

GF14LPP EFLX®4K Gen 2 TARGET SPEC

The EFLX®4K Logic IP core is an embeddable FPGA IP core containing 2,520 Look-Up-Tables (LUTs: each is 6-input, or dual-5-input, with 2 independent outputs with 2 bypassable flip flops) in Reconfigurable Building Blocks (RBBs) and 21Kbits RAM, an improved XFLX™ interconnect network, multiple clocks & scan: fully reconfigurable in-field at any time.

The EFLX4K DSP core has 40 DSP MACs (22x22 multiplier with 48 bit accumulator). In the Gen2 architecture, MACs cascade up to 10 stages without using the interconnect network.

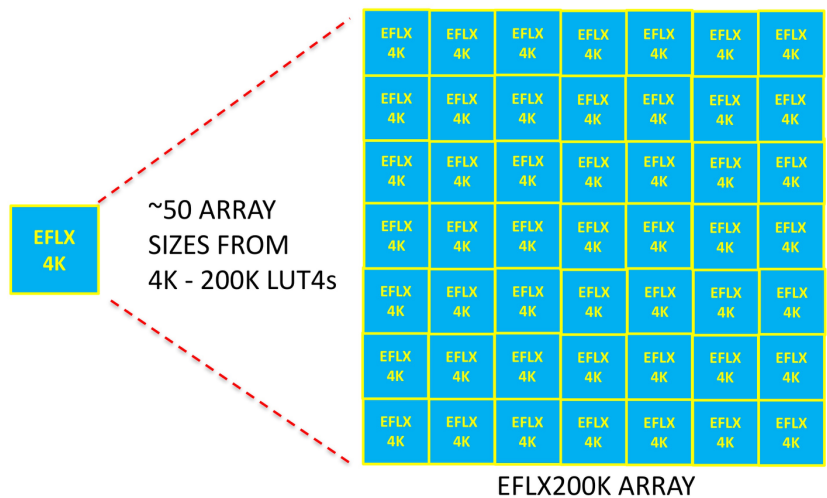
Each EFLX core is a standalone embedded FPGA. Cores can be arrayed up to at least 7x7 to create arrays of up to ~200K+ LUT4s. Logic and DSP cores can be mixed. And RAM can be integrated as well.

Our improved, Gen 2 XFLX programmable interconnect has been optimized for higher performance, especially for large arrays.

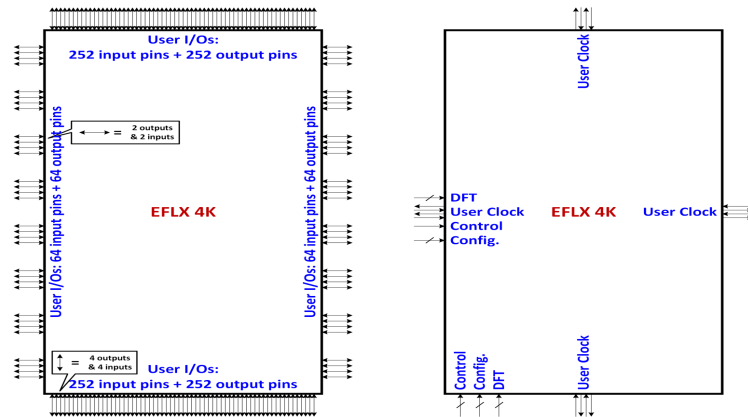
EFLX features full connectivity inside the core, and provides ArrayLinx™ interconnects at the boundary to concatenate multiple cores: ~50 array sizes are possible from 4,000 LUT4s up to ~200K LUT4s.

Gen 2 DFT improvements achieve 99% coverage of all faults & a new configuration load mode for test reduces test times about 100 times faster than Gen 1 to lower test costs.

| Name | EFLX®4K Core Gen 2 | |
|--|---|-----------------------|
| Technology | GlobalFoundries 14LPP | |
| Metal Stack | Optimized for GF 13 Metal Stack | |
| Nominal Supply Voltages (Vj) | 0.6, 0.7, 0.8, 0.9 | |
| Junction Temperature (°C) | -40 to 125 | |
| Leakage Power | 3.5mW (NN, 0.8Vj, 25C Tj) | |
| Area (mm ²) | ~1.28 | |
| Clock inputs | Mesh, multiple access points | |
| Input and Output Pins | 632 input & 632 output, each with an optional flip flop | |
| Look-up Tables (6-input LUT with two independent outputs) | Logic/Mem Core | DSP Core |
| | 2,520 (~4.0K LUT4) | 1,880 (~3.0K LUT4) |
| Total Flip Flops (ex DSP) | 6,304 | 5,024 |
| Distributed Memory (Kb) | 21Kbits | 1Kbits |
| 22-bit DSP MACs | 0 | 40 |
| EFLX Array Sizes Possible | 1x1 to at least 7x7 | |
| Design-for-Test Support | Yes, 99% fault coverage | |
| LUT Utilization | Typically ~90% | |



The EFLX4K Core has 632 input pins and 632 output pins placed as follows: 64 West, 64 East, 252 North, and 252 South. The I/O pins provide user access to the EFLX core. Each pin has a bypassable flip flop. When multiple cores are concatenated into EFLX arrays, the pins along the abutting edges are disabled (or are used for controlling embedded RAM blocks).



GF14 EFLX4K dimensions: 0.95mm wide x 1.35mm tall

Besides input/output pins, there are clock, configuration, and test/DFT pins. Each Core has an internal power grid which can be connected to the customer’s digital SoC power grid. The Core has power control pins. The Core also has configuration inputs on the West side and configuration inputs on the South side to load the bitstream. An AXI or JTAG interface is available for configuration. A clock mesh provides multiple connect points. The configuration bits can be read back anytime to enable checking for soft errors to improve reliability for high-reliability applications. A new test mode enables test times about 100x faster for lower test cost.

| Deliverables and EDA Design Views | |
|---------------------------------------|--|
| Front-end Design view (with NDA) | Back-end Design Views (with License) |
| Encrypted Verilog Netlist | Encrypted Verilog Netlist with Timing Annotation & SDF |
| LIB | GDS-II |
| Footprint LEF | CDL/Spice netlist |
| Detailed datasheet & DSP User’s Guide | Integration guidelines & assistance |
| Silicon validation report, when ready | Test Vectors for DFT fault coverage of 99% |
| EFLX Compiler evaluation version | EFLX Compiler bitstream generation version |