

Compiler Power Routing Guidelines

Power Pin Positions

Compiler	top	bottom	left	right
High Density RAM	X	X	-	-
Dual Port RAM	X	X	-	-
Via ROM	X	X	X	X

legend: X power pins existing
 - no power pins existing

Power Ring

It is recommended to put a power ring around each instance of a memory.

The power ring size should be wide enough to carry the calculated power. For additional information see the electromigration rules (maximum current density value) and the compiler data-sheet (proper power calculation method).

All power pins must be connected. The number of power pins and their widths have been calculated for maximum frequency usage of the compiler.

Multi-bank Considerations

When several memory instances are used to increase the word depth (multi-banking), just one of the memories, which are connected to the same bank address bus, is active at a time. This means, that the overall power consumption of all these memories is equal to the active power consumption of one memory instance plus the standby power consumption for the others.

So the sizing of the power bus is approximately the same as for one memory instance, not for the sum of all memory instances.

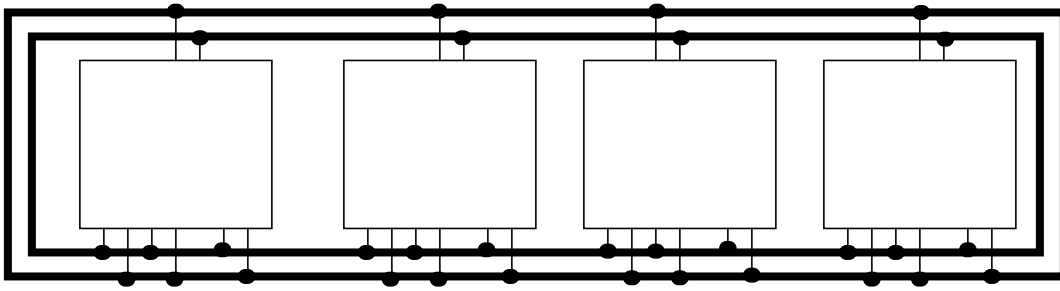
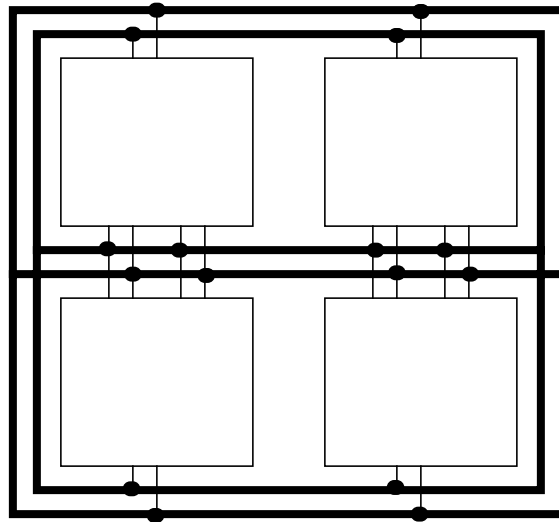
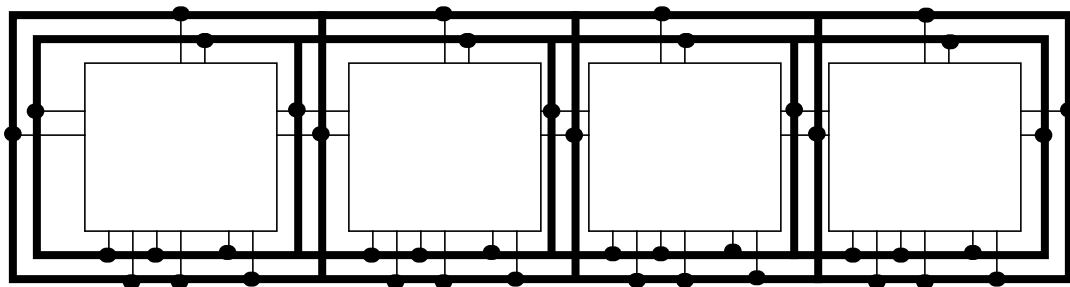
For compilers having only top and bottom power connectors, the ring can be done around all instances. For compilers with power connectors at all four sides additional traversing power busses are recommended.

Multi-instance Considerations

When several memory instances are used to increase the word width, all of these memories are used in parallel. This means, that the overall power consumption of all these memories is equal to the sum of the active power consumption of all concerned memory instances.

So the sizing of the power bus needs to be adjusted accordingly.

For compilers having only top and bottom power connectors, the ring can be done around all instances. For compilers with power connectors at all four sides additional traversing power busses are recommended.

Example1: Synchronous Ram with 4 banks in a line**Example2: Synchronous Ram with 4 banks in a square****Example3: Asynchronous 2-port ram with 4 banks in a line**

The Power rings in this case are around each instance because the compiler has power connectors on all sides, not only on the top and bottom sides like in the synchronous ram.