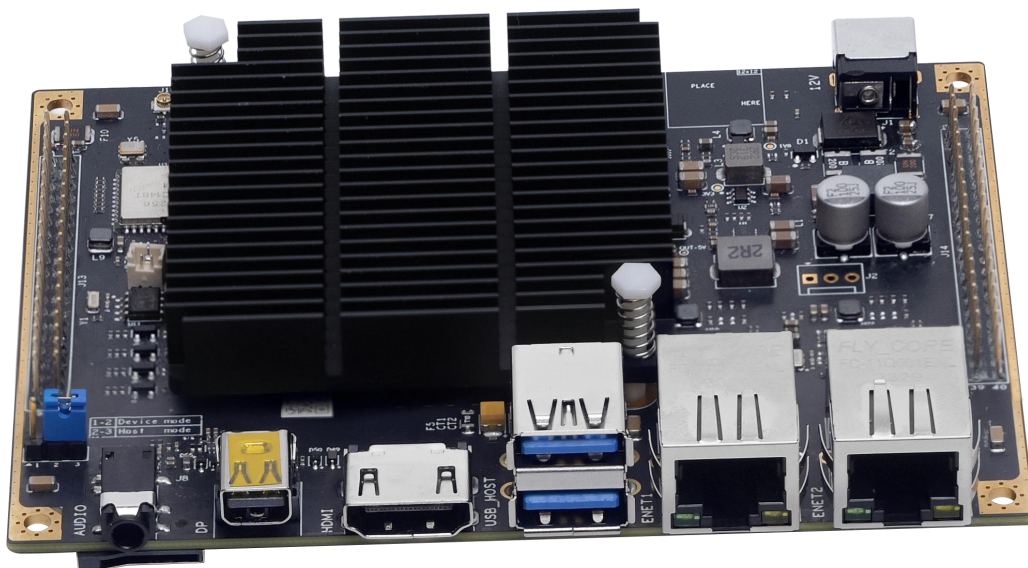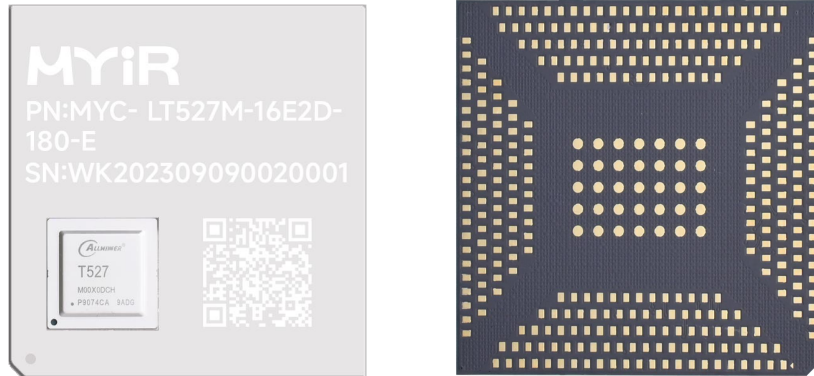# MYD-LT527 Development Board Overview

- ✓ *MYC-LT527 SOM as Controller Board*
- ✓ *Up to 1.8GHz Allwinner T527 Octa-core ARM Cortex-A55 MPU with GPU*
- ✓ *Neural Processing Unit (NPU) operating at up to 2 TOPs*
- ✓ *2GB/4GB LPDDR4, 16GB/32GB eMMC Flash, 32Kbit EEPROM*
- ✓ *UARTs, 1 x USB 3.0, 2 x USB 2.0, 2 x Gigabit Ethernet, 2 x CAN, WiFi/Bluetooth, Micro SD card Slot*
- ✓ *2 x MIPI-CSI, HDMI/Mini-DP/MIPI-DSI/LVDS, Audio Input/Output*
- ✓ *Supports for Linux, Android and Ubuntu OS*
- ✓ *Optional 7-inch LCD Module, Camera Module and RPI Module (RS232/RS485/CAN)*
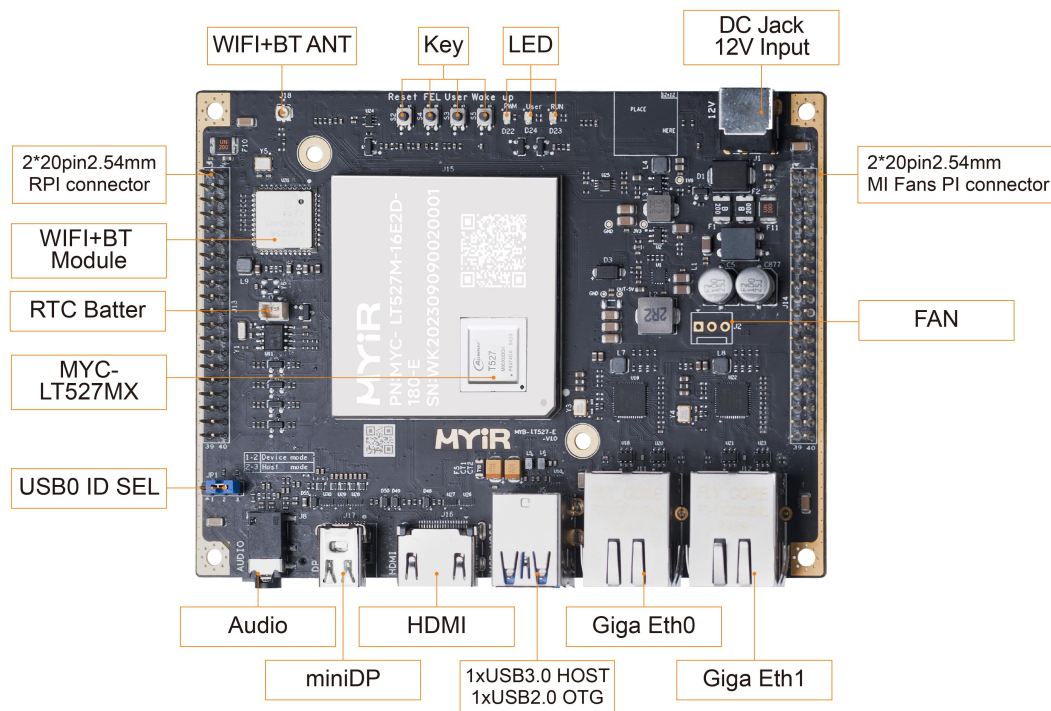
The MYD-LT527 Development Board is an advanced evaluation platform designed for the Allwinner T527 processor, which features an Octa-core ARM Cortex-A55 MPU operating at a maximum operating frequency of 1.8GHz. The board's core component is the MYC-LT527 System-On-Module (SOM), which integrates the T527 CPU, 2GB/4GB LPDDR4, 16GB/32GB eMMC, 32Kbit EEPROM and a Power management IC (PMIC). Most I/O signals are routed to and from the SOM via the 318-pin LGA expansion interface, providing a highly versatile base board.


MYC-LT527 Top-view and Bottom-view (delivered with shielding cover installed by default)

The MYD-LT527 development board takes full features of the T527 processor, offering exceptional multimedia capabilities. It support for 4K high-definition video decoding and 1080@60fps H.264 video encoding, ensuring superior video processing capabilities. The board offers two MIPI-CSI camera interfaces and multiple display interfaces: HDMI, Mini-DP, MIPI-DSI and LVDS, enabling different display in two screens. Additionally, it provides a range of advanced connectivity options, including dual Gigabit Ethernet, USB3.0, USB2.0, two CAN ports, a Micro SD card slot and an onboard WiFi/Bluetooth module, enhancing network and data transfer capabilities. Two 40-pin expansion interfaces are available to expand the board's functionality even further. The MYD-LT527 Development Board's robust capabilities and extensive interface options make it well-suited for high-performance industrial robots, integrated display and control machines, and embedded devices with media and AI functions, such as vehicle terminals.
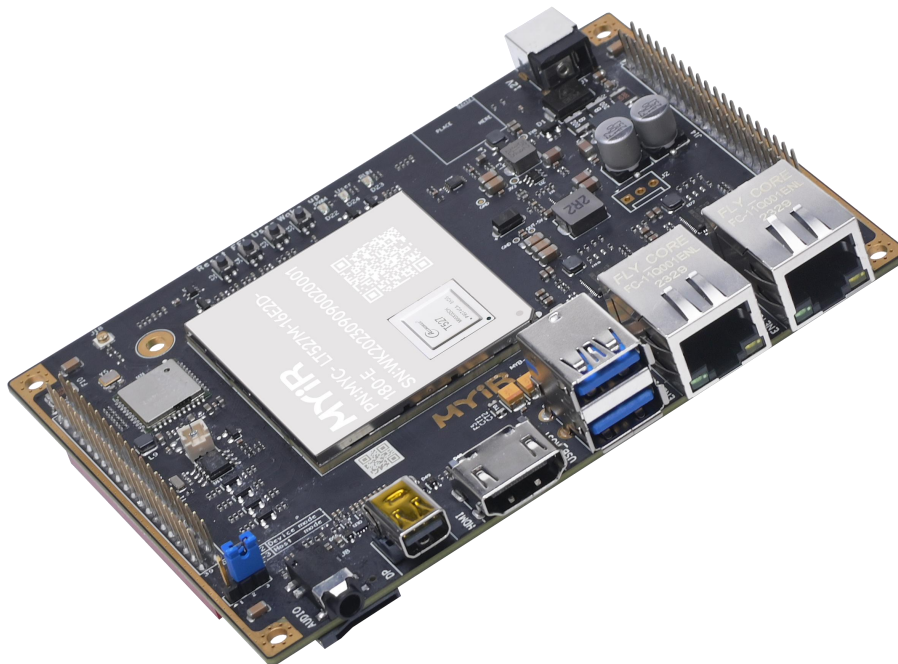

MYD-LT527 Development Board Top-view (delivered with heatsink installed by default)
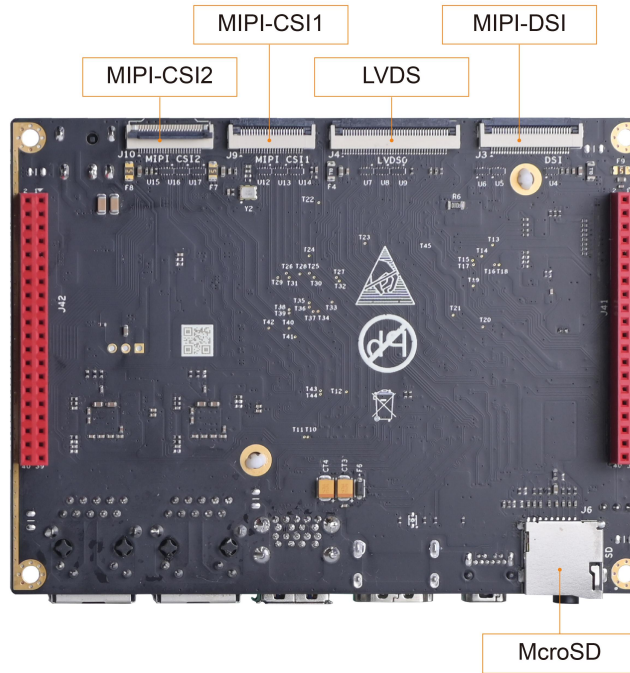
MYD-LT527 Development Board Bottom-view

The MYD-LT527 supports for Linux 5.15, Android 13 and Ubuntu 22.04 operating systems., ensuring a stable and efficient performance. MYIR provides abundant software resources, including kernel and driver source code, as well as detailed documentations and tools that facilitate rapid and easy development for users. These resources provide the necessary support to developers, enabling them to focus on creating innovative and exciting applications.

The MYD-LT527 Development Board is delivered with Quick Start Guide, one USB to TTL serial cable and one 12V/3A power adapter. MYIR also offers MY-CAM003M MIPI Camera Module, MY-LVDS070C 7-inch LCD Module and MY-WIREDCOM RPI Module ((RS232/RS485/CAN)) as add-on options for the board.
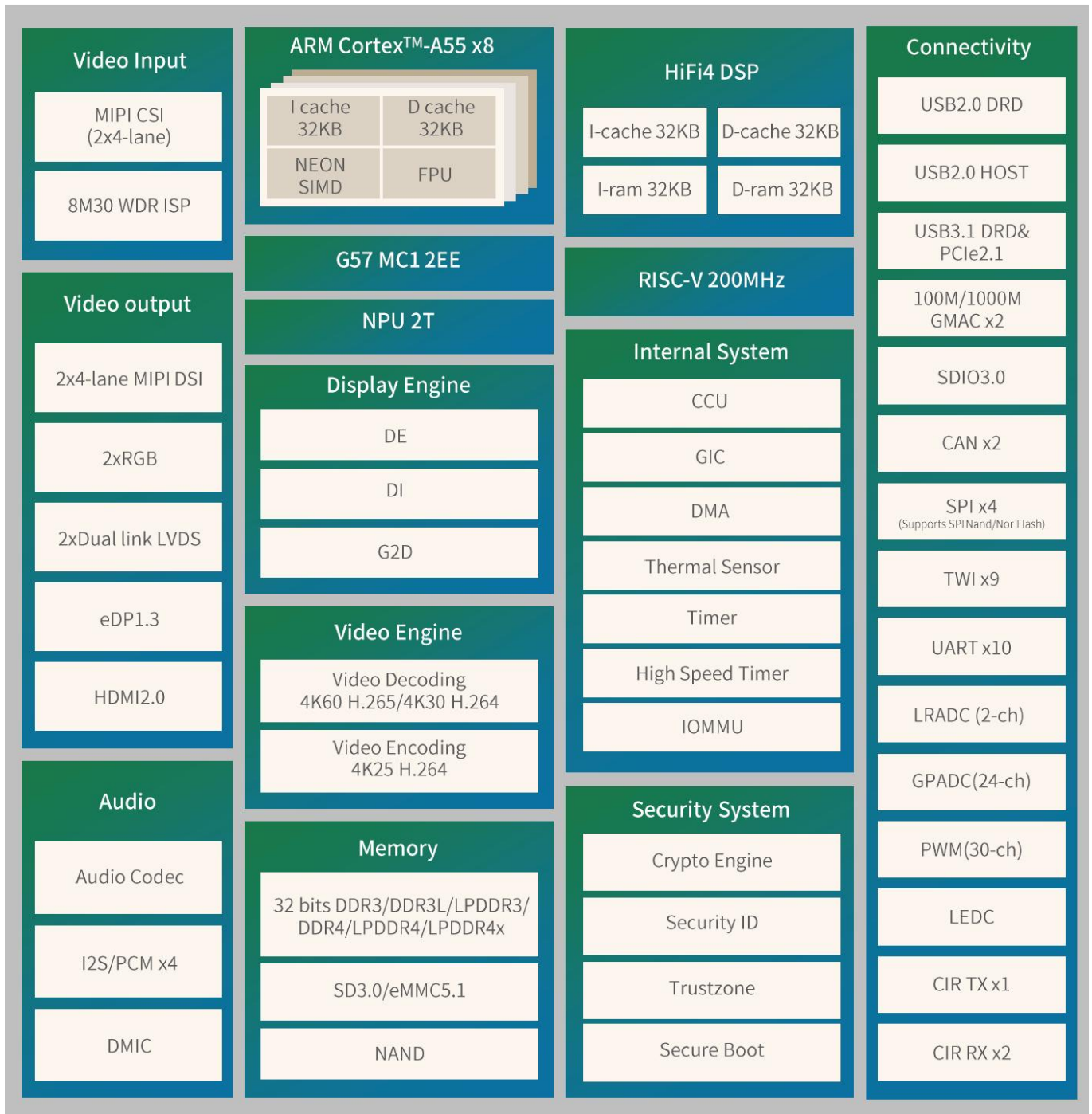

MYD-LT527 Development Board (delivered with heatsink installed by default)

Hardware Specification

Allwinner T527 series features high-performance octa-core Cortex-A55 AI platform SoCs for the electronic commercial, industrial, and automotive fields. The chip family integrates octa-core Cortex-A55 CPU, a HiFi4 DSP, 2 TOPS NPU, G57 MC1 GPU, 32-bit DDR3/DDR3L/DDR4/LPDDR3/LPDDR4/LPDDR4X DRAM, high-speed interfaces (PCIe2.1 and USB3.1), automotive interface (CAN), multi video output interfaces (2*RGB/2*Dual-LVDS/2*MIPI DSI/HDMI/eDP), and video input interfaces (MIPI CSI). The chip family supports 4K@60fps H.265 decoder, 4K@30fps H.264 decoder, 1080p@60fps H.264 encoder, DI, and SmartColor system, which provides users with smooth experience and professional AI visual effect. T527 series can be used in Content sharing and self-service interactive terminals, Smart manufacturing, and other electronic commercial and industrial devices.

Video Input	ARM Cortex™-A55 x8	HiFi4 DSP	Connectivity
MIPI CSI (2x4-lane)	I cache 32KB / D cache 32KB	I-cache 32KB / D-cache 32KB	USB2.0 DRD
8M30 WDR ISP	NEON SIMD / FPU	I-ram 32KB / D-ram 32KB	USB2.0 HOST

Video output	G57 MC1 2EE	RISC-V 200MHz	USB3.1 DRD& PCIe2.1
2x4-lane MIPI DSI	NPU 2T		100M/1000M GMAC x2

	Display Engine	Internal System	
2xRGB	DE	CCU	SDIO3.0
2xDual link LVDS	DI	GIC	CAN x2
eDP1.3	G2D	DMA	SPI x4 (Supports SPI Nand/Nor Flash)
HDMI2.0		Thermal Sensor	TWI x9

	Video Engine	Timer	UART x10
	Video Decoding 4K60 H.265/4K30 H.264	High Speed Timer	LRADC (2-ch)
	Video Encoding 4K25 H.264	IOMMU	GPADC(24-ch)

Audio	Memory	Security System	PWM(30-ch)
Audio Codec	32 bits DDR3/DDR3L/LPDDR3/ DDR4/LPDDR4/LPDDR4x	Crypto Engine	LEDC
I2S/PCM x4	SD3.0/eMMC5.1	Security ID	CIR TX x1
DMIC	NAND	Trustzone	CIR RX x2
		Secure Boot	

T527 Processor Block Diagram

MYIR is using the T527M00X0DCH and T527M02X0DCH processors for the MYC-LT527. The main differences of the T527 series devices are described as in below form:

Devices	NPU	Video Decoder	Package
T527H02X0DCH	Support	H.265, 4K@60fps, 10bits	17 mm x 17 mm, FCBGA 664 balls
T527H00X0DCH	Not Support	H.265, 4K@60fps, 10bits	17 mm x 17 mm, FCBGA 664 balls
T527M02X0DCH	Support	H.265, 4K@30fps, 8bits	17 mm x 17 mm, FCBGA 664 balls
T527M00X0DCH	Not Support	H.265, 4K@30fps, 8bits	17 mm x 17 mm, FCBGA 664 balls

T527 Series Device Summary
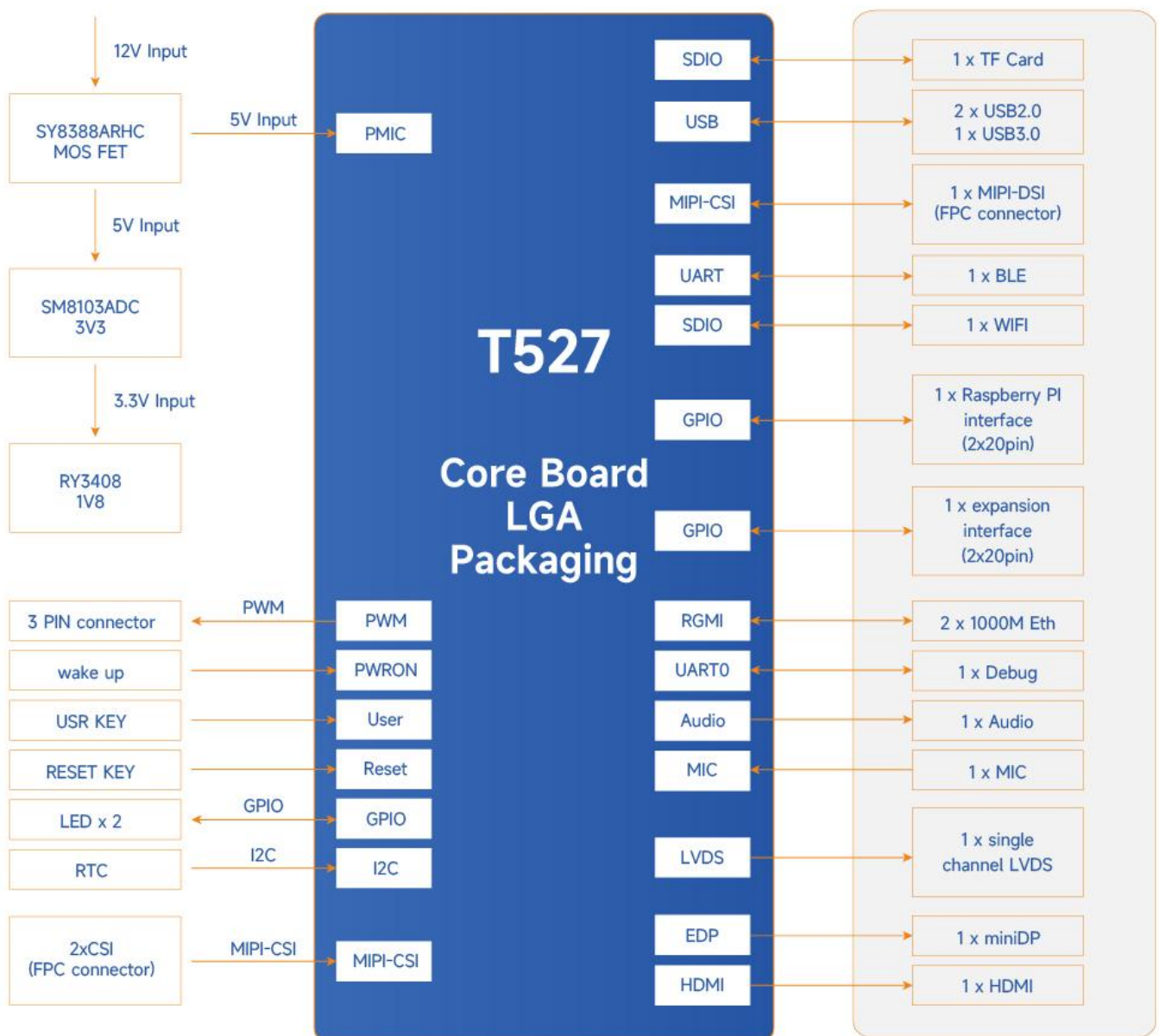
*Function Block Diagram of MYD-LT527 Development Board*

The MYD-LT527 Development Board is using the MYC-LT527 as core controller board.

It takes full features of Allwinner T527 processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 90mm x 120mm (base board), 43mm x 45mm (SOM)
- PCB Layers: 6-layer design (base board), 12-layer design (SOM)
- Power supply: +12V/3A Power supply (base board), 5V/3A (SOM)
- Working temperature: -40~85 Celsius (industrial grade) or -20~70 Celsius (extended temperature)
- (WiFi/BT Module: -30~85 Celsius)

The MYD-LT527 Controller Board (MYC-LT527)

MYC-LT527
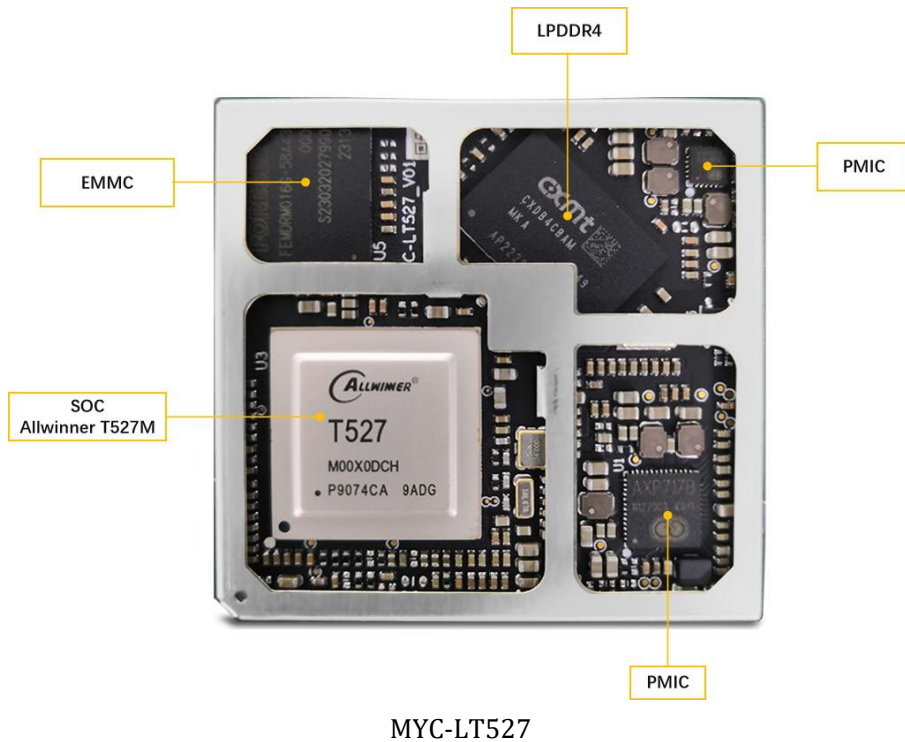
Processor

- Allwinner T527 processor
- - Octa-core ARM Cortex-A55, up to 1.8GHz
- - RISC-V CPU, up to 200 MHz
  - - 600MHz HIFI4 Audio DSP
  - - ARM G57 MC1 GPU
  - - Up to 2 Tops NPU

Memory

- 2GB/4GB LPDDR4
- 16GB/32GB eMMC
- 32Kbit EEPROM

Peripherals and Signals Routed to Pins

- Power Management IC
- 381-pin LGA Expansion Interface
  - 2 x RGMII/RMII
  - 1 x PCIe2.1, RC mode (reused with USB3.1)
  - 1 x USB 2.0 DRD
  - 1 x USB 2.0 Host
  - 1 x USB 3.1 DRD (reused with PCIe2.1)
  - 2 x SDIO 3.0
  - 10 x UART
  - 2 x CAN
  - 9 x I2C
  - 30 x PWM
  - 4 x SPI
  - 24 x GPADC, 12-bit
  - 2 x LRADC, 6-bit
  - 1 x Parallel CSI, 16-bit
  - 1 x HDMI 2.0
  - 1 x eDP
  - 2 x LVDS with dual link
  - 2 x RGB
  - 4+4-lane, 4+2+2-lane, or 2+2+2+2-lane MIPI-CSI
  - 2 x MIPI-DSI
  - 2 x DACs and 3 x ADCs
  - 3 x audio outputs
  - 3 x audio inputs
  - 4 x I2S/PCM
  - 1 x SPIF I/O
 - 2 x CIR RX and 1 x CIR TX
  - Up to 138 x GPIO

Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet and the SOM pinout description file.
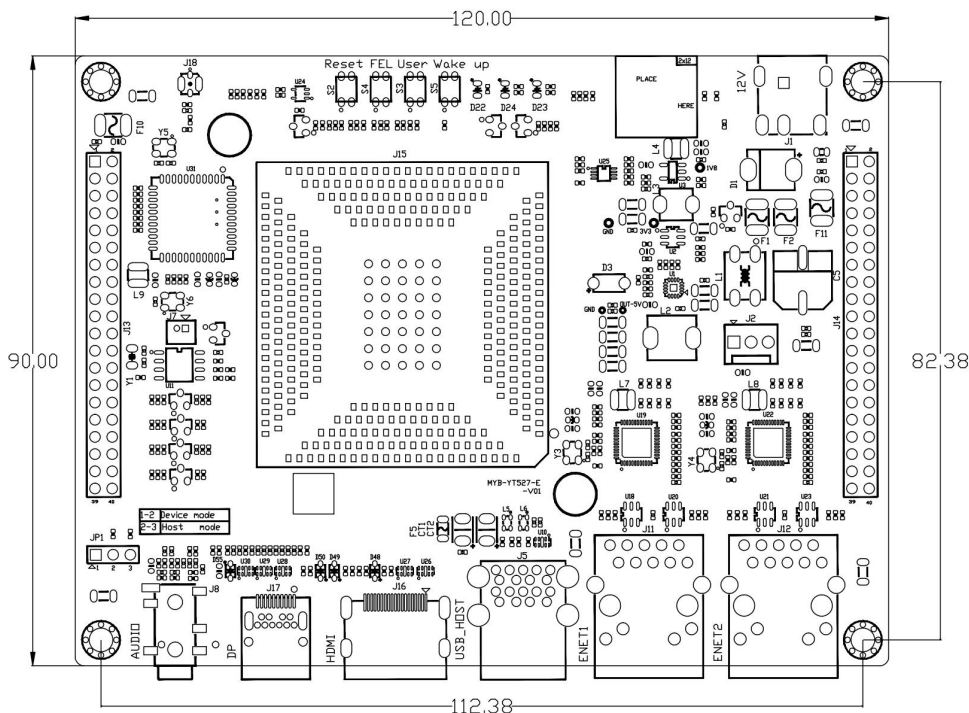
The MYD-LT527 Development Board Base Board

- 1 x Power Jack
- Serial ports
- - 2 x TTL serial ports (UART3/7 brought out from RPI expansion interface)
- - 2 x TTL serial ports (UART2/4/5/6 brought out from MI Fans PI expansion interface)
- USB
  - 1 x USB 3.0 Host
  - 2 x USB 2.0 OTG
- 2 x 10/100/1000 Mbps Ethernet interfaces
- 2 x CAN
- WiFi/Bluetooth Module (complies with IEEE 802.11 a/b/g/n/ac standard and supports Bluetooth V5.2)
- 1 x Micro SD card slot
- Video Input: 2 x MIPI-CSI interfaces
- *Supports MYIR's MY-CAM003M Camera Module*

- Video Output
- - 1 x HDMI output interface
- - 1 x Single-channel LVDS display interface
- *Supports MYIR's MY-LVDS070C LCD Module with Capacitive Touch Screen*
- - 1 x Mini-DP Display interface
- - 1 x MIPI-DSI interface
- Audio: 1 x 3.5mm Headphone/Mic Jack
- Extension interfaces
- - 1 x RPI interface (2.54mm 2 x 20-pin male expansion header, GPIO/I2C/UART/SPI/CAN, compatible with Raspberry PI standard 40-pin extension interface)
  - 1 x MI Fans PI interface (2.54mm 2 x 20-pin male expansion header, GPIO/I2C/UART/SPI/USB/PWM)
- 4 x Buttons (one for Reset, one for Wake up, one for Flash and one for USER)
- 1 x RTC Battery Interface
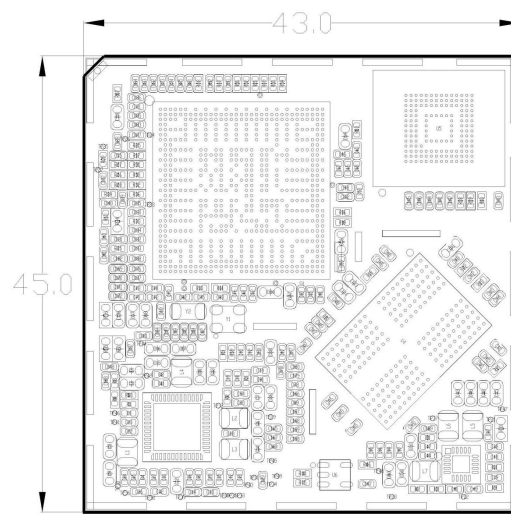
MYC-LT527 Dimensions Chart (Unit: MM)

MYD-LT527 Base Board Dimensions Chart (Unit: MM)

Software Features

The MYD-LT527 development board offers supports for Linux, Android and Ubuntu OS and is equipped with comprehensive software packages. To assist clients in speeding up their projects, the kernel and numerous peripheral drivers are provided in source code format. Below is a brief overview of the key software features:

Item	Features	Description	Source code
Bootloader	U-boot	Boot program uboot_2018.02	YES
Linux kernel	Linux kernel	Customized base on official kernel_5.15 version	YES
Device driver	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	USB Mouse	Standard USB mouse driver	YES
	USB Camera	Standard UVC driver-free camera driver	YES
	USB 4G	EC20/EC200	YES
	USB 5G	Quectel RG200U	YES
	I2C	I2C bus driver	YES
	RTC	LK8563T driver	YES
	SPI	QSPI, SPI bus driver	YES
	SDHI	eMMC, SD/TF card storage driver	YES
	WiFi	AP6256 driver (SDIO)	YES
	Ethernet	YT8531SH driver	YES
	MIPI-CSI	MY-CAM003M camera module driver (OV5640)	YES
	MIPI-DSI	LT9611 driver (MIPI-to-HDMI, 1920x1080p60)	YES
	LVDS	MY-LVDS070C display module driver (1024*600 pixels resolution)	YES
	HDMI Out	HDMI display driver, 4K@60fps, with audio	YES
	DP	Standard DP display driver, 1080p@60fps, with audio	YES
	Audio	SPDIF, MIC, HPout, LINEout and I2S drivers	YES
	GPIO	GPIO driver	YES
	Watchdog	Watchdog driver	YES
	Key	Key driver	YES
	LED	LED driver	YES
	DI&DO	DI&DO driver	YES
	PWM	PWM driver	YES
	ADC	ADC driver	YES
	UART	RS232/RS485/TTL UART Driver	YES
	CAN	CAN Driver	YES
	Timer	Timer Driver	YES
File system	myir-image-Android 13	Compiled and built based on Android13 SDK	YES
	myd-lt527-core.img	Linux image without GUI, built by buildroot	YES
	myd-lt527-full.img	Linux image with GUI, built by buildroot	YES
	Ubuntu 22.04		YES

MYD-LT527 Software Features

Order Information

Product Item	Part No.	Packing List
MYD-LT527 Development Board	MYD-LT527MN-32E4D-180-I (with NPU, Industrial) MYD-LT527MN-16E2D-180-I (with NPU, Industrial) MYD-LT527M-16E2D-180-I (without NPU, Industrial) MYD-LT527M-16E2D-180-E (without NPU, Extended)	✓ One MYD-LT527 Development Board ✓ (including MYC-LT527) ✓ One USB to TTL cable ✓ One 12V/2A Power adapter ✓ One Quick Start Guide
MYC-LT527 System-On-Module	MYC-LT527MN-32E4D-180-I-G (with NPU, Industrial) MYC-LT527MN-16E2D-180-I-G (with NPU, Industrial) MYC-LT527M-16E2D-180-I-G (without NPU, Industrial) MYC-LT527M-16E2D-180-E (without NPU, Extended)	**Add-on Options** ✓ One MYC-LT527 ✓ MY-LVDS070C 7-inch LCD Module ✓ MY-CAM003M Module ✓ MY-WIREDCOM Module
MY-LVDS070C 7-inch LCD Module	MY-LVDS070C	
MY-CAM003M Camera Module	MY-CAM003M	
MY-WIREDCOM RPI Module (RS232/RS485/CAN)	MY-WIREDCOM	

Note:

1. One MYD-LT527 Development Board comprises one MYC-LT527 SOM mounted onto the base board. If you require additional SOMs, you may place orders for extras.

2. The items of industrial grade support -40 to 85 degree Celsius temperature range; the items of extended temperature range support -20 to 70 degree Celsius temperature range.

3. Bulk discounts are available. For inquiries, kindly contact MYIR.

4. We cater to custom design requests based on the MYD-LT527, whether it involves reducing, adding or modifying the existing hardware components to suit the customers' specific needs.

MYIR

MYIR Electronics Limited

Headquarter Address: Room 04, 6th Floor, Building No.2, Fada Road, Yunli Smart Park, Bantian, Longgang District, Shenzhen, Guangdong, China 518129

Factory Address: Room 201, Block C, Shengjianli Industrial Park, Dafu Industrial Zone, Guanlan, Longhua District, Shenzhen, 518110, China

Website: en.myir.cn

Email: sales@myir.cn

Tel: +86-755-22984836