CROSSLINK-NX™

MIPI Bridging and Edge AI Combined Into One FPGA

Built on the 28 nm FD-SOI Lattice Nexus platform, the CrossLink-NX family of FPGAs lead their class in power, small form factor, reliability, and performance. They are optimized for a wide range of applications, including embedded vision.

The CrossLink-NX applications include sensor and display bridging, sensors aggregation, sensor duplication, and AI inferencing at the Edge.

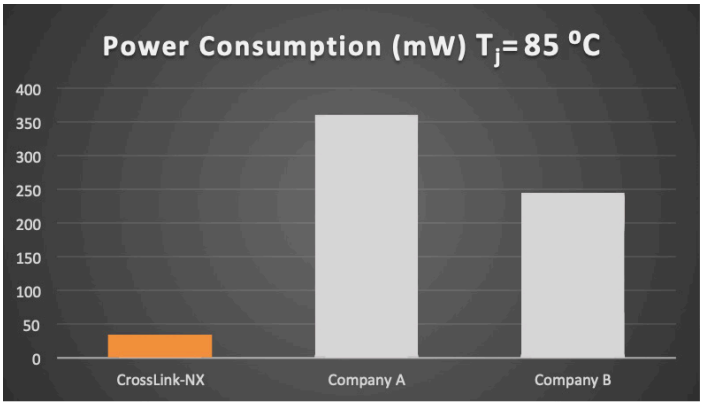
Key Features

- Up to 75% lower power versus competition: Programmable back bias enabled by FD-SOI allows power, performance optimization based on customers' needs
- 10x smaller than competition: Has the smallest package in each density ranging from 16 mm^2 to 100 mm^2. Offers multiple package options for compact system design
- Highly reliable: Insulated gate of FD-SOI technology has a smaller area susceptible to particle induced soft errors leading to 100x better soft error rate (SER)
- High performance:
  - 2.5 Gbps MIPI D-PHY, 5 Gbps PCIe, 1.5 Gbps differential I/O provide the most capacity for bridging high speed interfaces for a wide range of applications
  - Ultra-fast I/O configuration (3 ms). Full device configuration (8 – 14 ms)
  - Most embedded memory per LC (170 bits/LC) accelerates AI processing

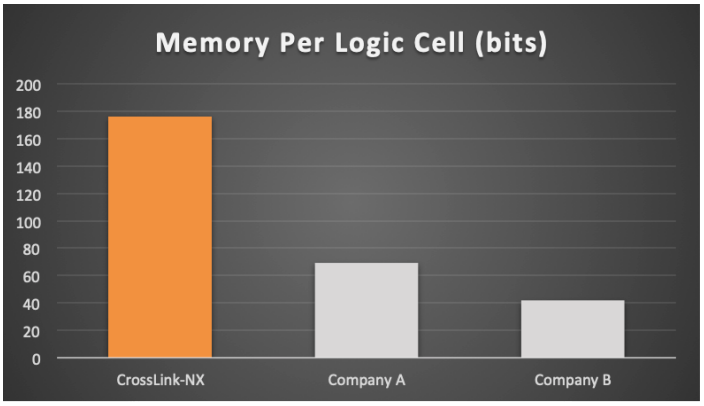
Device	LIFCL-17	LIFCL-40
Logic Cells	17k	39k
Embedded Memory (EBR) kbits	432	1,512
Large Memory (LRAM) kbits	2560	1024
18 x 18 Multipliers	24	56
ADC Blocks	2	2
GPLL	2	3
Hardened 10 Gbps D-PHY Quads	2	2
Hardened 2.5 Gbps D-PHY Data Lanes (total)	8	8
5 Gbps PCIe	—	1
Packages	**Total I/O (Wide Range, High Performance) (D-PHY, PCIe)**	
72 wlcsp (3.7 x 4.1 mm, 0.4 mm)	36 (16, 20) (2, 0)	—
72 QFN (10 x 10 mm, 0.5 mm)	40 (18, 22) (1, 0)	40 (18, 22) (1, 0)
121 csfBGA (6 x 6 mm, 0.5 mm)	72 (24, 48) (2, 0)	72 (24, 48) (2, 0)
256 caBGA (14 x 14 mm, 0.8 mm)	72 (24, 48) (2, 0)	152 (78, 74) (2, 1)
289 csBGA (9.5 x 9.5 mm, 0.5 mm)	—	180 (106, 74) (2, 1)
400 caBGA (17 x 17 mm, 0.8 mm)	—	192 (118, 74) (2, 1)

Competitive Comparison

Low Power



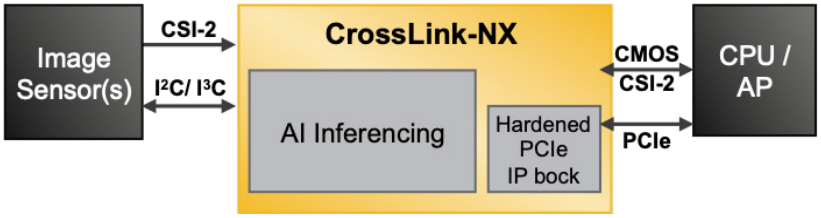
Embedded Memory per LC



Key Applications

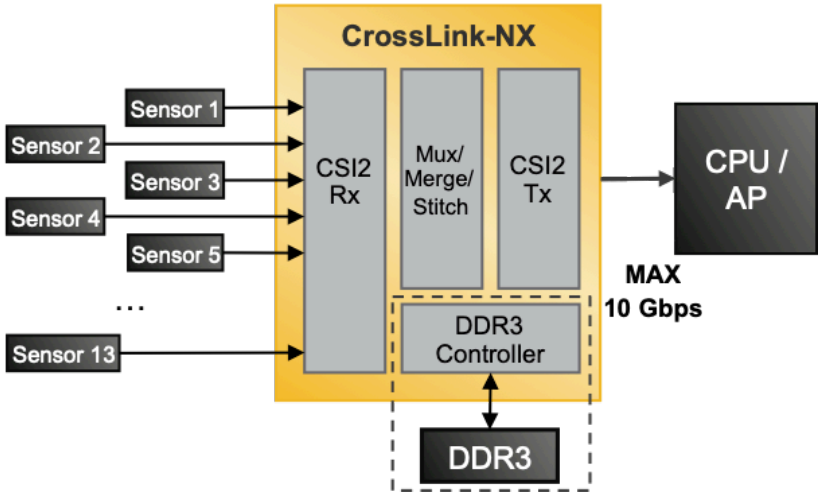
Edge AI Companion

- Bridge one or multiple CSI-2 image sensors to processor interface (PCIe, CMOS, CSI-2)
- Up to 3 Mb of internal RAM for processing
- Offloads inferencing from CPU for object detection / counting
- Combine video bridging and edge AI into a single device



Sensor Aggregation

- Aggregate up to 13 MIPI CSI-2 image sensors into one MIPI CSI-2 output
- Stitch data together into larger horizontal video frame
- Use external DDR memory to stitch data into larger vertical video frame
- Arbitrate data from image sensors using unique virtual channel numbers
- Extend limited processor sensor interface capability and connect more sensors



Applications Support
www.latticesemi.com/support

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