



The fb2CG@KU15P is a high performance OEM hardware platform intended for 10/40/25/50/100 Gigabit Ethernet via its dual QSFP28 slots.

The standard configuration is based on the Xilinx® Kintex UltraScale+ KU15P FPGA, to provide ample capacity for the dual QSFP28 interface. The card features the KU15P to keep the solution as cost effective as high performance computing allows.

The card is mounted with 4 x 72-bit DDR4 ECC RAM, 4 GB for a total of 16 GB.

## HOST INTERFACE

- Physical bus connector: 16-lane PCIe
- PCIe bus type: 1-16 lane PCIe Gen1/Gen2/Gen3
- Support for SMBUS

## NETWORK INTERFACE

- IEEE standard: IEEE 802.3 10/40/25/100 GE
- Physical interface: 2 x QSFP28 ports
- Supports QSFP+/QSFP28 modules: including fan-out modules for 4x10G/4x25GE per slot, Multimode SR4 (850nm), singlemode LR4 (1310nm), singlemode PSM4 (1310nm), multimode LRM4 (1310 nm), or Direct Attached Copper (Twinax) and others
- Data rate: 8x10, 2x40, 8x25, 2x100 Gbps
- Support for SyncE

## CONFIGURATION

- Quad SPI fast parallel programming interface from supporting preprogrammed controller
- Configuration flash supports two boot images with automatic fallback to fail safe image if first image fails
- Upload of FPGA configuration to flash via PCIe or directly from Xilinx Vivado via the onboard JTAG dongle
- Direct FPGA configuration from Xilinx via the onboard JTAG dongle
- Support for encrypted FPGA bit file (optional)
- Supports Tandem PROM boot

## ON-BOARD MEMORY

- 4 x 72-bit DDR4@2666MT/s (4 GB per bank with ECC)
- User configurable space in flash RAM for permanent storage
- Configuration flash RAM for boot images

## ON-BOARD CLOCK

- PCIe clock: 100 MHz
- 2 x differential 161.13 MHz SerDes clock for Ethernet
- 2 x differential 161.13 MHz SerDes clock for Expansion
- 2 x differential 266.67 MHz clock for Memory
- 50 MHz clock

## FPGA DETAILS

- FPGA Xilinx® Kintex UltraScale+ XCKU15P

## ENVIRONMENT

- Full height, ½ length 111.15 x 167.65 mm with bracket
- Storage temperature: -30 - 70°C, -22 - 158°F
- Operating temperature: 0 - 55°C, 30 - 130°F
- Operating humidity: 20 - 80%
- Hardware compliance: RoHS, CE

## ADDITIONAL BOARD SUPPORT

- On-board power and temperature sensors
- FPGA controlled Link and Activity LED for each port. 4 for each QSFP
- Board status LEDs
- Battery holder for coin cell battery for back-up of Key memory for bitstream encryption. (optional)
- Failsafe button on bracket
- PPS clock synchronization connector
- Support for direct Card to Card interconnect with up to 150Gbit/s

## POWER

- Max 120W, above 75W PCIe AUX power must be used
- Active and passive cooling alternatives available
- Power, temperature and FAN tachometer reading
- PCIe AUX power connector available

## ON\_BOARD MICROCONTROLLER

- Board management Microcontroller for various internal control tasks as well as external communication
- SMBus/I<sup>2</sup>c
- Possible to readout telemetry parameters

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