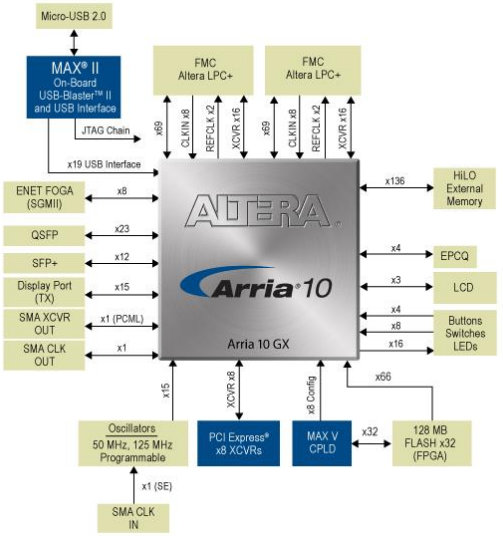
CRU Development Platforms

Erno DAVID, Tivadar KISS
Wigner Research Center for Physics (HU)

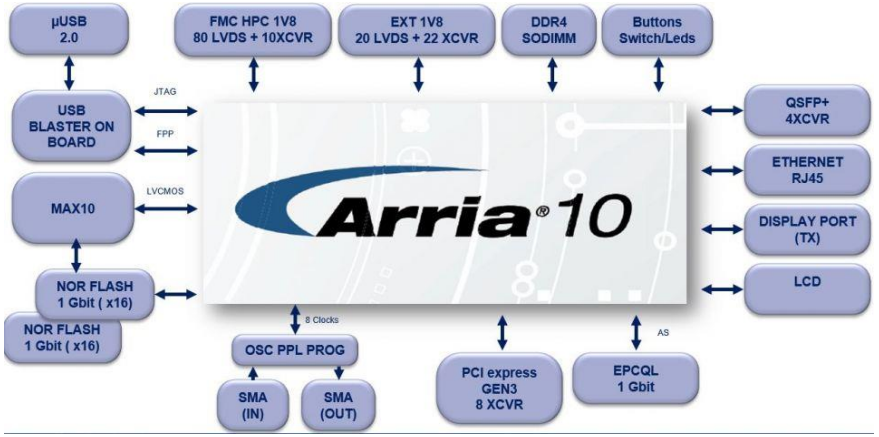
2 September, 2015

Altera Arria 10 GX FPGA Development Kit



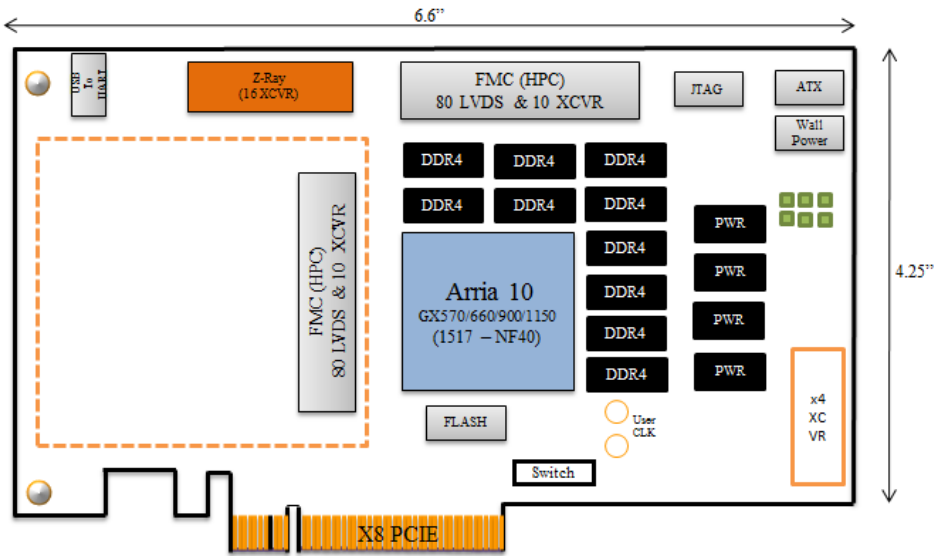
- Arria 10 GX 1150, **4500$**
- 1 x SFP+
- 1 x QSFP
- 2 x FMC
- PCIe Gen3 x8
- https://www.altera.com/products/boards_and_kits/dev-kits/altera/kit-a10-gx-fpga.html

ReFLEX CES Attila Instant-DevKit Arria 10



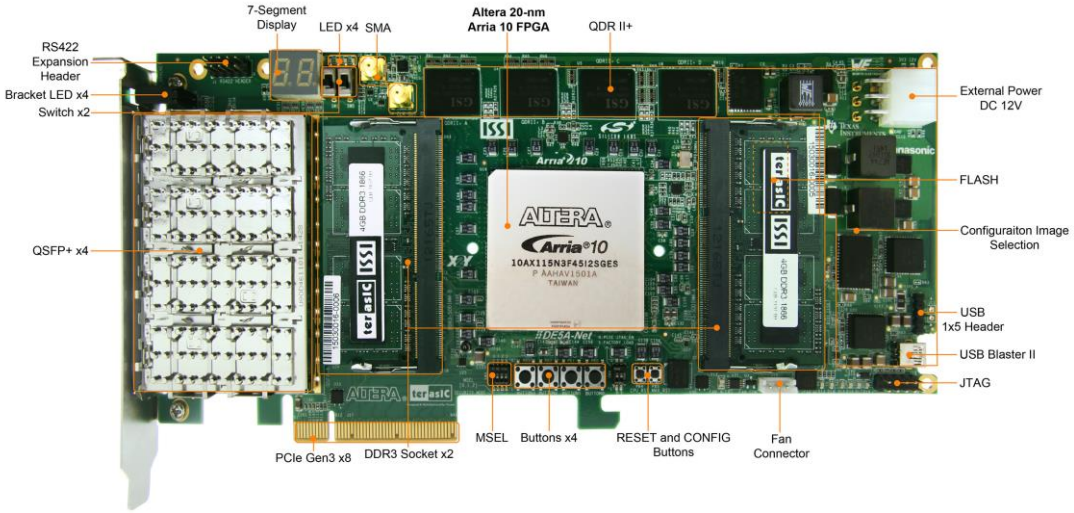
- Arria 10 GX 1150, **4200$,** from mid October
- 1 x QSFP
- 2 x FMC
- PCIe Gen3 x8
- https://www.reflexces.com/products/development-kits/arria-10-instant-devkit/attila

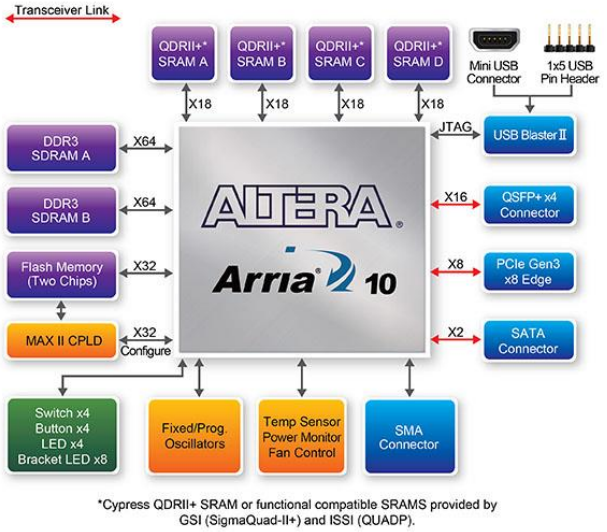
HiTech Global Arria 10 Development Board



- Arria 10 GX 570/660/900/1150
- 2 x FMC + 1 Z-Ray
- PCIe Gen3 x8
- http://www.hitechglobal.com/Boards/Altera-Arria10.htm

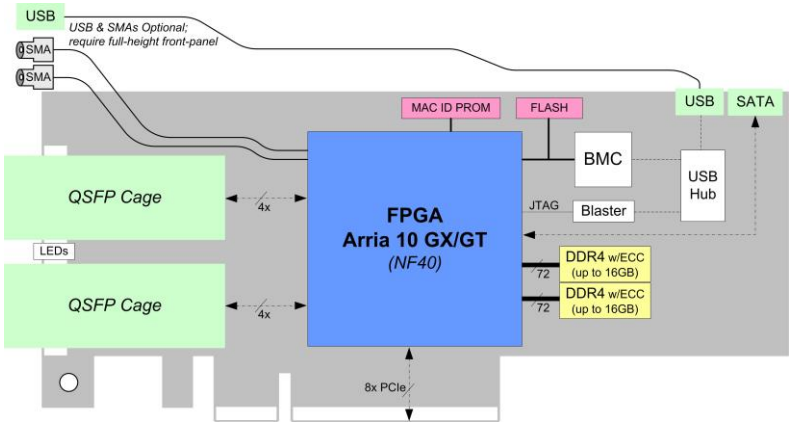
Terrasic DE5a-Net





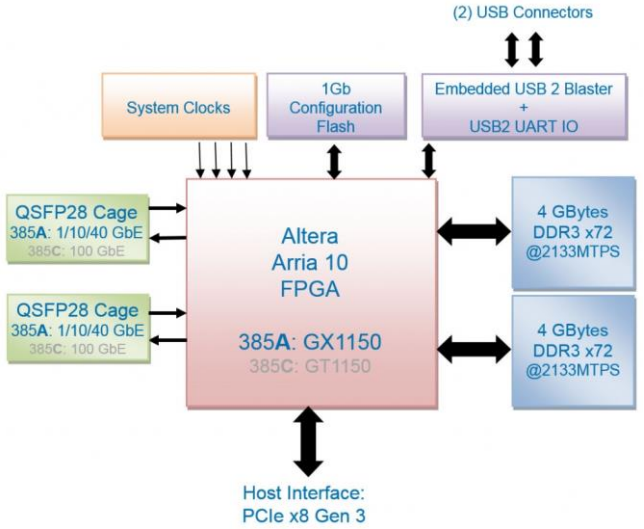
- Arria 10 GX 1150, depends on FPGA availability
- 4 x QSFP
- PCIe Gen3 x8
- http://www.terasic.com.tw/cgi-bin/page/archive.pl?Language=English&CategoryNo=228&No=970

BittWare A10PL4



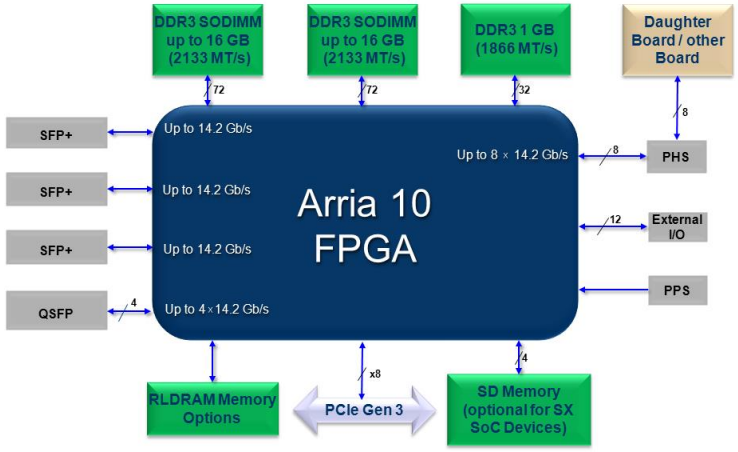
- Arria 10 GX 1150, **10120$**
- 2 x QSFP
- 2 x onboard DDR4 memory bank (total 2 x 16 GB)
- PCIe Gen3 x8
- http://www.bittware.com/products-services-fpga-cots-hardware/a10pl4

Nallatech 385A



- Arria 10 GX 1150, **6000$**
- 2 x QSFP
- 2 x 4 GB onboard memory
- PCIe Gen3 x8
- http://www.nallatech.com/store/pcie-accelerator-cards/nallatech-385a-arria10-1150-fpga/

Gidel Proc10A PCIe Arria 10 Accelerator Board



- Arria 10 GX 1150
- 3 x SFP+
- 2 x QSFP
- PCIe Gen3 x8
- http://www.gidel.com/HPC-RC/Proc10A_HPC.asp

Summary

Company	Altera	ReFLEX	HiTech	Terasic	BittWare	Nallatech	Gidel
Board	Arria 10 GX	Attila	HTG-A100	DE5a-Net	A10PL4	385A	Proc10A
URL	www	www	www	www	www	www	www
FPGA	GX 1150	GX 660/1150	GX 570 - 1150	GX 1150	GX 1150	GX 1150	GX 1150
Available	-	1150 mid Oct	-	depends on Altera	end of year	-	-
Delivery	-	6 weeks	-	-	-	-	6 weeks
Price	4500$	4200$	-	?	10120$	6000$	?
PCIe Gen3 x8	1	1	1	1	1	1	1
SFP+	1	-	FMC mod.	-	-	-	3
QSFP	1	1	FMC mod.	4	2	2	1
Ext. Memory	1 x DDR3/DDR4	1 x DDR4	-	2 x DDR3	-	-	2 x DDR3
On board Mem.	-	-	DDR4	QDRII+	2 x 16 GB DDR4	2 x 4 GB DDR3	1 GB DDR3
Connector 1	FMC, 69 I/O, 16 XCVR	FMC, 80 I/O, 10 XCVR	FMC, 80 I/O, 10 XCVR	-	SATA	-	PHS, 8 XCVR
Connector 2	FMC, 69 I/O, 16 XCVR	FMC, 20 I/O, 22 XCVR	FMC, 80 I/O, 10 XCVR	-	-	-	-
Connector 3	-	-	Z-RAY, 16 XCVR	-	-	-	-

Our Needs

- **Our needs:**
  - 10G PON development (SFP+ interface, expansion connector for external PLL and jitter cleaner)
  - GBT development (SFP or QSP interface)
  - PCIe DMA development (PCIe Gen3 x8 interface)
  - Early CRU prototype (SFP+, QSFP, PCIe Gen3 x8, Arria 10 GX 1150)

- **Current top list:**
  - Altera Arria 10 GX DevKit (**4500$**) – based on documentation fulfils our needs (except for 10G PON PLL)
  - ReFLEX Attial (**4200$**) – will be tested by CERN GBT/PON lab., needs an extra FMC module (SFP+, PLL)
  - HiTech Arria 10 Board – modular design, no response from the company yet

CRU Prototype Clocking Requirements