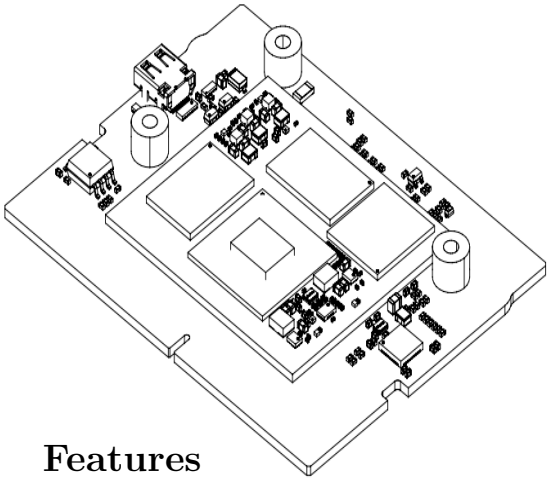
Grinn AstraADA Short description



1 Features

- designed to fit the Grinn AstraSOM-1680 and connect it to the Synaptics Astra Machina Foundation Series demo board
- pin-to-pin mapping between the SOM and the demo board's interface
- minimal footprint and reliable connectivity
- supports all required power rails and voltage levels as per the Grinn AstraSOM-1680 specifications
- ensures proper routing and signal integrity for high-speed interfaces

2 Key specification

- connector type: custom edge connectors compatible with the Synaptics demo board
- dimensions: to be determined based on final design
- pinout compatibility: fully aligned with Grinn AstraSOM-1680 's pinout and the demo board's interface
- mounting: the SOM is soldered onto the adapter, and the adapter plugs into the demo board

3 Description

The Grinn AstraADA core module adapter enables the integration of Grinn AstraSOM-1680 with the Synaptics Astra Machina demo board. This adapter facilitates a seamless connection between the SOM and the Synaptics evaluation platform, offering developers the ability to prototype and validate embedded solutions efficiently.

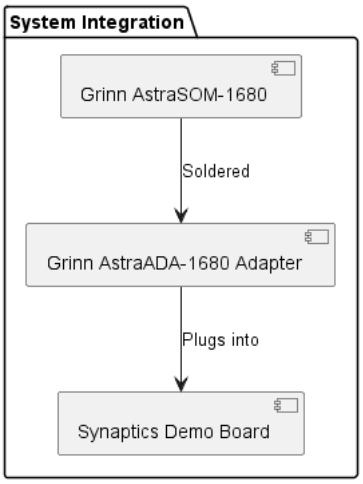


Figure 1: Block diagram

Contents

4 Revision History

Revision	Date	Changes
1.0	26.11.2024	Initial revision.
1.1	17.02.2025	Links and pictures updated.

5 Adapter dimensions

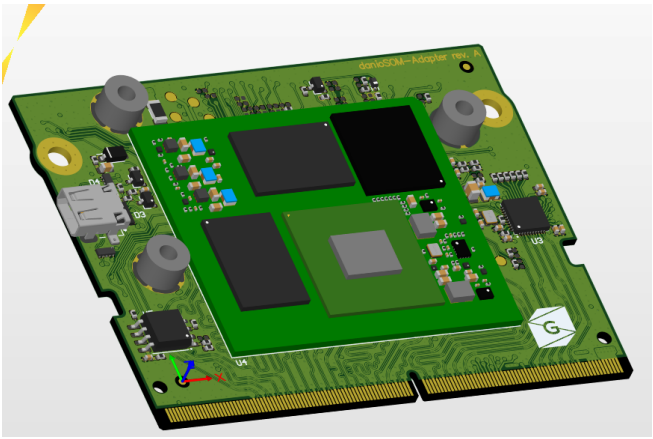


Figure 2: Grinn Grinn AstraADA top view

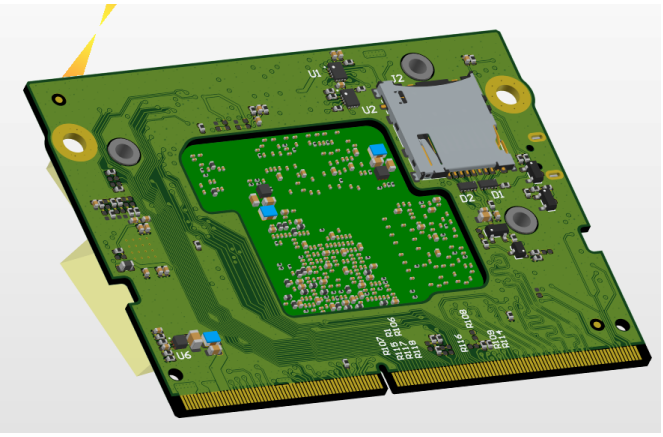


Figure 3: Grinn Grinn AstraADA bottom view

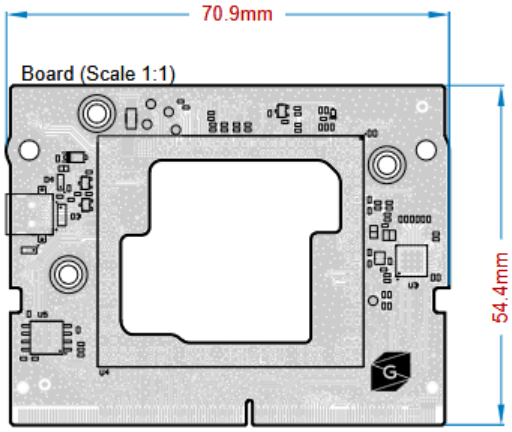


Figure 4: Fabrication Grinn Grinn AstraADA drawing

6 Functional Description

6.1 Ethernet

The Grinn AstraADA integrates the Realtek RTL8211F Ethernet PHY, enabling high-speed network connectivity with 10/100/1000 Mbps support. This Ethernet PHY allows the board to efficiently handle data-intensive applications, making it suitable for use in IoT devices, embedded systems, and industrial automation. With its RGMII interface, the RTL8211F ensures seamless communication with the board's main processor, while features like Wake-on-LAN (WoL) and energy-efficient Ethernet (EEE) enhance its power management capabilities. The inclusion of automatic MDI/MDI-X crossover simplifies the connection process by eliminating the need for specialized Ethernet cables. Thanks to the RTL8211F's robust design and low power consumption, Grinn AstraADA delivers reliable and efficient networking performance for a variety of use cases.

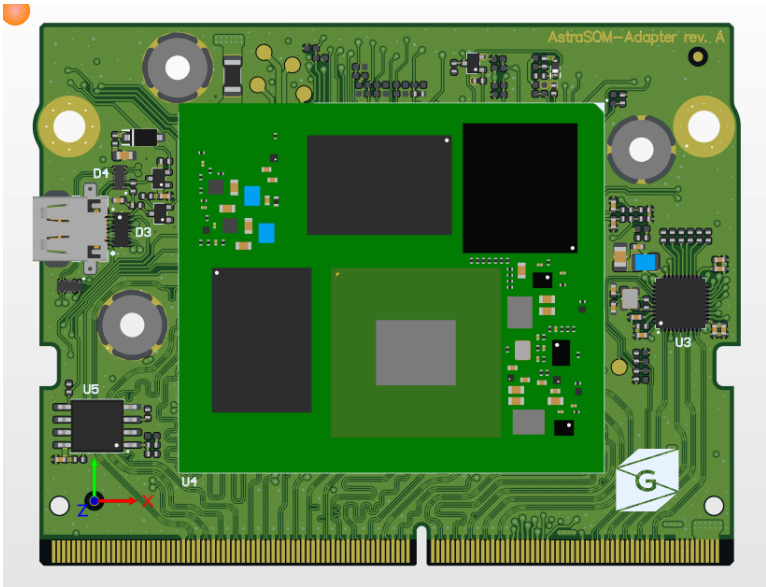


Figure 5: Grinn AstraADA - holes for a heat sink

6.2 Flash QSPI

The Grinn AstraADA features the W25Q128JW, a 128Mb (16MB) Quad SPI (QSPI) flash memory from Winbond, optimized for high-speed and reliable storage. Supporting multiple SPI modes, it enables data transfers up to 133 MHz, ideal for firmware, bootloader, and application data. Its low power consumption, sector/block erase and write protection ensure secure and efficient operation.

6.3 HDMI RX

The Grinn AstraADA features a micro-HDMI port configured exclusively as RX (receiver), enabling it to receive HDMI input signals. This setup is ideal for applications like video capture, image processing, or multimedia integration, where the board acts as a sink for HDMI data. Supporting compatibility with HDMI output devices such as cameras and media players, the RX-only configuration ensures reliable handling of high-quality video and audio streams. Its compact micro-HDMI design facilitates easy integration into embedded systems, making the Grinn AstraADA suitable for industrial, consumer, and IoT applications requiring HDMI input functionality.

6.4 MicroSD card

The Grinn AstraADA includes a MicroSD card holder, allowing for easy integration of external storage. This feature provides a convenient way to expand storage capacity for applications such as data logging, file storage, and firmware updates. The MicroSD holder supports standard MicroSD cards, enabling fast read and write speeds for efficient data handling. Its compact design makes it ideal for space-constrained embedded systems, offering a flexible solution for increasing the board's storage capabilities in a variety of use cases.

Grinn sp. z o. o.
Strzegomska 140a
54-429 Wrocław
Poland

www: https://www.grinn-global.com
office: office@grinn-global.com
phone: +48 71 716 40 99

products: https://grinn-global.com/products
technical support: support@grinn-global.com