

# Sistemas Digitales

## Decodificadores / Codificadores

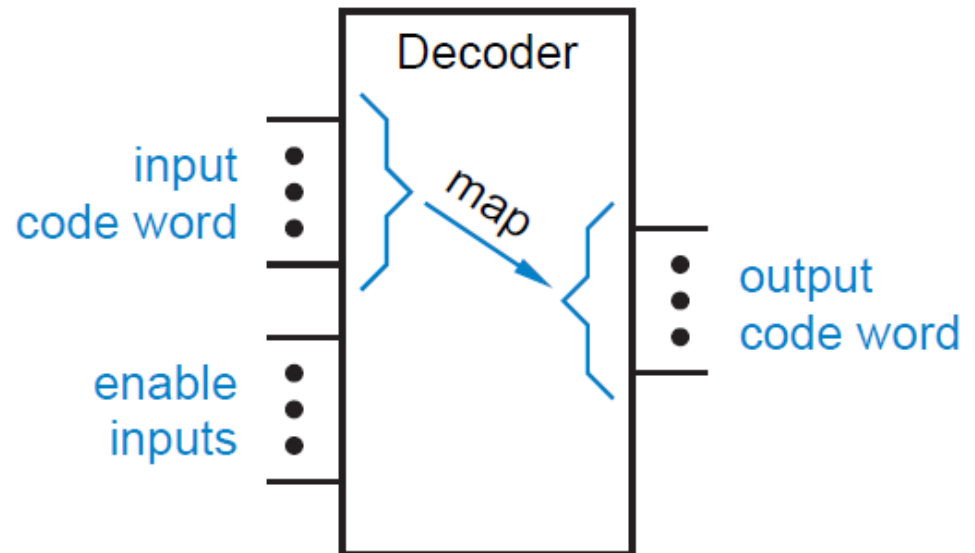
Prof. Luis Araujo

Escuela de Ingeniería Eléctrica



# Decodificador/Codificador

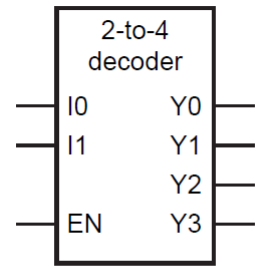
- Decodificador: Conversor de Código de  $n$  a  $M$  bits ( $n < M$ )
- Codificador: Conversor de Código de  $n$  a  $M$  bits ( $n > M$ )



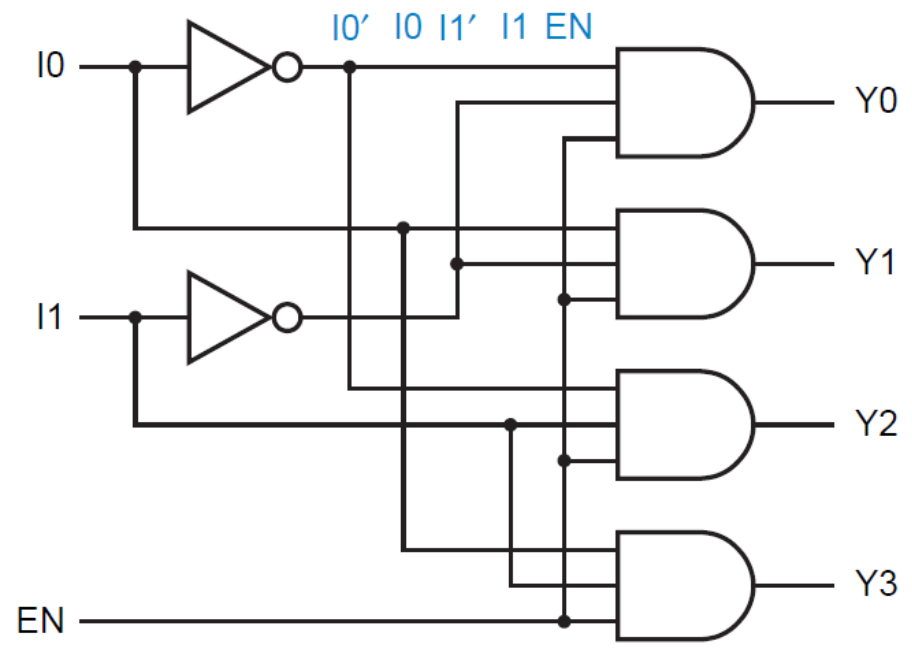
# Decodificador

- Decodificador Binario:  $n$  a  $2^n$  bits

Inputs			Outputs			
EN	I1	I0	Y3	Y2	Y1	Y0
0	x	x	0	0	0	0
1	0	0	0	0	0	1
1	0	1	0	0	1	0
1	1	0	0	1	0	0
1	1	1	1	0	0	0



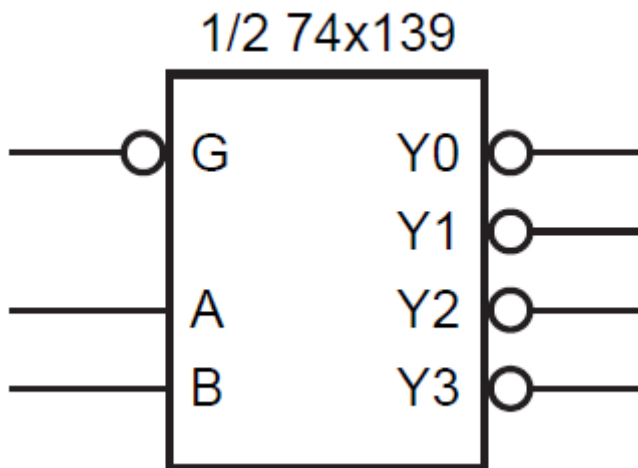
(a)



(b)

# Decodificador

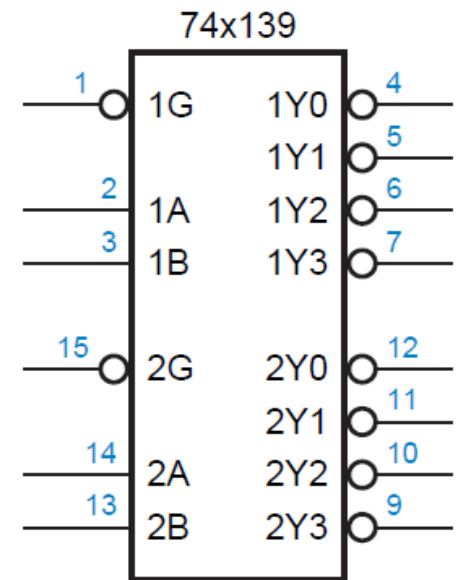
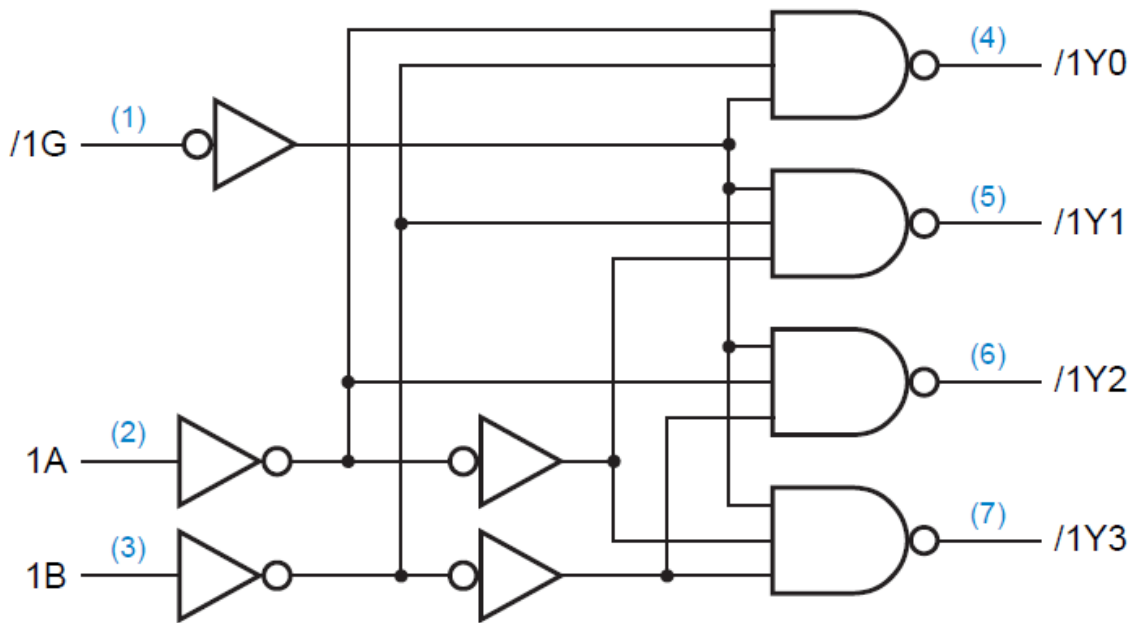
- Decodificador Comercial Binario: 2 a 4 bits



Inputs			Outputs			
/G	B	A	/Y3	/Y2	/Y1	/Y0
1	x	x	1	1	1	1
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1

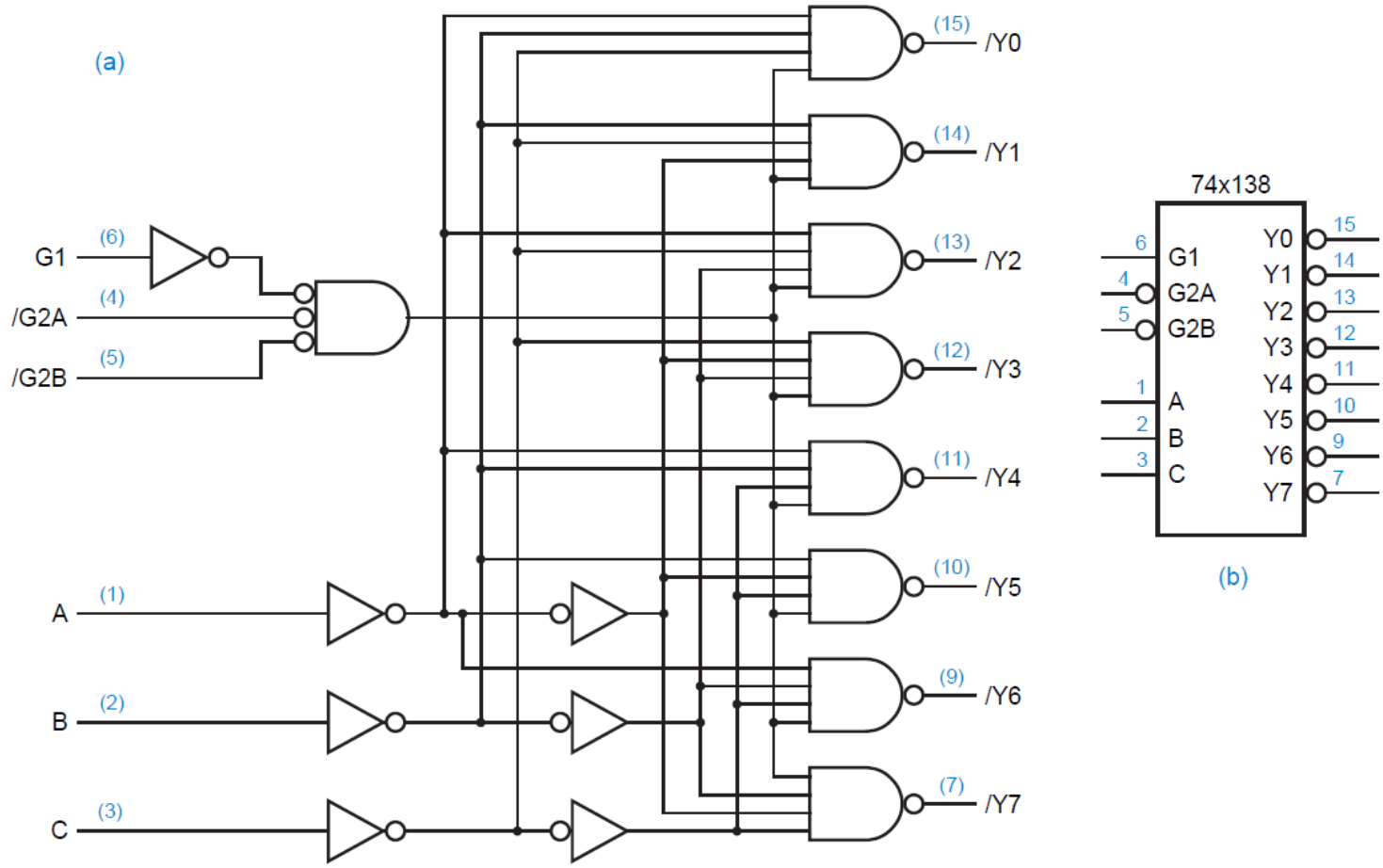
# Decodificador

- Decodificador Comercial Binario: 2 a 4 bits



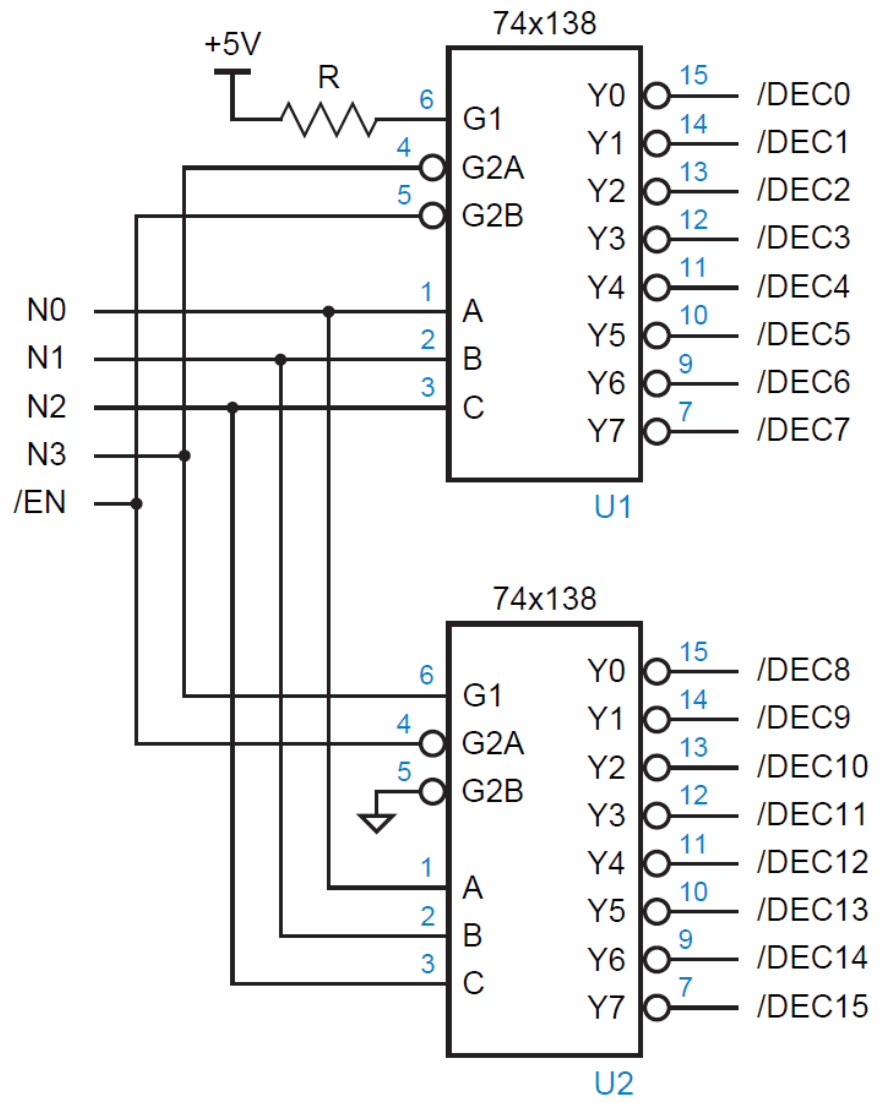
# Decodificador

- Decodificador Comercial Binario: 3 a 8 bits



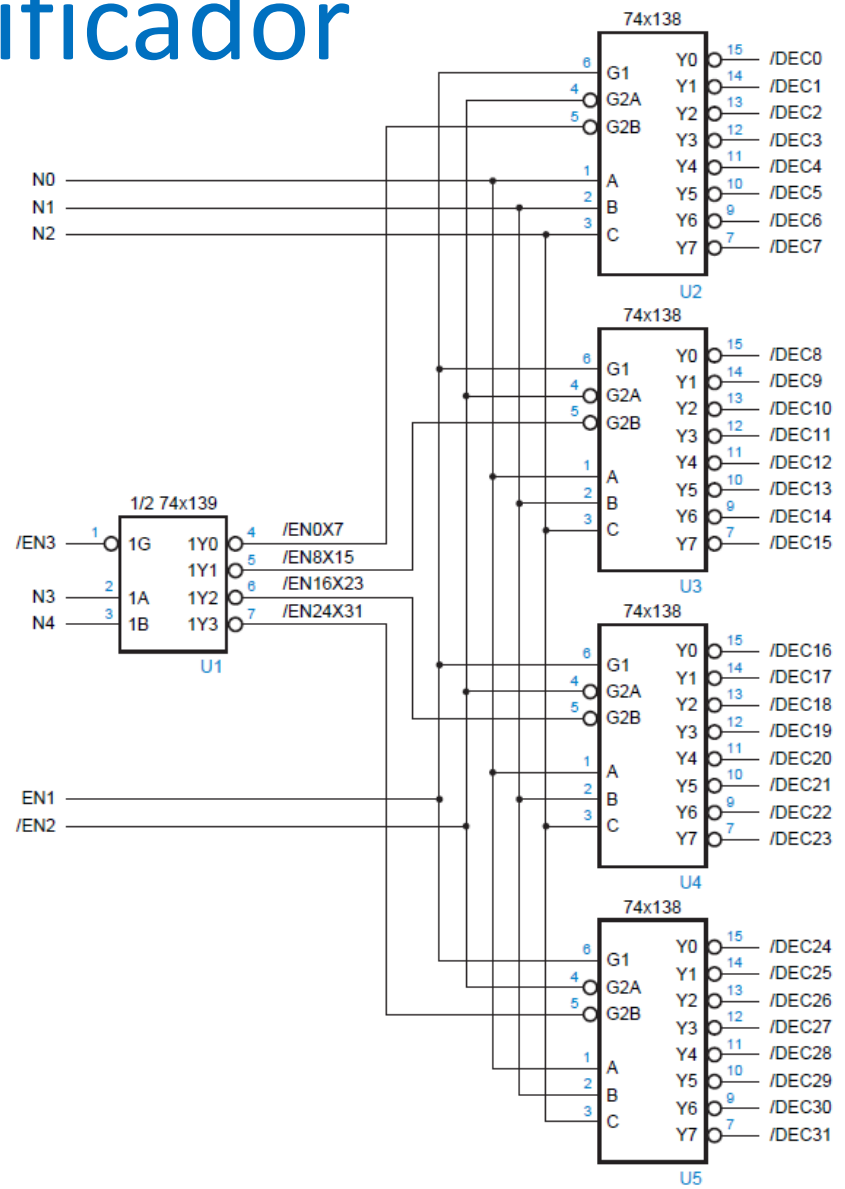
# Decodificador

- Expansión de Decodificadores



# Decodificador

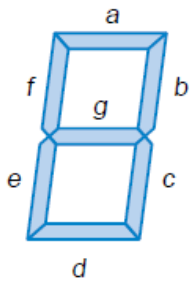
- Expansión de Decodificadores





# Decodificador

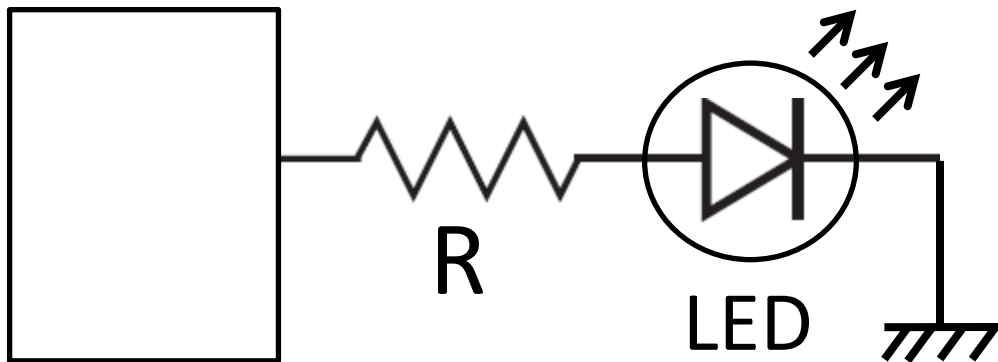
- Decodificador Comercial 7 segmentos



(a)

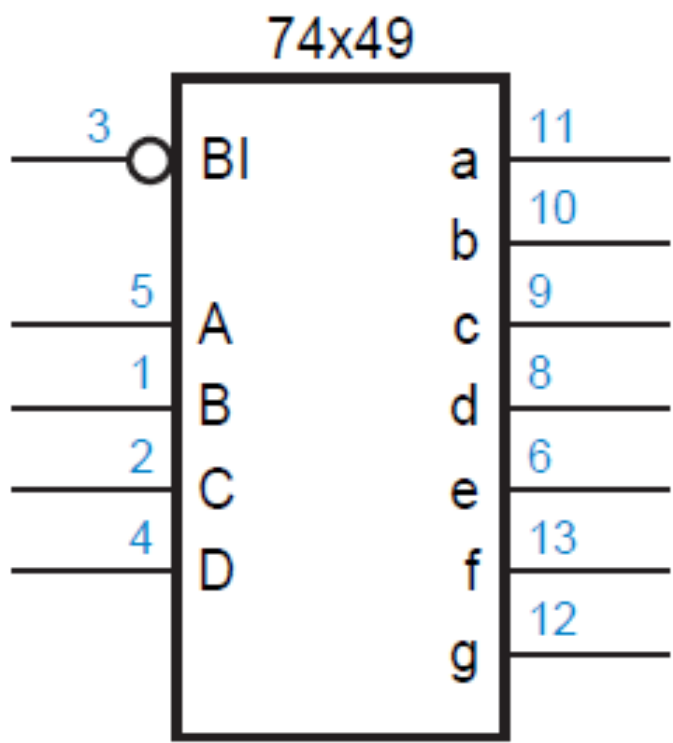


(b)



# Decodificador

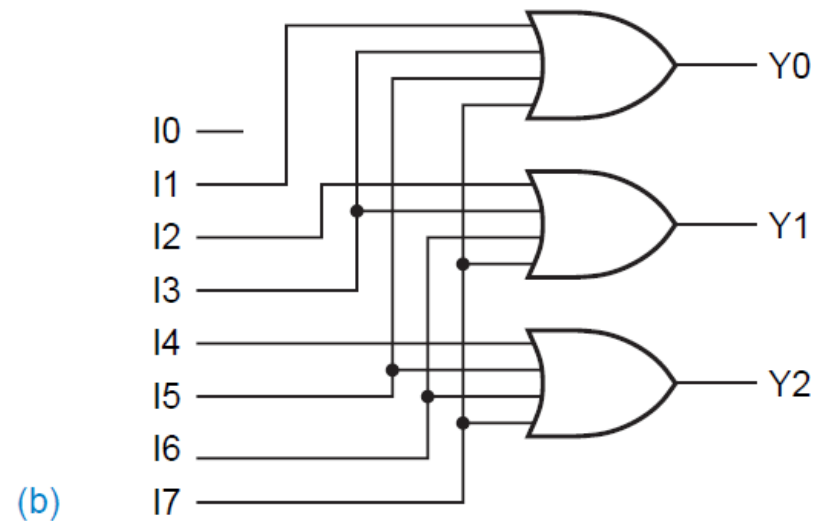
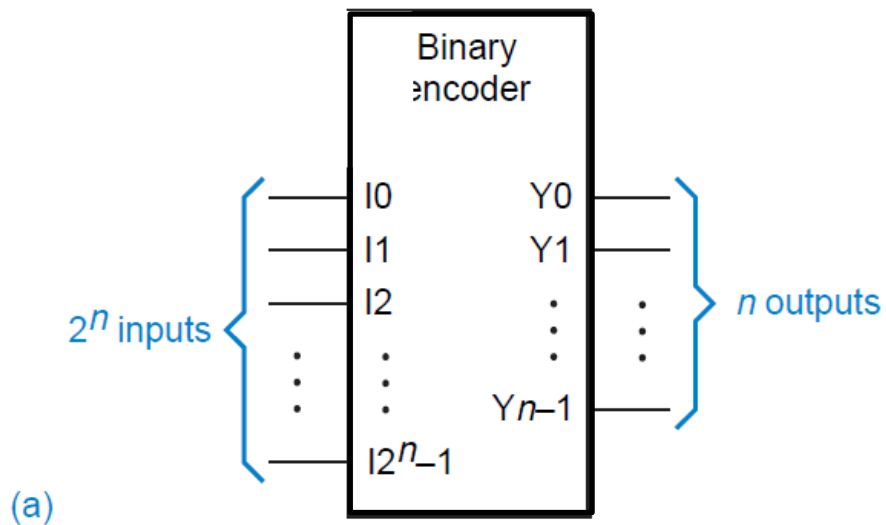
- Decodificador Comercial 7 segmentos



/BI	D	C	B	A	a	b	c	d	e	f	g
0	x	x	x	x	0	0	0	0	0	0	0
1	0	0	0	0	1	1	1	1	1	1	0
1	0	0	0	1	0	1	1	0	0	0	0
1	0	0	1	0	1	1	0	1	1	0	1
1	0	0	1	1	1	1	1	1	0	0	1
1	0	1	0	0	0	1	1	0	0	1	1
1	0	1	0	1	1	0	1	1	0	1	1
1	0	1	1	0	0	1	1	1	1	1	1
1	0	1	1	1	1	1	1	0	0	0	0
1	1	0	0	0	1	1	1	1	1	1	1
1	1	0	0	1	1	1	1	0	0	1	1
1	1	0	1	0	0	0	0	1	1	0	1
1	1	0	1	1	0	0	0	1	1	0	1
1	1	1	0	0	0	1	0	0	0	1	1
1	1	1	0	1	1	0	0	1	0	1	1
1	1	1	1	0	0	0	0	1	1	1	1
1	1	1	1	1	0	0	0	0	0	0	0

# Codificador

- Codificador Binario: 4 a 2 bits



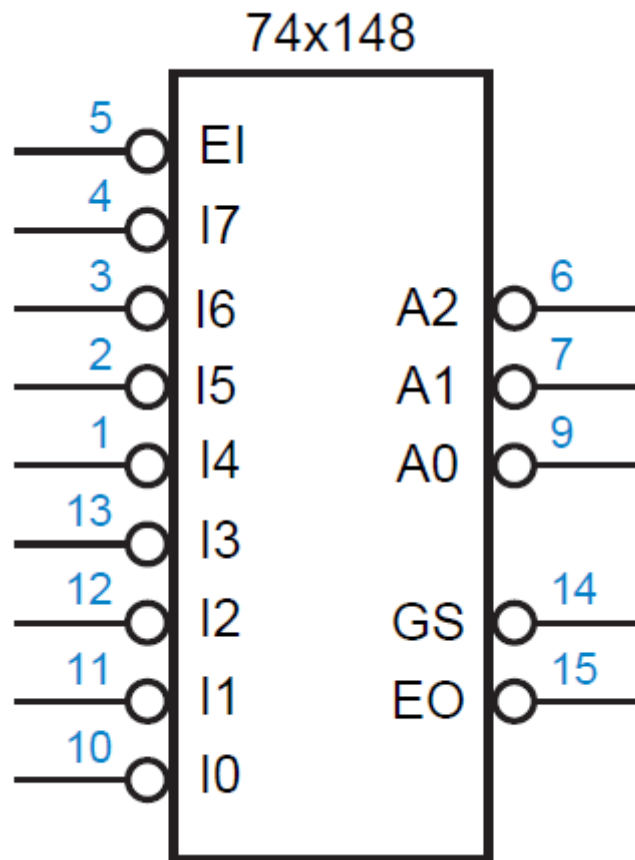
# Codificador

- Codificador de Prioridad:

Inputs									Outputs				
/EI	/I0	/I1	/I2	/I3	/I4	/I5	/I6	/I7	/A2	/A1	/A0	/GS	/EO
1	x	x	x	x	x	x	x	x	1	1	1	1	1
0	x	x	x	x	x	x	x	0	0	0	0	0	1
0	x	x	x	x	x	x	0	1	0	0	1	0	1
0	x	x	x	x	x	0	1	1	0	1	0	0	1
0	x	x	x	0	1	1	1	1	1	0	0	0	1
0	x	x	0	1	1	1	1	1	1	0	1	0	1
0	x	0	1	1	1	1	1	1	1	1	0	0	1
0	0	1	1	1	1	1	1	1	1	1	1	0	1
0	1	1	1	1	1	1	1	1	1	1	1	1	0

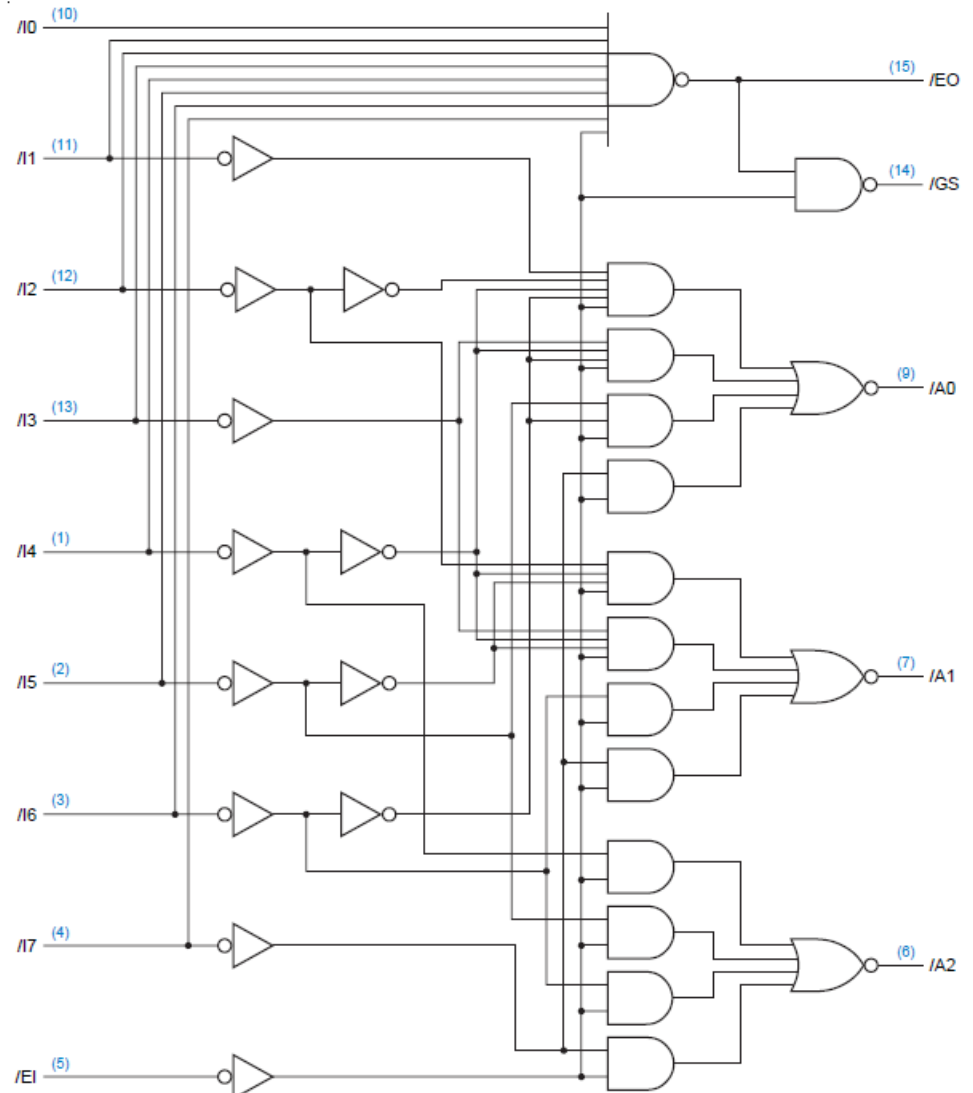
# Codificador

- Codificador de Prioridad Comercial:



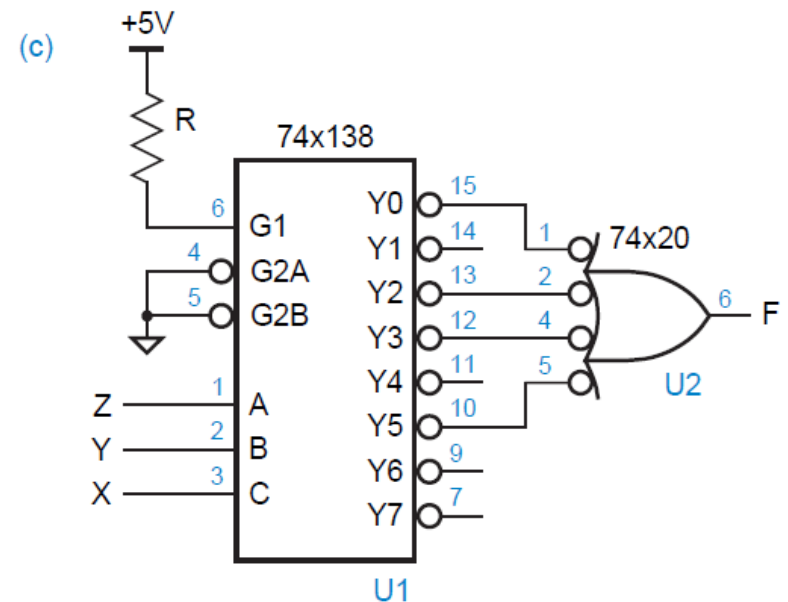
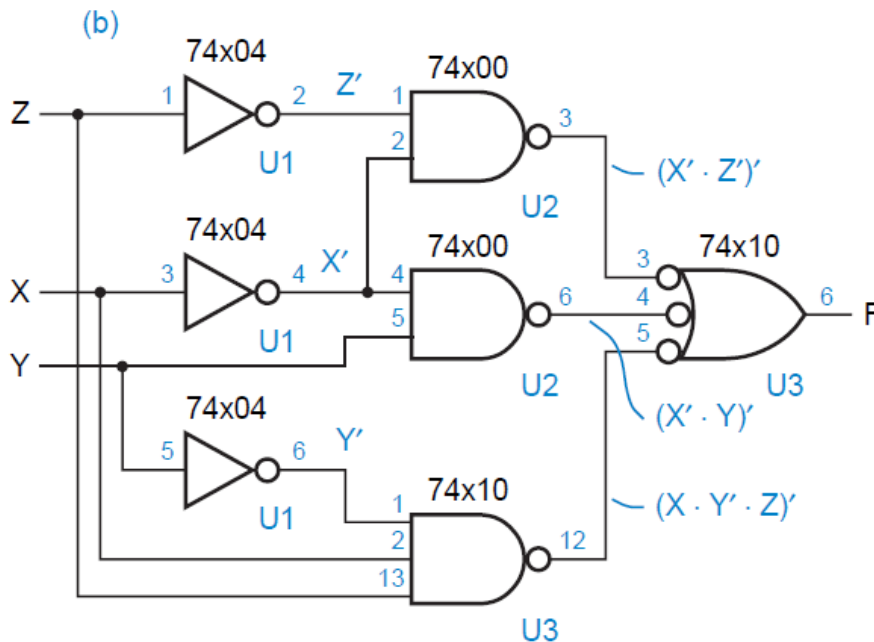
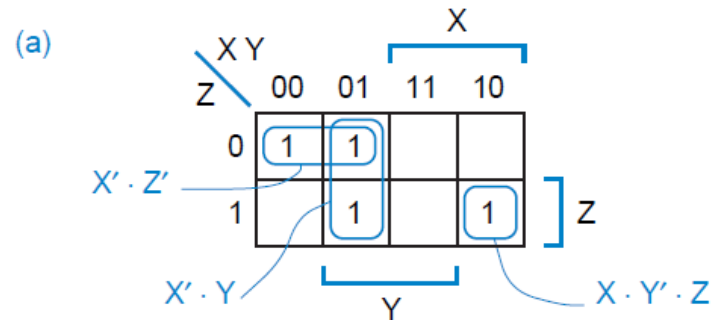
# Codificador

- Codificador de Prioridad Comercial:



# Funciones con Decodificadores

$$F = \sum_{x,y,z} (0,2,3,5)$$



# Funciones con Decodificadores

$$H = \sum_{x,y,z} (2,4,5)$$

$$G = \sum_{x,y,z} (0,1,3)$$

$$F = \sum_{x,y,z} (3,5,7)$$

