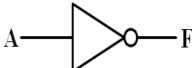


Compuertas lógicas

Nombre	Símbolo Grafico	Función Algebraica	Tabla de Verdad															
Y (AND)		$F = A \cdot B$	<table><tr><th>A</th><th>B</th><th>$A \cdot B$</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	A	B	$A \cdot B$	0	0	0	0	1	0	1	0	0	1	1	1
A	B	$A \cdot B$																
0	0	0																
0	1	0																
1	0	0																
1	1	1																
O (OR)		$F = A + B$	<table><tr><th>A</th><th>B</th><th>$A + B$</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	A	B	$A + B$	0	0	0	0	1	1	1	0	1	1	1	1
A	B	$A + B$																
0	0	0																
0	1	1																
1	0	1																
1	1	1																
Inversor (NOT)		$F = \overline{A}$	<table><tr><th>A</th><th>F</th></tr><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td></tr></table>	A	F	0	1	1	0									
A	F																	
0	1																	
1	0																	
Separador (Buffer)		$F = A$	<table><tr><th>A</th><th>F</th></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td></tr></table>	A	F	0	0	1	1									
A	F																	
0	0																	
1	1																	
NO-Y (NAND)		$F = \overline{A \cdot B} = \overline{A} + \overline{B}$	<table><tr><th>A</th><th>B</th><th>$\overline{A \cdot B}$</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	A	B	$\overline{A \cdot B}$	0	0	1	0	1	1	1	0	1	1	1	0
A	B	$\overline{A \cdot B}$																
0	0	1																
0	1	1																
1	0	1																
1	1	0																
NO-O (NOR)		$F = \overline{A + B} = \overline{A} \cdot \overline{B}$	<table><tr><th>A</th><th>B</th><th>$\overline{A + B}$</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	A	B	$\overline{A + B}$	0	0	1	0	1	0	1	0	0	1	1	0
A	B	$\overline{A + B}$																
0	0	1																
0	1	0																
1	0	0																
1	1	0																
O-Exclusiva (OR-Exclusive)		$F = A \neq B$ $= A\overline{B} + \overline{A}B = A \oplus B$	<table><tr><th>A</th><th>B</th><th>$A \oplus B$</th></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	A	B	$A \oplus B$	0	0	0	0	1	1	1	0	1	1	1	0
A	B	$A \oplus B$																
0	0	0																
0	1	1																
1	0	1																
1	1	0																
NO-O Exclusiva (NOR-Exclusive)		$F = \overline{A \neq B}$ $= AB + \overline{A}\overline{B} = A \odot B$	<table><tr><th>A</th><th>B</th><th>$A \odot B$</th></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	A	B	$A \odot B$	0	0	1	0	1	0	1	0	0	1	1	1
A	B	$A \odot B$																
0	0	1																
0	1	0																
1	0	0																
1	1	1																

Teoremas Fundamentales del Algebra Booleana

1.
 - a) $A + 0 = A$
 - b) $A \cdot 1 = A$
2.
 - a) $A + \bar{A} = 1$
 - b) $A \cdot \bar{A} = 0$
3.
 - a) $A + A = A$
 - b) $A \cdot A = A$
4.
 - a) $A + 1 = 1$
 - b) $A \cdot 0 = 0$
5.
$$(\bar{\bar{A}}) = A$$
6.
 - a) $A + B = B + A$
 - b) $AB = BA$

(Conmutativo)
7.
 - a) $A + (B + C) = (A + B) + C$
 - b) $A (BC) = (AB) C$

(Asociativo)
8.
 - a) $A (B + C) = AB + AC$
 - b) $A + BC = (A + B) (A + C)$

(Distributivo)
9.
 - a) $\overline{(A + B)} = \bar{A} \bar{B}$
 - b) $\overline{(AB)} = \bar{A} + \bar{B}$

(De Morgan)
10.
 - a) $A + AB = A$
 - b) $A (A + B) = A$

(Absorción)
11.
$$(A + B) (A + C) = A + BC$$
12.
$$(A + B) (A + \bar{B}) = A$$

13.

$$A + \bar{A} B = A + B$$

14.

$$AB + A\bar{B}C = AB + AC$$

15.

$$(A + B)(A + \bar{B} + C) = (A + B)(A + C)$$

16.

$$AB + \bar{A}C + BC = AB + \bar{A}C$$

17.

$$(A + B)(\bar{A} + C)(B + C) = (A + B)(\bar{A} + C)$$

18.

$$AB + \bar{A}C = (A + C)(\bar{A} + B)$$

19.

$$(A + B)(\bar{A} + C) = AC + \bar{A}B$$