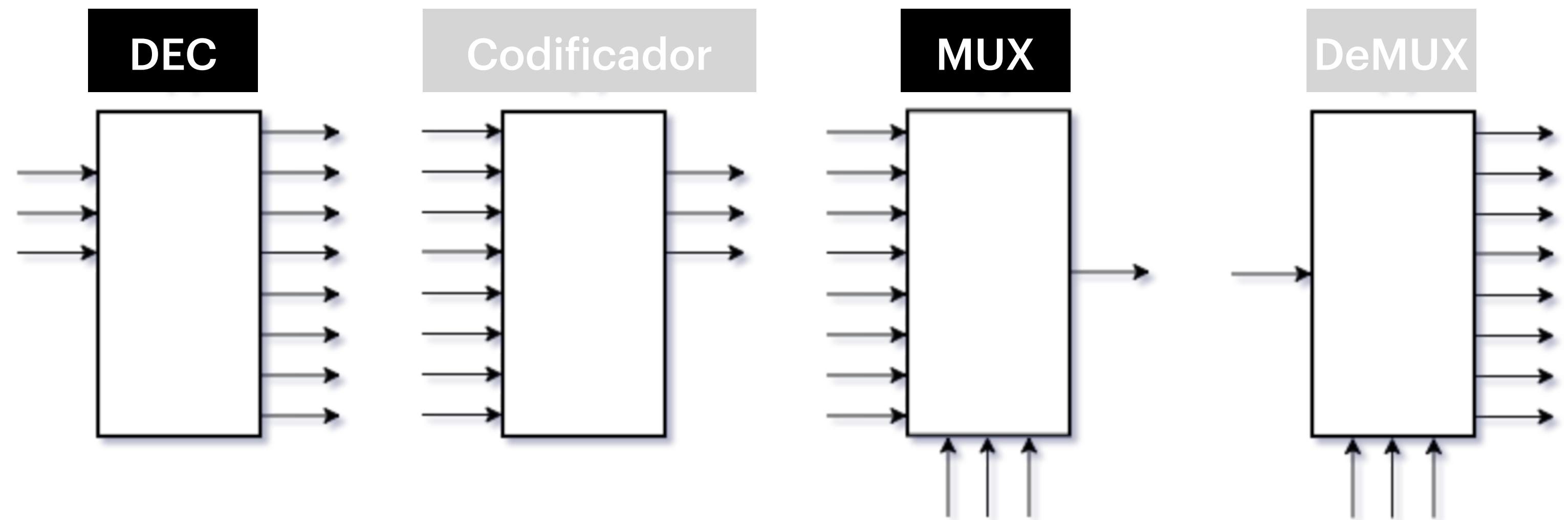


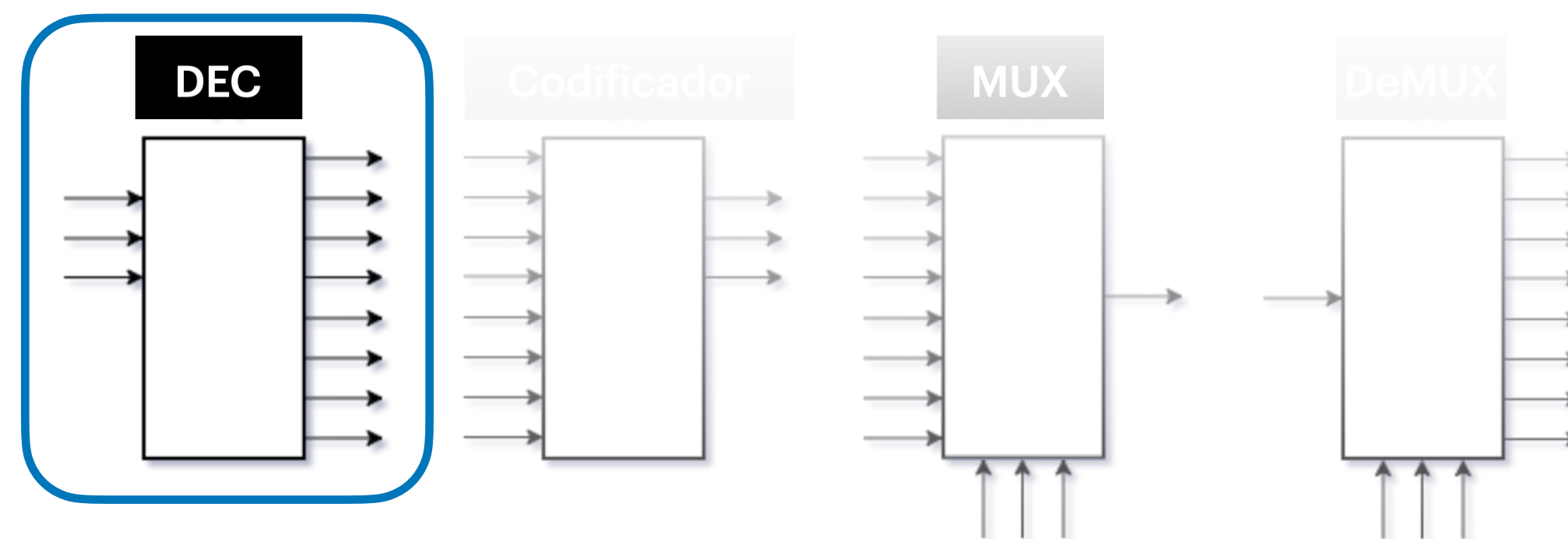
Funções Lógicas

Circuitos MSI (de Média Escala de Integração)

- DEC
- MUX
- Aplicações
- Uso de DEC e MUX para síntese de circuitos combinacionais



DEC

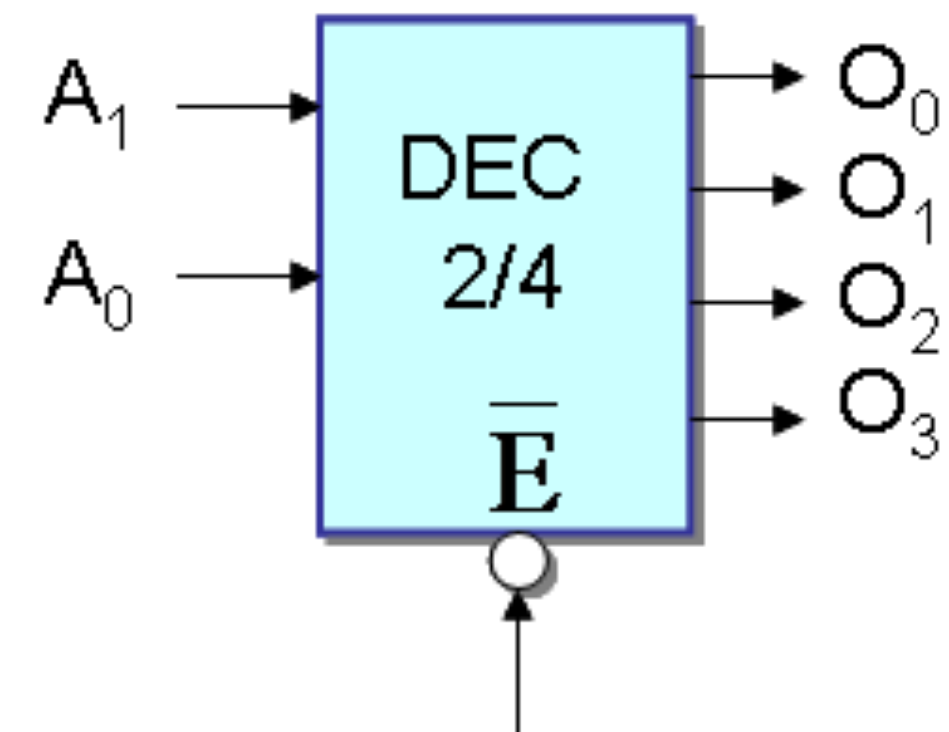


DEC's

Decodificadores

- Mais saídas que entradas;
- Transforma código binário de entrada numa única linha ativa de saída;
- n —entradas $\Rightarrow 2^n$ saídas;
- Podem possuir entrada adicional de habilitação ("Enable")

Teoricamente:



Equações:

$$O_0 = \overline{E} \cdot \overline{A_1} \cdot \overline{A_0}$$

$$O_1 = \overline{E} \cdot \overline{A_1} \cdot A_0$$

$$O_2 = \overline{E} \cdot A_1 \cdot \overline{A_0}$$

$$O_3 = \overline{E} \cdot A_1 \cdot A_0$$

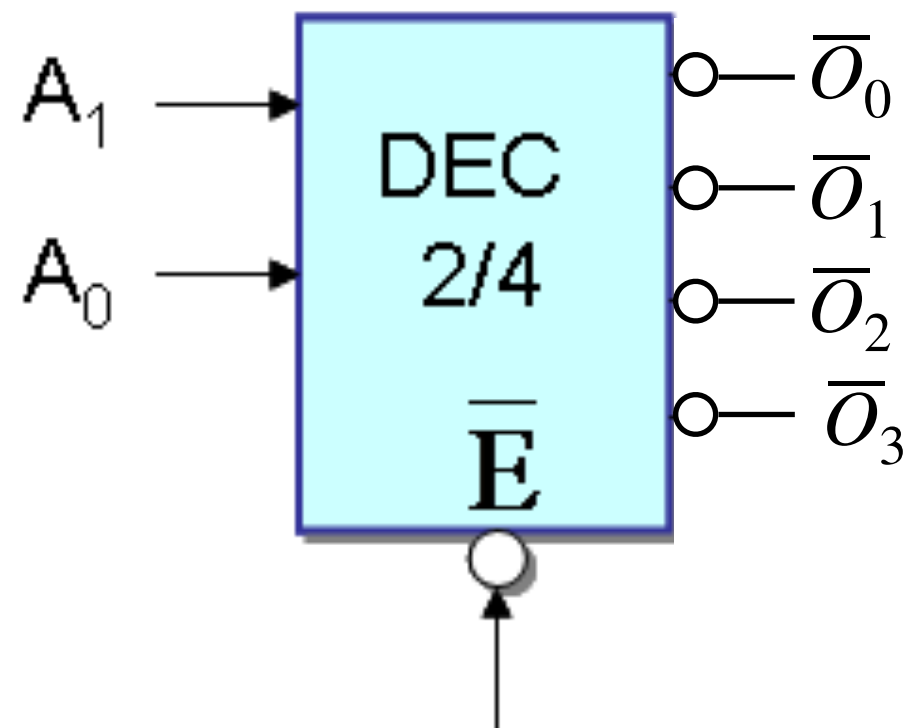
Tabela funcional

Entradas			Saídas			
/E	A1	A0	O0	O1	O2	O3
0	0	0	1	0	0	0
0	0	1	0	1	0	0
0	1	0	0	0	1	0
0	0	0	0	0	0	0
1	1	1	1	1	1	1

DEC's

Decodificadores

Comercial:



Equações:

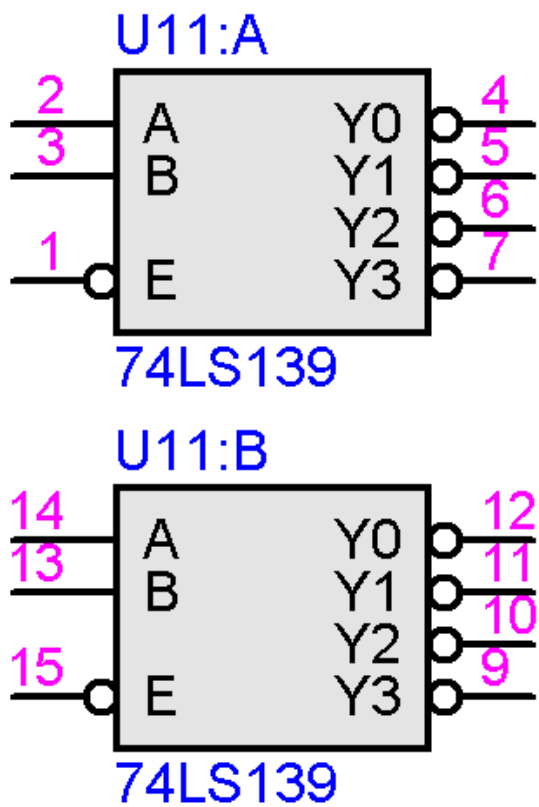
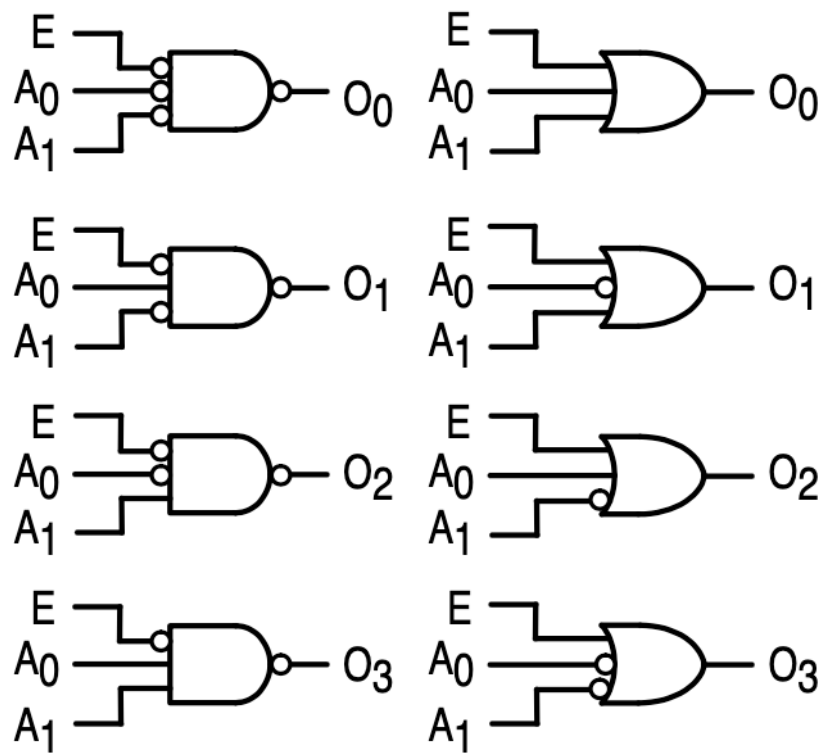
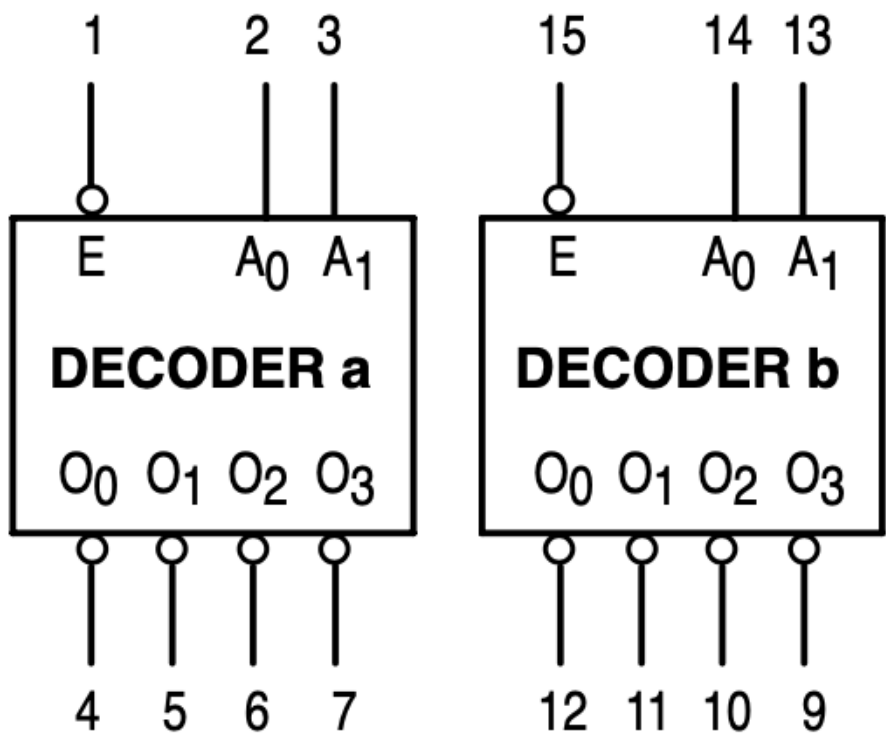
$$\begin{aligned}\overline{O_0} &= \overline{\overline{E} \overline{A_1} \overline{A_0}} \\ \overline{O_1} &= \overline{\overline{E} \overline{A_1} A_0} \\ \overline{O_2} &= \overline{\overline{E} A_1 \overline{A_0}} \\ \overline{O_3} &= \overline{\overline{E} A_1 A_0}\end{aligned}$$

Saídas “ativo baixo”

Tabela funcional

Entradas			Saídas			
$\overline{E}$	A1	A0	$\overline{O_0}$	$\overline{O_1}$	$\overline{O_2}$	$\overline{O_3}$
0	0	0	0	1	1	1
0	0	1	1	0	1	1
0	1	0	1	1	0	1
0	0	0	1	1	1	0
1	1	1	1	1	1	1

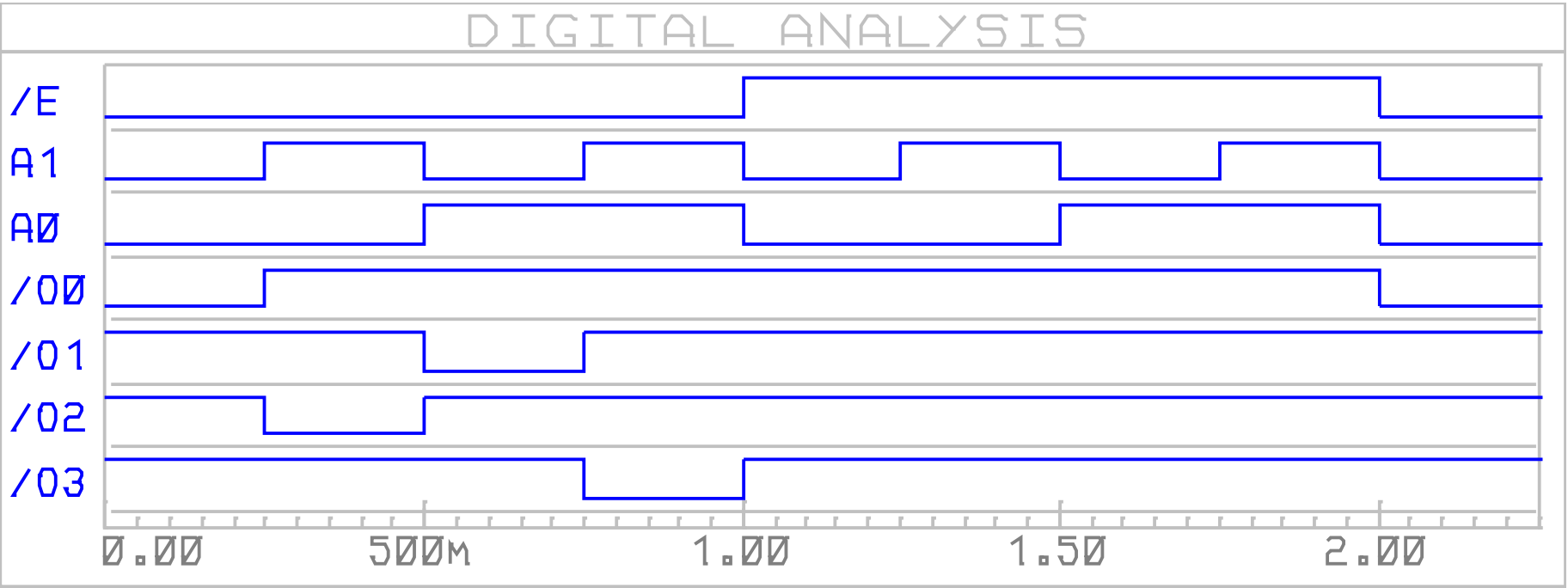
74139: DUAL 1-OF-4 DECODER/DEMULTIPLEXER



TRUTH TABLE

INPUTS			OUTPUTS			
$\overline{E}$	A0	A1	$\overline{O_0}$	$\overline{O_1}$	$\overline{O_2}$	$\overline{O_3}$
H	X	X	H	H	H	H
L	L	L	L	H	H	H
L	H	L	H	L	H	H
L	L	H	H	H	L	H
L	H	H	H	H	H	L

H = HIGH Voltage Level
L = LOW Voltage Level
X = Don't Care



MUXes

