



# fbC4CGg3-16x10G

## Supporting the fbCapture framework

The Silicom fb4CGg3-16x10G now offers an unprecedented 16 x 10GE network connectivity and capture to host memory or Tx relay with zero packet loss and hardware packet processing. The use of QSFP28 cages, while using QSFP+ modules, allows the support of 4x10GE for each of the four QSFP28 slots, by employing break-out fibers. The card is also a platform that can be extended for 4x40GE, and even 4x100GE.

The fbC4CGg3 card is based on cutting edge Xilinx Virtex Ultrascale FPGA technology, providing packet filtering, advanced processing, traffic management, transmission, CPU load balancing and host offloading mechanisms. This high performance hardware platform connects to 10GE using QSFP+ modules for both Single mode, Multi mode and copper 10GE links. Single Mode using Parallel Single mode modules (PSM). The card performs packet processing, while delivering a sustained throughput to host memory of up to 107 Gbps and in parallel allows full or selective forwarding of packets through its 16 Tx fibers .

The card uses a single-slot PCIe solution through a 16-lane PCIe slot. NUMA specific memory allocation allows for effective traffic management and load balancing in NUMA environments. The card also support Silicom's GTP Session Based Distribution solution .

### NETWORK INTERFACE

- IEEE standard: IEEE 802.3 10GE
- Physical interface: 2 x QSFP28 port (QSFP+ compatible)
- 10GE supported through break-out cable assemblies.
- Supported QSFP+ modules (10GE/40GE)
  - SR4, PSM4/IR4 (LR), CWDM4, ER4, ZR4)
  - 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 via 2x8 lanes
- 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 64 bit DDR4

### PERFORMANCE

- Capture rate (bursts): Line rate. 160 Gbps
- Capture rate (sustained): 107 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 receive and transmit, allowing user applications to operate independently

### TIME STAMPING AND SYNC

- Resolution = 6.4 ns
- Accuracy down to 20 ns
- PPS synchronization via SMA connector
- Daisy chain PPS between multiple cards supported
  - Via COAX or Card interconnect adapter
- Strict Host based sync available in driver, for indirect PTP/NTP sync

### CONFIGURATION

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

### ENVIRONMENT

- Physical dimensions:  $\frac{3}{4}$  length, standard height
- PCIe: 111 x 254 mm
- Weight: 320g
- Operating temperature: 0 – 55°C, 30 – 130°F
- Operating humidity: 20 – 80%
- Hardware compliance: RoHS, CE
- Active cooling
- Passive cooling (option)

### ADDITIONAL BOARD SUPPORT

- fbCAPTURE API
- PF\_RING and nTop suite support
- DPDK support
- libPCAP support
- On-board temperature sensor
- On-board multi-color status LED
- Link and Activity LED for ports