

iCan PicoPop®

Small Form Factor System On Module
with Zynq® UltraScale+™ MPSoC



UltraScale+™ in a pocket-sized board

iCan PicoPop® is a high performance, small form factor System On Module (SOM), based on the Xilinx Zynq® UltraScale+™ MPSoC. The board is available with ZU4-5-7 CG-EG-EV families of devices.

The platform provides the power of 64-bits quad-core processors, combined with real time processing capability. Performance customization is enabled with advanced hardware acceleration possibilities thanks to the embedded programmable logic.

The EV version features its integrated H.264 / H.265 Video Codec Unit (VCU) capable of performing video compression and decompression of simultaneous video streams at resolutions up to 3840x2160 pixels at 60 frames per second (4K Ultra HD @ 60Hz)



Technical Specifications

Xilinx Zynq® UltraScale+™ MPSoC featuring*:

- ARM® Quad-core Cortex™-A53 (1.5 GHz)
- ARM® Dual-core Cortex™-R5 (600 MHz RT CPU)
- ARM® Mali™-400 MP2 GPU
- H.264 / H.265 HW Codec up to Ultra HD 4K (60 fps)

User configurable I/Os

- 106x PL I/Os
- 52x PS MIOs
- 16x GTH 16.3 Gb/s MGTs (PL)
- 4x 6 Gb/s MGTs (PS)

Oxytronic maintained Linux BSP

- Yocto toolchain
- Xilinx Kernel³ 4.9.0

Miscellaneous

- Board size: 80mm x 63 mm
- Temperature Range: -40°C/+85°C
- Connectors: Samtec 2 x 200 pins 0,8 mm pitch
- PCB: IPC Class 3

VCU performances

- 32 streams / 720x480p @ 30 Hz
- 8 streams / 1920x1080p @ 30Hz
- 4 streams / 1920x1080p @ 60 Hz
- 2 streams / 3840x2160p @ 30 Hz
- 1 stream / 3840x2160p @ 60 Hz
- 1 stream / 7680x4320p @ 15 Hz

Storage

- Up to 4 GB DDR4 SDRAM (PS)
- Up to 2 GB DDR4 SDRAM (PL)
- eMMC Flash 8 GB to 128 GB
- 2x Quad-SPI up to 128 MB

High-Speed connectivity

- 4x PCIe® Gen2
- 2x USB 3.0
- SATA 3.1
- DisplayPort
- 4x Tri-mode Gigabit Ethernet

General connectivity

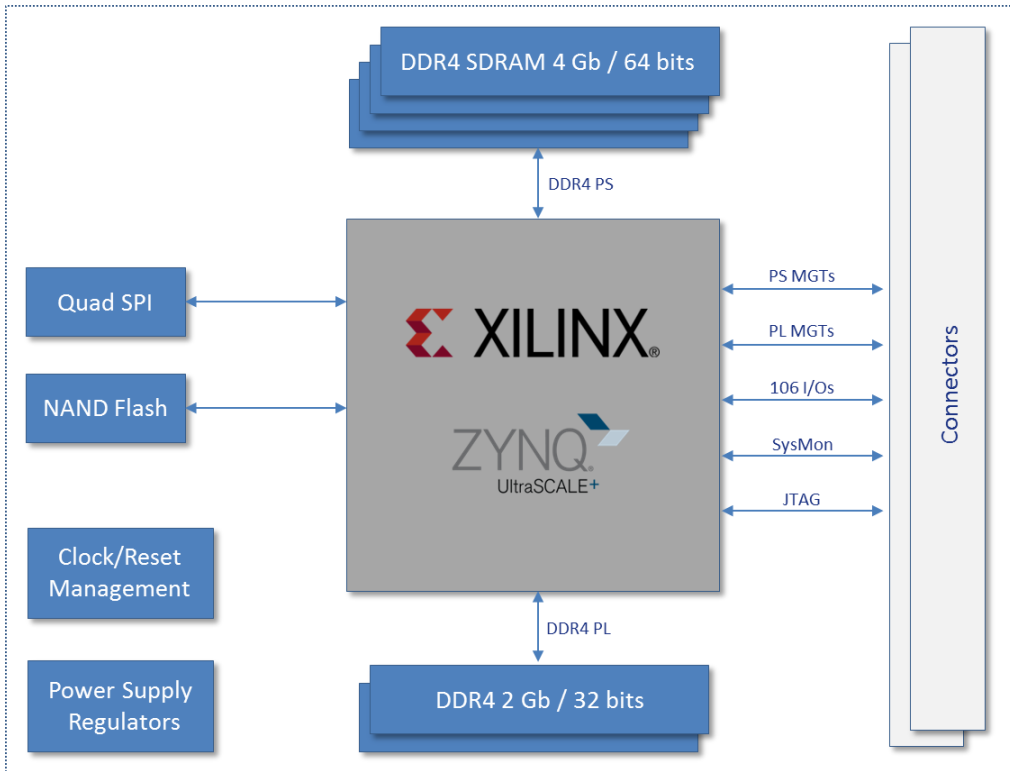
- 2x USB 2.0
- 2x SD/SDIO
- 2x UART
- 2x CAN 2.0B
- 2x I2C
- 2x SPI

* Features may vary upon selected Zynq® UltraScale+™ family: see Product Selection Guide below.

Applications

- Video Processing
- Broadcast
- Video Over IP
- Embedded Video/Radio Communication
- Embedded Vision
- Data Processing
- ADAS (Advanced Driver Assistance Systems)
- Civil / Military UAV Datalink
- Optronics
- Autonomous Vehicles
- Mobile Military Radio
- Broadcast Cameras
- Unmanned Ground Systems
- Real-time Control

Block Diagram



Board Selection

Reference	Zynq® UltraScale+™ Model	Availability
iCan PicoPop® - CGEG	ZU4/5/7 CG/EG devices	On Demand
iCan PicoPop® - EV	ZU4/5/7 EV devices	Q1 / 2020

Product Selection Guide

		CG			EG			EV			
		ZU4	ZU5	ZU7	ZU4	ZU5	ZU7	ZU4	ZU5	ZU7	
Processing System (PS)	Application Processor Unit	Processor Core	Dual-core ARM® Cortex-A53 MPCore up to 1.3GHz			Quad-core ARM® Cortex-A53 MPCore up to 1.5GHz			Quad-core ARM® Cortex-A53 MPCore up to 1.5GHz		
		Memory w/ECC	L1 Cache 32KB I / D per core, L2 Cache 1MB, on-chip Memory 256KB			L1 Cache 32KB I / D per core, L2 Cache 1MB, on-chip Memory 256KB			L1 Cache 32KB I / D per core, L2 Cache 1MB, on-chip Memory 256KB		
	Real-Time Processor Unit	Processor Core	Dual-core ARM® Cortex-R5 MPCore up to 533MHz			Dual-core ARM® Cortex-R5 MPCore up to 600MHz			Dual-core ARM® Cortex-R5 MPCore up to 600MHz		
		Memory w/ECC	L1 Cache 32KB I / D per core, Tightly Coupled Memory 128KB per core								
	Graphic & Video Acceleration	Graphics Processing Unit	-			Mali™ - 400 MP2 up to 667MHz					
		Memory	-			L2 Cache 64KB					
	External Memory	Dynamic Memory Interface	DDR4 x64 without 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	Full / Low / PL / Battery Power Domains									
	Security	RSA, AES, and SHA									
	AMS - System Monitor	10-bit, 1MSPS - Temperature and Voltage Monitor									
PS to PL Interface		12 x 32/64/128b AXI Ports									
Programmable Logic (PL)	Programmable Functionality	System Logic Cells (K)	192	256	504	192	256	504	192	256	504
		CLB Flip-Flops (K)	176	234	461	176	234	461	176	234	461
		CLB LUTs (K)	88	117	230	88	117	230	88	117	230
	Memory	Max. Distributed RAM (Mb)	2.6	3.5	6.2	2.6	3.5	6.2	2.6	3.5	6.2
		Total Block RAM (Mb)	4.5	5.1	11.0	4.5	5.1	11.0	4.5	5.1	11.0
		UltraRAM (Mb)	13.5	18.0	27.0	13.5	18.0	27.0	13.5	18.0	27.0
	Clocking	Clock Management Tiles (CMTs)	4	4	8	4	4	8	4	4	8
	Integrated IP	DSP Slices	728	1248	1728	728	1248	1728	728	1248	1728
		PCI Express® Gen3 x16 / Gen4 x8	2	2	2	2	2	2	2	2	2
		Video Codec Unit (VCU)	-	-	-	-	-	-	1x H.264/H.265		
150G Interlaken		-	-	-	-	-	-	-	-	-	
100G Ethernet MAC/PCS w/RS-FEC		-	-	-	-	-	-	-	-	-	
AMS - System Monitor	1	1	1	1	1	1	1	1	1		
Transceivers	GTH 16.3Gb/s Transceivers	16	16	24	16	16	24	16	16	24	
	GTY 32.75Gb/s Transceivers	-	-	-	-	-	-	-	-	-	
Speed Grades	Extended(2)	-1-2 -2L			-1-2 -L2 -3			-1-2 -L2 -3			
	Industrial	-1-1L -2			-1-1L -2			-1-1L -2			
Zynq Package		1FBVB900I (-40/+100°C)									

Applications

Take advantage of Oxytronic reference designs to improve your productivity and your time to market!

iCan PicoPop® comes with numerous examples based on our iCan PicoPop®-Carrier featuring PCIe, HDMI, 4K Broadcast & video processing as well as USB and wireless functionalities.

Board comes with user manual, custom I/Os pinouts assignments, and 3D model.

Specific Yocto meta-layer will bring you up to speed in your software development.

Moreover, stay up to date and download fresh BSP with our git lab repository.

A dedicated wiki gives relevant information to use our products with the greatest efficiency.

Oxytronic Added-Value and Services

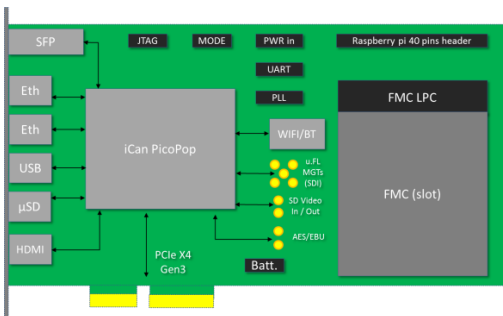
- Support is provided directly by the board's development team, in France
- Oxytronic can provide, as design services:
 - the development of your embedded application software
 - the development and manufacturing of your customized carrier board
 - the HW customization of your specific PicoPop® board

Benefits

Thanks to its SoC architecture and the BSP package provided with the board, customers can reuse the HW platform and customize their own system, by developing the SW application and customizing a dedicated HW carrier board, thus providing a reusable, full-featured system.

Related Products

- iCan PicoPop® Carrier Board (available soon)
- iCan PicoPop® with a customized carrier board



More Information

support.picopop@oxytronic.fr

www.oxytronic.fr

