

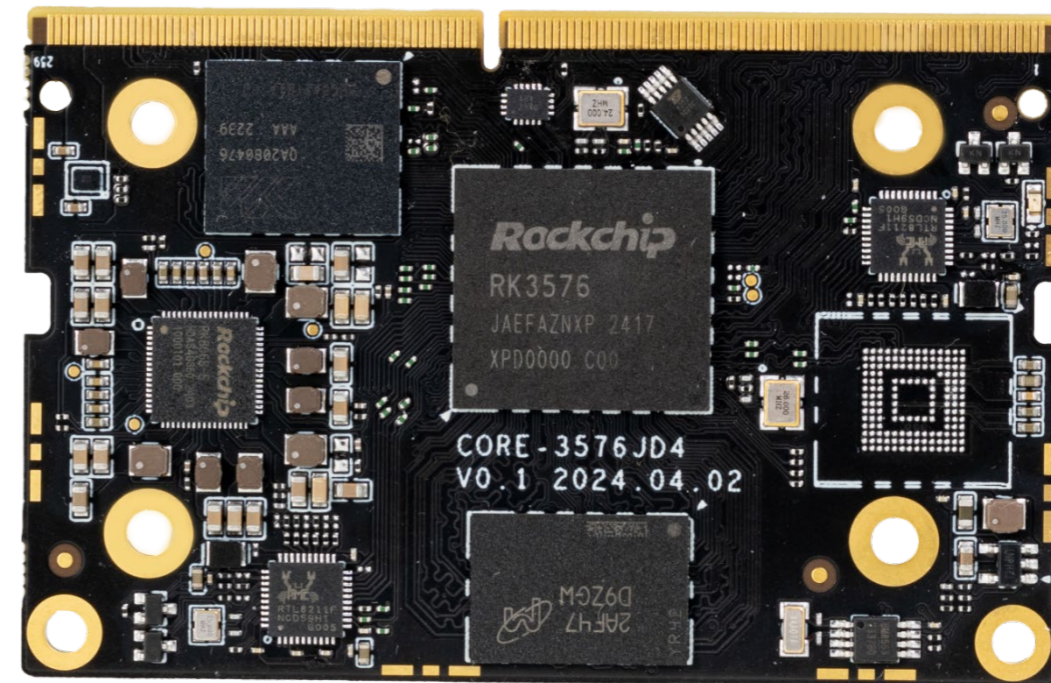


Core-3576JD4

Low-power Large-model Core Board

V0.1 2024-6-24

T-CHIP INTELLIGENCE TECHNOLOGY



Product features



High-performance Octa-core 64-bit AIOT processor, RK3576

RK3576, the new octa-core 64-bit AIOT processor, features a big.LITTLE architecture (4x A72 + 4x A53), an advanced lithography process, and a frequency of up to 2.2 GHz. It ensures strong support for high-performance computing and multitasking.



4K@120fps high frame rate video decoding

It supports 4K@120fps decoding (H.265/HEVC, VP9, AVS2, and AV1), 4K@60fps decoding (H.264/AVC), and 4K@60fps encoding (H.265/HEVC and H.264/AVC).



EPD display with algorithms to improve image quality

EBC output interface (E-ink EPD (Electronic Paper Display)) with a resolution of up to 1920 x 2560 is suitable for EINK e-readers. Combining RK PQ with multiple enhanced image quality algorithms and multiple refresh modes to provide users with a better reading experience.



The private deployment of large language models

Support the private deployment of ultra-large-scale parameter models under the Transformer architecture, including large language models such as Gemma-2B, LLaMa2-7B, Qwen1.5-1.8B. Support Docker container management technology.

Product features



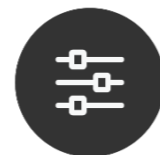
Multiple deep learning frameworks

Support traditional network architectures such as CNN, RNN, and LSTM; a variety of deep learning frameworks, including TensorFlow, PyTorch, MXNet, PaddlePaddle, and ONNX, as well as custom operator development.



Various operating systems and abundant resources

Support Android 14, Linux OS, and Buildroot. These provide safe and stable systems for product research and production. We offer SDKs, tutorials, technical documentation, and development tools to streamline and improve the development process.



Abundant expansion interfaces

It provides a rich array of expansion interfaces such as PCIe 2.1, SATA 3.1, SAI, I2C, I3C, CAN, UART, SPDIF, SDIO 3.0, MIPI-CSI, USB 3.0, USB 2.0, SPI, and GPIO to meet peripheral expansion needs for various applications.



Wide range of application scenarios

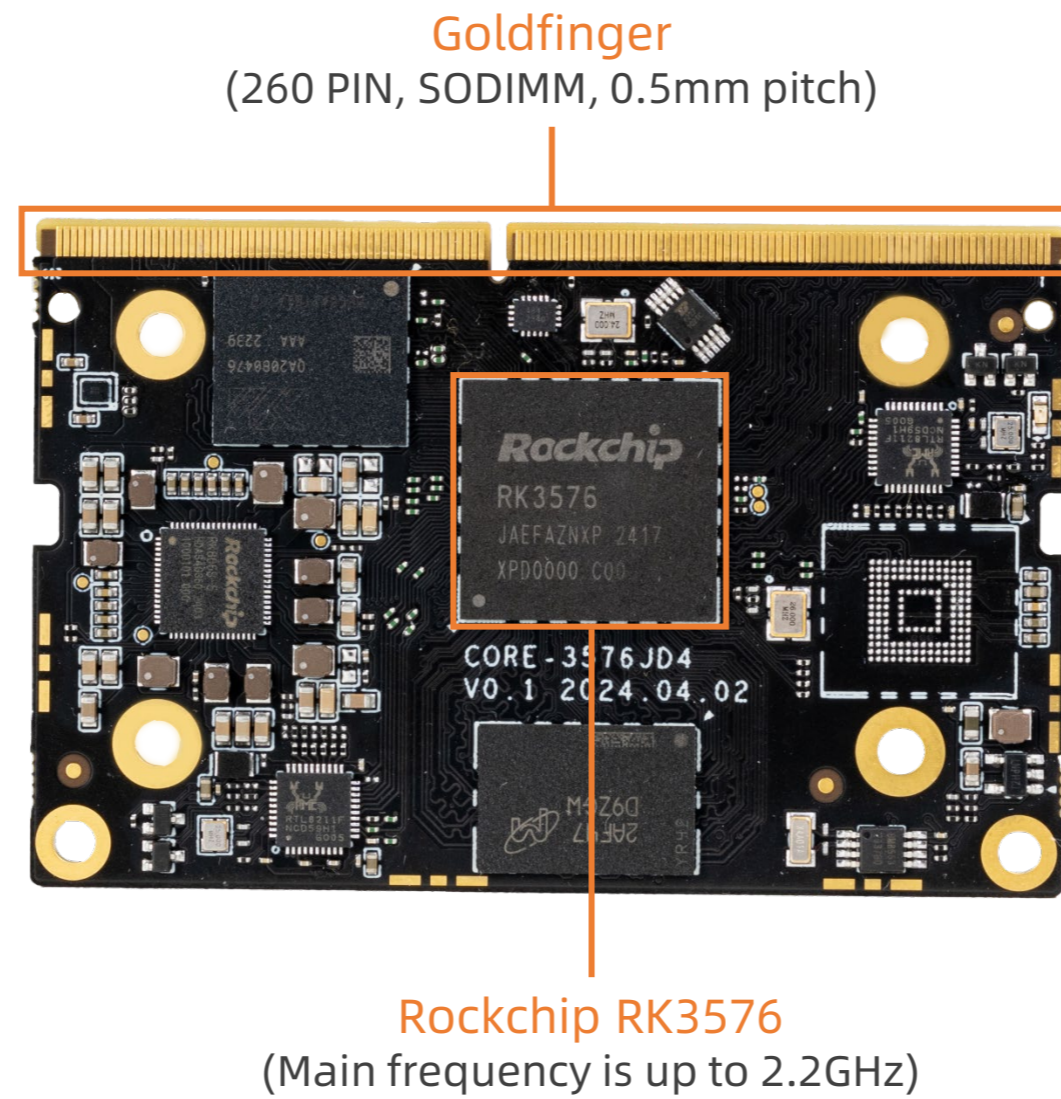
It is widely used in edge computing, local deployment of large models, intelligent digital signage, cloud terminal products, industrial PCs, automotive electronics, and more.

Specifications

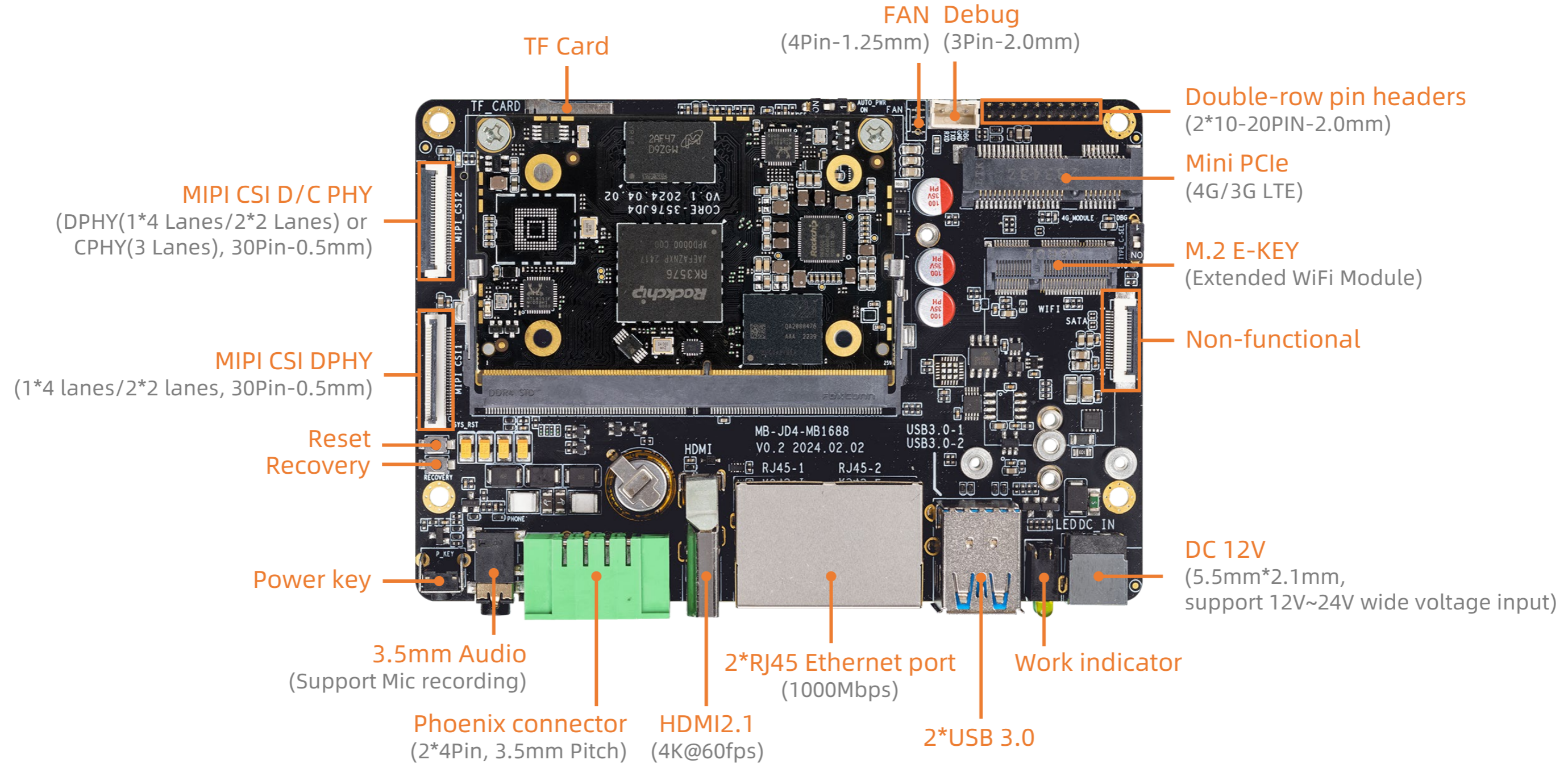


Specifications		
Basic Specifications	SOC	Rockchip RK3576
	CPU	Octa-core 64-bit processor (4xA72 + 4xA53) with a maximum frequency of 2.2GHz
	GPU	G52 MC3@1GHz, support OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1, embedded with high-performance 2D acceleration hardware
	NPU	6 TOPS NPU, support mixed operations of INT4/8/16/FP16/BF16/TF32
	ISP	Built-in 16 million pixel ISP, support low-light noise reduction, support RGB-IR sensor, support up to 120dB HDR, AI-ISP to improve low-noise image effect.
	Decoding/Encoding	Decoding: 4K@120fps (H.265/HEVC, VP9, AVS2, AV1), 4K@60fps (H.264/AVC) Encoding: 4K@60fps (H.265/HEVC, H.264/AVC)
	RAM	LPDDR4/LPDDR4x (4GB/8GB optional)
	Storage	eMMC (16GB/32GB/64GB/128GB/256GB optional), UFS2.0 (Optional)
	Power	5.0V (voltage tolerance $\pm 5\%$)
	OS	Android14, Linux OS, Buildroot
	Power consumption	Max: 7.0W(5V/1400mAh) Normal: 1.05W(5V/210mAh) Min: 0.05W(5V/10mAh)
	Software Support	<ul style="list-style-type: none"> The private deployment of ultra-large-scale parameter models under the Transformer architecture, including large language models such as Gemma-2B, LLaMa2-7B, ChatGLM3-6B, Qwen1.5-1.8B. Traditional network architectures such as CNN, RNN, and LSTM; a variety of deep learning frameworks, including TensorFlow, PyTorch, MXNet, PaddlePaddle, and ONNX, as well as custom operator development Docker container management technology
	Size	69.6mm * 45mm * 4.15mm
	Weight	$\approx 16g$
Environment	Operating Temperature: -20°C- 60°C Storage Humidity: 10% ~ 90%RH (non-condensing)	
Interface Specifications	Internet	Supports 2-way Gigabit Ethernet (2 onboard Ethernet ICs), expandable 2.4GHz/5GHz dual-band WiFi6 (802.11a/b/g/n/ac/ax)/Bluetooth 5.2 and 5G/4G LTE
	Video input	2 * MIPI CSI DPHY (1*4 Lanes or 2*2 Lanes), 1 * MIPI D/CPHY (MIPI DPHY (1*4 Lanes or 2*2 Lanes) or MIPI CPHY (3 Lanes)), 1 * DVP (8/10/12/16-bit, BT.601/BT.656 and BT.1120)
	Video output	1 * HDMI2.1(4K@120fps)/eDP1.3(4K@60fps), 1 * DP1.4 (4K@120fps), 1 * EBC Output interface (Support E-ink EPD (Electronic Paper Display), 2560 x1920)
	Audio	2 * SAI (4T/4R), 3 * SAI (1T/1R), supports I2S/TDM/PCM mode and supports sampling rates up to 192KHz 2 * SPDIF TX & RX (8ch) 2 * PDM(Up to 8 channels, audio resolution 16~24 bits, sample rate up to 192KHz, support PDM master receive mode)
	PCIe/SATA	1* PCIe 2.1/SATA 3.1/USB 3.2 Gen1 Combo interface 1* PCIe 2.1/SATA 3.1 Combo interface
	USB	USB 3.2 Gen1x1 (USB3.0) with USB 2.0
	SDIO	1 * SDIO3.0
	PWM	16 * PWM
	SPI	5 * SPI (Supports serial master and serial slave modes, software configurable)
	I2C	10 * I2C (Supports 7-bit and 10-bit address modes, data rates up to 100kbps in standard mode and up to 400kbps in fast mode)
	I3C	2 * I3C (I2C compliant, SDR mode supported, up to 10 devices supported)
	UART	12 * UART (Support automatic flow control mode, support RS485 function)
	CAN	2 * CAN FD (Supports 8192 bit receive FIFO)
	Watch Dogs	Support External watchdog (On-board watchdog IC)
SARADC	7 * SARADC + 1 * SARADC (boot only), supports 12-bit resolution, up to 1MS/s sampling rate	

Core board Interface description

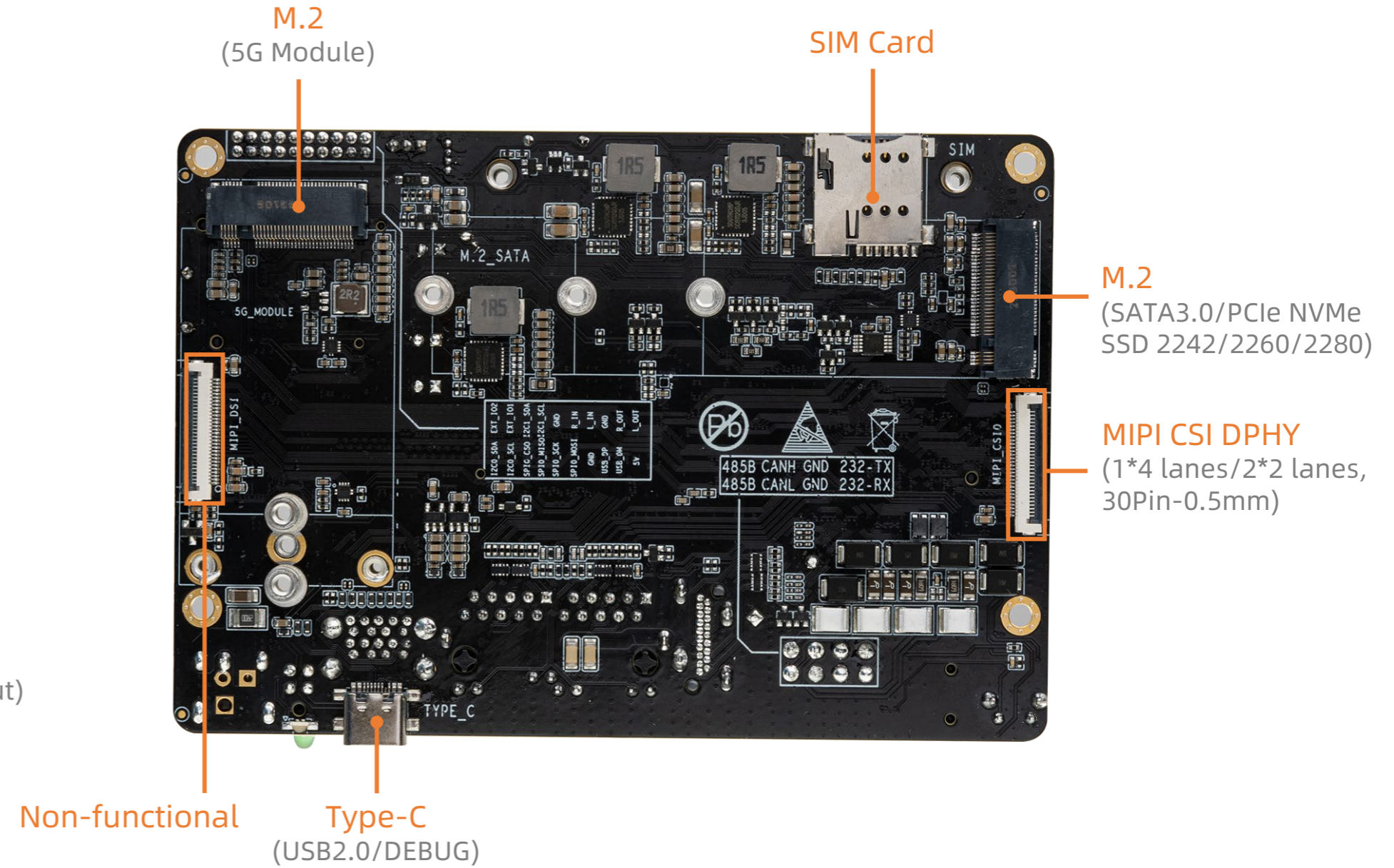
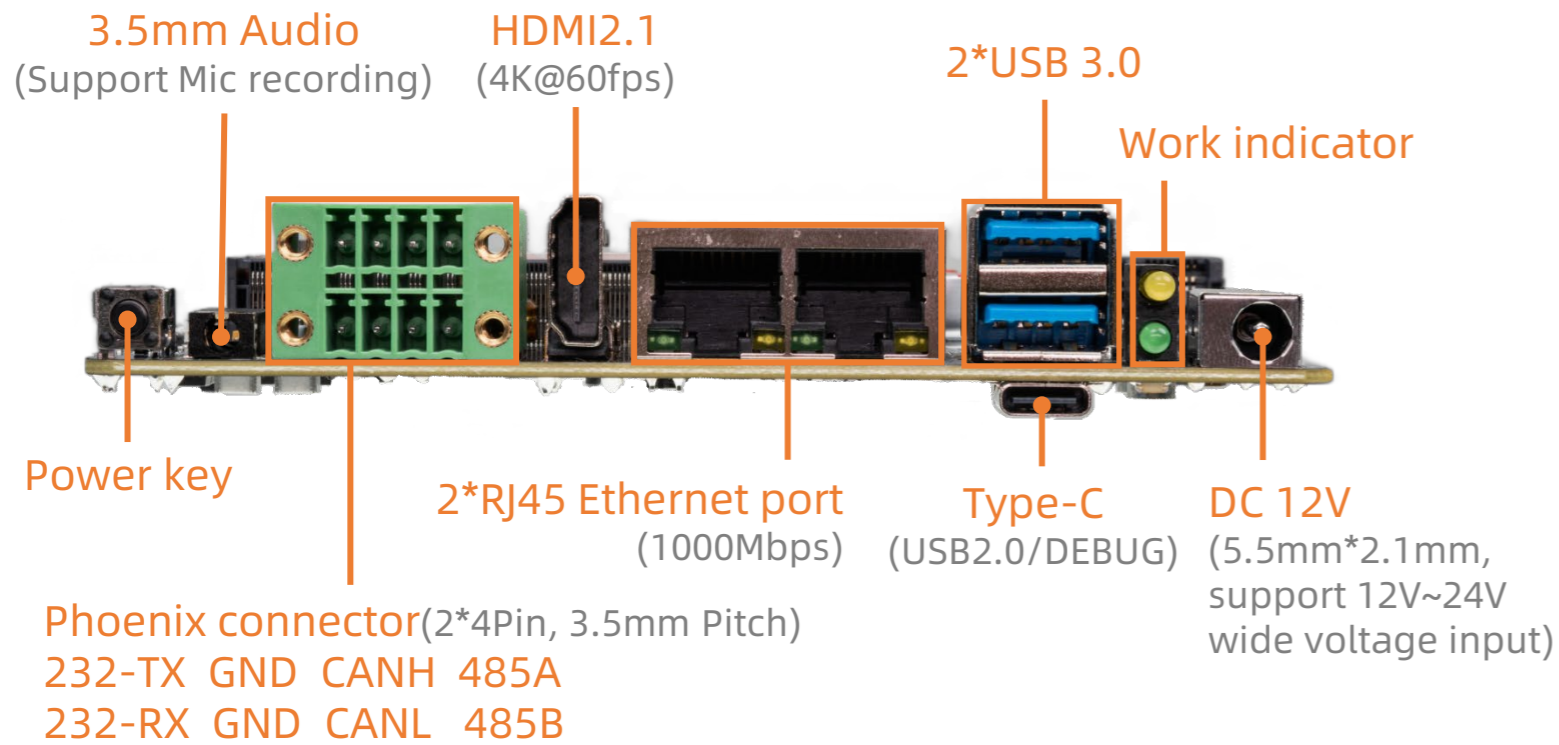


Mainboard Interface description

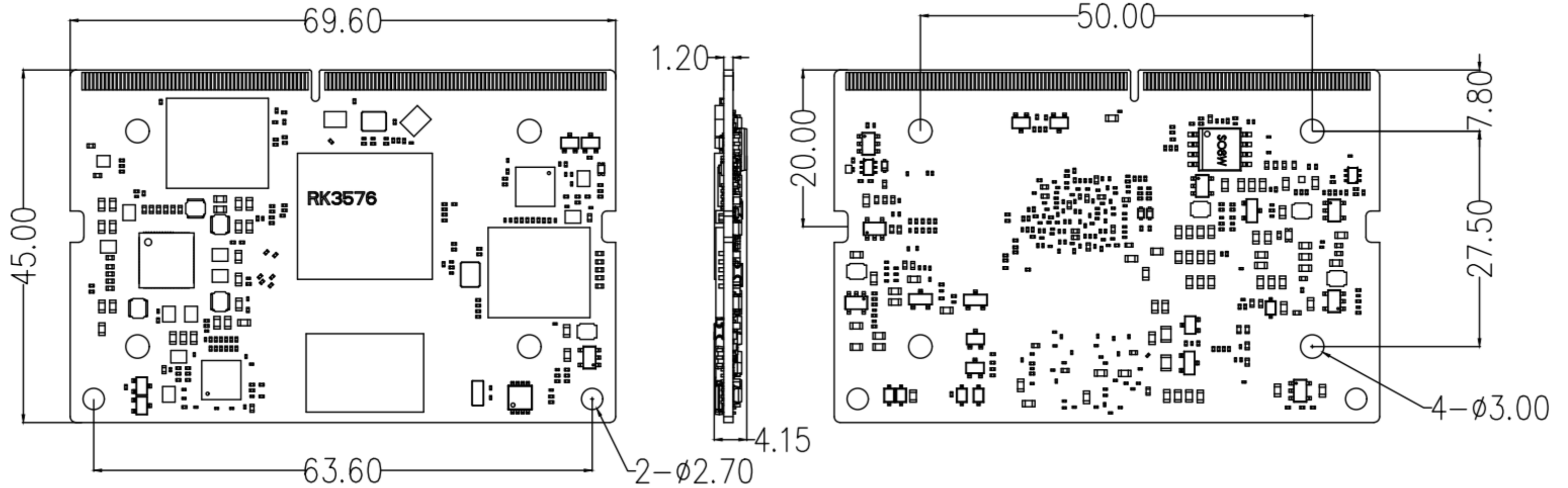




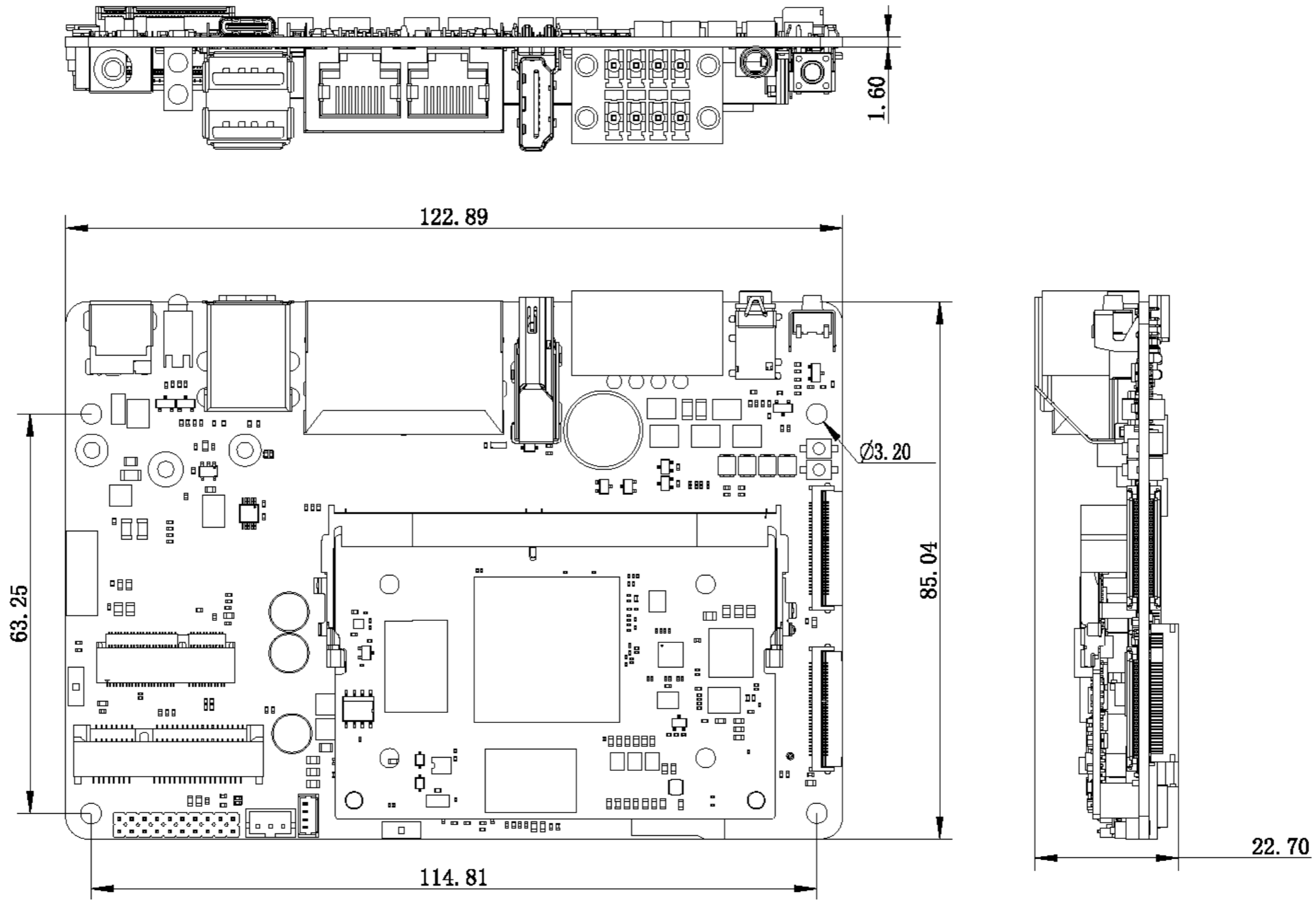
Mainboard Interface description



Core board Dimension



Mainboard Dimension





T-CHIP INTELLIGENCE TECHNOLOGY



Contact Us
(+86)18688117175



E-mail
global@t-firefly.com



Website
<https://en.t-firefly.com/>



Address
Room 2101, Hongyu Building, #57 Zhongshan 4Rd, East District,
Zhongshan, Guangdong, China.