

05 - Projete um conversor de Complemento de 2 para BCD8421  
 Requisito: Valores não representáveis em BCD8421 ativam sinal de erro

1 - Descrição

Entrada:  $C_4, C_3, C_2, C_1, C_0$

Saída: BCD:  $B_4, B_3, B_2, B_1$

E.

Comportamento

$E = 0 \rightarrow$  "00000" até "01001"

$E = 1 \rightarrow$  "01010" até "11111"

$B_4 = C_3, B_3 = C_2, B_2 = C_1, B_1 = C_0$ .

2 T.V

$C_4$	$C_3$	$C_2$	$C_1$	$C_0$	$B_4$	$B_3$	$B_2$	$B_1$	$E$
0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	1	0
0	0	0	1	0	0	0	1	0	0
0	0	0	1	1	0	0	1	1	0
0	0	1	0	0	0	1	0	0	0
0	0	1	0	1	0	1	0	1	0
0	0	1	1	0	0	1	1	0	0
0	0	1	1	1	0	1	1	1	0
0	1	0	0	0	1	0	0	0	0
0	1	0	0	1	1	0	0	1	0
0	1	0	1	0	1	0	1	0	0
0	1	0	1	1	1	0	1	1	0
0	1	1	0	0	1	1	0	0	0
0	1	1	0	1	1	1	0	1	0
0	1	1	1	0	1	1	1	0	0
0	1	1	1	1	1	1	1	1	0
1	0	0	0	0	x	x	x	x	1
1	0	0	0	1	x	x	x	x	1
1	0	0	1	0	x	x	x	x	1
1	0	0	1	1	x	x	x	x	1
1	0	1	0	0	x	x	x	x	1
1	0	1	0	1	x	x	x	x	1
1	0	1	1	0	x	x	x	x	1
1	0	1	1	1	x	x	x	x	1
1	1	0	0	0	x	x	x	x	1
1	1	0	0	1	x	x	x	x	1
1	1	0	1	0	x	x	x	x	1
1	1	0	1	1	x	x	x	x	1
1	1	1	0	0	x	x	x	x	1
1	1	1	0	1	x	x	x	x	1
1	1	1	1	0	x	x	x	x	1
1	1	1	1	1	x	x	x	x	1

3 Simplificação

$B_4$

$\bar{C}_3$	$C_3$	$\bar{C}_2$	$C_2$	$\bar{C}_1$	$C_1$	$\bar{C}_0$	$C_0$
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
1	x	x	x	x	x	x	x
1	x	x	x	x	x	x	x

Group 1 =  $C_3$

$B_4$

$\bar{C}_3$	$C_3$	$\bar{C}_2$	$C_2$	$\bar{C}_1$	$C_1$	$\bar{C}_0$	$C_0$
0	0	1	1	0	0	0	0
0	0	1	1	0	0	0	0
0	x	x	x	x	x	x	x
0	x	x	x	x	x	x	x

$B_4 = C_3$

$B_4$

$\bar{C}_3$	$C_3$	$\bar{C}_2$	$C_2$	$\bar{C}_1$	$C_1$	$\bar{C}_0$	$C_0$
0	1	1	0	0	0	0	0
0	1	1	0	0	0	0	0
0	x	x	x	x	x	x	x
0	x	x	x	x	x	x	x

$B_4 = C_3$

$B_4$

$\bar{C}_3$	$C_3$	$\bar{C}_2$	$C_2$	$\bar{C}_1$	$C_1$	$\bar{C}_0$	$C_0$
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x

$B_4 = C_3$

$B_4$

$\bar{C}_3$	$C_3$	$\bar{C}_2$	$C_2$	$\bar{C}_1$	$C_1$	$\bar{C}_0$	$C_0$
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x

$B_4$

$\bar{C}_3$	$C_3$	$\bar{C}_2$	$C_2$	$\bar{C}_1$	$C_1$	$\bar{C}_0$	$C_0$
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x
x	x	x	x	x	x	x	x

		$\overline{C_4}$				
		$\overline{C_2}$		$C_2$		
$\overline{C_3}$	$C_3$	0	0	0	0	$\overline{C_0}$
$\overline{C_3}$	$C_3$	1	1	1	1	$C_0$
$C_3$	$\overline{C_3}$	1	x	x	x	$\overline{C_0}$
$C_3$	$\overline{C_3}$	0	x	x	x	$C_0$
		$\overline{C_1}$	$C_1$	$\overline{C_1}$	$C_1$	

		$C_4$				
		$\overline{C_2}$		$C_2$		
$\overline{C_3}$	$C_3$	x	x	x	x	$\overline{C_0}$
$\overline{C_3}$	$C_3$	x	x	x	x	$C_0$
$C_3$	$\overline{C_3}$	x	x	x	x	$\overline{C_0}$
$C_3$	$\overline{C_3}$	x	x	x	x	$C_0$
		$\overline{C_1}$	$C_1$	$\overline{C_1}$	$C_1$	

$B_1 = C_0$

		$\overline{C_4}$				
		$\overline{C_2}$		$C_2$		
$\overline{C_3}$	$C_3$	0	0	0	0	$\overline{C_0}$
$\overline{C_3}$	$C_3$	0	0	0	0	$C_0$
$C_3$	$\overline{C_3}$	0	1	1	1	$\overline{C_0}$
$C_3$	$\overline{C_3}$	0	1	1	1	$C_0$
		$\overline{C_1}$	$C_1$	$\overline{C_1}$	$C_1$	

		$C_4$				
		$\overline{C_2}$		$C_2$		
$\overline{C_3}$	$C_3$	1	1	1	1	$\overline{C_0}$
$\overline{C_3}$	$C_3$	1	1	1	1	$C_0$
$C_3$	$\overline{C_3}$	1	1	1	1	$\overline{C_0}$
$C_3$	$\overline{C_3}$	1	1	1	1	$C_0$
		$\overline{C_1}$	$C_1$	$\overline{C_1}$	$C_1$	

Grupo 1 =  $C_4$   
 Grupo 2 =  $(C_3, C_2)$   
 Grupo 3 =  $(C_3, C_1)$   
 $C = C_4 + (C_3, C_2) + (C_3, C_1)$

4) Circuito

