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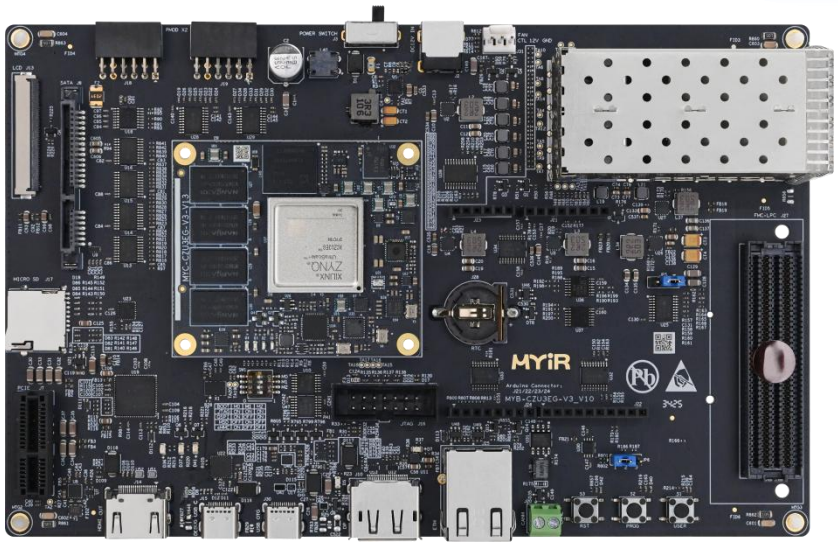
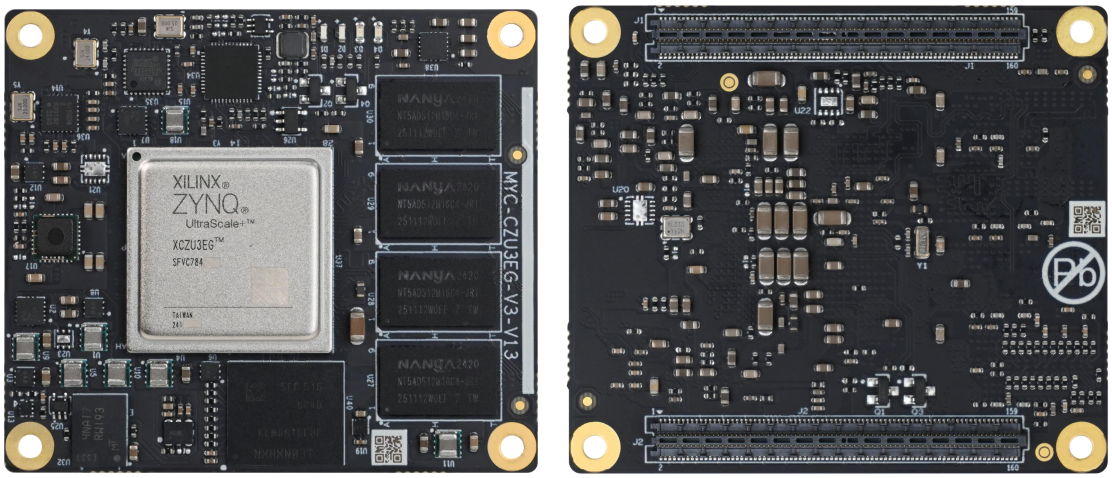
MYD-CZU3EG-V3 Development Board Overview



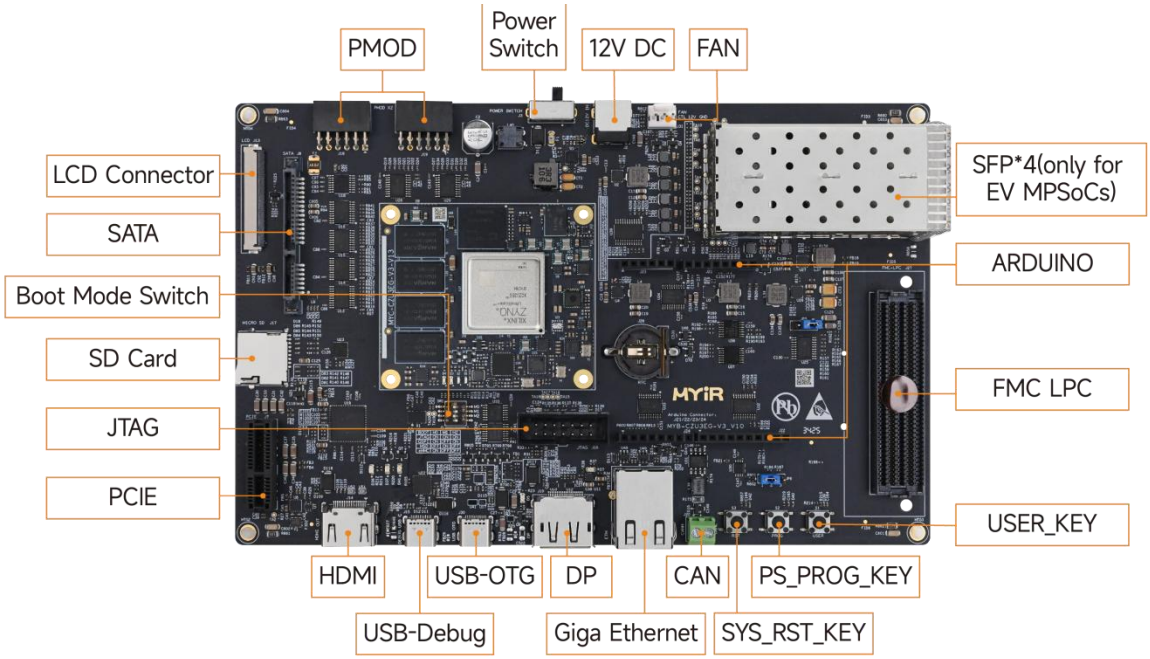
- ✓ *MYC-CZU3EG-V3 System-On-Module as Controller Board*
- ✓ *AMD Zynq UltraScale+ ZU3EG based on 1.2GHz Quad Arm Cortex-A53 and 600MHz Dual Arm Cortex-R5F Cores*
- ✓ *4GB DDR4 SDRAM (64 bit, 2400MHz), 8GB eMMC Flash, 64MB QSPI Flash*
- ✓ *USB 3.0, Gigabit Ethernet, CAN, TF, DisplayPort (DP), PCIe 2.1 interface, SATA 3.1 interface, JTAG...*
- ✓ *2x PMOD, 1x LPFMC, 4x SFP+ (only for EV MPSoCs), ARDUINO User Interface, HDMI, LCD FPC*
- ✓ *Optional 7-inch LCD Module*
- ✓ *Ready-to-Run Linux 6.6.40 (PetaLinux 2024.2)*
- ✓ *Supports AMD Vitis Software Development Platform*

The MYD-CZU3EG-V3 development board consists of the MYC-CZU3EG-V3 System-On-Module and a specially designed base board to provide a complete and versatile platform for evaluating and prototyping based on AMD Zynq UltraScale+ MPSoC devices. The MYC-CZU3EG-V3 System On Module is an Arm SOM with integrated XCZU3EG-1SFVC784I MPSoC, 4GB DDR4, 8GB eMMC, and 64MB QSPI Flash, Ethernet PHY, USB PHY and Power Module. It is mounted on the MYD-CZU3EG-V3 base board through two 0.5mm pitch 160-pin Razor Beam High-Speed Sockets.



MYC-CZU3EG-V3 System-On-Module (Top-view and Bottom-view)

The MYD-CZU3EG-V3 Zynq UltraScale+ ZU3EG MPSoC development board has extended a rich peripheral set and interfaces on the base board through connectors and headers including USB 3.0, Gigabit Ethernet, CAN, TF, DisplayPort (DP), PCIe interface, SATA interface, JTAG, HDMI, LCD interface, ARDUINO User Interface, PMoD, FMC, and four SFP+ interfaces (for EV MPSoCs only).

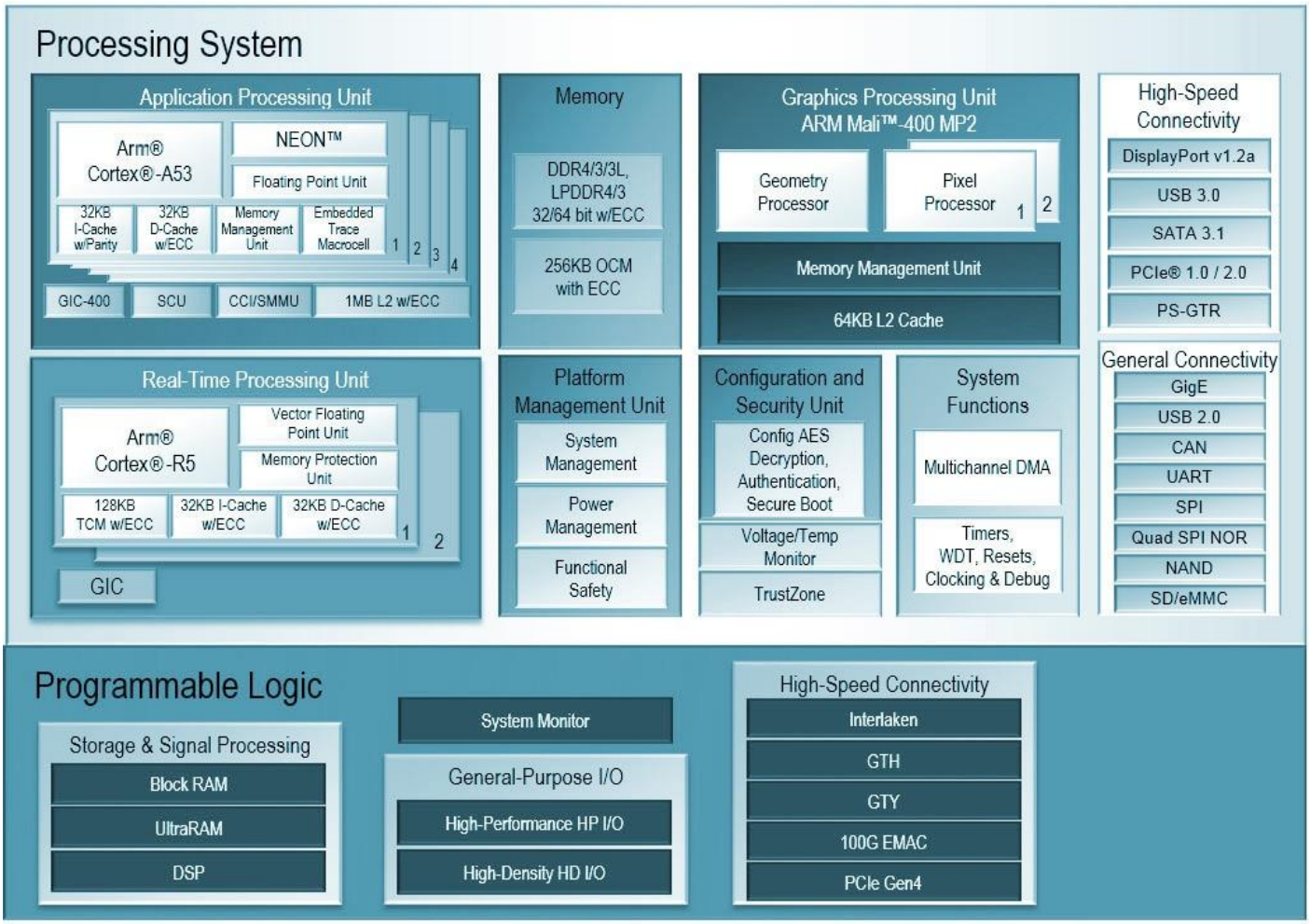


MYD-CZU3EG-V3 Development Board

The MYD-CZU3EG-V3 is capable of running PetaLinux 2024.2 and supporting Vitis development. It comes with necessary cable accessories as well as detailed documentations and software package. Typical applications are the Internet, cloud computing, Data center, Machine Vision, Military facilities, Flight navigation and other embedded applications.

Hardware Specification

AMD Zynq™ UltraScale+™ MPSoC devices provide 64-bit processor scalability while combining real-time control with soft and hard engines for graphics, video, waveform, and packet processing. Built on a common real-time processor and programmable logic equipped platform, three distinct variants include dual application processor (CG) devices, quad application processor and GPU (EG) devices, and video codec (EV) devices.



System block diagram of AMD Zynq™ UltraScale+™ EG

The MYD-CZU3EG-V3 is powered by the AMD Zynq UltraScale+ XCZU3EG. The main features for the MPSoC device are summarized as below.

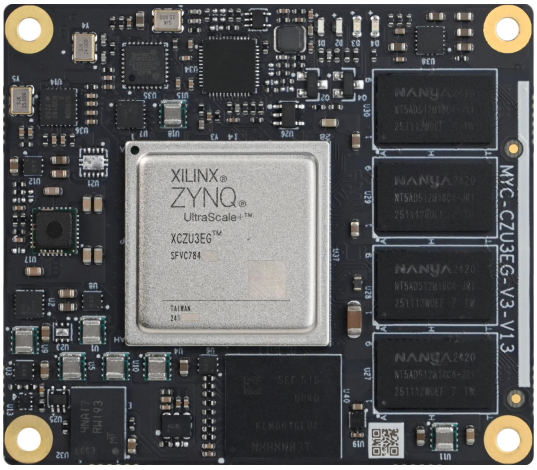
PS/PL	Features	Device Name	ZU3EG
Processing System (PS)	Application Processor Unit	Processor Core	Quad-core Arm® Cortex®-A53 MPCore up to 1.5 GHz
		Memory w/ECC	L1 Cache 32 KB I / D per core, L2 Cache 1 MB, on-chip Memory 256 KB
	Real-Time Processor Unit	Processor Core	Dual-core Arm Cortex-R5F MPCore up to 600 MHz
		Memory w/ECC	L1 Cache 32 KB I / D per core, Tightly Coupled Memory 128 KB per core
	Graphic & Video Acceleration	Graphics Processing Unit	Mali -400 MP2 up to 667 MHz
		Memory	L2 Cache 64 KB
	External Memory	Dynamic Memory Interface	x16: DDR4 w/o ECC; x32/x64: DDR4, LPDDR4, DDR3, DDR3L, LPDDR3 w/ ECC
		Static Memory Interfaces	NAND, 2x Quad-SPI
	Connectivity	High-Speed Connectivity	PCIe® Gen2 x4, 2x USB3.0, SATA 3.1, DisplayPort , 4x Tri-mode Gigabit Ethernet
		General Connectivity	2xUSB 2.0, 2x SD/SDIO, 2x UART, 2x CAN 2.0B, 2x I2C, 2x SPI, 4x 32b GPIO
	Integrated Block Functionality	Power Management Memory	Full / Low / PL / Battery Power Domains
		Security AMS - System Monitor	RSA, AES, and SHA 10-bit, 1 MSPS – Temperature and Voltage Monitor
PS to PL Interface			12 x 32/64/128b AXI Ports
Programmable Logic (PL)	Programmable Functionality	System Logic Cells (K)	154
		CLB Flip-Flops (K)	141
		CLB LUTs (K)	71
	Memory	Max. Distributed RAM (Mb)	1.8
		Total Block RAM (Mb)	7.6
		UltraRAM (Mb)	-
	Clocking	Clock Management Tiles (CMTs)	3
	Integrated IP	DSP Slices	360
		PCI Express®	-
		150G Interlaken	-
		100G Ethernet MAC/PCS w/RS-FEC	-
		AMS - System Monitor	1
	Transceivers	GTH Transceivers	-
		GTY Transceivers	-
	Speed Grades	Extended	-1-2-2L
		Industrial	-1-1L-2

Feature of ZU3EG MPSoC

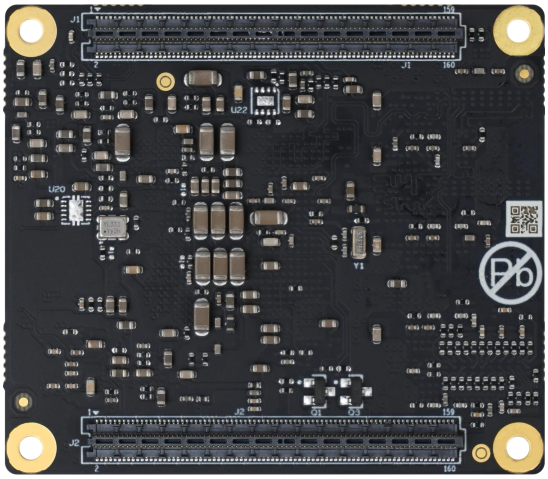
Mechanical Parameters

- Dimensions: 60.00mm x 52.00mm (System On Module), 195.33mm x 123.95mm (base board)
- PCB Layers: 14-layer design (System On Module), 6-layer design (base board)
- Power supply: 3.3V (System On Module), 12V (base board)
- Working temp.: 0~70 Celsius (Commercial grade), -40~85 Celsius(Industrial grade)

The MYD-CZU3EG-V3 Controller Board (MYC-CZU3EG-V3 System On Module)



MYC-CZU3EG-V3 Top-view



MYC-CZU3EG-V3 Bottom-view

MPSoC

- Xilinx Zynq UltraScale+ XCZU3EG-1SFVC784I MPSoC
  - Quad-core Arm Cortex-A53 MPCore™ up to 1.2 GHz
  - Dual-core Arm Cortex-R5F MPCore up to 600 MHz
  - ARM Mali-400MP2 Graphics Processor
  - 16nm FinFET+ FPGA fabric

Memory

- 4GB DDR4 SDRAM (64-bit, 2400MHz)
- 8GB eMMC Flash
- 64MB QSPI Flash

Peripherals and Signals Routed to Pins

- Gigabit Ethernet PHY
- USB PHY
- Power Module
- Clock Generator
- Watchdog
- Four LEDs
  - One yellow LED for ERROR_STATUS indicator (indicate a secure lockdown state)
  - One yellow LED for ERROR_OUT indicator (Asserted for accidental power loss, hardware error)
  - One green LED for PS_Done indicator (indicate the pl configuration is done)
  - One green LED for PS_INIT indicator (indicate the ps is initialized after a power-on reset)

- Two 0.5mm pitch 160-pin Razor Beam High-Speed headers bring out
  PS-GTS Unit:
  - PCIe 2.0 x4
  - 1x SATA 3.1
  - 1x DisplayPort 1.2a
  - 1x USB 3.0
  - 1x SGMII Ethernet

  PS Unit:
  - 1x USB 2.0
  - 1x RGMII
  - 1x SD/SDIO
  - 2x UART
  - 2x CAN 2.0B
  - 2x SPI
  - 2x I2C
  - GPIO

  PL Unit:
  - HP BANK64/65/66, IO voltage range supports 1.0～1.8V

  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-CZU3EG-V3 Development Board Base Board

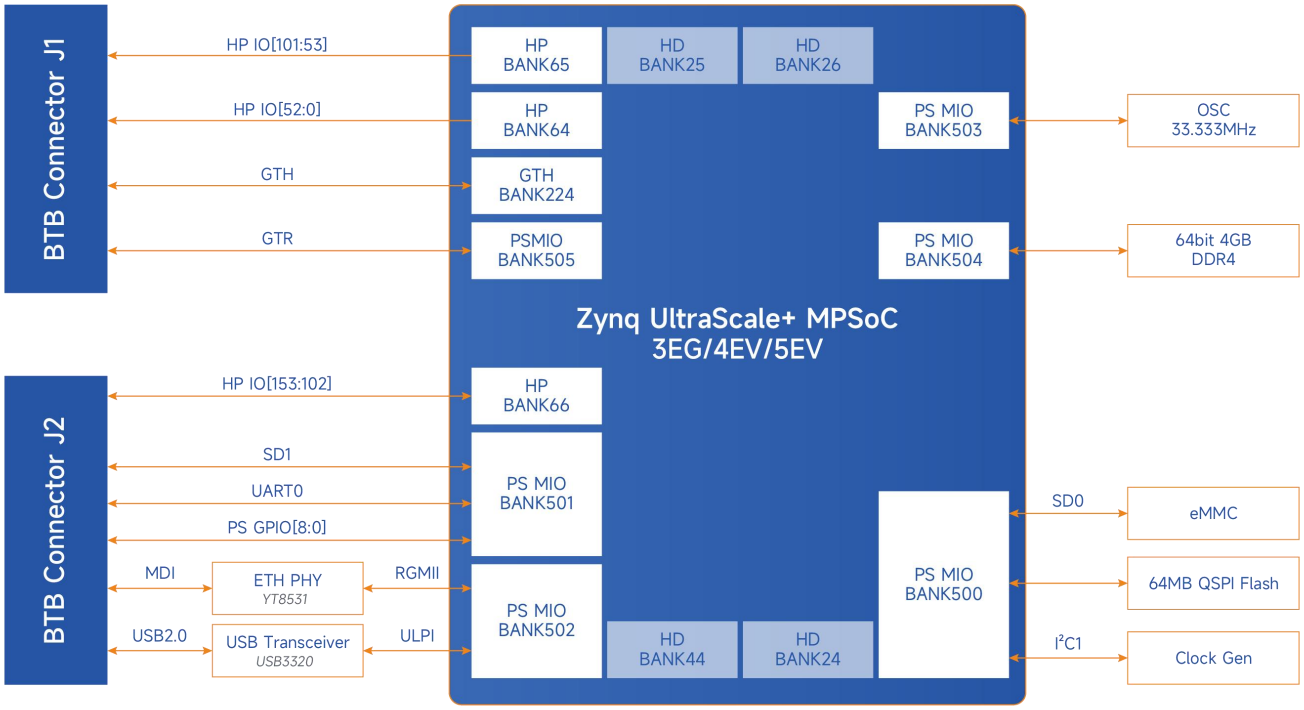
PS Unit

- One USB 3.0 (Type-C interface)
- One UART Debug port
- One TF card slot
- One CAN interface
- One 10/100/1000Mbps Ethernet interface
- One PCIe2.1 interface
- One SATA3.1 interface
- One 2.54mm pitch 14-pin JTAG interface (PS, PL reused)
- Buttons (one user button, one system reset button and one ps-programming button)
- One DisplayPort (DP)
- Battery backed RTC

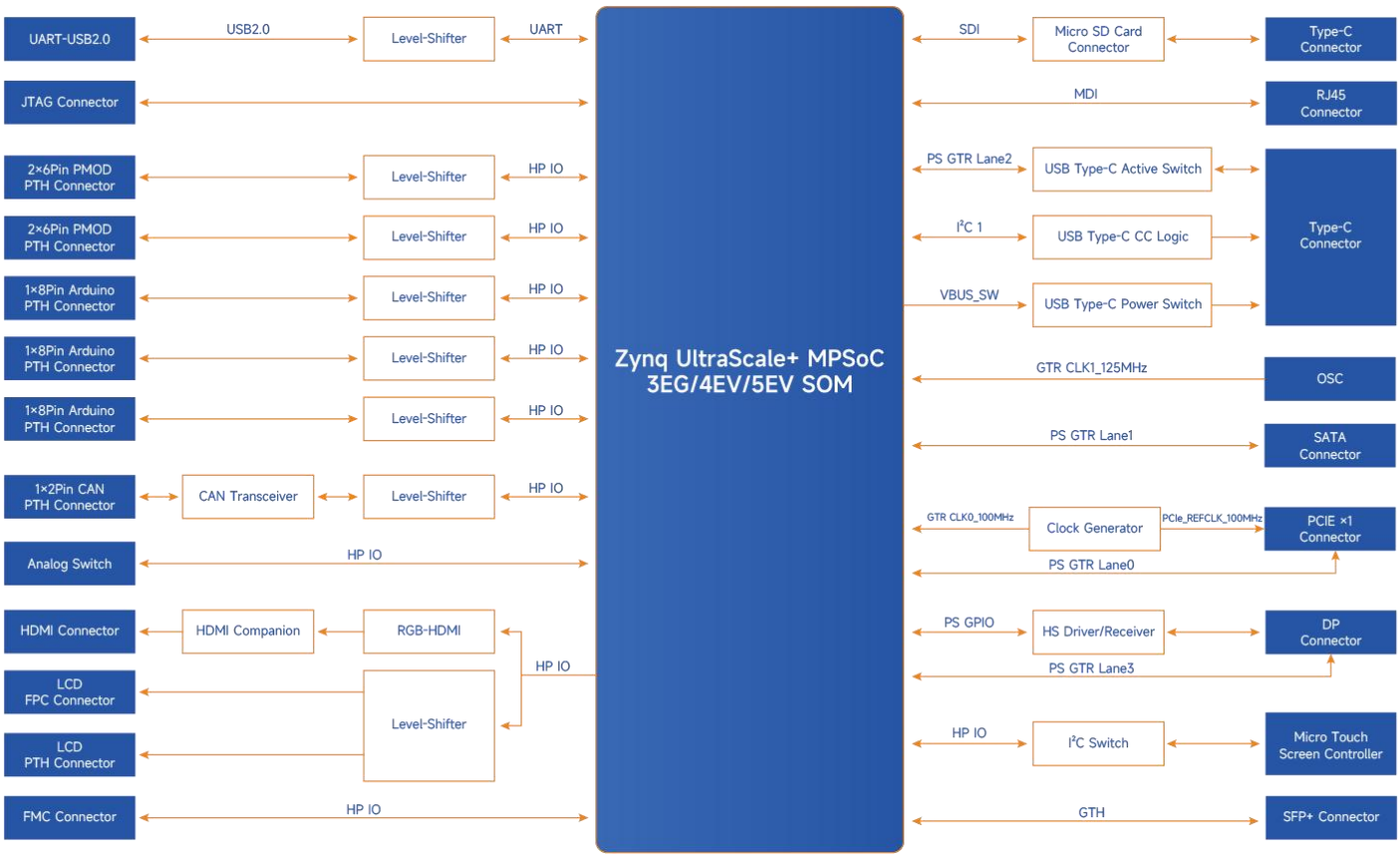
PL Unit

- One AMD standard LPFMC interface
- One HDMI interface (RGB 24-bit,not supporting audio, signals reused with LCD/TSP interface)
- Four SFP+ transceiver interfaces (reserved, only for Zynq UltraScale+ EV Devices)
- Two-channel Pmod
- ARDUINO user interface
- LCD FPC interface
  (24-bit RGB, supports resistive and capacitive touch screen panels,signals reused with HDMI interface)
- Three LEDs
  - One blue LED for power indicator
  - One red LED for FPGA programming indicator
  - One green LED for user define

Function Block Diagram

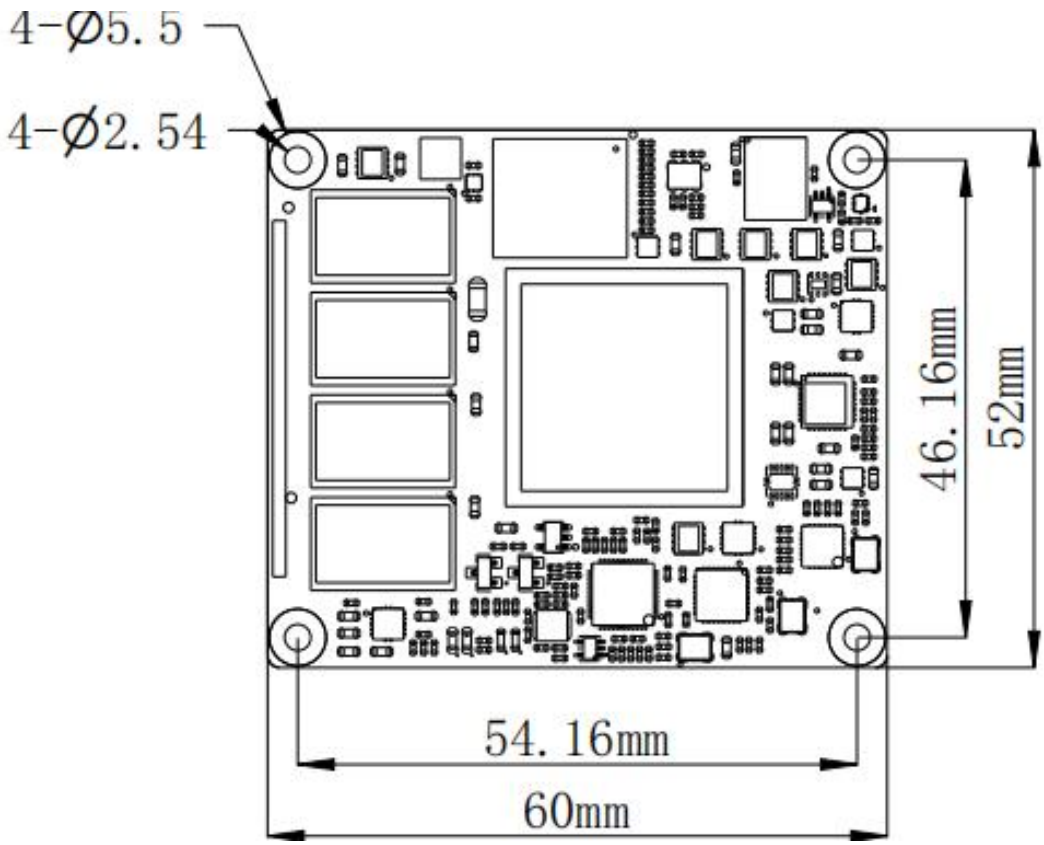


MYC-CZU3EG-V3 System-On-Module Function Block Diagram

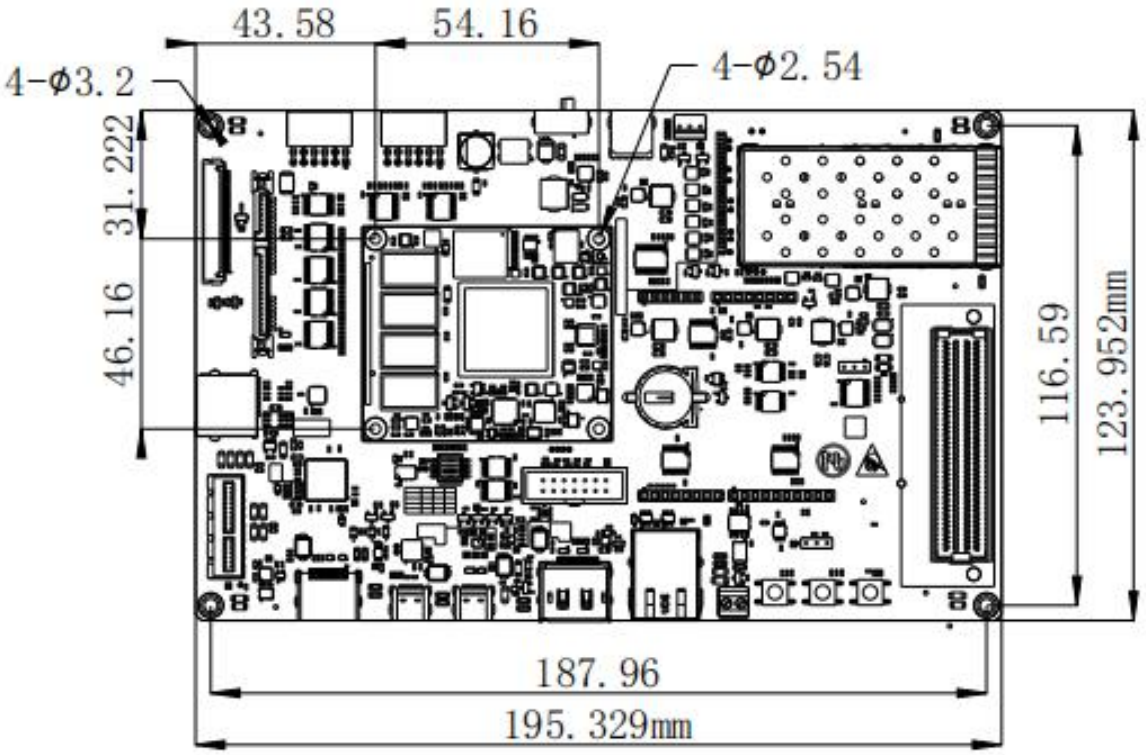


MYD-CZU3EG-V3 Development Board Function Block Diagram

Dimension Chart (Unit: MM)



Dimension Chart of MYC-CZU3EG-V3 (Top-view)



Dimension Chart of MYD-CZU3EG-V3

Software Features

The MYD-CZU3EG-V3 is provided with abundant software resources to assist customers in quickly commencing their development. Users can obtain the complete SDK and a comprehensive software development manual from MYIR's developer center. The software package features as below:

Item	Features	Description	Source Code
Bootloader	U-boot	uboot 2024.01	YES
Kernel	Linux 6.6.40	MYD-CZU3EG-V3 Customized Kernel	YES
Drivers	PMOD	PMOD driver	YES
	Arduino	Arduino driver	YES
	CAN	CAN driver	YES
	HDMI	HDMI driver	YES
	LCD	LCD driver	YES
	Micro SD	Micro SD driver	YES
	I2C	I2C driver	YES
	SATA	SATA driver	YES
	PCIE	PCIE driver	YES
	DP	DP driver	YES
	Ethernet	Ethernet driver	YES
	Watchdog	Watchdog driver	YES
File System	myir-image-czu3eg-hdmi	HDMI/DP display image built with Petalinux	YES
	myir-image-czu3eg-lcd	LCD display image built with Petalinux	YES

MYD-CZU3EG-V3 Software Features

Order Information

Item	Packing List
MYD-CZU3EG-V3 Development Board (Part No.: MYD-CZU3EG-V3-8E4D-1200-C)	✓ One MYD-CZU3EG V3 Development Board (including the base board and System On Module with installed active heatsink) ✓ One HDMI cable ✓ One 12V/2A Power adapter ✓ One 1.2m Micro USB2.0 cable ✓ One USB A 3.0 to Type-C cable Adapter ✓ One 32GB TF card ✓ One RJ45 Ethernet cable
MYD-CZU3EG-V3 Development Board (Part No.: MYD-CZU3EG-V3-8E4D-1200-I)	
MYC-CZU3EG-V3 System-On-Module (Part No.: MYC-CZU3EG-V3-8E4D-1200-I)	✓ OneMYC-CZU3EG-V3 System On Module
MYC-CZU3EG-V3 System-On-Module (Part No.: MYC-CZU3EG-V3-8E4D-1200-C)	
MY-TFT070CV2 LCD Module (Part No.: MY-TFT070CV2)	✓ One 7-inch LCD Module with capacitive touch screen

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