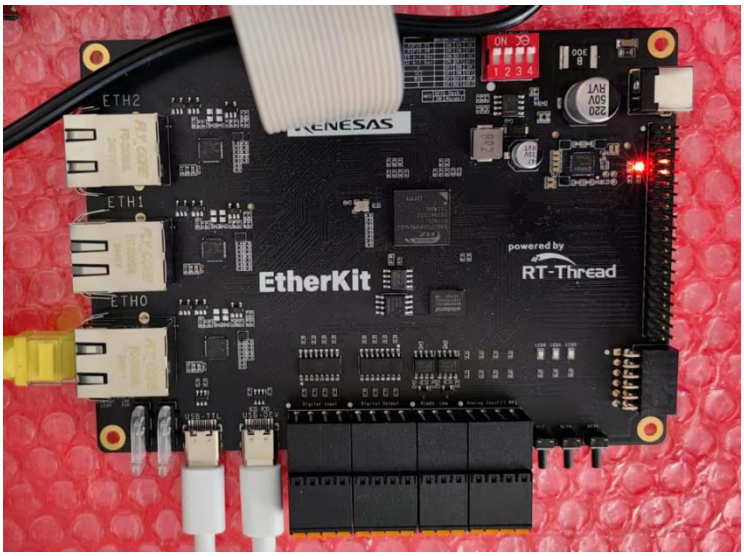
RZN2L GPT 例程操作手册-----基于 Etherkit 开发板

简介

本应用笔记介绍了基于 RZ/N2 Etherkit 开发板的定时器 GPT 的操作：定时、 PWM 输出。分别介绍 IDE IAR 和 E2studio 软件下的操作。

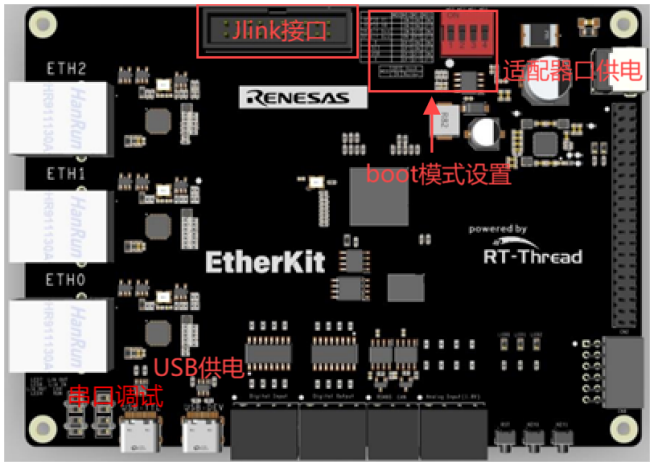
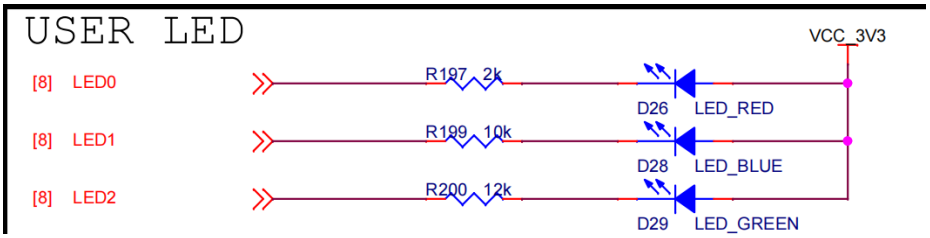
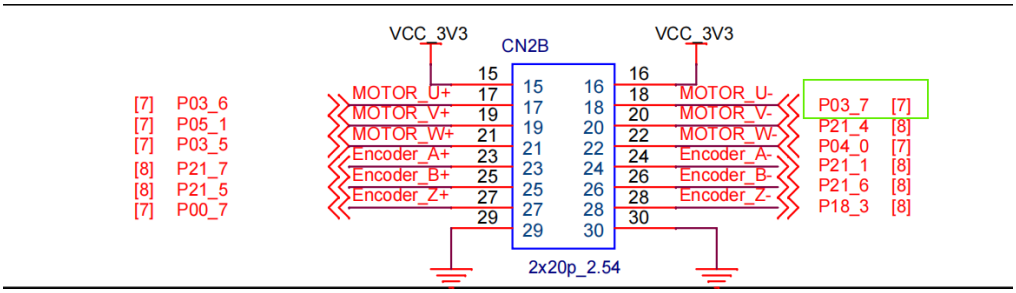


开发工具	实验材料
• IDE: IAR EW for Arm 9.50.2 E2studio 2024-01.1 • FSP：RZ/N2 FSP V2.0 • 仿真器： Jlink V12	• Etherkit 开发板 • Jlink 仿真器，需支持瑞萨 R52 内核

实验部分

1 .硬件设置及软件安装

本节 EtherKit 开发板硬件设置。

1.1	开发板设置： ● 供电：可选 USB 供电或适配器供电 ● Boot 模式设置：推荐 xSPI0 x1 boot mode ● Jlink v12 
1.2	硬件原理图： 本实验用到 LED0，对应 P143 引脚，P037 用作 GPT5 的 PWM 输出引脚。  

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2 .IAR 环境工程介绍

本节介绍 IAR 环境下 GPT 工程介绍。

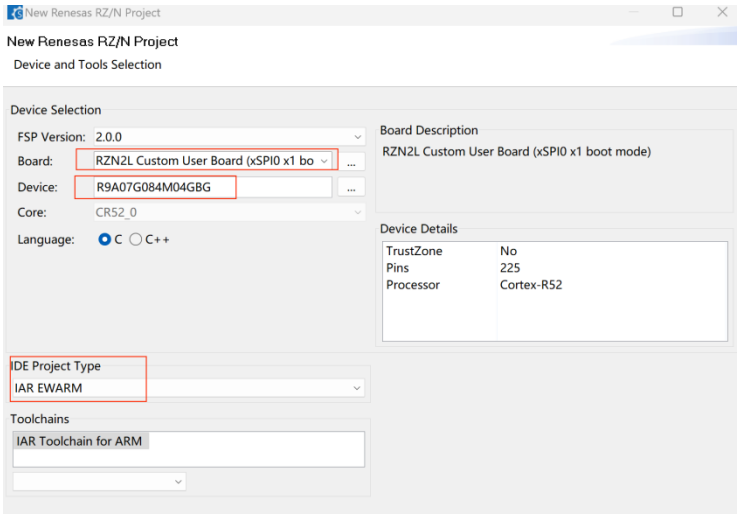
2.1

- 打开 FSP 新建工程：**GPT**

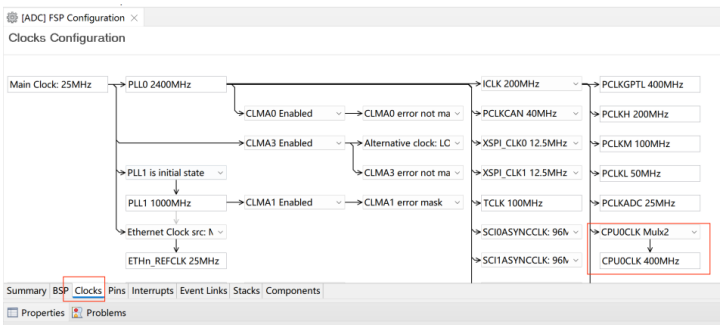
1. Boot 模式选择 RZN2L Custom User Board（ XSPI0 x1 boot mode）

芯片型号：R9A07G084M04GBG

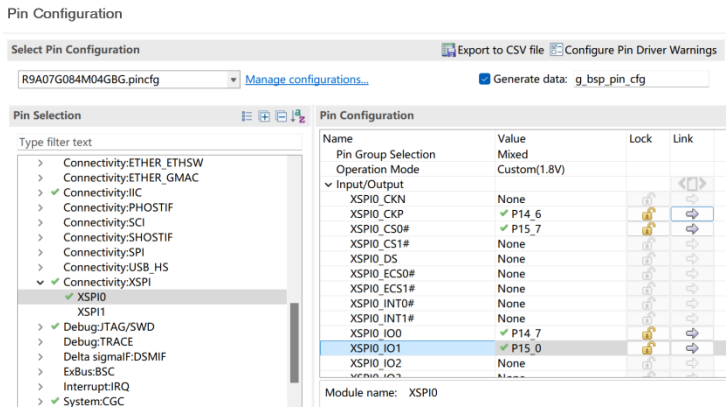
IDE Project Type 选择 IAR EWARM



1. 主时钟设置 400MHZ

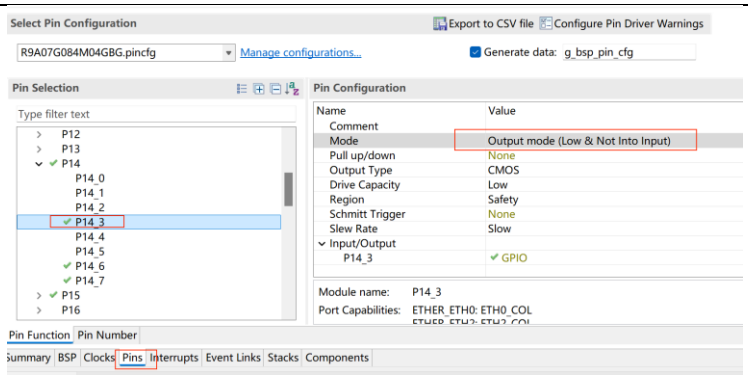


2. 配置 XSPI0



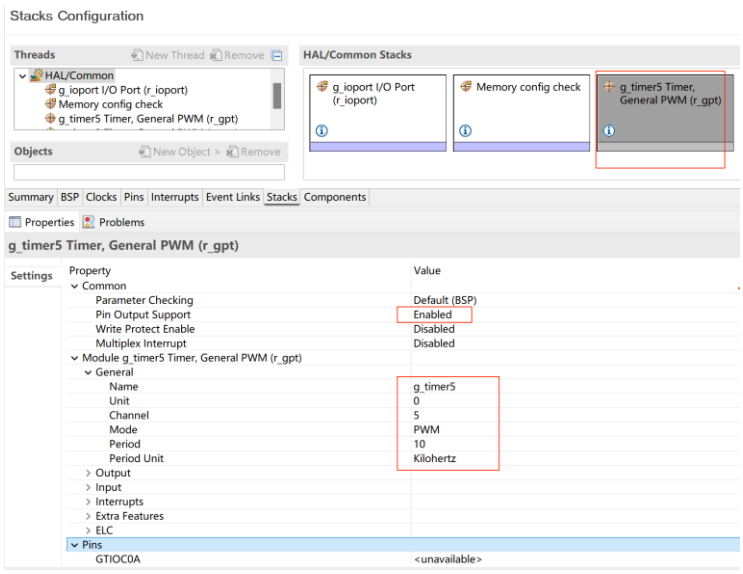
3. P143 引脚配置

P143 设置输出模式，初始电平 0

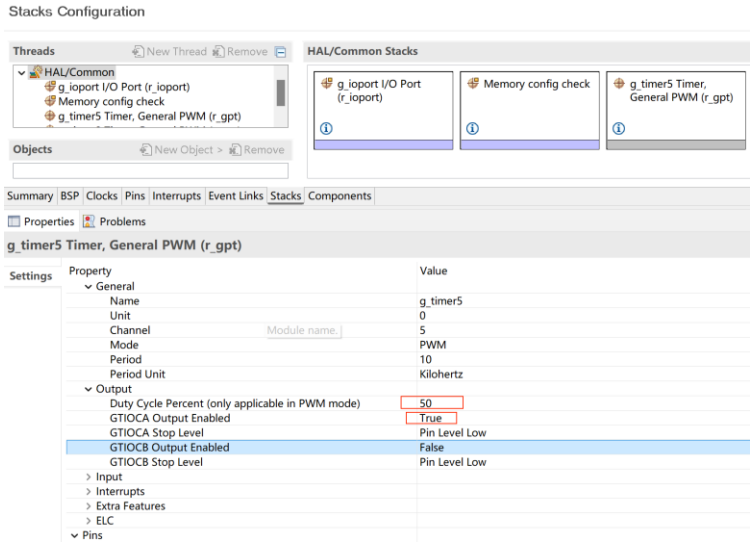


4. 添加 new Stack： GPT5

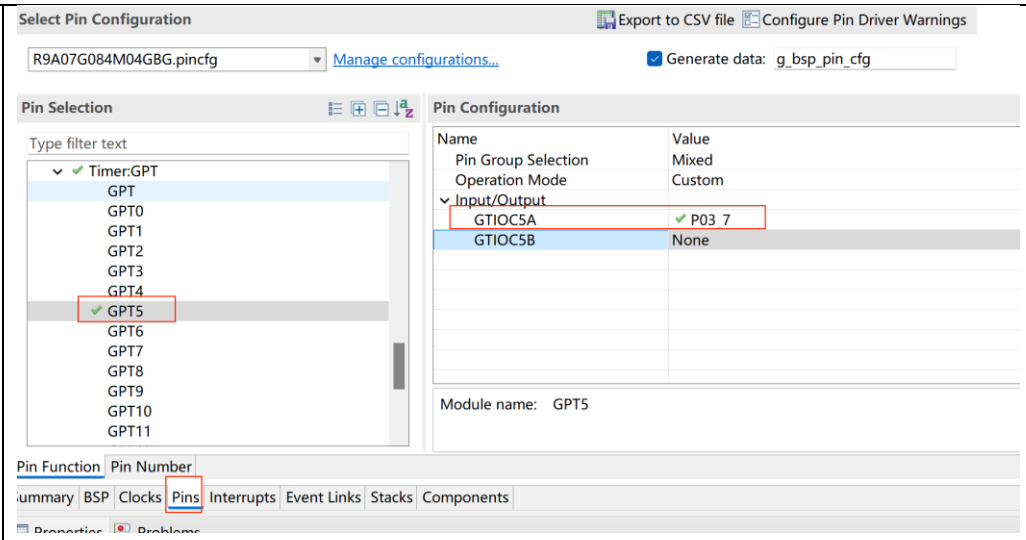
➢ 使能 pin 输出功能，设置 GPT5 PWM 模式，PWM 周期 10kHZ



➢ 使能 GTIOCA output 功能，占空比 50%

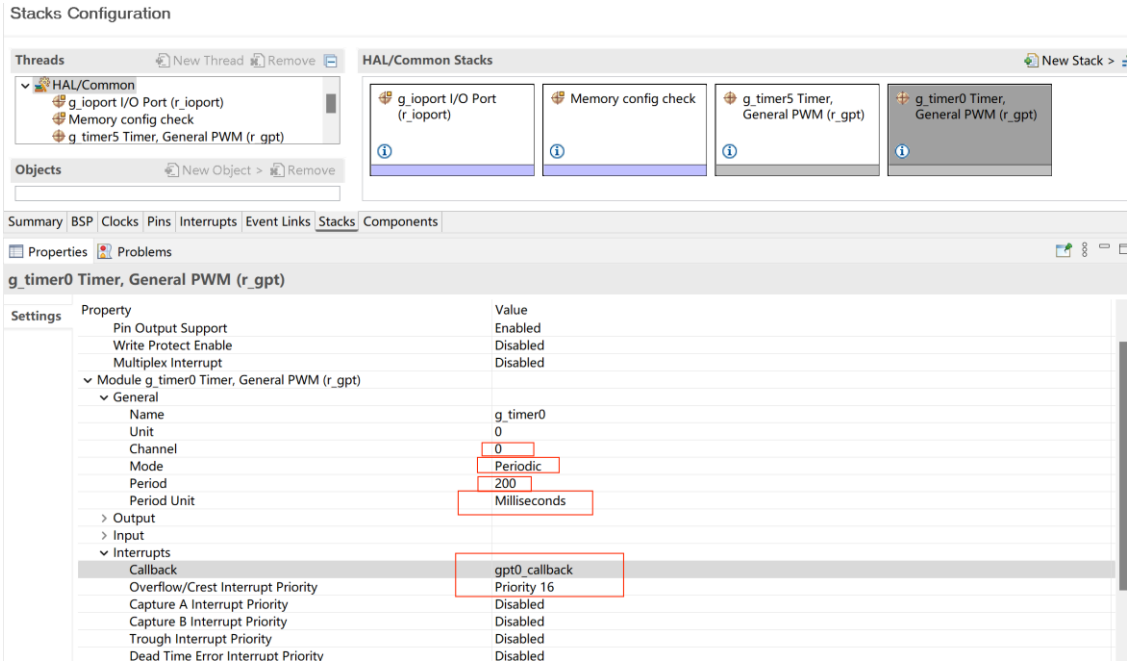


➢ 配置 GPT5 输出引脚，P037 使能

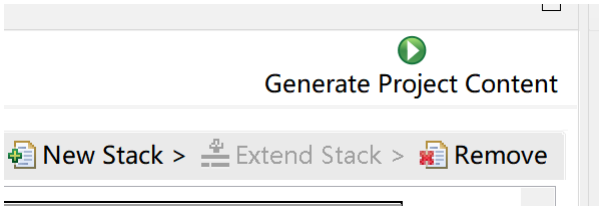


5. 添加 new stack ：

- GPT0 Periodic mode，200ms 周期
- 开中断,设置中断优先级，设置回调函数 gpt0_callback



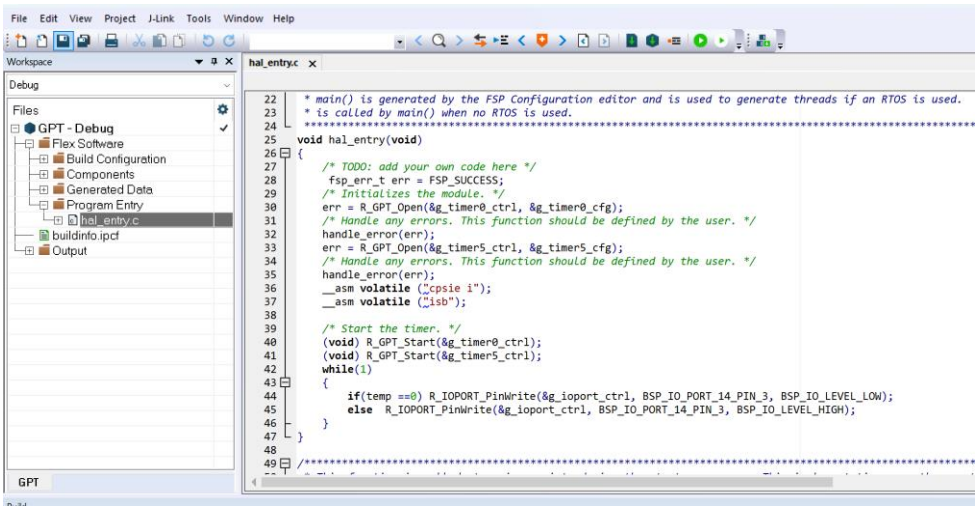
6. 点击：Generate Project Content 生成代码



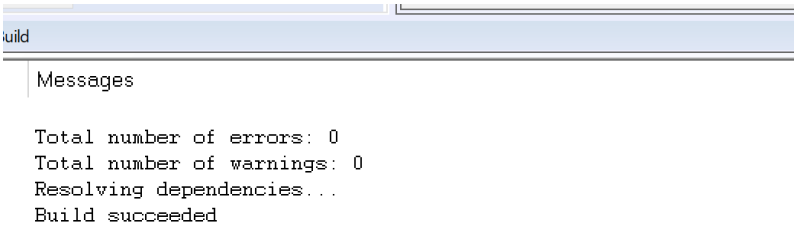
2.2

7. 打开生成的代码

- 仿真器由 Ijet 切换为 Jlink
- 编写用户代码：GPT0 200ms 产生中断，反转 P143 电平，LED0 以 200ms 周期亮灭变化
- GPT5 产生 10Khz PWM

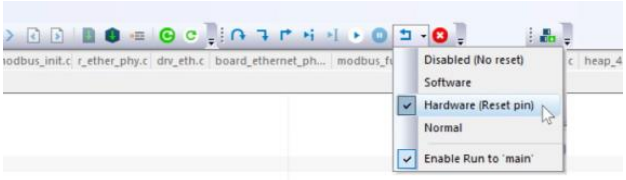


- Rebuild All---编译工程 无报错



2.3

- Download and Debug ---下载程序
- 下载工程到开发板，进入仿真界面
- Debug 复位设置为 Hardware



- 全速运行代码。

观察 LED0 周期性亮灭。

逻辑分析仪或示波器观察 P037 波形。

本节完

3 .E2studio 环境工程介绍

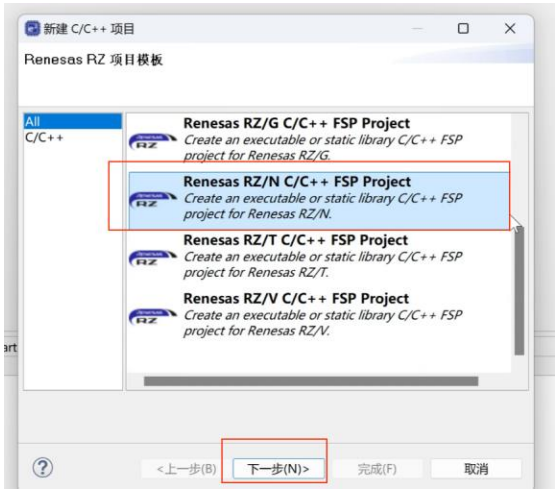
本节介绍使用 E2studio 环境创建 IIC 工程。

3.1

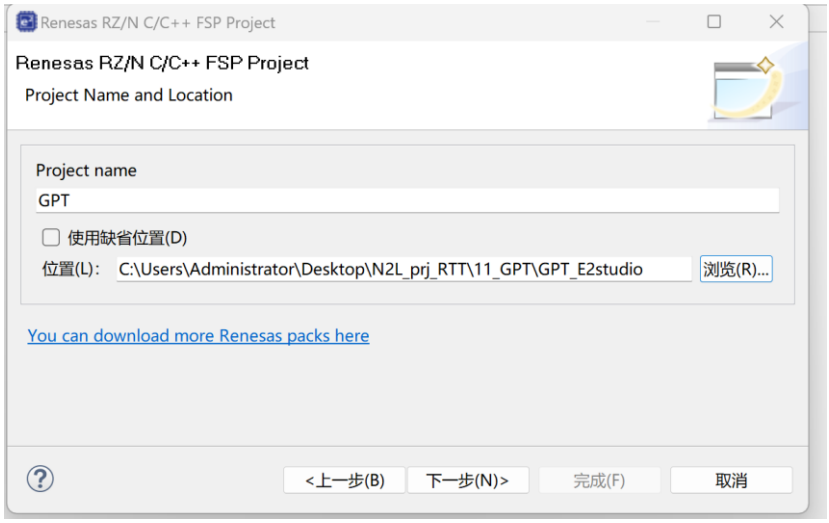
- 打开 E2studio，新建工程

1. 选择　文件--新建--瑞萨 C/C++项目--Renesas RZ：

2. 选择 Renesas RZ/N C/C++ FSP Project

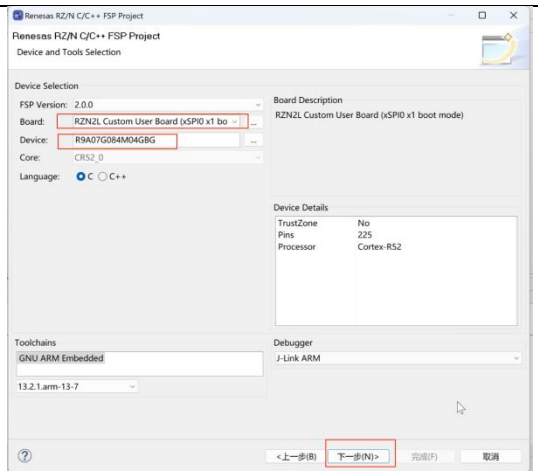


3. 设置项目名称：GPT，选择工程保存路径

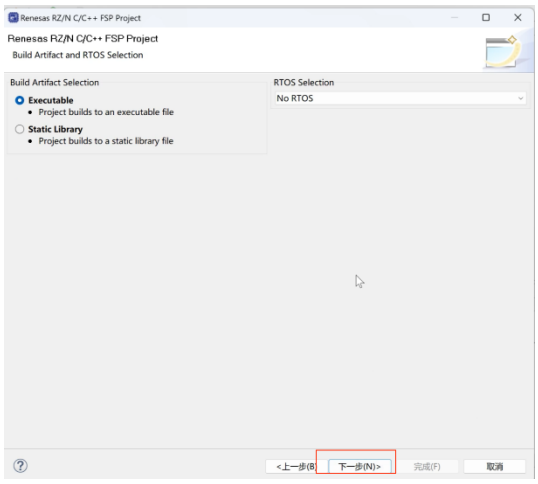


4. Boot 模式选择 RZN2L Custom User Board（ XSPI0 x1 boot mode）

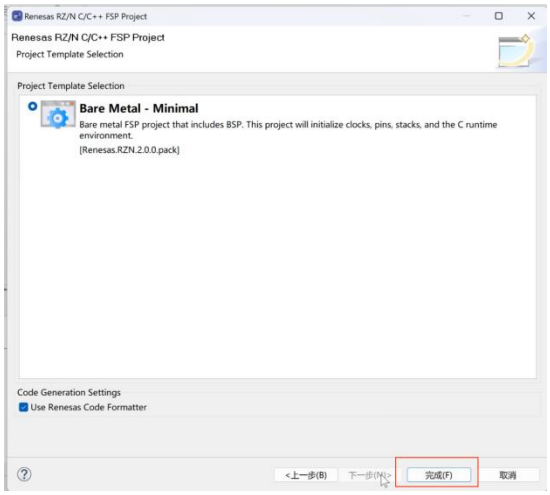
芯片型号：R9A07G084M04GBG



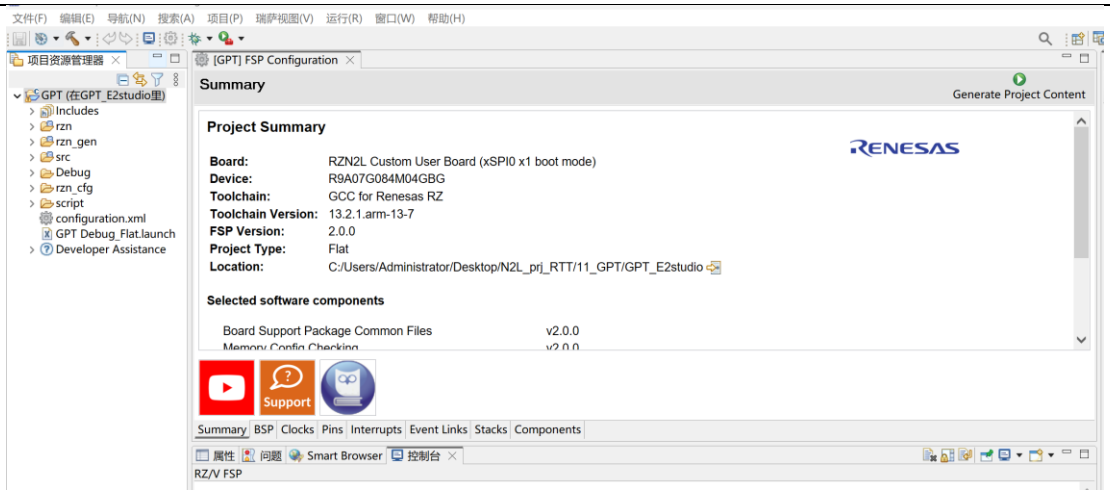
5. 直接下一步



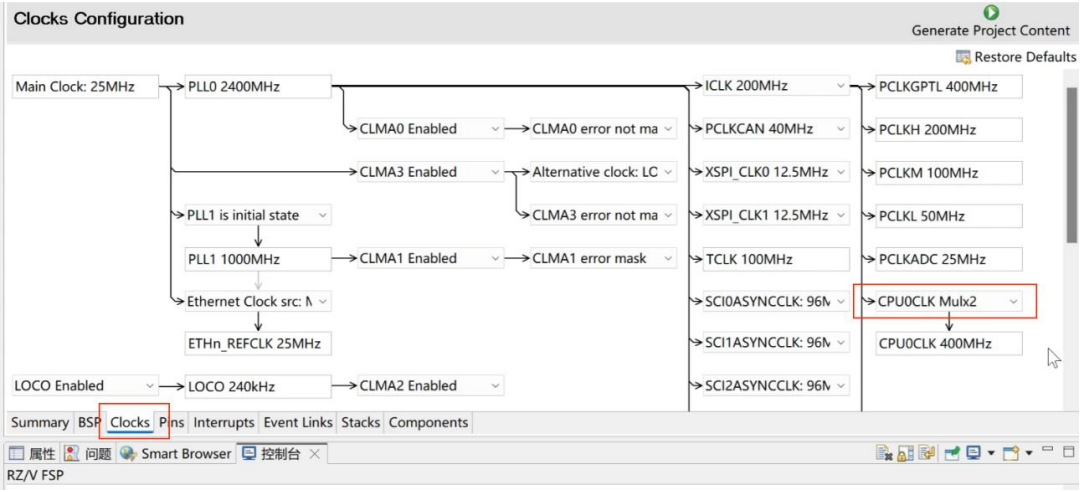
6. 点击 完成



7. 进入到工程界面

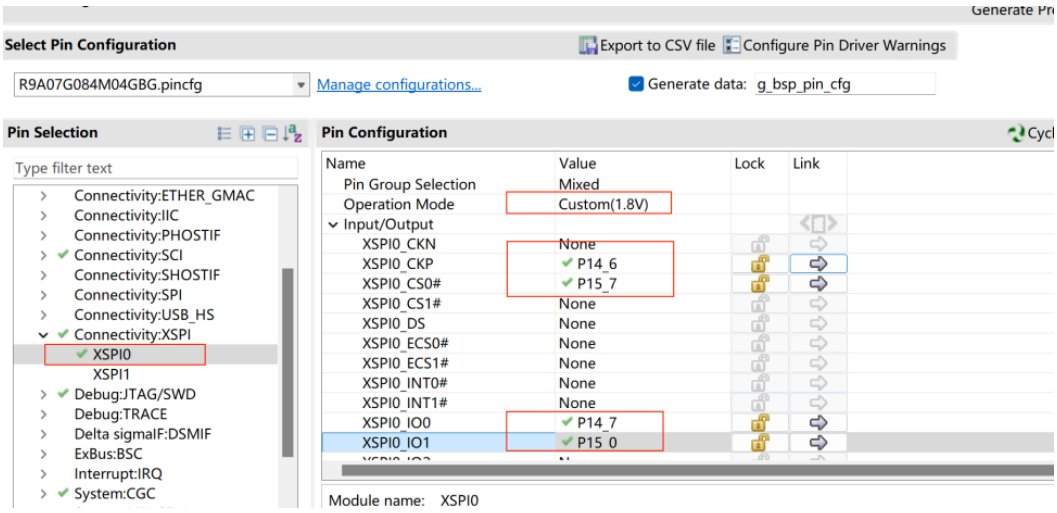


8. 设置时钟 CPU0CLK 400MHZ



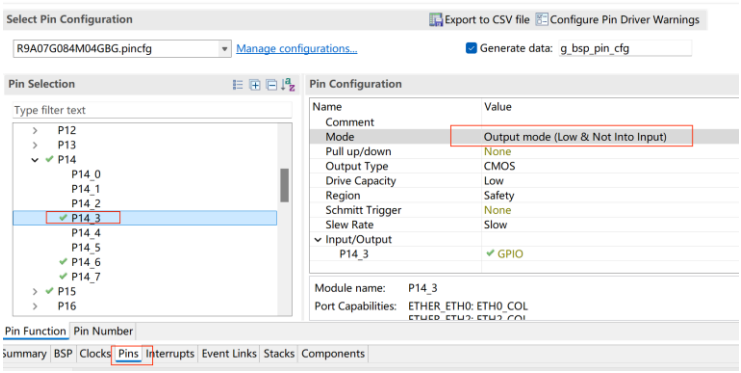
3.2

9. 配置 XSPI0



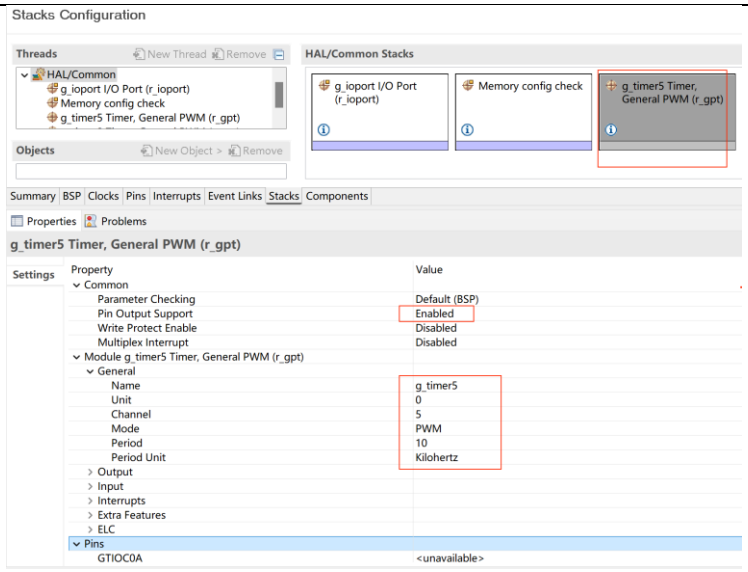
10. P143 引脚配置

P143 设置输出模式，初始电平 0

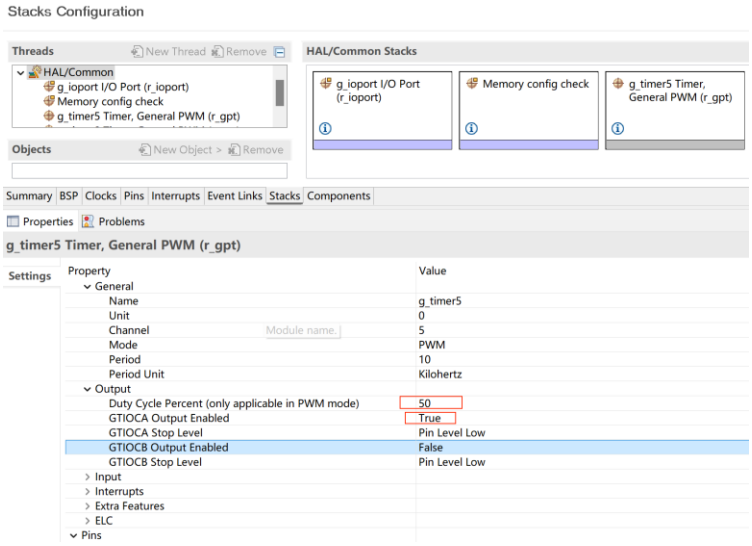


11. 添加 new Stack： GPT5

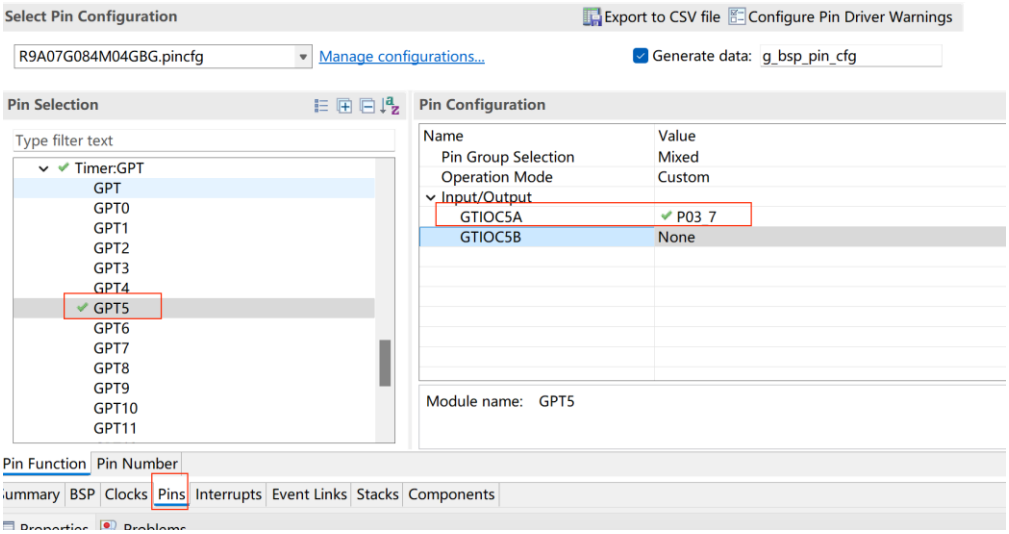
➢ 使能 pin 输出功能，设置 GPT5 PWM 模式，PWM 周期 10kHZ



➢ 使能 GTIOCA output 功能，占空比 50%

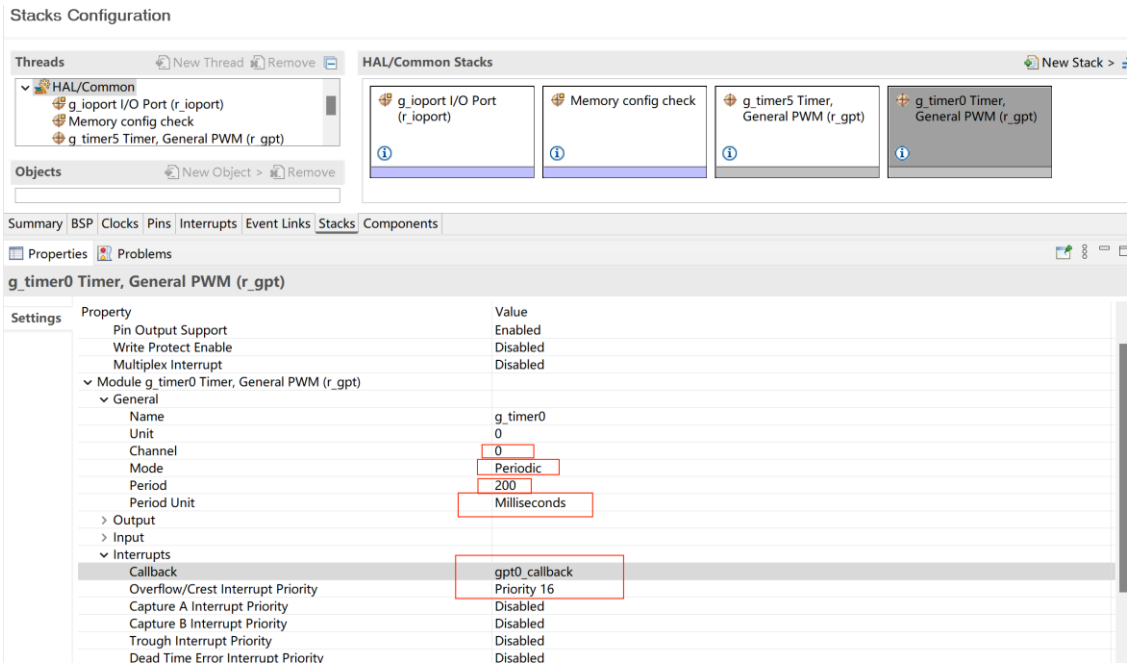


➢ 配置 GPT5 输出引脚，P037 使能

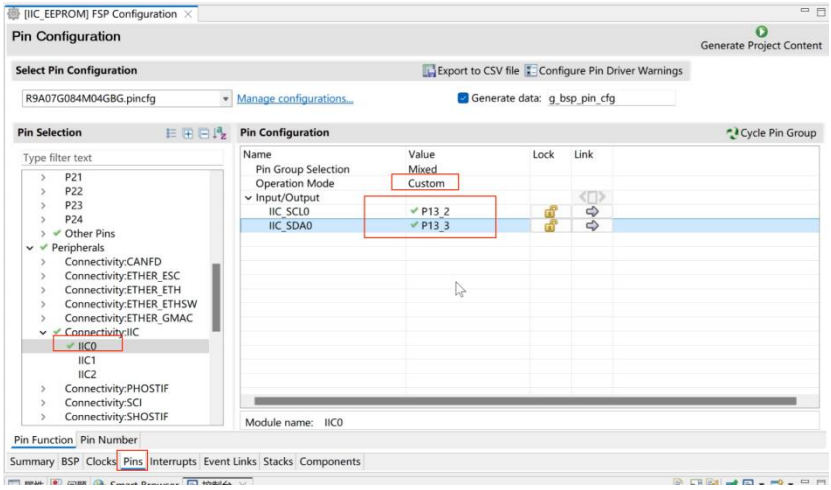


12. 添加 new stack ：

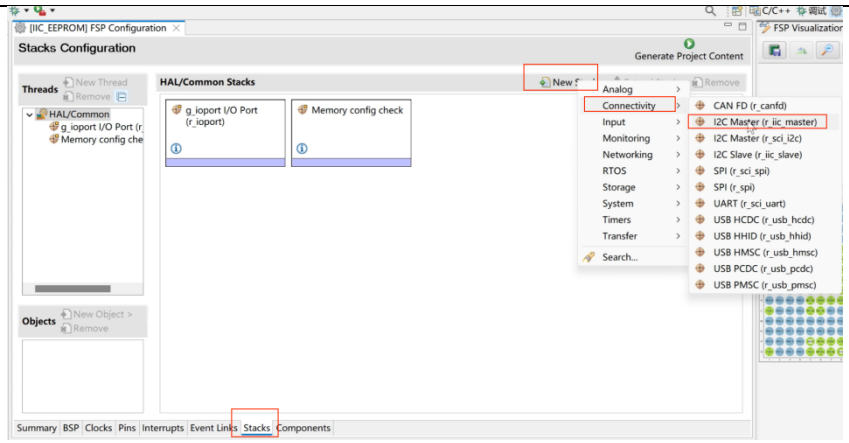
- GPT0 Periodic mode，200ms 周期
- 开中断,设置中断优先级，设置回调函数 gpt0_callback



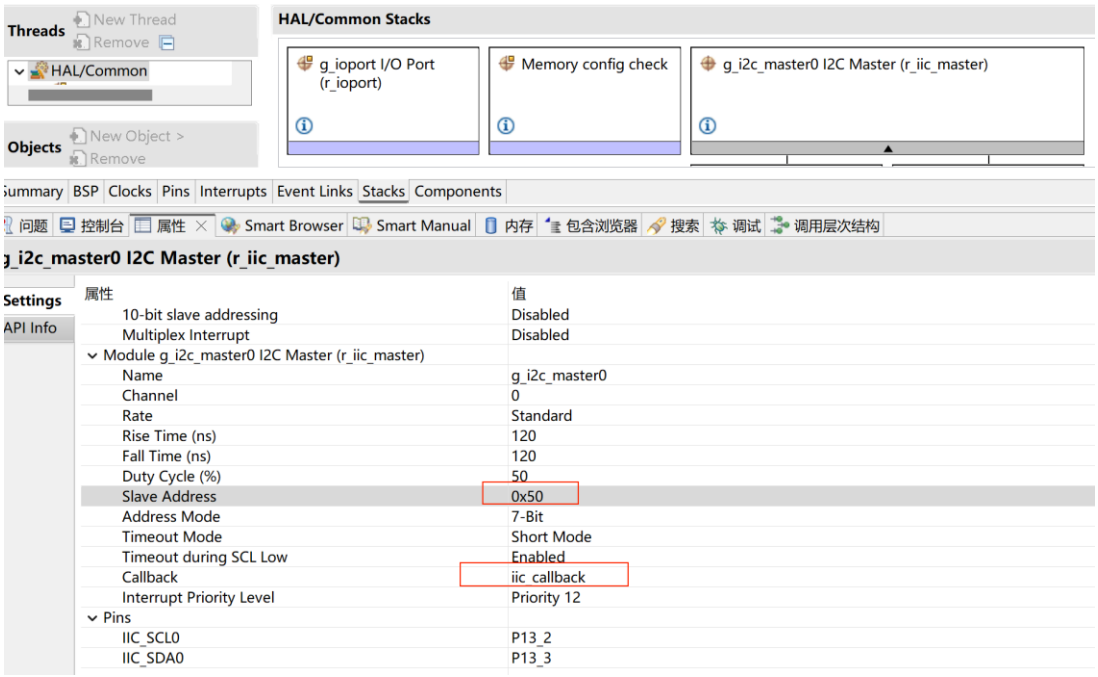
8. 点击：Generate Project Content 生成代码



9. 添加 NEW Stack： IIC master Stack



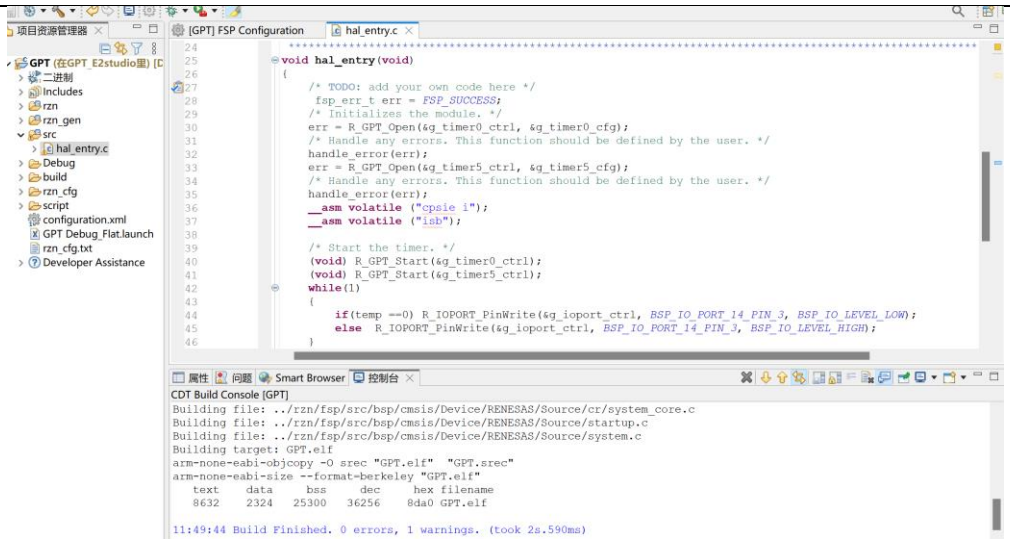
10. 设置回调函数 iic_callback ， 从机地址 0X50



11. 设置完毕，点击 Generate Project Content 生成代码

12. 用户代码编写

添加用户代码到工程，



3.3

- 下载代码到开发板

编译代码，无报错。

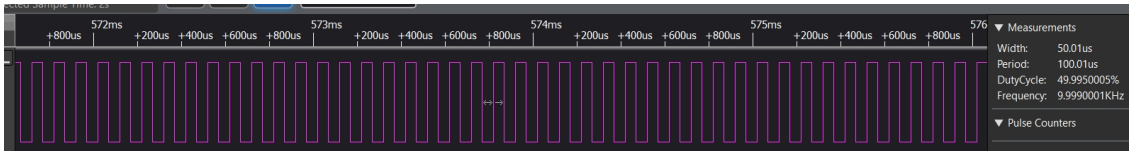
E2studio 在线仿真下载，全速运行

3.4

➢ 全速运行代码。

观察 LED0 周期性亮灭。

逻辑分析仪或示波器观察 P037 波形。



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