**Features**

- **PCI hosted logic prototyping system available** with up to 3 Xilinx Virtex-4 FPGAs:
  - 2 from 'LX' family FPGA A and FPGA B (FF1513):
    - 4VXL100-10,-11,-12
    - 4VXL160-10,-11,-12
    - 4VXL200-10,-11
  - 1 from 'FX' family FPGA C (FF1152):
    - 4VFX40-10,-11,-12
    - 4VFX60-10,-11,-12
    - 4VFX100-10,-11,-12
- 100% FPGA resources available for user application
- Nearly 3.7M ASIC gates (LSI measure)

- All FPGA to FPGA interconnect LVDS differential
  - 500MHz differential chip to chip
  - Reference designs for integrated CSE/OSERDES
  - 10x pin multiplexing per LVDS pair
- FPGA A to FPGA B interconnect: >1800 signals
- Greatly simplified logic partitioning
- Symplicity Certify™ models for partitioning assistance

- 5 separate programmable clock synthesizers (ICS8442)
  - 3 Global clocks (ACLK, BCLK, DCLK)
  - 2 for RocketI/O specific functions
  - User configurable via SmartMedia, PCI, or USB

- Dedicated 64-bit/66MHz PCI Bridge - QL5064
  - No FPGA resources consumed for PCI
  - Maximum PCI data transfer rate: 533mb/s

- Programmable Target Prefetching/Write Posting
- PCI2.2 Compliant
- Zero Wait State Master and Target Bursting
- Five Independent Master DMA Channels:
  - 2 -- Transmit
  - 2 -- Receive
  - 1 -- Single PCI Access (SPCl)
- DMA Chaining/Scatter Gather

- Advanced FPGA configuration via PCI, USB2.0 or SmartMedia
  - Partial reconfiguration support on all FPGAs
  - 2 separate DDR2 SODIMMs (200MHz)
  - Connected to: FPGA B (LX), FPGA C (FX)
  - 64-bit data width, 200MHz operation
  - PC2-3200/PC2-4200
  - Addressing and power to support 4GB in each socket
  - Verilog/VHDL reference design provided
  - DDR2 SODIMM data transfer rate: 25.6Gb/s

- Gigabit serial I/O interfaces:
  - 2 -- 10G, Small form factor XFP (or SFP)
  - 2 -- Transmit
  - 2 -- Receive
  - Five Independent Master DMA Channels:
    - Zero Wait State Master and Target Bursting
    - PCI2.2 Compliant
    - Programmable Target Prefetching/Write Posting
    - 10G Ethernet
  - Clocking options available for standard communications data rates for RocketI/O:
    - OIF 10G BP

- 4VFX100-10,-11,-12
- 4VFX40-10,-11,-12
- 1 from 'FX' family FPGA C (FF1152):
- 4VFX60-10,-11,-12
- 2 from 'LX' family FPGA A and FPGA B

- Multiple power supplies.
- Standalone operation with off-the-shelf ATX power supply.
- Two, 200-pin expansion connectors with 284+ connections
  - Custom daughter cards
  - DN3K10SD Observation Daughter Card
  - DNPNC104 Embedded Systems Board Carrier

- Full support for embedded logic analyzers via JTAG interface:
  - ChipScope, ChipScope PRO
  - Identify™ from Symplicity

**Block Diagram**
Description

The DN8000K10PCI is a complete logic emulation system that enables ASIC or IP designers a vehicle to prototype logic and memory designs for a fraction of the cost of existing solutions. The DN8000K10PCI is hosted in a 32-bit or 64-bit PCI slot (33/66MHz) or can be used stand-alone. A single DN8000K10PCI configured with 2 4VLX200's and a single 4VFX100 can emulate up to 3.7 million gates of logic as measured by LSI. And this number does not include the embedded memories and multipliers/ALU’s resident in each FPGA. The DN8000K10PCI achieves high gate density and allows for fast target clock frequencies by utilizing FPGA’s from Xilinx's Virtex-4 LX/FX families for logic and memory. High I/O-count, 1513-pin, flip-chip BGA packages (for LX) and 1152-pin BGA’s (for FX) are employed, providing for abundant, fixed interconnect between the FPGA's. All FPGA interconnect is single-ended or differential, with differential clocked at 500MHz+. In addition, the OSERDES/ISERDES functionality is thoroughly tested and characterized, allowing for 10x pin multiplying on differential pairs between FPGA's and dramatically easing the partitioning problem. The industry's highest performance PCI Bridge, the QL5064, enables data transfer via master-moding and chaining, without making any resource demands on the Virtex-4 FPGA's. Two, DDR2 SDRAM SODIMM are provided, allowing for up to 8GB of DDR2 memory. Each socket is tested at 200MHz, and reference designs are provided. A total of 284+ test pins are provided on the top of the PWB via two 200-pin expansion headers. These expansion headers can also be used for logic analyzer-based debugging or for pattern generator stimulus. The DNPMC104 card can be mounted to any of these connectors, enabling an interface to A/D's, D/A's, and a host of other embedded system peripherals. Also, custom daughter cards can be mounted to these connectors as a means to interface the DN8000K10PCI to application-specific circuits. Two XFP modules can be used to support OC-192/STM-64, 10 Gigabit Ethernet, 10 Gigabit Fibre Channel, and G.709 data streams and can be connected to routers, switches and network cards. Reference material such as DDR2 SDRAM controllers and PowerPC code is included (in Verilog, VHDL, C) at no additional cost.

Included Accessories:

<table>
<thead>
<tr>
<th>FPGA</th>
<th>Speed Grades (slowest to fastest)</th>
<th>Slices or LE's</th>
<th>FF's</th>
<th>Gate Estimate</th>
<th>Max I/O's</th>
<th>FF’s in I/O pad</th>
<th>Multipliers (18x18)</th>
<th>PowerPC Blocks</th>
<th>Memory</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Max (100% util)*</td>
<td>Practical (60% util)*</td>
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