mem4kBytesOr32kbitsSpec

SRAM (1024 x 32): (32kbits or 4kB), 1.8V and access time is <2.5ns

Original Specs is from XFAB

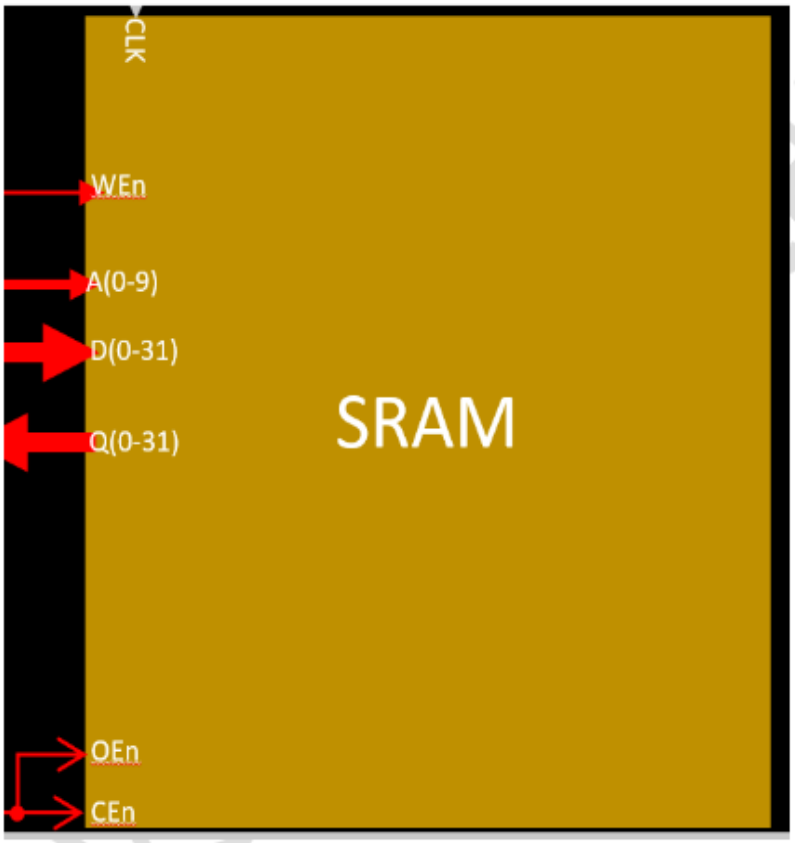
Recreated by VSD Corp. Pvt. Ltd.

To be used only for Educational Purposes

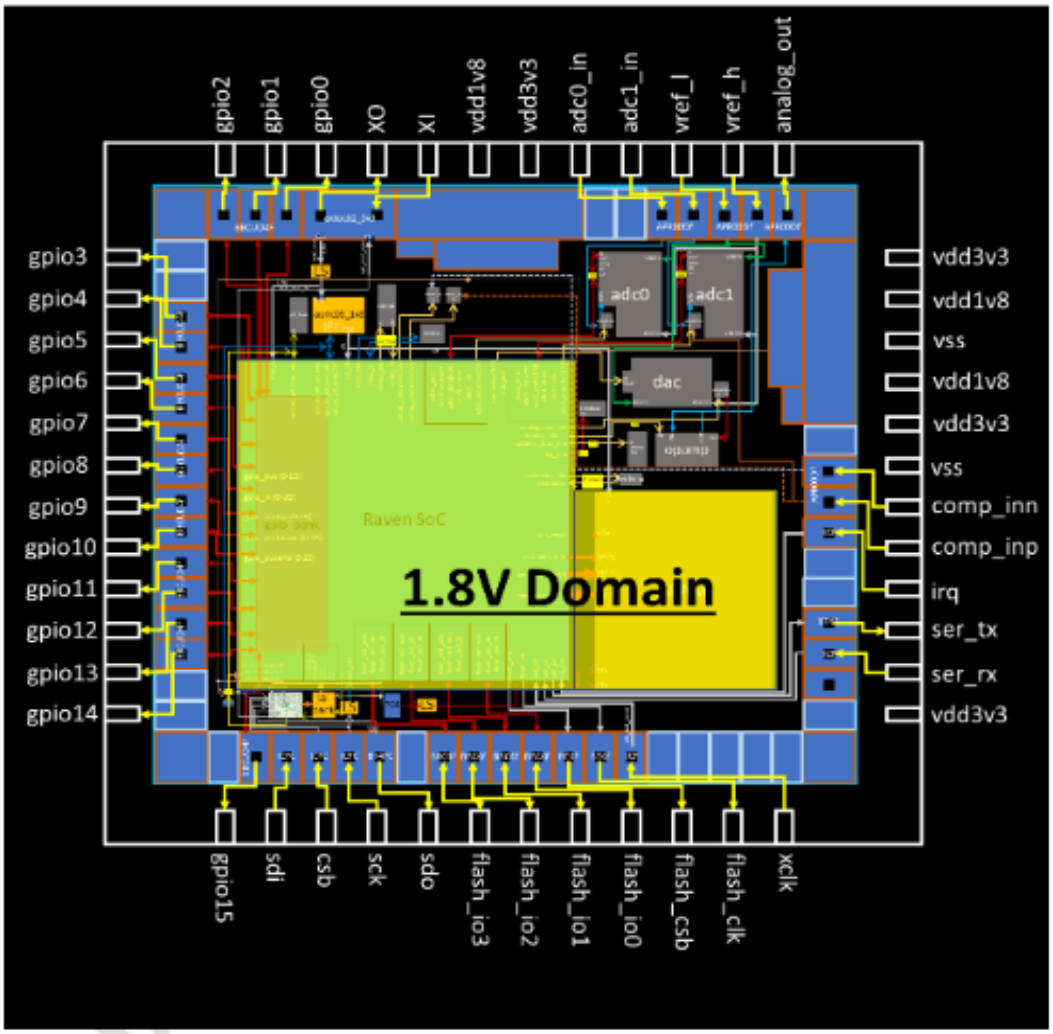
Contact Kunal in case of any clarifications needed at kunalpghosh@gmail.com

What we need?

SRAM (1024 x 32): (32kbits or 4kB), 1.8V and access time is <2.5ns@scl180nm



On-chip Physical Location and voltage domain



Port Names and preferred metal layers:

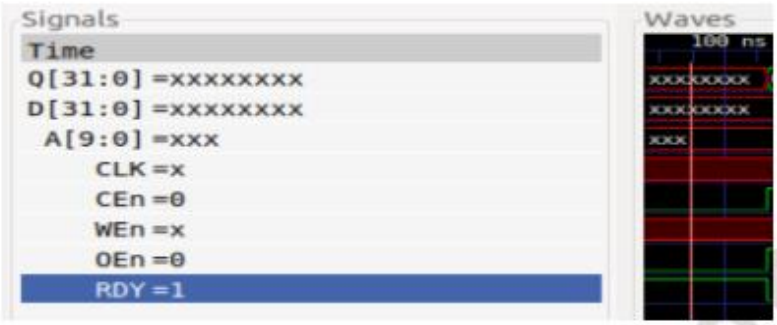
Port Name	Function	Preferred Metal	Preferred Pin dimension
output [31:0] Q	RAM data output	Metal 1	at-least 1.26m x 1um
input [31:0] D	RAM data input bus	Metal 1	at-least 1.26m x 1um
input [9:0] A	RAM address bus	Metal 1	at-least 1.26m x 1um
input CLK	RAM clock	Metal 1	at-least 1.26m x 1um
input CEn	RAM enable	Metal 1	at-least 1.26m x 1um
input WEn	RAM write enable, 0-active	Metal 1	at-least 1.26m x 1um
input OEn	RAM output enable, 0-active	Metal 1	at-least 1.26m x 1um
output RDY	Test output	Metal 1	at-least 1.26m x 1um
VDD18M	1.8v supply	Metal 4	4.41um x 1um
VSSM	Ground	Metal 3	4.46um x 1um

Functionality specs:

Case	CLK	CEn	WEn	OEn	A[10bits]	D[32bits]	Q[32bits]	RDY
1	x	x	x	x	x	x	x	Tie high
2	x	0	x	0	x	x	x	Tie high
3	x	0->1	x	0->1	x	x	0000_0000	0
4	0->1	1	1	1	x	x	0000_0000	0
5	0->1	0	1	0	x	x	Q<- mem[A] (read)	1
6	0->1	0	0	0	x	mem[A]<- D (write)	Q<- mem[A] (read)	1

Case 1:

Case 2:



Case 3:

Case 4:

Case 5:

Case 6:

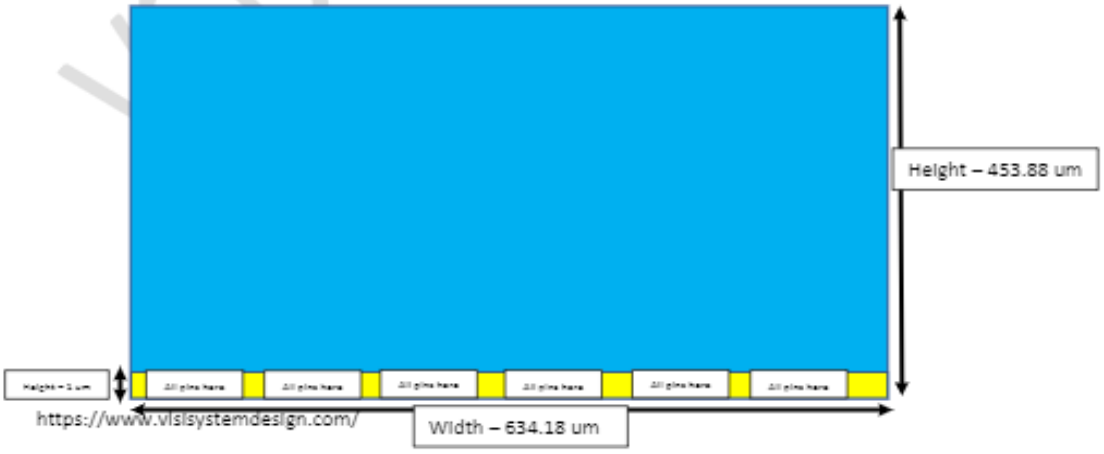
Full behavioral model in verilog:

https://github.com/efabless/raven-picorv32/blob/master/verilog/XSPRAM_1024X32_M8P.v

Layout specs:

Width – 634.18 um

Height – 453.88 um



https://www.vlsisystemdesign.com/