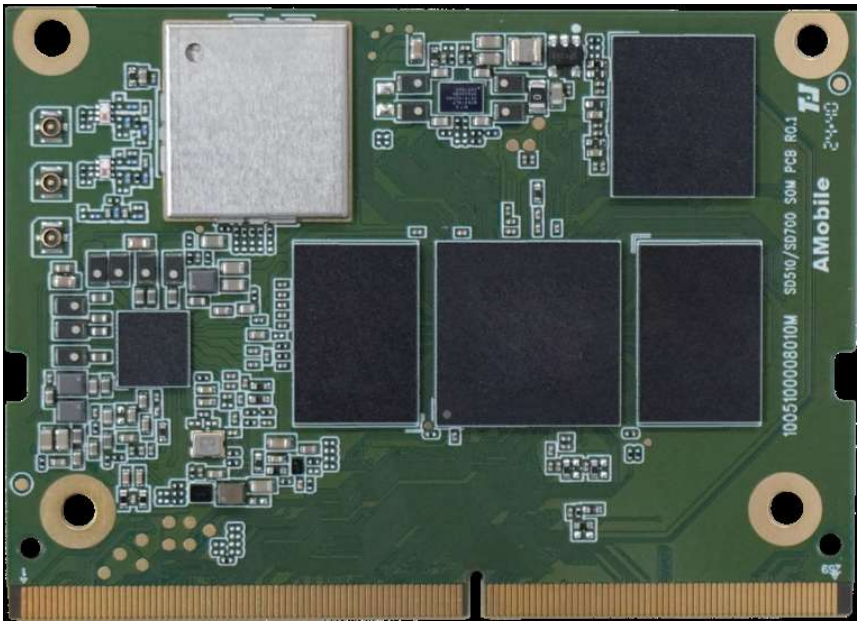
SoM-SD510/SoM-SD700 Datasheet

Mediatek Genio 510/700 – based System-on-Module



Document Revision History

Date	Version Number	Document Changes
2025/1/7	0.1	Initial Draft
2025/2/25	0.2	Error Corrrection

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1 General Information

The SoM-SD510/700 is a highly integrated and powerful System-on-Module (SoM) built on the Mediatek Genio 510/700 platform. It is designed to support a wide array of Artificial Intelligence (AI) and Internet of Things (IoT) applications that demand high-performance edge processing, advanced multimedia and connectivity features, support for multiple high-resolution cameras, connected touch screen displays, and the capability to run a multi-tasking High-Level Operating System (HLOS).

The chip is manufactured using a cutting-edge process to deliver both high performance and low power consumption. It leverages Arm® DynamIQ™ technology, combining high-performance Cortex-A78 cores with power-efficient Cortex-A55 cores, and is equipped with the Arm Neon™ engine for enhanced processing capabilities. This architecture provides the necessary computational power to support modern OpenOS platforms and demanding applications such as web browsing, email, and gaming.

Graphics processing is powered by the Arm Mali-G57 MC2/MC3 GPU, a 2D/3D graphics accelerator, enabling smooth rendering of visuals on high-resolution touchscreen displays. For advanced multimedia applications, the chip integrates multi-standard video encoder and decoder engines, along with an advanced audio subsystem, to support seamless streaming of audio and video content.

The chip also features a built-in AI Processor Unit (APU), enabling deep learning, Neural Network (NN) acceleration, and Computer Vision (CV) applications. When paired with support for up to a 32MP camera, the chip excels in AI-vision tasks such as facial recognition, object detection, scene analysis, optical character recognition, and more, delivering clear and accurate results.

The SoM-SD510/700 serves as an ideal building block for seamless integration into a wide range of products across target markets. It offers a compact, cost-effective solution that meets the demands for high performance and low power consumption, making it suitable for applications requiring advanced processing and multimedia capabilities.

Supporting products:

- SoM-SD510/700 – System on Module
  - ✓ Genio 510/700 SoM w/ memory variation
- CB200 – evaluation board
  - ✓ Carrier Board, compatible with SoM-SD510/700
  - ✓ Schematics
- SBC-MB510/710 development kit, including:
  - ✓ CB200
  - ✓ SoM-SD510 or SoM-SD700
  - ✓ Accessories and cables
- OS support
  - ✓ Android
  - ✓ Yocto

Contact Amobile support services for further information: mailto:support@amobile.com.tw

2 Architecture and Block Diagram

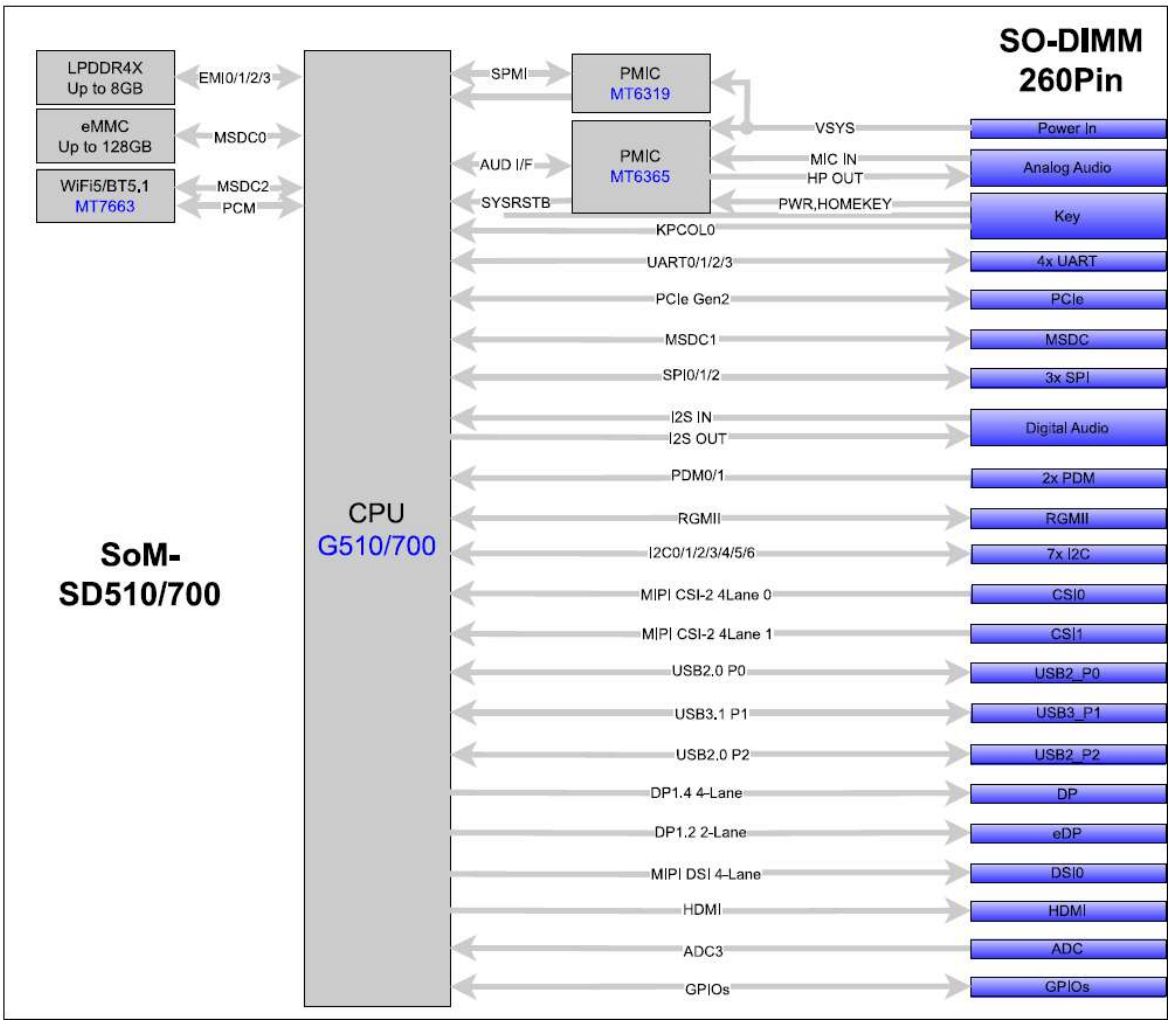

Figure 2-1 SoM-SD510/700 System Block Diagram

3 Feature Summary

Model Name		SoM - SD510	SoM - SD700
Process		Mediatek G510	Mediatek G700
CPU		2x CA78(2.0G)+4x CA55(2.0G)	2x CA78(2.2G)+6x CA55(2.0G)
GPU		Mali-G57 MC2	Mali-G57 MC3
APU/NPU		1x MLDA3.0 + 1x VP6; 3.2 TOPS	1x MLDA3.0 + 1x VP6; 4.0TOPS
Audio DSP		Tensilica HiFi 5	
Memory		LPDDR4X-3733Mbps, up to 8GB	
Storage		eMMC5.1, 64GB (Option: up to 128GB), SDIO interface	
Audio		1x I2S, 1x PDM 2 channel	
Other I/F		7x I2C, 2x SPI, GPIO	
Operating System		Android 14, Yocto 4.0 Kirkstone	
Network	WiFi	WiFi 5 (802.11 a/b/g/n/ac, 2T2R)	
	Bluetooth	BT 5.1	
	Ethernet	Gigabit Ethernet(RGMII)	
Display Interface	eDP	up to 2560x1600@60fps	
	MIPI DSI	up to 1920x1080@60fps	
	HDMI	up to 4K@60fps	
	DP	up to 4K@60fps	
Camera Interface		2x MIPI CSI – CMOS Serial Camera Interface 4 lanes	
High-speed Interface	USB	1x USB2.0 Host, 1x USB2.0 OTG, 1x USB3.1	
	PCIe	1x PCIe2.0	

Table 3-1 SoM-SD510/700 Feature List

4 Module Dimension

The dimension of SoM-SD510/700 is 69.6mm x 50mm x 3.45mm. Detailed dimension please see below figure.

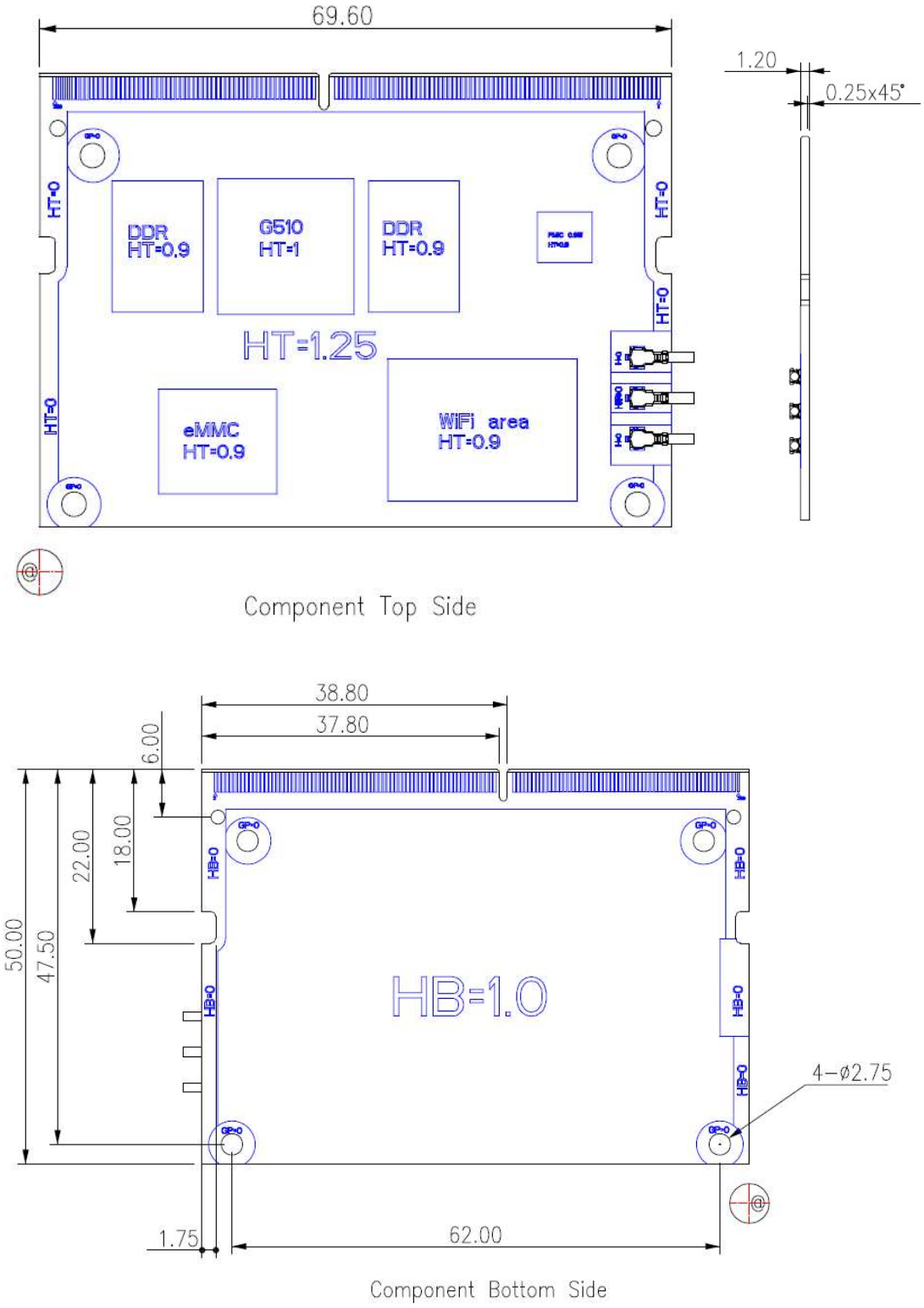

Figure 4-1 SoM-SD510/700 Dimension Drawing

5 Electrical Specification

Symbol	Parameter	Minimum	Maximum	Unit
VSYS	Input Voltage	3.4	4.35	V
VSYS	Input Current		1.5	A

Table 1-2: Input Power Absolute Ratings

Symbol	Parameter	Minimum	Maximum	Unit
VRTC28	Output Voltage	2.66	2.94	V
VIO18_PMU	Output Voltage	1.71	1.89	V

Table 1-3: Output Power

Symbol	Parameter	Minimum	Maximum	Unit
T	Operation Temp.	-10	60	℃
T	Storage Temp.	-20	85	℃

Table 5-1: Temperature Specification

6 Antenna Connectors

The SoM-SD510/700 is equipped with the MT7663 to provide WiFi and Bluetooth capabilities. To achieve optimal performance, antennas with MHF® 4 Plugs should be connected to the antenna connectors on the SoM.

The antenna connector features the following specifications:
- Height: 1.20 mm (maximum)
- Frequency Range: Up to 9 GHz
- Micro-Coaxial Cable (AWG): #36 (O.D. 0.81 mm)

The detailed location and specifications of the antenna connectors are provided below:

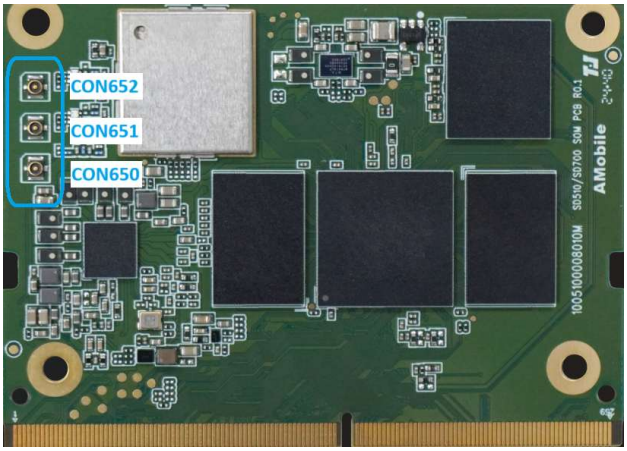

Figure 6-1 RF Connectors Location

Location	Connector Function	Notes
CON650	BT_ANT_2	RF connector for Bluetooth Antenna
COn651	WF0_ANT	RF connector for WiFi0 Antenna (2T2R)
CON652	WF1_ANT	RF connector for WiFi1 Antenna (2T2R)

Table 6-1 Antenna Connector Signals

7 Certification

CE/FCC certificate estimated to be ready in middle of April, 2025.

8 Warranty Terms

Warranty Period

AMobile branded off-the-shelf product are entitled to a 12 months complete and prompt global warranty service. Product defect in materials and workmanship , are covered from the date of shipment. (Accessories warranty is 6 months)

Repairs under Warranty

- It is possible to obtain a replacement (Cross-Shipment) during the first 30 days of the purchase, thru your original supplier to arrange DOA replacement if the product is DOA (Dead-on-Arrival). The DOA Cross-Shipment excludes any shipping damage, and/or customized products.
- The DOA agreement signed by customers is required for initiating/releasing cross-shipment with AMobile confirmation and verification. The only conditions for Cross-Shipment are:
    - The return must not be damaged, altered or marked
    - All parts and accessories must be included as originally shipped
    - Proof of purchase must be included
- Any returns that do not meet the above requirements, or any wrong user settings/configurations will be denied, or subject to additional handling/service charges as determined by the Customer Service Department.
- For those products which are not DOA, AMobile's obligation shall be limited to repair or replace (at AMobile's sole option) the defective product free of charge in case AMobile determines the product failed due to defects in materials and workmanship. The return fee to an authorized repair facility/or AMobile HQ will be at the customers' expense. The shipping fee for reconstructive products from an authorized repair facility/or AMobile HQ back to customers' sites will be at AMobile's expense.
    - In the event of AMobile determines there is no defect ("No Defect Found") or is not qualified for warranty repair, AMobile shall charge Customer from return shipment and a minimum diagnosing fee.

Exclusions from Warranty

The product is excluded from warranty if:

- The product has been found to be defective after expiry of the warranty period.
- voided by removal or of or part identification labels.
- The product has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which is not responsible whether by accident or other cause. Such conditions will be determined by at its sole unfettered discretion.
- The product is damaged beyond repair due to a natural disaster such as a lighting strike, flood, earthquake, etc.
- Product updates/upgrades and tests upon the request of customers who are without warranty.

9 Contact Information

Headquarters:
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10 Caution:

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure.

These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

RF Exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

This device meets the EU requirements (2014/53/EU) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

The device complies with RF specifications when the device used at 20 cm from your body.

Wireless Specification and power:

Technologies	Frequency range (MHz)	Max. Transmit Power	
Bluetooth	2402-2480 MHz	16.16 dBm	
WLAN 2.4 GHz	2412-2472 MHz	29.67 dBm	
WLAN 5 GHz	5180-5825 MHz	26.66 dBm	

This module is intended for OEM integrator. The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated. Additional testing and certification may be necessary when multiple modules are used.

USERS MANUAL OF THE END PRODUCT:

In the user's manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated.

The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following

" Contains TX FCC ID:2AQ5W-SOM510-700"