YeaCreate-ESP32-P4-CORE

Main Board Specification-v0.1

Main board model：	YeaCreate-ESP32-P4-CORE V0.2
Board functions ：	ESP32-P4-CORE Main board
Security level：	public

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Reviewer：	Troy Wong
approve：	Vivian Chen

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Directory

1 Introduction

Enchuang is committed to smart home solutions, creating a smarter and more convenient life for people. As an innovator in embedded application technology, Enchuang continuously drives innovation in home interconnection and smart interconnection solutions.
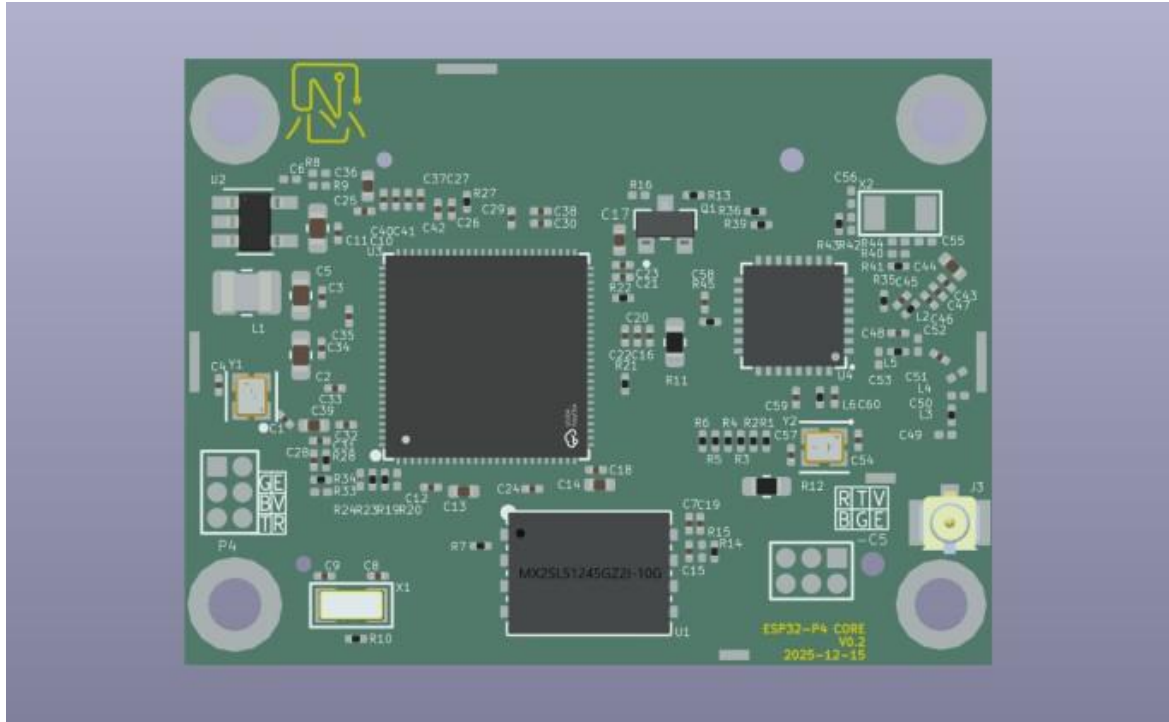
The YeaCreate-ESP32-P4-CORE motherboard is a high-performance core control board designed for next-generation intelligent applications and AI development. It integrates an ESP32-P4 + ESP32-C6 dual-chip architecture. The ESP32-P4 handles high-performance computing and peripheral control, while the ESP32-C6 provides stable wireless communication capabilities, achieving a good balance between performance and connectivity. This motherboard can be used with the YeaCreate-ESP32-P4-BODY to form a modular hardware solution, facilitating functional expansion and product design according to project requirements.

The YeaCreate-ESP32-P4-CORE supports various peripheral expansions, including displays, voice input, audio output, and TF card storage interfaces, meeting the application needs of graphical interfaces, human-computer interaction, multimedia processing, and data storage. Its rich interface resources and flexible expansion methods enable developers to quickly build prototypes and verify functionality. With its dual-chip collaborative design and excellent expandability, this motherboard is ideal for AI inference, smart terminals, voice interaction devices, and other innovative AI projects.
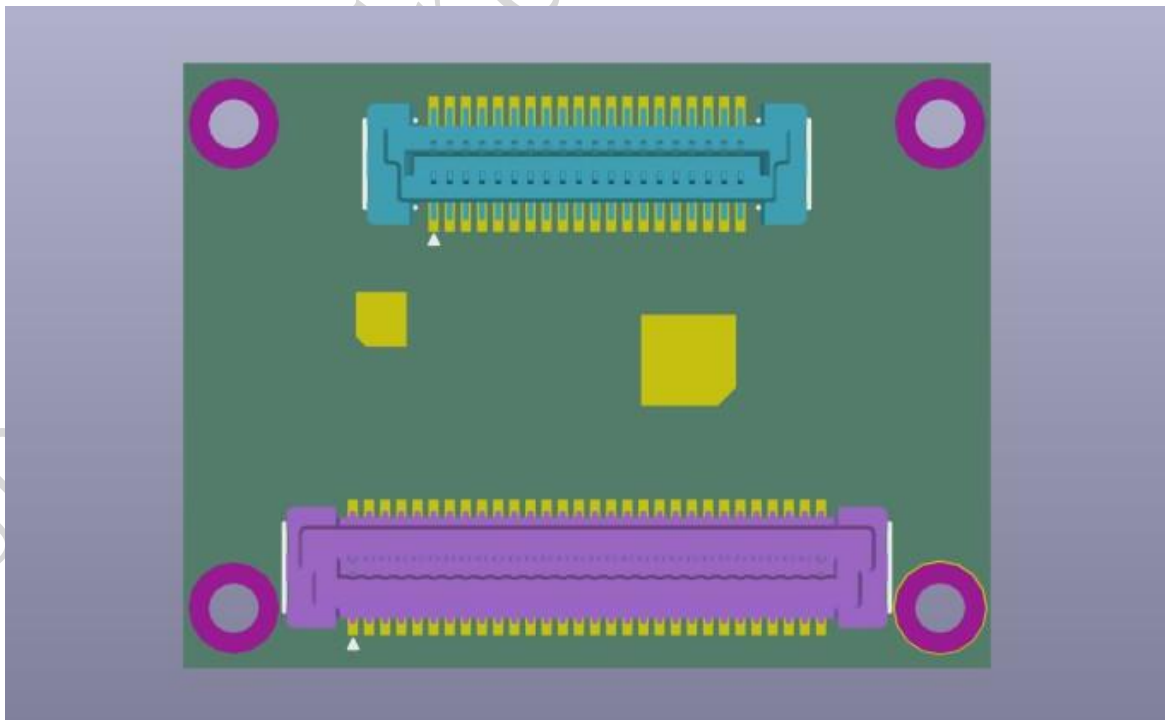
Unless otherwise stated, the specifications that the product conforms to are described in this document.

2Appearance and Dimensions

2.1 The appearance drawing is as follows:
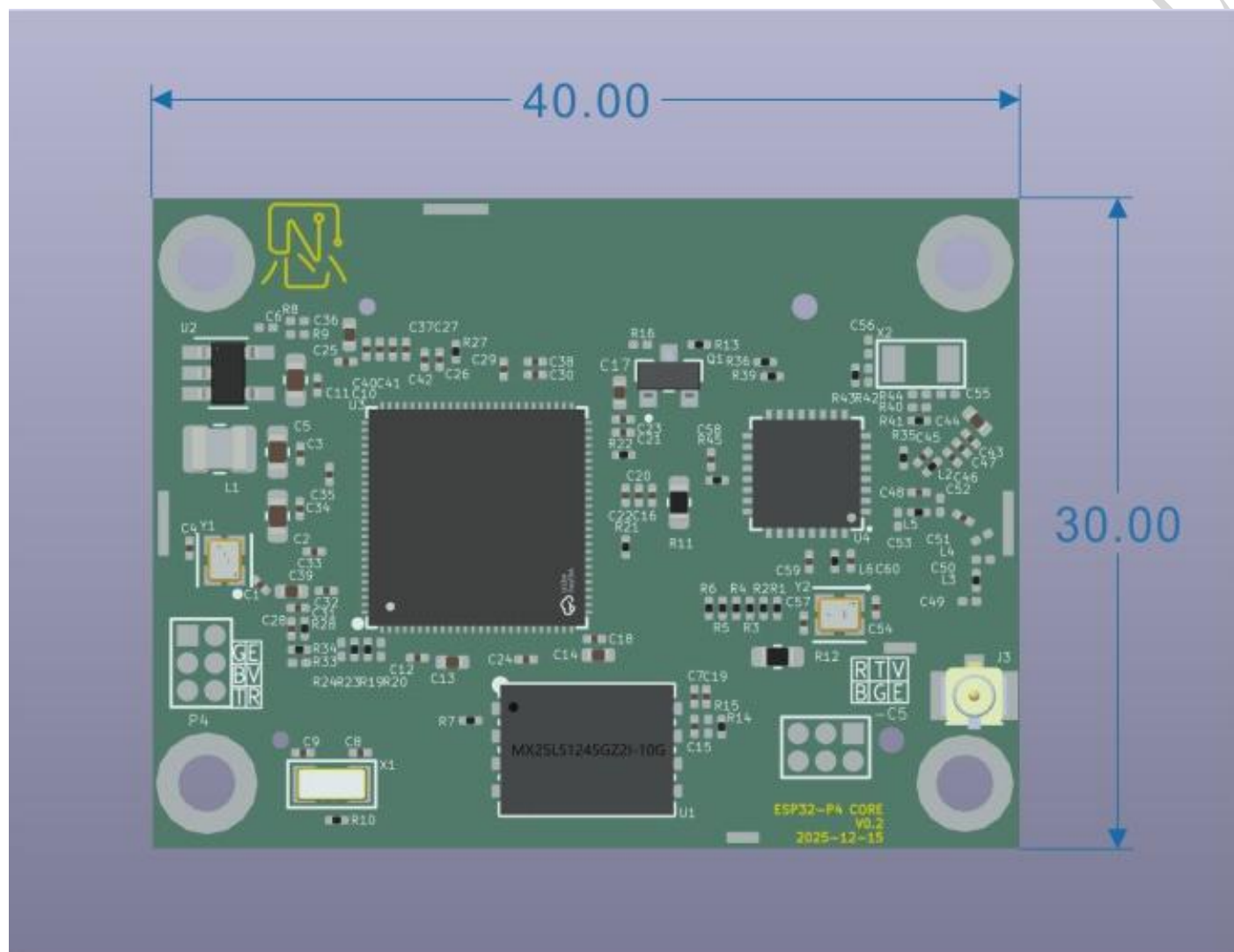

Front view (Figute 1)

Back side (Figure 2)

2.2Dimensions

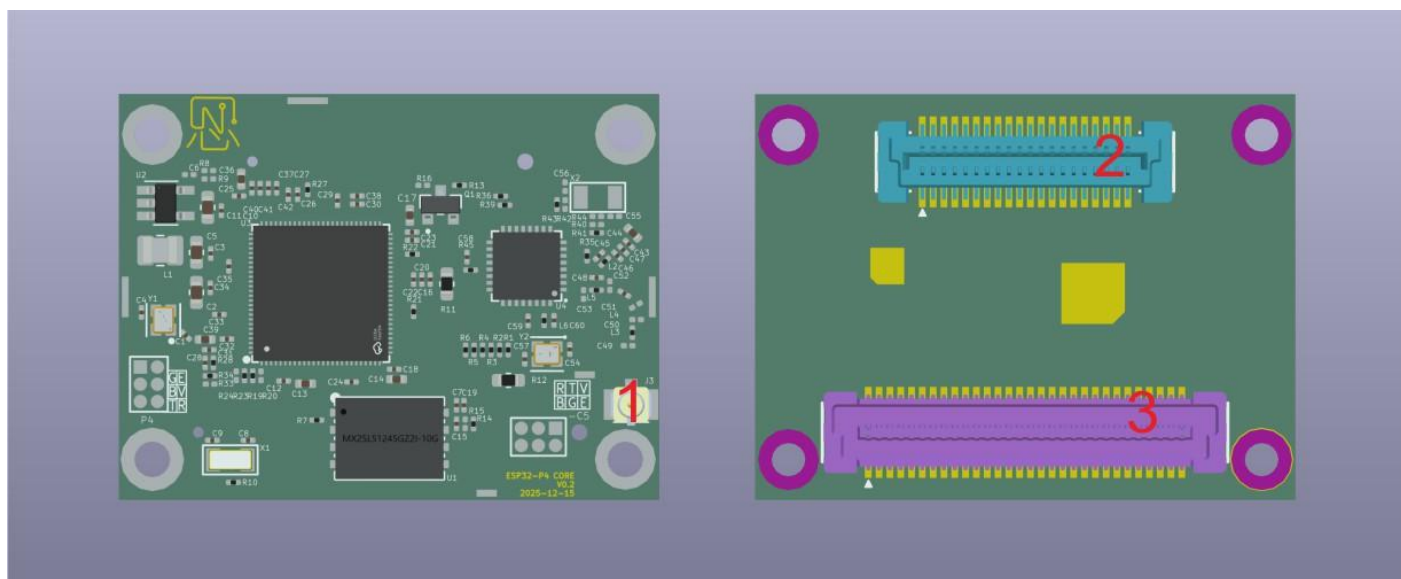Width: 30mm

Length: 40mm

Tolerance: ±0.5mm

（Figure 3）

3 Application Guide

This chapter mainly introduces the usage of the outer perimeter plate, including
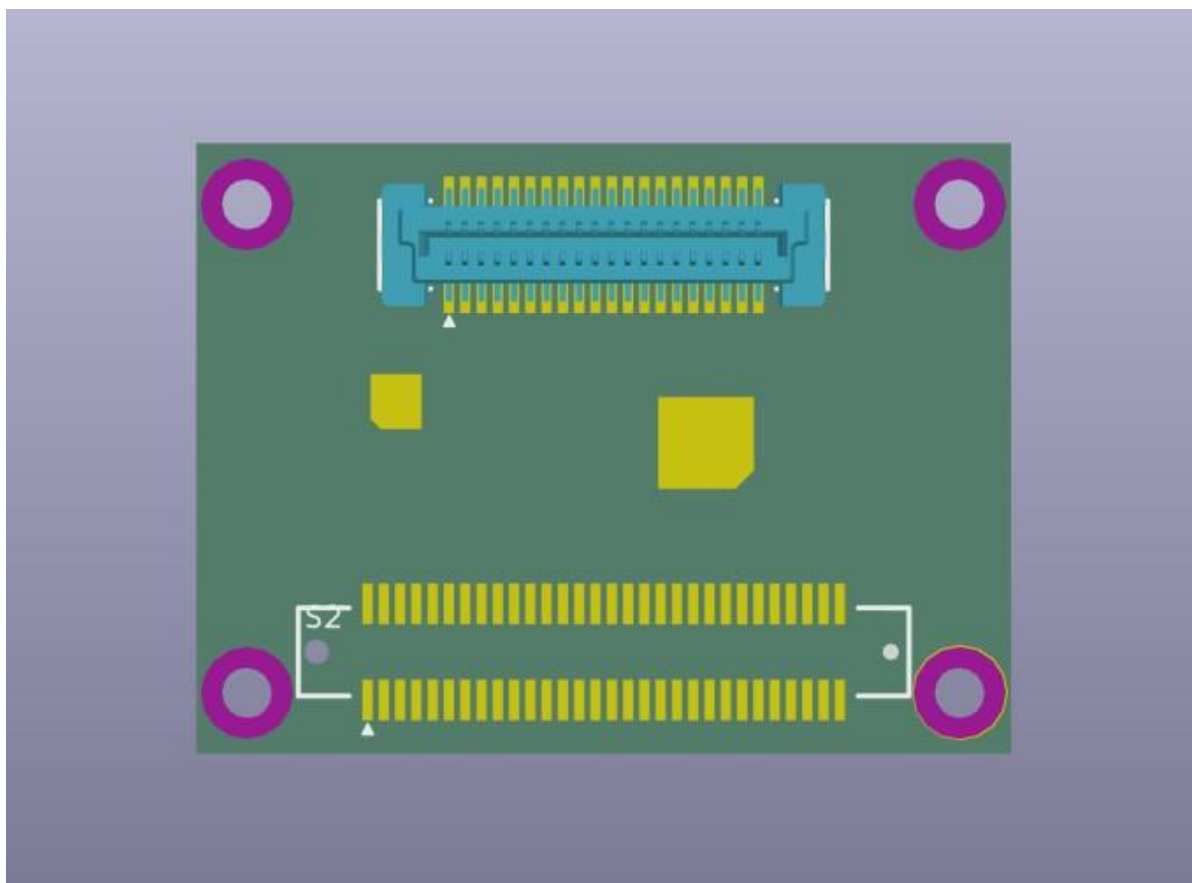
■ Function

■ back

3.1Functions

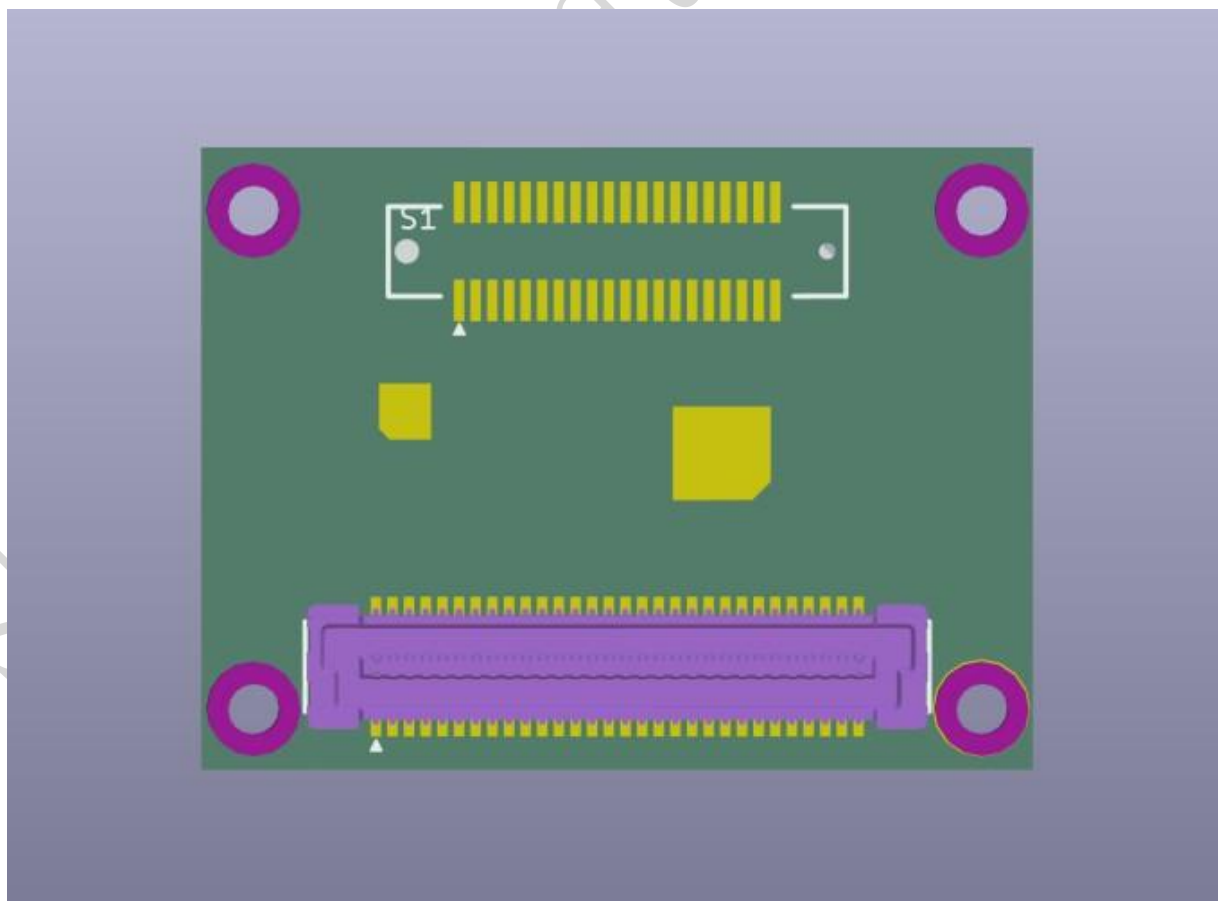（Figure 4）

Table 3.1 Function List

Serial number	describe
1	WIFI+BT interface
2	40PIN LGA ESP32-C6 Functional Interface
3	60PIN LGA ESP32-P4　Functional Interface

The ESP32-C6 supports Wi-Fi 6 (802.11ax) and Bluetooth 5 (LE)，while the ESP32-P4 is an AI inference and signal processing chip, suitable for edge computing with higher computing power requirements.

The ESP32-C6 and ESP32-P4 can be flexibly selected for integrated or independent use, supporting both chips to work together or to be developed as independent control units without affecting each other. The LGA interface-based design provides greater flexibility in assembly methods and system expansion.
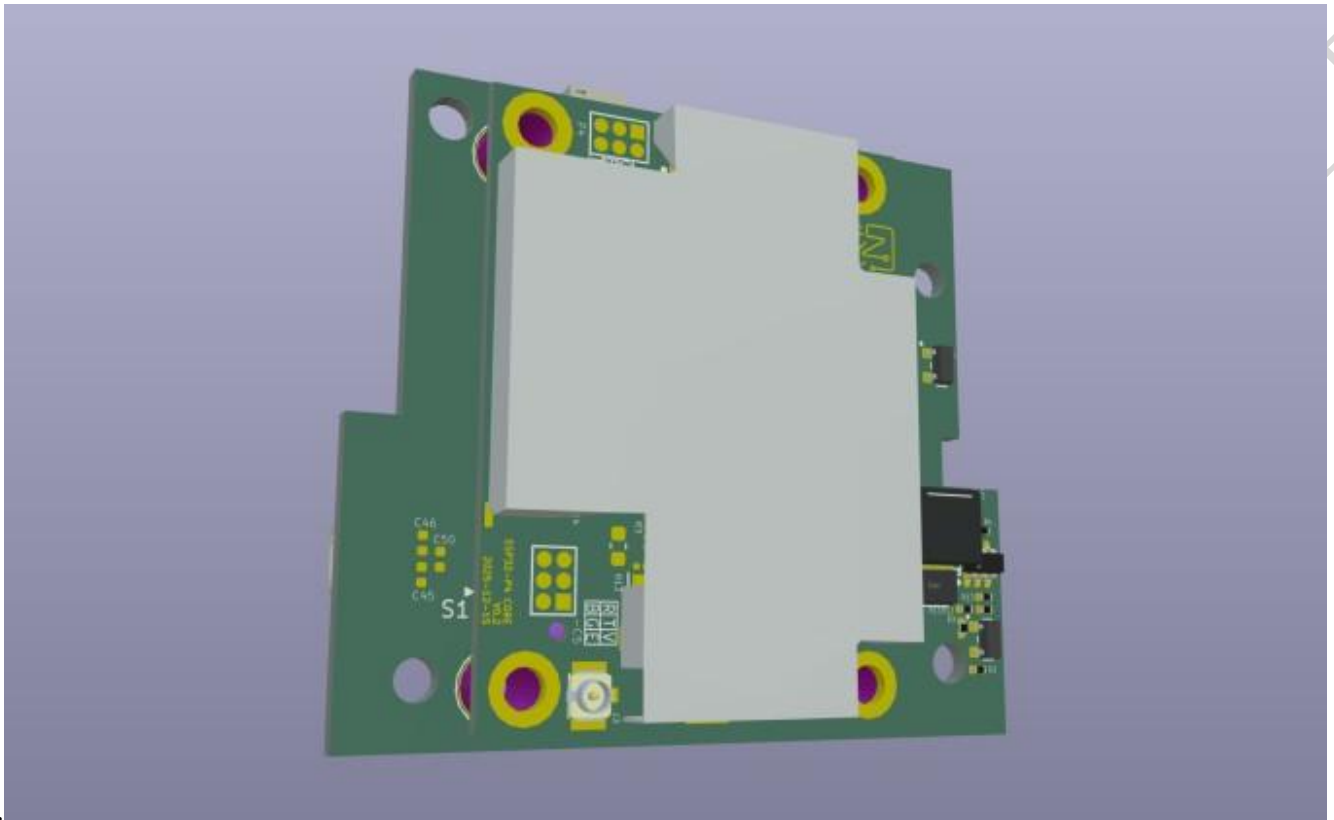
(Figure 5)

(Figure 6)

3.2 Outer Panel Matching

(Figure 7)

The system adopts a modular design approach with a core board and peripheral boards . The YeaCreate-ESP32-P4-CORE serves as the core computing unit, reliably connecting to the peripheral boards via an LGA interface. The peripheral boards are primarily responsible for power management, interface expansion, and functional peripheral integration, and can be customized and combined according to different application scenarios.

While maintaining the versatility of the core board, the peripheral boards can be flexibly expanded to include display, audio, storage, communication, and various sensor interfaces, giving the entire solution greater scalability and adaptability in terms of functional configuration, assembly methods, and product form. This makes it suitable for the rapid development and mass production deployment of AI, IoT, and embedded applications.