



The Silicom fb2CGg5 offers network connectivity and capture to host memory with zero packet loss and with hardware packet processing. The 2xQSFP28 slots allow link speed support for 2x100GE/50GE/40GE/25GE and 8x10GE. The fbC2CGg5 card is based on cutting edge Xilinx FPGA technology in the Kintex UltraScale+ series, providing packet filtering, advanced processing, traffic management, load balancing and host offloading mechanisms.

This high performance hardware platform connects to the network using QSFP28/QSFP+/SFP28 modules and performs packet processing, while delivering a sustained throughput to host memory of up to 107 Gbps, using the standard PCIe connector with full support for standard gen3 x16. The fbC2CGg5 uses a single-slot x16 lane PCIe solution. The card is prepared for inter-card connection and for second-slot connectivity for double PCIe bandwidth to the host system. NUMA specific memory allocation allows for effective traffic management and load balancing in NUMA environments.

## NETWORK INTERFACE

- IEEE standard: IEEE 802.3 10GE, 40GE, 25GE, 50GE, 100GE
- Support Forward Error Correction (FEC) on 100GE
- Physical interface: 2 x QSFP28 slots
- 10GE supported through break-out cable assemblies.
- 2x25 SFP28 through QSA28 adaptor
- Supported QSFP28 modules (25GE/100GE)
  - » SR4, LR4, PSM4, CWDM4/CLR4, CR4 (DAC), ER4
- Supported QSFP+ modules (10GE/40GE)
  - » SR4, LR4, LM4, PSM4/IR4, CWDM4, ER4, ZR4, BiDi, CR4
  - » Appropriate 4x10GE Break-out modules
- Ethernet PHY directly embedded in FPGA

## HOST INTERFACE

- Physical bus connector: 16 lane PCIe
- PCIe bus type: 16 lanes PCIe Gen3
- PCIe compliant
- 64 logical channels that can be connected to DMA or egressed to physical output ports

## ON-BOARD MEMORY

- On-board buffering for application robustness
- 16 GB 72-bit Error-correcting code (ECC) DDR4 RAM

## PERFORMANCE

- Capture rate (bursts): Line rate (200 Gbps)
- Capture rate (sustained): 107 Gbps to host memory
  - » With secondary connector up to 200 Gbps to host

## LATENCY

- Less than 3.2  $\mu$ s to host memory
- Less than 3.2  $\mu$ s from host memory to Tx
- Non-blocking sending, allowing user applications to operate independently

## TIME STAMPING AND SYNC

- Resolution = 3.2 ns
- Accuracy down to 20 ns
- Daisy chain PPS between multiple cards supported
  - » Via COAX or Card interconnect adapter
- Strict Host based sync available in driver
- PPS synchronization via SMA connector

## CONFIGURATION

- Dual boot images with automatic fallback to fail-safe image
- Full configuration and firmware upgrades via supplied tools or fbCAPTURE API

## ENVIRONMENT

- Full height, ½ length. 111.15 x 167.65 mm with bracket
- Weight: 485 g
- Operating temperature: 0 – 55°C, 30 – 130°F
- Operating humidity: 20 – 80%
- Hardware compliance: RoHS, CE
- Active cooling, with fan sensor
- Passive cooling (option)

## ADDITIONAL BOARD SUPPORT

- fbCAPTURE API
- PF\_RING and nTop suite support
- DPDK support
- libPCAP support
- On-board temperature sensors
- On-board multi-color status, Link and Activity LED for ports
- HW prepared for direct Card to Card interconnect and second PCIe slot connection

## CARD VARIANTS

Firmware for all links speeds below are available with any variant.

- fbC2CGg5-8x10G for 10GE
- fbC2CGg5-2x25G for 25GE (Excl QSA28 adaptors)
- fbC2CGg5-2x40G for 40GE
- fbC2CGg5-2x100G for 100GE (Limited HW filter capacity)

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