

Atividade Eletrônica Digital

Tabela Verdade:

→ ①

A	B	Soma	Carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

$$\left. \begin{array}{l} S = \bar{A} \cdot B + A \cdot \bar{B} \\ \text{ou } S = A \oplus B \\ C = A \cdot B \end{array} \right\}$$

→ ② Tabela Verdade:

A	B	Entrada (TE)	Soma	Carry (TS)
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

$$\text{Soma} = \bar{A} \cdot \bar{B} \cdot TE + \bar{A} \cdot B \cdot \overline{TE} + A \cdot \bar{B} \cdot \overline{TE} + A \cdot B \cdot TE$$

$$\therefore TE \cdot (\bar{A} \cdot \bar{B} + A \cdot B) + \overline{TE} \cdot (\bar{A} \cdot B + A \cdot \bar{B})$$

$$\therefore TE \cdot (A \oplus B) + \overline{TE} \cdot (A \oplus B)$$

$$\therefore TE \cdot (A \oplus B) + \overline{TE} \cdot (A \oplus B)$$

$$\boxed{\text{Soma} = A \oplus B \oplus TE}$$

$$TS = \bar{A} \cdot B \cdot TE + A \cdot \bar{B} \cdot TE + A \cdot B \cdot \overline{TE} + A \cdot B \cdot TE$$

$$\therefore TS = TE \cdot (\bar{A} \cdot B + A \cdot \bar{B}) + A \cdot B \cdot (\overline{TE} + TE)$$

$$\boxed{TS = TE \cdot (A \oplus B) + A \cdot B}$$

→ ③ Tabela Verdade:

A	B	TE	Soma	TS - Carry
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

Soma:

	\bar{B}	\bar{B}	B	B
\bar{A}	0	1	0	1
A	1	0	1	0
	TE	TE	TE	TE

$$Soma = \bar{A} \cdot \bar{B} \cdot TE + \bar{A} \cdot B \cdot TE + A \cdot \bar{B} \cdot TE + A \cdot B \cdot TE$$

$$Soma = TE \cdot (\bar{A} \cdot \bar{B} + A \cdot B) + TE \cdot (A \cdot \bar{B} + \bar{A} \cdot B)$$

$$Soma = TE \cdot (\bar{A} \oplus B) + TE \cdot (A \oplus B)$$

$$Soma = A \oplus B \oplus TE$$

TS:

	\bar{B}	\bar{B}	B	B
\bar{A}	0	0	1	0
A	0	1	1	1
	TE	TE	TE	TE

$$TS = A \cdot B + A \cdot TE + B \cdot TE$$

→ ④ Tabela Verdade:

A	B	S	TS
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

$$Saida = \bar{A} \cdot B + A \cdot \bar{B} \text{ ou } S = A \oplus B$$

$$TS = \bar{A} \cdot B$$

→ ⑤ Tabela Verdade:

A	B	TE	S	TS
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	1	0	0	0
1	1	1	1	1

$$\begin{aligned}
 \text{Saída} &= \bar{A} \cdot \bar{B} \cdot TE + \bar{A} \cdot B \cdot \overline{TE} + A \cdot \bar{B} \cdot \overline{TE} + A \cdot B \cdot TE \\
 &\therefore TE(\bar{A} \cdot \bar{B} + A \cdot B) + \overline{TE} \cdot (\bar{A} \cdot B + A \cdot \bar{B}) \\
 &\therefore TE \cdot (A \oplus B) + \overline{TE} \cdot (A \oplus B) \\
 &\therefore TE \cdot (A \oplus B) + \overline{TE} \cdot (A \oplus B) \\
 \boxed{\text{Saída} = A \oplus B \oplus TE}
 \end{aligned}$$

$$TS = \bar{A} \cdot \bar{B} \cdot TE + \bar{A} \cdot B \cdot \overline{TE} + \bar{A} \cdot B \cdot TE + A \cdot B \cdot TE$$

$$TS = \bar{A} \cdot B \cdot (\overline{TE} + TE) + TE \cdot (\bar{A} \cdot \bar{B} + A \cdot B)$$

$$TS = \bar{A} \cdot B + TE \cdot (A \oplus B)$$

$$\boxed{TS = (\bar{A} \oplus B) \cdot TE + \bar{A} \cdot B}$$

→ ⑥ Tabela Verdade:

A	B	TE	S	TS
0	0	0	0	0
0	0	1	1	1
0	1	0	1	1
0	1	1	0	1
1	0	0	1	0
1	0	1	0	0
1	1	0	0	0
1	1	1	1	1

Mapa de Karnaugh:

	\bar{B}	\bar{B}	B	B
\bar{A}	0	1	0	1
A	1	0	1	0
	TE	TE	TE	TE

$$\begin{aligned}
 \text{Saída} &= \bar{A} \cdot \bar{B} \cdot TE + \bar{A} \cdot B \cdot \overline{TE} + A \cdot \bar{B} \cdot \overline{TE} + A \cdot B \cdot TE \\
 &= TE \cdot (\bar{A} \cdot \bar{B} + A \cdot B) + \overline{TE} \cdot (\bar{A} \cdot B + A \cdot \bar{B}) \\
 &= TE \cdot (A \oplus B) + \overline{TE} \cdot (A \oplus B) \\
 \boxed{\text{Saída} = A \oplus B \oplus TE}
 \end{aligned}$$

$$\begin{aligned}
 \text{Saída} &= TE \cdot (A \oplus B) + \overline{TE} \cdot (A \oplus B) \\
 \boxed{\text{Saída} = A \oplus B \oplus TE}
 \end{aligned}$$

TS: \bar{B}	\bar{B}	B	B
\bar{A}	0	1	1
A	0	0	1
	TE	TE	TE

$$\boxed{TS = \bar{A} \cdot B + \bar{A} \cdot TE + B \cdot TE}$$

Tabela Verdade:

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M	A	B	TE	S	TS	
0	0	0	0	0	0	0
0	0	0	1	1	0	1
0	0	1	0	1	0	2
0	0	1	1	0	1	3
0	1	0	0	1	0	4
0	1	0	1	0	1	5
0	1	1	0	0	1	6
0	1	1	1	1	1	7
1	0	0	0	0	0	8
1	0	0	1	1	1	9
1	0	1	0	1	1	10
1	0	1	1	0	1	11
1	1	0	0	1	0	12
1	1	0	1	0	0	13
1	1	1	0	0	0	14
1	1	1	1	1	1	15

M = 0

M = 1

Mapas de Karnaugh:

S \ B	B	B	B	B
\bar{M}	0	1	0	1
\bar{M}	1	0	1	0
M	1	0	1	0
M	0	1	0	1

$$S = \bar{B}A\bar{T}E + BATE + \bar{B}A\bar{T}E + B\bar{A}\bar{T}E$$

TS \ TE	TE	TE	TE	TE
\bar{M}	0	0	1	0
\bar{M}	0	1	1	1
M	0	0	1	0
M	0	1	1	1

$$TS = B\bar{T}E + \bar{M}AB + \bar{M}A\bar{T}E + M\bar{A}B + M\bar{A}\bar{T}E$$