

**2018 8**

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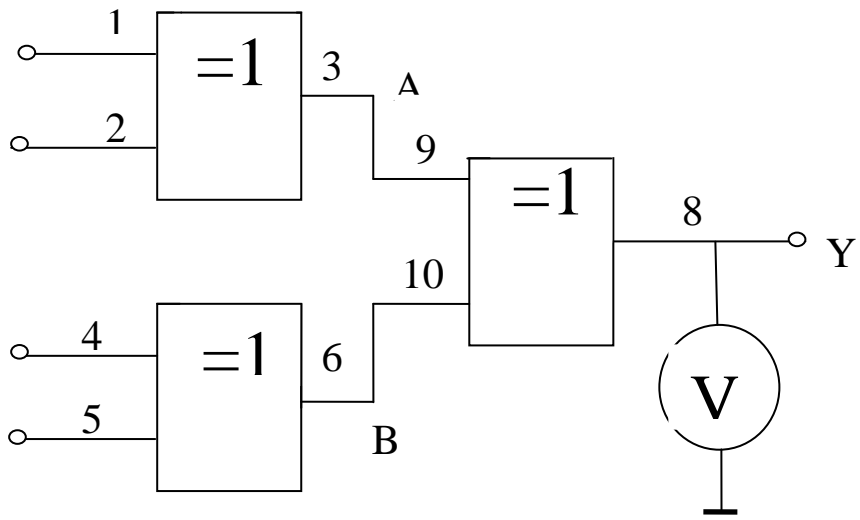
3

**4**

**1**

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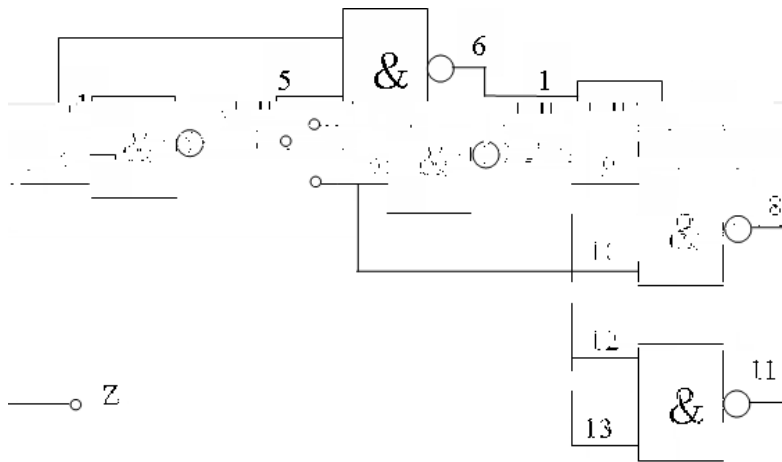
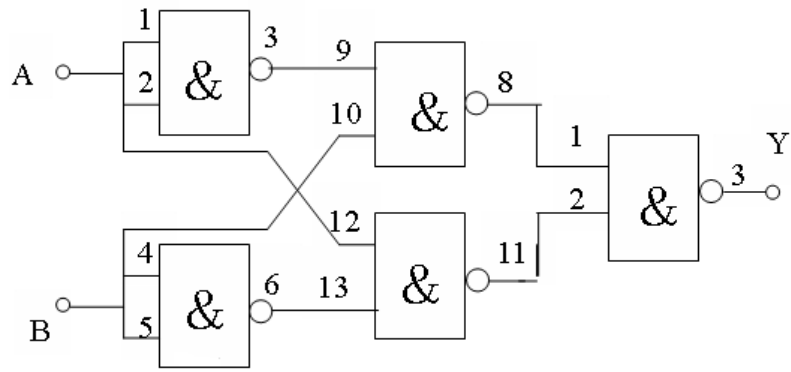
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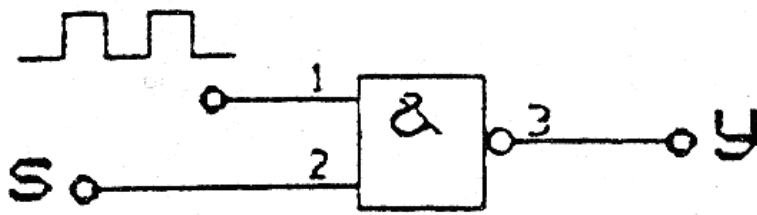
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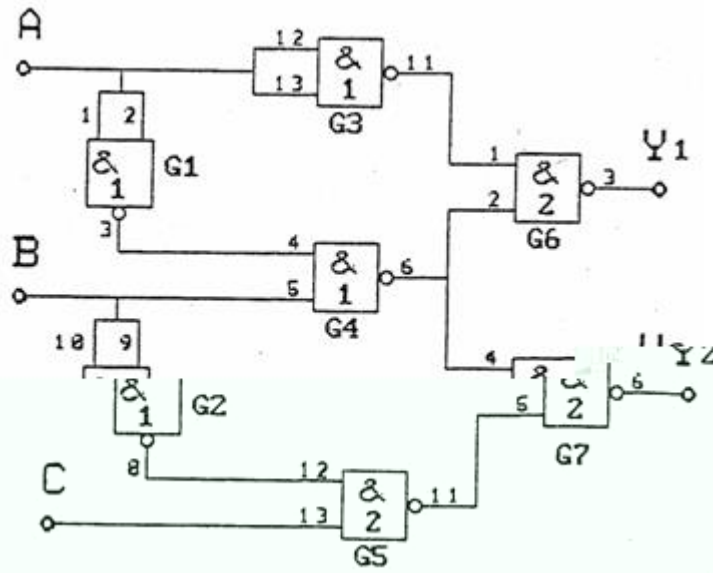
$$F = \overline{A+B} = \overline{A} \bullet \overline{B}$$


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2 74LS00

1) 2 74LS00

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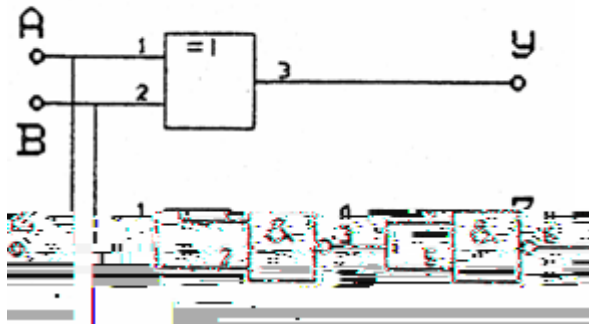
!

A	C	Y <sub>1</sub>	Y <sub>2</sub>
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

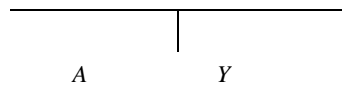
74LS86

74LS00





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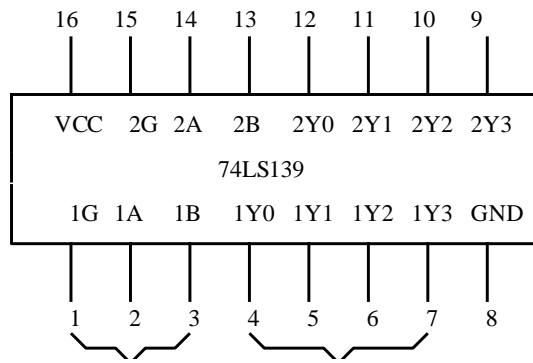
1 0 1	
1 1 0	
1 1 1	

!

!

2

1

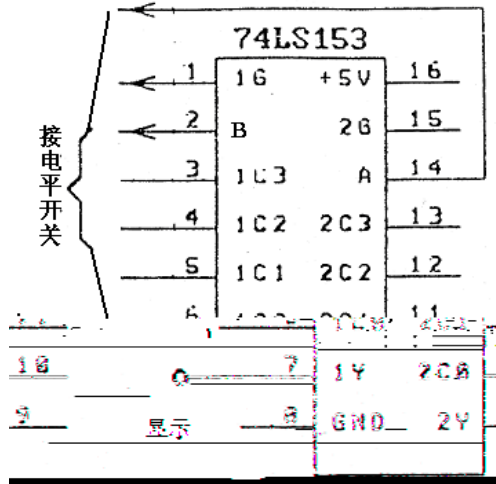


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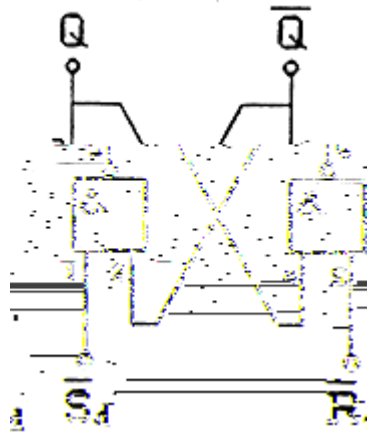
! !


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2  
3  
4  
1

3.1.10



3.1.10

13       $\overline{S_d}$     $\overline{R_d}$                        $\overline{Q}$

3.1.13

3.1.13

$\overline{S_d}$	$\overline{R_d}$		$\overline{Q}$	

2    $\overline{S_d}$                        $\overline{R_d}$   
3    $\overline{S_d}$                        $\overline{R_d}$   
4    $\overline{R_d}$                        $\overline{S_d}$

2   3   4                       $\overline{Q}$

$\overline{Q}$

$\overline{S_d} \quad \overline{R_d}$

$\overline{S_d} \quad \overline{R_d}$

$\overline{Q}$

$\overline{S_d} \quad \overline{R_d}$

$\overline{Q}$

$\overline{Q}$

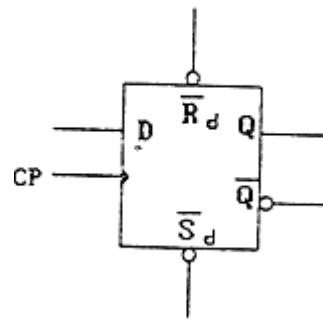
2

! !

3.1.11

$\overline{S_d}$

$\overline{R_d}$



3.1.11 ! !

$\overline{S_d} \quad \overline{R_d}$

$\overline{Q}$

2  $\overline{S_d} \quad \overline{R_d}$

$\overline{S_d} \quad \overline{R_d}$

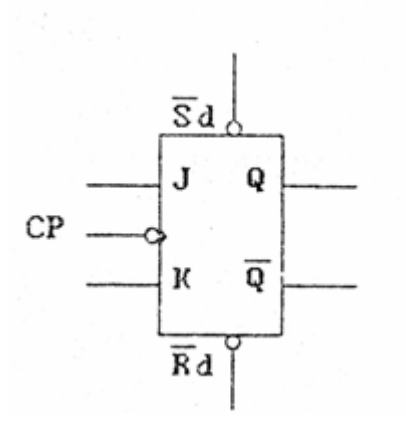
!

!

$\overline{S_d}$	$\overline{R_d}$				

!  $\overline{S_d}$   $\overline{R_d}$   $\overline{Q}$

! 3.1.12  $\overline{S_d}$   $\overline{R_d}$



3.1.12 !

$\overline{S_d}$	$\overline{R_d}$	$Q^n$	$Q^{n+1}$

2  $\overline{S_d}$   $\overline{R_d}$

$\overline{Q}$

!



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2

**2**

1

2

3

4 7!

!

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**3**

1

2

3

**4**

**1**

3.1.13

1 *CP*

*Q* :

3.1.16






3.1.14

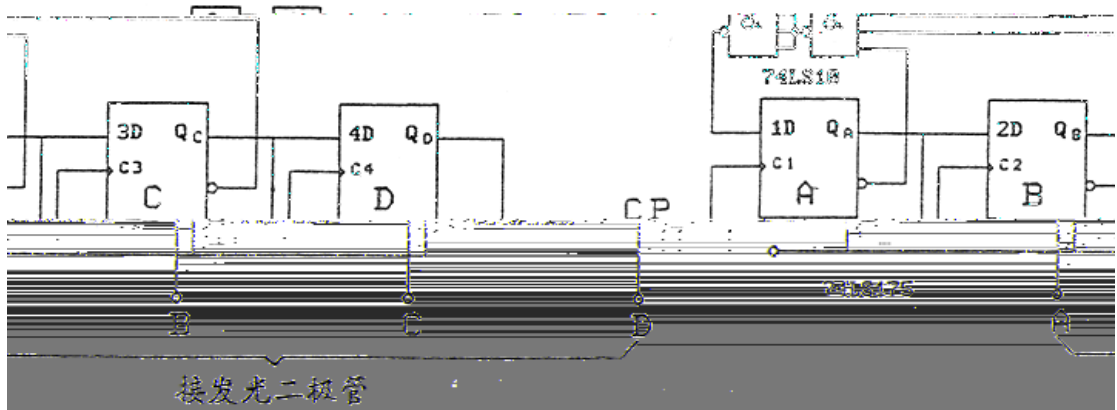
2  
 1 3.1.15 ABCD 1000,  
 0 1 CP



3.1.15

1

2 3.1.16



3.1.16

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**1**

1

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3

**2**

1

74LS160 12

1

2

2

74LS161 12

3

74LS160

M 1

M 0

**3**

**4**

1

2

74LS161 74LS160

CP 1Hz

$Q_0 Q_1 Q_2 Q_3$

3

Multisim **Max+plus**

**5**

1

2

74LS161 74LS160 12

**6**

1

2

3

4 Multisim **Max+plus**

5

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6

7

1

2

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2

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1

2

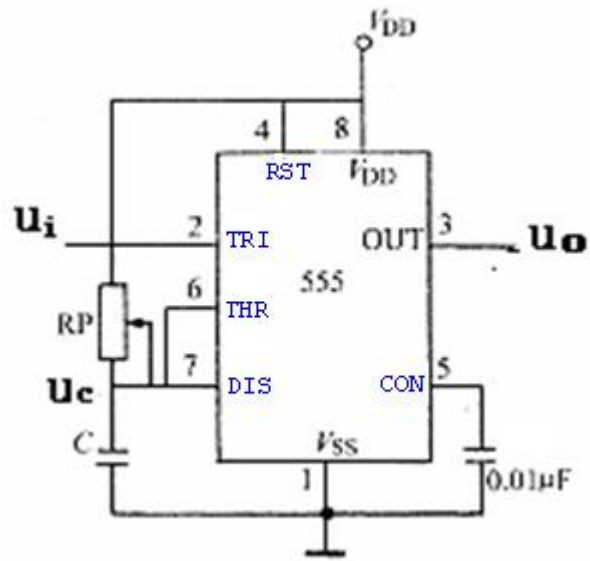
3

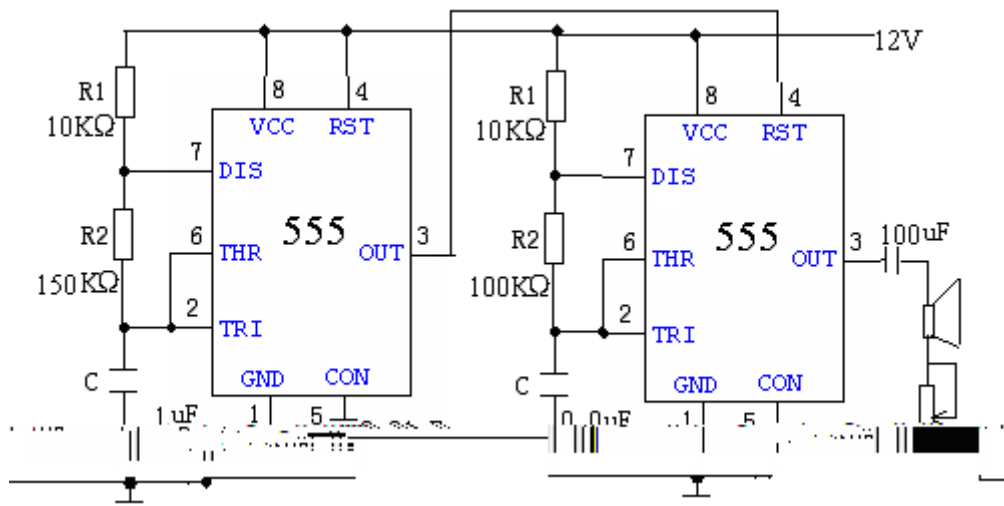
4

**4**

**1**

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**1**

1 555

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1            555

2

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**3**

1            555

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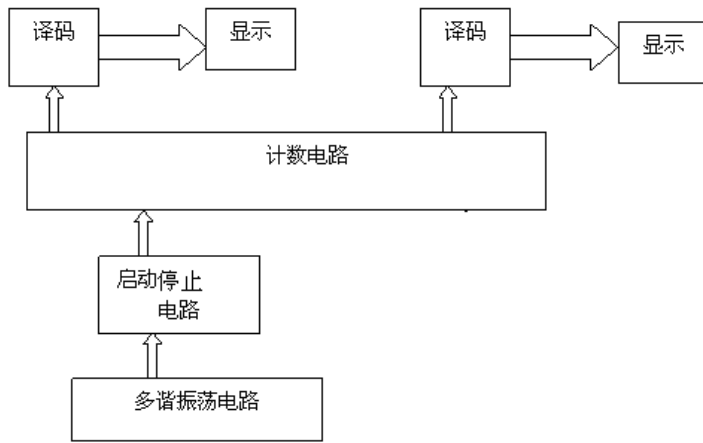
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4	:	74LS160	2
		74LS247	2
		74LS00	1
		74LS08	1
		555	1

**5.**





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555 RC

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S +5V

S

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74LS160 74LS161 74LS290

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74LS160

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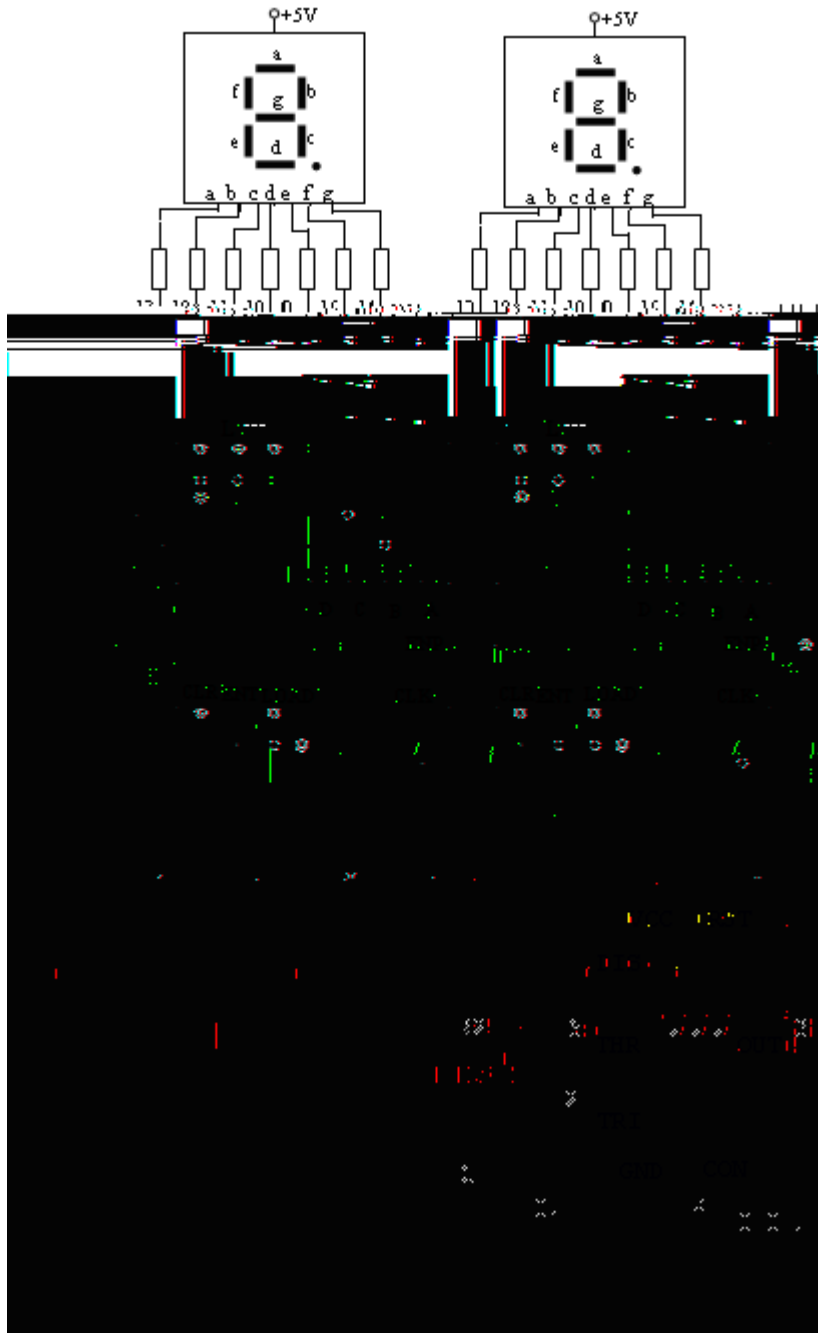
8421

74LS248

74LS247

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3.1.21

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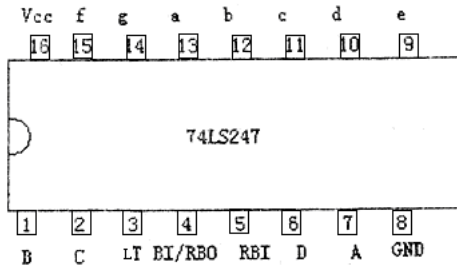
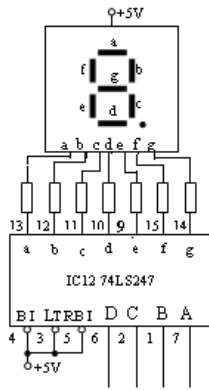
0011

3.1.17 74LS247

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3.1.18

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74LS247

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3.1.17

D	C	B	A	
0	0	0	0	
0	0	0	1	
0	0	1	1	
0	1	0	1	
0	1	1	1	
1	0	0	1	

3.1.18 74LS247

LT	RBI	BI/RBO	D	C	B	A		a	b	c	d	e	f	g	
0	x	1	x	x	x	x		0	0	0	0	0	0	0	8
x	x	0	x	x	x	x		1	1	1	1	1	1	1	
1	0	0	0	0	0	0		1	1	1	1	1	1	1	0
1	1	1	0	0	0	0		0	0	0	0	0	0	1	0
		.									.				.
		.									.				.
1	1	1	1	0	0	1		0	0	0	0	1	0	0	9

3.1.19

CP	Q <sub>D</sub>	Q <sub>C</sub>	Q <sub>B</sub>	Q <sub>A</sub>	
	0	0	0	0	0
1					
2					
3					
4					

4

N

74LS160

74LS00

6

2

3.1.20

CP	Q <sub>D</sub>	Q <sub>C</sub>	Q <sub>B</sub>	Q <sub>A</sub>	
	0	0	0	0	0
1	0	0	0	1	1
2	0	0	1	0	2
3					
4					
5					
6					

5

555

1HZ

R2

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A.

B

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4 Multisim Max+plus

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