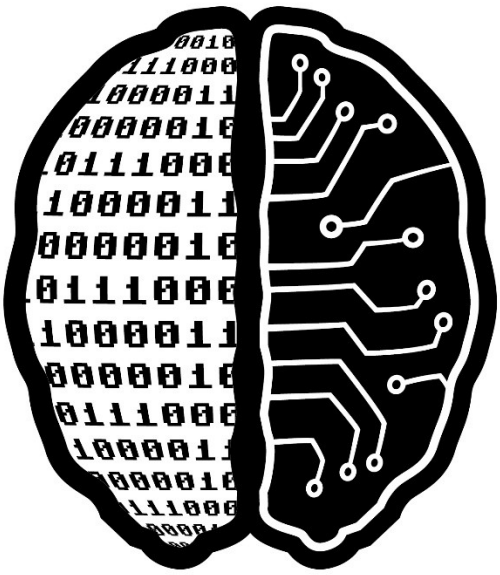


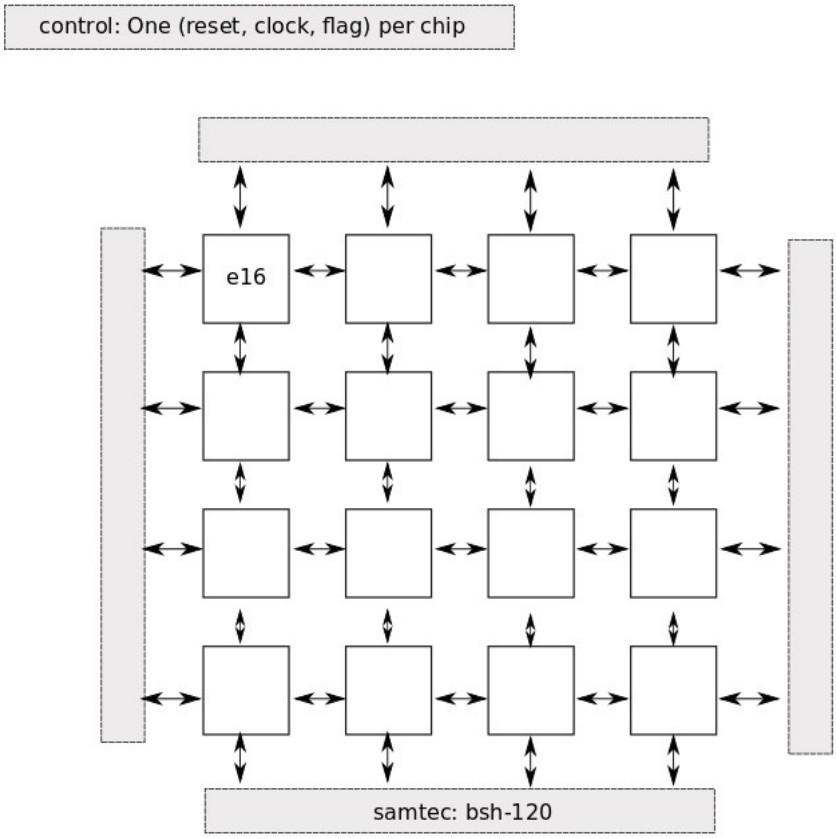
parallella

Parallella-Meta Specifications Rev-15.02.09

ANDREAS OLOFSSON

Overview

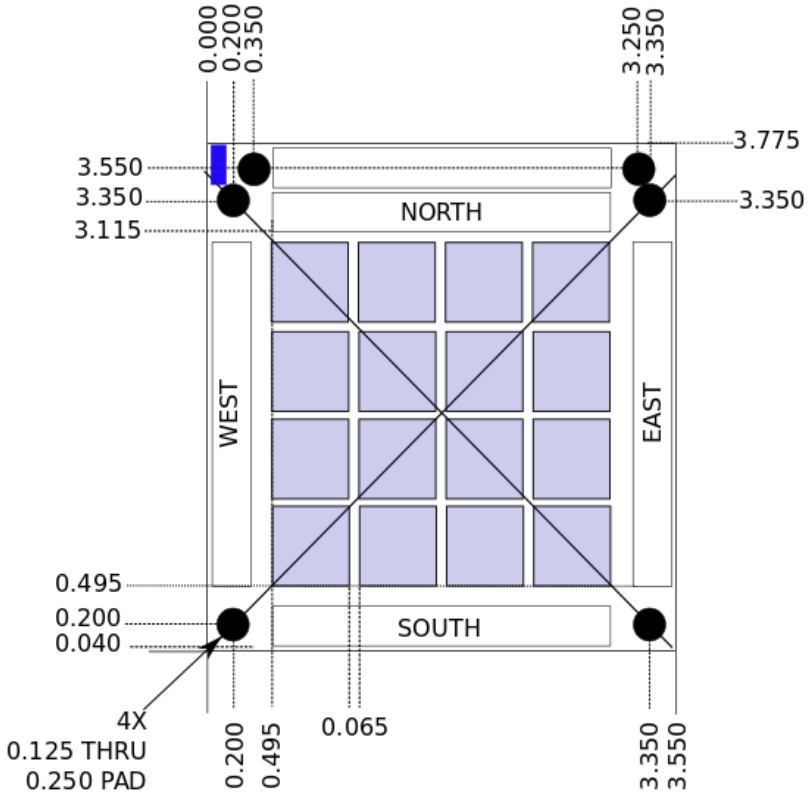
The Parallella-Meta board is a PCI-104 form factor board (90.8mm x 95.9mm) that includes 16 E16G301 chips, 5 Samtec BSH-120 connectors for eLink signaling, clocks and power.



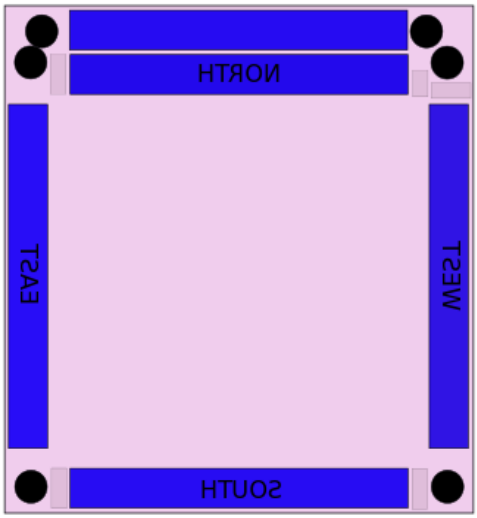
Specifications

- **CPU:**
  - 256 Epiphany dual-issue RISC CPU cores (4x4 grid of E16G301 chips)
  - 600 MHz nominal operating frequency (overclocking to 1GHz possible, but not guaranteed)
  - 512 autonomous DMA engines
  - 300 GFLOPS (nominal)
  - 256 cores * 600Mhz ~ equivalent to a “153 GHz” of dual issue CPU performance
- **Programming Support:**
  - Software Tools: GCC, GDB, Eclipse
  - Programming model: C, C++, OpenCL
  - Under development: OpenMP, MPI, POSIX
- **Memory System:**
  - Distributed shared memory model up to 4096 cores (ie up to 16 meta modules)
  - 8 MB of on-chip single cycle local SRAM memory
  - 4.9 TB/s on chip memory bandwidth
- **Mesh Network:**
  - Meta module can be scaled “ad infinitum” (beyond 4096 cores) using messaging
  - 38 GB/s on chip cross section bandwidth
  - 6.4 GB/s module cross section bandwidth
- **IO:**
  - 16 independent bidirectional eLinks
  - 16 GB/s eLink input bandwidth
  - 9.6 GB/s eLink output bandwidth
  - 16 LVDS independent clock inputs (one for each chip)
  - 4 coordinate pins for specifying ROW/COL ID of module
- **Power:**
  - 1.0V rail for core power (approx 16A)
  - 1.8V rail for LVDS/IO power (approx 8A)
  - Ability to power each chip individually through power islands
  - <40W typical power consumption
- **Mechanical:**
  - PCI-104 mechanical form factor, with mounting holes in corners
  - 4 high frequency Samtec type BSH connectors for mating eLinks to carrier card
  - 1 high frequency Samtec type BSH connector for mating clk, power,reset to carrier card
  - 1.5mm uniform height across the top complete top of module
  - Optional bsh / bth contacts on top for stacking
  - Size is 90.8 x 95.9 x 7 (mm)

Mechanical Drawing



Bottom



Side-view

Components

Component	Quantity	Note	Placement
BSH-120-01-F-D-A	5	240 pin connectors	Bottom
E16G301-SBCU	16	Multicore DSP IC	Top
0.1” 3 pin header	16	power connector (0.1in), 1.8/1.0/gnd	Bottom
0.1” 3 pin header	1	Fan connector	Top
Resistors/Capacitors	-	See Parallella	Bottom of board
Temp Sensors	1	????	
LED			

Instances

Component	Quantity
H1	South samtec
H2	West samtec
H3	North samtec
H4	East samtec
H5	Control smatec
i0	Upper left E16G301
I1	To the right of i0
I2	To the right of i1
I3	To the right of I2
I4	Below i0
I5-i15	Continue in zig-sag pattern
Rx	resistors
Cx	capacitors