Less or Equal

Number of input ports: 2 64-bit each

Number of output latches: 1 64-bit

Control signal: N/A

Function: Compare the signed value present at the first input port with the value present at the second port. Produces 0 if the first input is less or equal than the second input, 1 otherwise.

Area: 600nm2

Power: 1W

12-bit write

Number of input ports: 2 64-bit each

Number of output latches: 1 64-bit

Control signal: N/A

Function: write the second input value’s last 12 bits to the first input value’s last 12 bits.

Area: 300nm2 (As the logic has four functions and area is 600 nm2, the 12-bit write only use and to erase the last 12 bits and then use or to write the last 12 bits, I think half area and power of the logic make sense)

Power: 0.5W

L/S unit

Number of input ports: 2 64-bit each

Number of output latches: 1 64-bit

Control signal: 0b0 for load, 0b1 for store

Function: If load model, the L/S unit get the address from the address input and output the value at that address. If store model, the L/S unit get the address from the address input and get value from the value input, then store the value in corresponding address in memory.

Area: 20000nm2

Power: 4W

Input

Number of input ports: 1 64-bit

Number of output latches: 1 64-bit

Control signal: N/A

Function: Read the value from port pointed to by ‘port’ footprint and send back the value through ‘value’ footprint.

Area: 150nm2

Power: 0.1W

Output

Number of input ports: 2 64-bit each

Number of output latches: 1 N/A

Control signal: N/A

Function: Read the value from ‘value’ footprint and writes it to the output port pointed to by the value of ‘port’ footprint.

Area: 150nm2

Power: 0.1W

Instruction Look-Up Table

Number of input ports: 1 5-bit

Number of output latches: control array and the latch of immediate (1-bit)

Control signal: N/A

Function: Translate the instructions to control signal vector of each cycle. It could give multiple cycle control signal vectors (belonging to the same instruction) to the control array.

Area: 20000nm2

Power: 4W

Instruction decoder

Number of input ports: 1 32-bit (instruction)

Number of output latches: 5. (Lopcode: latch to store opcode, LRD: latch to store rd’s value in this instruction, LRS: latch to store rs’s value in this instruction, LRT: latch to store rt’s value in this instruction, LL: latch to store literal’s value in this instruction,

Control signal: N/A

Function: Translate the instructions to control signal vector of each cycle. It could give multiple cycle control signal vectors (belonging to the same instruction) to the control array.

Area: 400nm2

Power: 0.5W

Program counter

Number of input ports: 1 64-bit

Number of output latches: 1 64-bit

Control signal: N/A

Function: Holds the value of program counter and output its value when control signal is 1

Area: 500 nm2

Power: 0.05W