MEMORIA

Técnicas Digitales I

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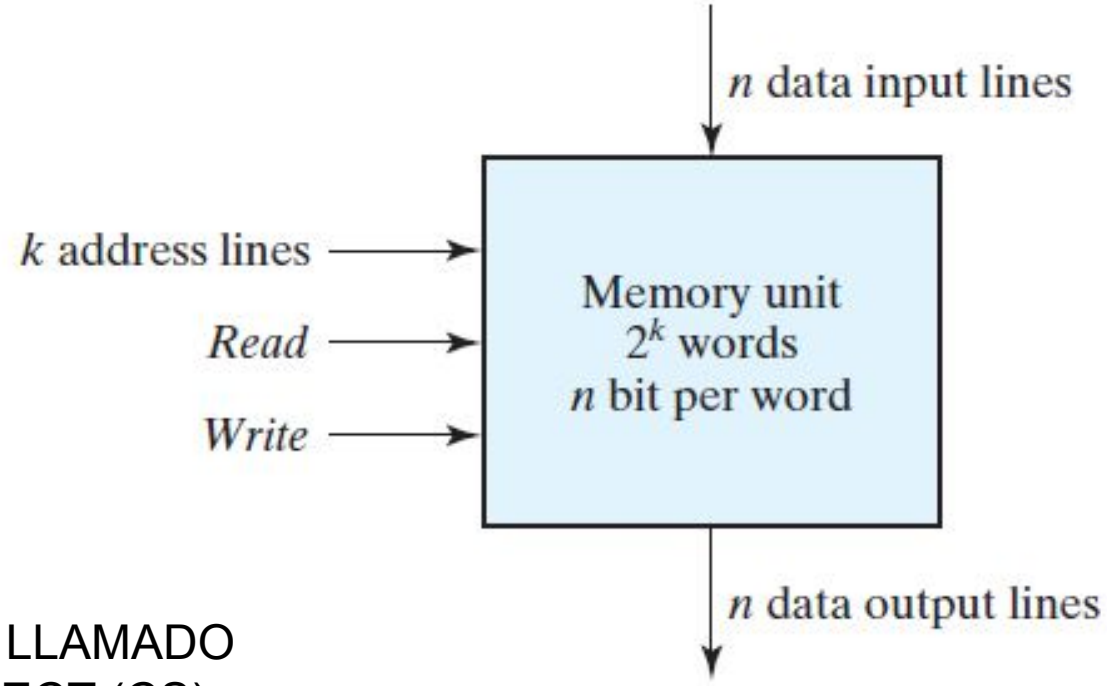
UTN

DIAGRAMA DE BLOQUE DE UNA UNIDAD DE MEMORIA



TAMBIÉN LLAMADO
CHIP SELECT (CS)

SEÑALES ALTERNATIVAS EN UN CHIP DE MEMORIA

Memory Enable	Read/Write	Memory Operation
0	X	None
1	0	Write to selected word
1	1	Read from selected word

CONTENIDO DE UNA MEMORIA DE 1024 X 16

Memory address		Memory content
Binary	Decimal	
0000000000	0	1011010101011101
0000000001	1	1010101110001001
0000000010	2	0000110101000110
⋮	⋮	⋮
1111111101	1021	1001110100010100
1111111110	1022	0000110100011110
1111111111	1023	1101111000100101

reg [15: 0] memword [0: 1023];

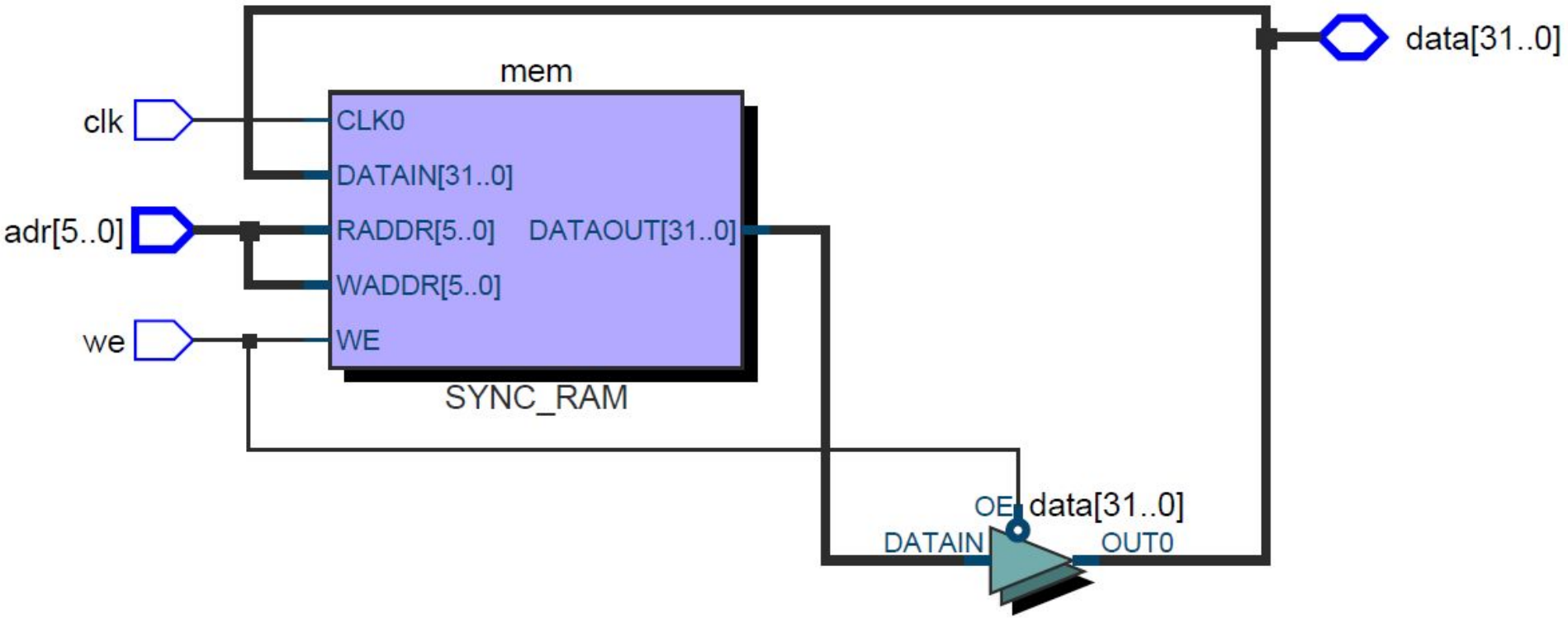
UTN

DESCRIPCIÓN DE UNA RAM DE 64 X 32

```
// Read and write operations of memory
// Memory size is 64 words of 32 bits each.
module memory # (parameter N=6, M=32)
                        ( input          Enable, ReadWrite,
                          input          [N-1: 0] Address,
                          input          [M-1: 0] DataIn,
                          output  reg    [M-1: 0] DataOut );

   reg       [M-1: 0] Mem [0:2**N-1];                  // 64 x 32 default memory
   always @ (Enable or ReadWrite)
     if (Enable)
       if (ReadWrite) DataOut = Mem [Address];  // Read
       else Mem [Address] = DataIn;                  // Write
     else DataOut = {M{1'bz}};                       // High impedance state
endmodule
```

DESCRIPCIÓN DE UNA RAM DE 64 X 32 CON BUS DE DATOS BIDIRECCIONAL



ROM

```
module rom (input [1:0] adr,
                  output [2:0] dout);
  always@ (*)
    case (adr)
      2'b00: dout = 3'b011;
      2'b01: dout = 3'b110;
      2'b10: dout = 3'b100;
      2'b11: dout = 3'b010;
    endcase
endmodule
```