

# MUX / DEMUX

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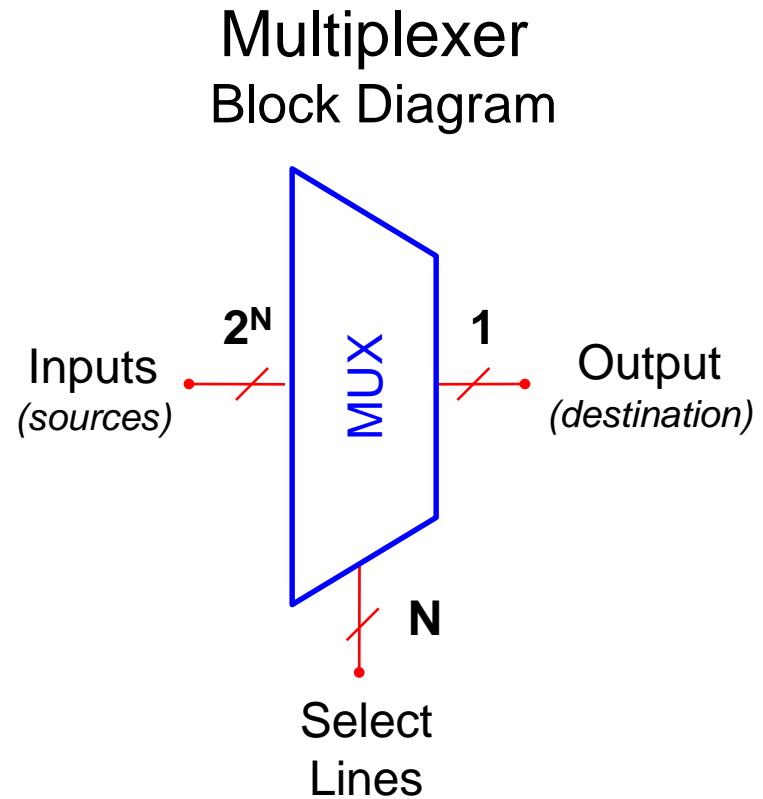
Justino Lourenço – 21 Out 2020



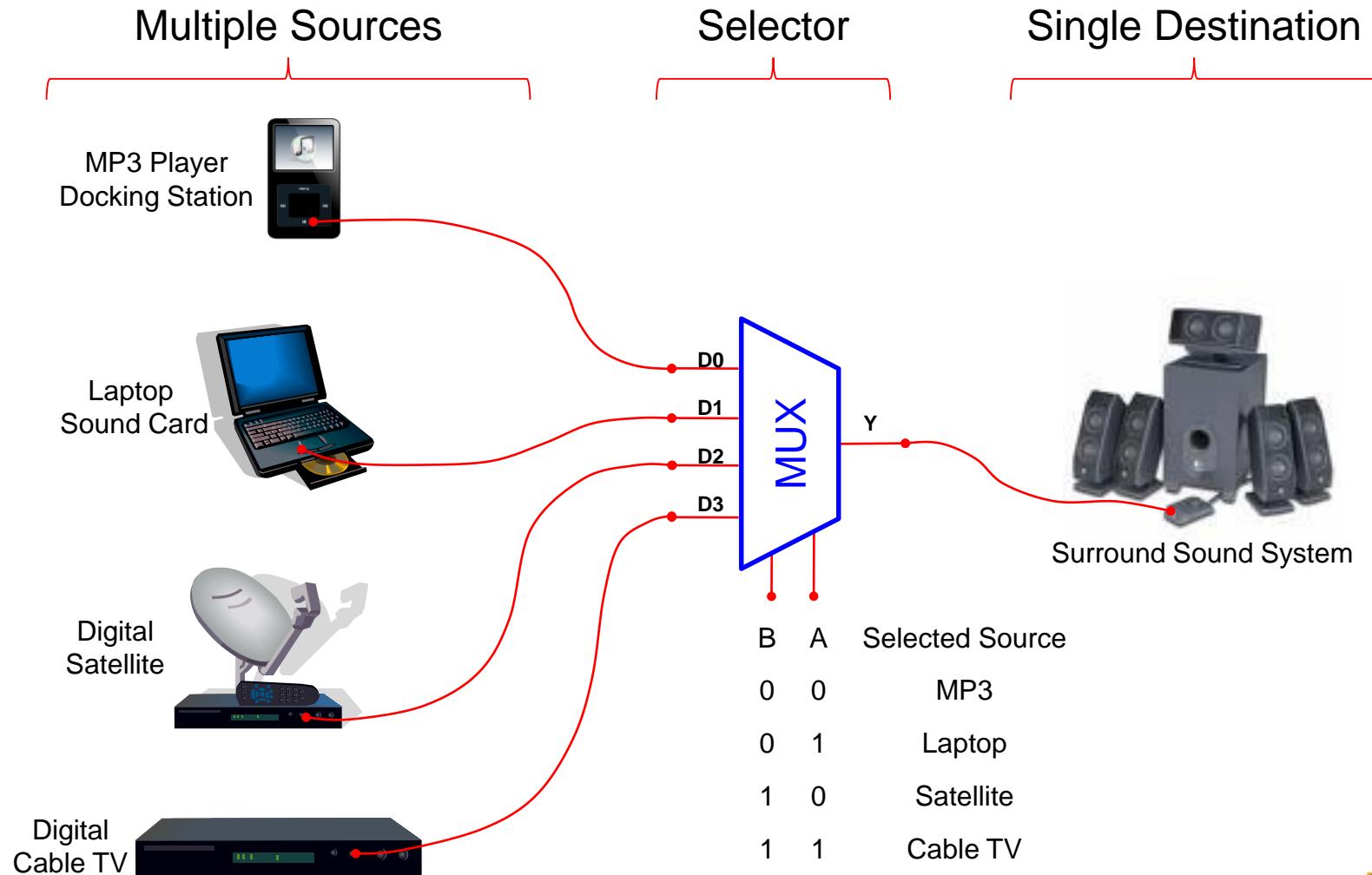
# O que é um MUX?

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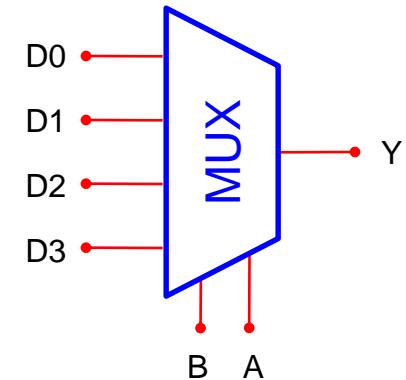
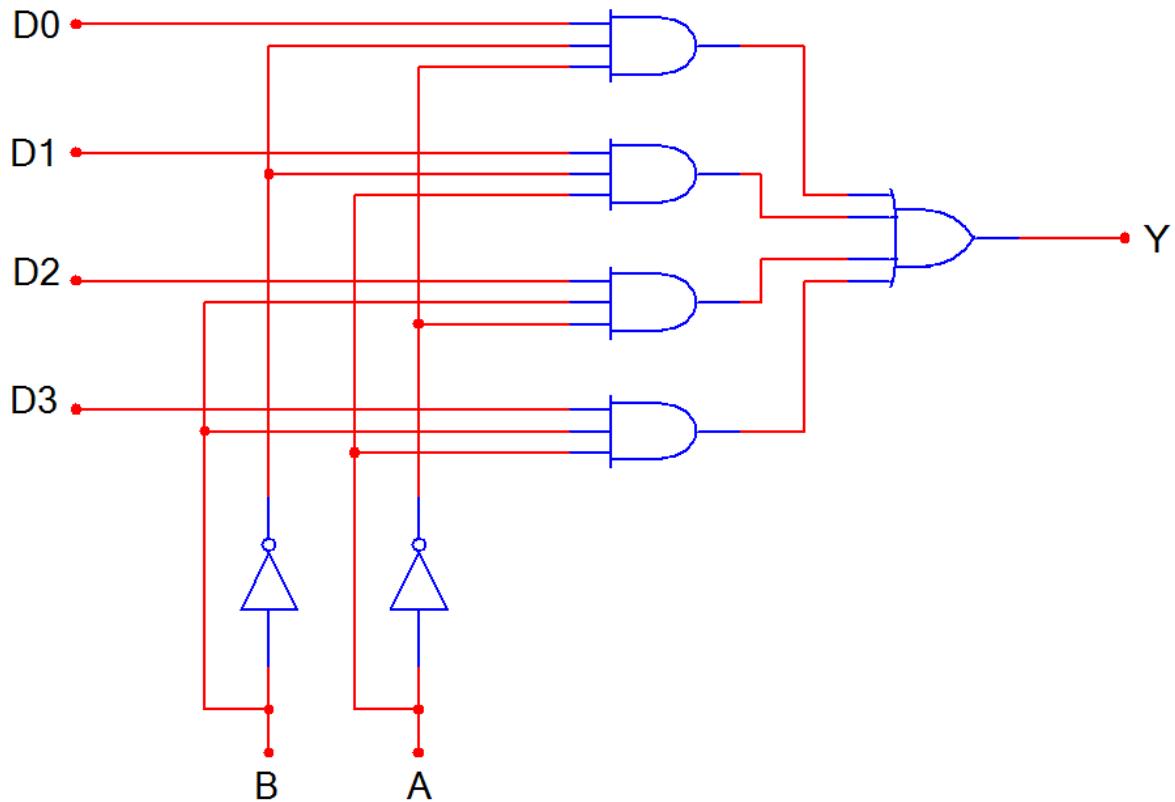
- A MUX é um switch com N entradas e uma saída.
- As linhas de seleção definem que entrada passa para a saída.
- MUX (Tipos)
  - 2-to-1 (1 select line)
  - 4-to-1 (2 select lines)
  - 8-to-1 (3 select lines)
  - 16-to-1 (4 select lines)



# Aplicações MUX



# 4-to-1 Multiplexer (MUX)



B	A	Y
0	0	D0
0	1	D1
1	0	D2
1	1	D3



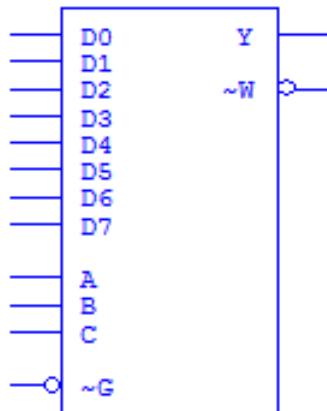
# Medium Scale Integration MUX

4-to-1 MUX

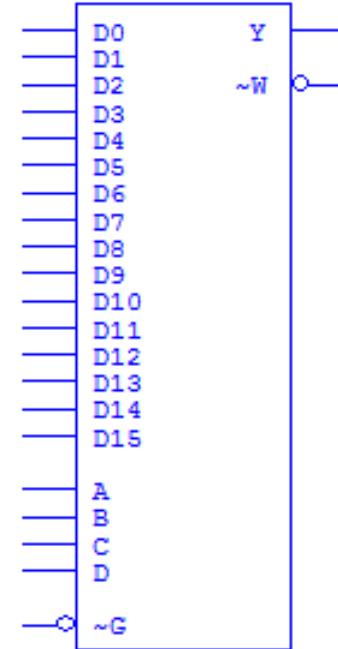
Inputs {  
Select {  
Enable ↗

} Output (Y)  
(and inverted output)

8-to-1 MUX

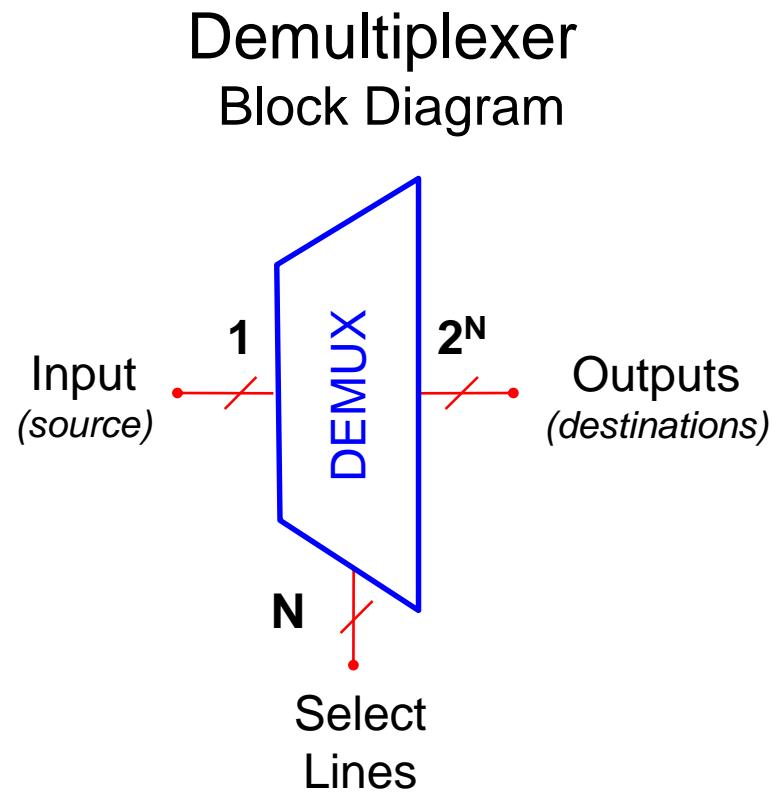


16-to-1 MUX

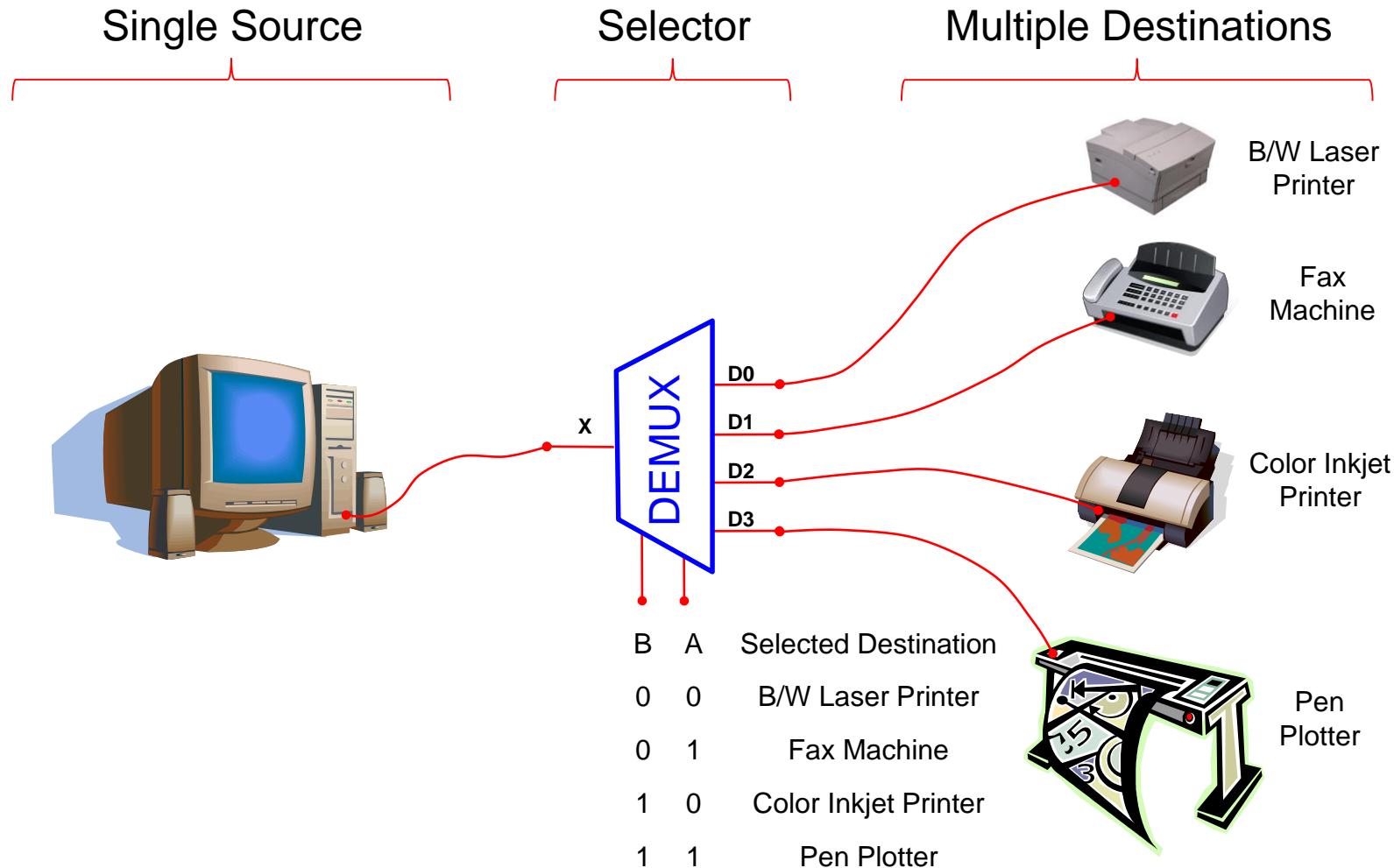


# O que é um Demultiplexer (DEMUX)?

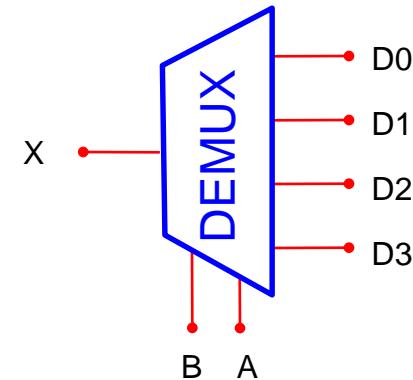
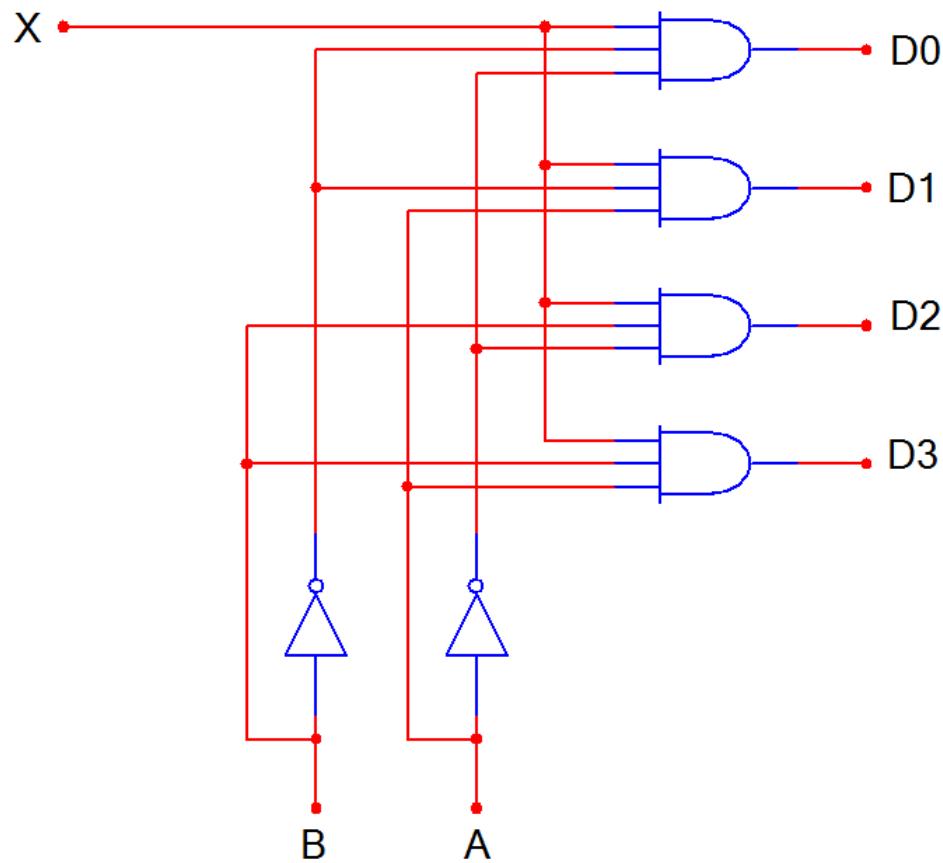
- A DEMUX é um digital switch com uma entrada e N saídas.
- As linhas de seleção escolhem qual a saída para a qual “passa” o valor da entrada.
- DEMUX Types
  - 1-to-2 (1 select line)
  - 1-to-4 (2 select lines)
  - 1-to-8 (3 select lines)
  - 1-to-16 (4 select lines)



# Aplicação Típica



# 1-to-4 De-Multiplexer (DEMUX)

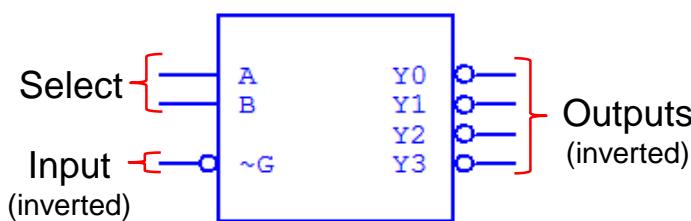


B	A	D0	D1	D2	D3
0	0	X	0	0	0
0	1	0	X	0	0
1	0	0	0	X	0
1	1	0	0	0	X

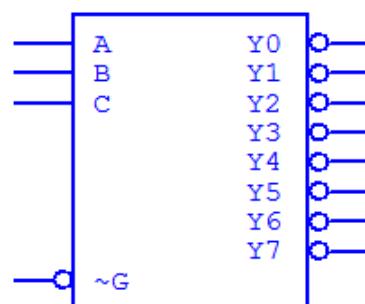


# Medium Scale Integration DEMUX

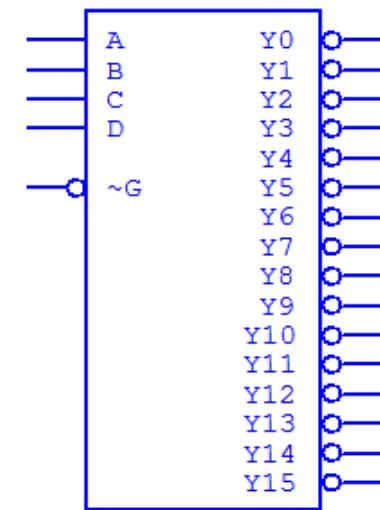
1-to-4 DEMUX



1-to-8 DEMUX



16-to-1 MUX



Note : Most Medium Scale Integrated (MSI) DEMUXs , like the three shown, have outputs that are inverted. This is done because it requires few logic gates to implement DEMUXs with inverted outputs rather than no-inverted outputs.



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**FIM**