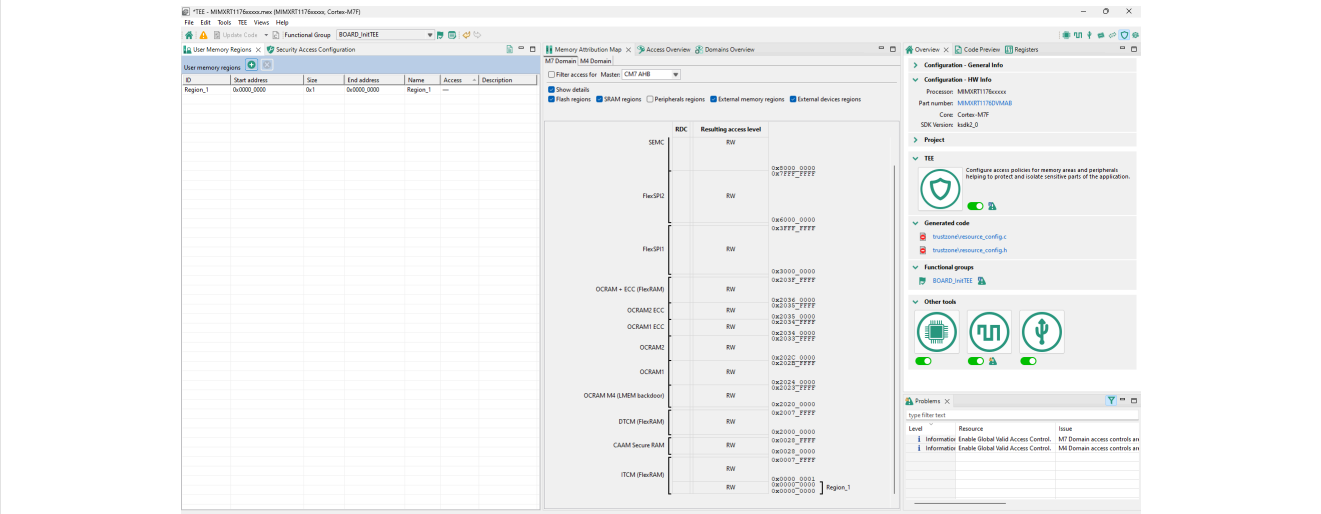


Figure 5. TEE 工具用户界面 (RDC)

7 生成代码

引脚工具会自动为当前配置生成输出代码。您也可以从主菜单选择引脚 > 刷新来手动更新代码。所有输出代码文件都显示在代码预览视图中。要复制代码，请执行复制/粘贴操作或单击代码预览视图右上角的导出图标。



Figure 6. 生成代码

或者，您也可以导出各种类型的生成输出，如源文件、CSV 格式的纯引脚配置数据、修改的寄存器内容或 HTML 格式的引脚配置报告，可通过从主菜单的文件 > 导出中选择特定的导出向导。

8 修订历史

文档 ID	发布日期	描述
IMXQSUG_ZH v.13	2025年9月18日	为 v.25.09 更新
IMXQSUG_ZH v.12	2025年6月20日	为 v.25.06 更新
IMXQSUG_ZH v.11	2025年3月17日	为 v.25.03 更新
IMXQSUG_ZH v.10	2015年1月15日	为 v.24.12 更新
IMXQSUG_ZH v.9	2024年9月24日	为 v.16.1 更新
IMXQSUG_ZH v.8	2024年7月1日	为 v.16 更新
IMXQSUG_ZH v.7	2024年4月19日	为 v.15.1 更新
IMXQSUG_ZH v.6	2024年1月10日	为 v.15 更新
IMXQSUG_ZH v.5	2023年7月31日	为 v.14 更新
IMXQSUG_ZH v.4	2023年1月2日	截图已更新，小幅更新
IMXQSUG_ZH v.3	2022年9月20日	为 v.12.1 更新
IMXQSUG_ZH v.2	2022年6月30日	为 v.12 更新
IMXQSUG_ZH v.1	2021年12月22日	截图已更新。
IMXQSUG_ZH v.0	2021年6月23日	初始版本

9 Note about the source code in the document

Example code shown in this document has the following copyright and BSD-3-Clause license:

Copyright 2025 NXP Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials must be provided with the distribution.
3. Neither the name of the copyright holder nor the names of its contributors may be used to endorse or promote products derived from this software without specific prior written permission.

THIS SOFTWARE IS PROVIDED BY THE COPYRIGHT HOLDERS AND CONTRIBUTORS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE COPYRIGHT HOLDER OR CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Legal information

Definitions

Draft — A draft status on a document indicates that the content is still under internal review and subject to formal approval, which may result in modifications or additions. NXP Semiconductors does not give any representations or warranties as to the accuracy or completeness of information included in a draft version of a document and shall have no liability for the consequences of use of such information.

Disclaimers

Limited warranty and liability — Information in this document is believed to be accurate and reliable. However, NXP Semiconductors does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information. NXP Semiconductors takes no responsibility for the content in this document if provided by an information source outside of NXP Semiconductors.

In no event shall NXP Semiconductors be liable for any indirect, incidental, punitive, special or consequential damages (including - without limitation - lost profits, lost savings, business interruption, costs related to the removal or replacement of any products or rework charges) whether or not such damages are based on tort (including negligence), warranty, breach of contract or any other legal theory.

Notwithstanding any damages that customer might incur for any reason whatsoever, NXP Semiconductors' aggregate and cumulative liability towards customer for the products described herein shall be limited in accordance with the Terms and conditions of commercial sale of NXP Semiconductors.

Right to make changes — NXP Semiconductors reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

Suitability for use — NXP Semiconductors products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety-critical systems or equipment, nor in applications where failure or malfunction of an NXP Semiconductors product can reasonably be expected to result in personal injury, death or severe property or environmental damage. NXP Semiconductors and its suppliers accept no liability for inclusion and/or use of NXP Semiconductors products in such equipment or applications and therefore such inclusion and/or use is at the customer's own risk.

Applications — Applications that are described herein for any of these products are for illustrative purposes only. NXP Semiconductors makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Customers are responsible for the design and operation of their applications and products using NXP Semiconductors products, and NXP Semiconductors accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the NXP Semiconductors product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

NXP Semiconductors does not accept any liability related to any default, damage, costs or problem which is based on any weakness or default in the customer's applications or products, or the application or use by customer's third party customer(s). Customer is responsible for doing all necessary testing for the customer's applications and products using NXP Semiconductors products in order to avoid a default of the applications and the products or of the application or use by customer's third party customer(s). NXP does not accept any liability in this respect.

Terms and conditions of commercial sale — NXP Semiconductors products are sold subject to the general terms and conditions of commercial sale, as published at <https://www.nxp.com/profile/terms>, unless otherwise agreed in a valid written individual agreement. In case an individual agreement is concluded only the terms and conditions of the respective agreement shall apply. NXP Semiconductors hereby expressly objects to applying the customer's general terms and conditions with regard to the purchase of NXP Semiconductors products by customer.

Export control — This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.

Suitability for use in non-automotive qualified products — Unless this document expressly states that this specific NXP Semiconductors product is automotive qualified, the product is not suitable for automotive use. It is neither qualified nor tested in accordance with automotive testing or application requirements. NXP Semiconductors accepts no liability for inclusion and/or use of non-automotive qualified products in automotive equipment or applications.

In the event that customer uses the product for design-in and use in automotive applications to automotive specifications and standards, customer (a) shall use the product without NXP Semiconductors' warranty of the product for such automotive applications, use and specifications, and (b) whenever customer uses the product for automotive applications beyond NXP Semiconductors' specifications such use shall be solely at customer's own risk, and (c) customer fully indemnifies NXP Semiconductors for any liability, damages or failed product claims resulting from customer design and use of the product for automotive applications beyond NXP Semiconductors' standard warranty and NXP Semiconductors' product specifications.

HTML publications — An HTML version, if available, of this document is provided as a courtesy. Definitive information is contained in the applicable document in PDF format. If there is a discrepancy between the HTML document and the PDF document, the PDF document has priority.

Translations — A non-English (translated) version of a document, including the legal information in that document, is for reference only. The English version shall prevail in case of any discrepancy between the translated and English versions.

Security — Customer understands that all NXP products may be subject to unidentified vulnerabilities or may support established security standards or specifications with known limitations. Customer is responsible for the design and operation of its applications and products throughout their lifecycles to reduce the effect of these vulnerabilities on customer's applications and products. Customer's responsibility also extends to other open and/or proprietary technologies supported by NXP products for use in customer's applications. NXP accepts no liability for any vulnerability. Customer should regularly check security updates from NXP and follow up appropriately. Customer shall select products with security features that best meet rules, regulations, and standards of the intended application and make the ultimate design decisions regarding its products and is solely responsible for compliance with all legal, regulatory, and security related requirements concerning its products, regardless of any information or support that may be provided by NXP.

NXP has a Product Security Incident Response Team (PSIRT) (reachable at PSIRT@nxp.com) that manages the investigation, reporting, and solution release to security vulnerabilities of NXP products.

NXP B.V. — NXP B.V. is not an operating company and it does not distribute or sell products.

Trademarks

Notice: All referenced brands, product names, service names, and trademarks are the property of their respective owners.

NXP — wordmark and logo are trademarks of NXP B.V.

Microsoft, Azure, and ThreadX — are trademarks of the Microsoft group of companies.

Contents

1 简介2

2 开始新配置2

3 导入现有配置2

4 引脚工具3

5 DDR 工具4

6 可信执行环境工具4

7 生成代码5

8 修订历史6

9 Note about the source code in the document7

Legal information8

Please be aware that important notices concerning this document and the product(s) described herein, have been included in section 'Legal information'.