

ODD-EVEN COUNTER USING J-K FLIPFLOP

FUNDAMENTAL OF DIGITAL ELECTRONICS

Reference

BOOK : Digital Logic and Computer Design

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K-MAPS

10th DIGIT GENERATOR IC

Segment A

$$JK2' JK3 + JK3 JK4' + JK2 JK3' + JK1$$

		JK3, JK4			
		00	01	11	10
JK1, JK2	00	x	0	0	0
	01	1	1	0	1
	11	x	x	x	x
	10	1	1	x	x

Segment B

$$JK3' JK4' + JK2 JK3' + JK2 JK4' + JK1$$

		JK3, JK4			
		00	01	11	10
JK1, JK2	00	0	0	1	1
	01	1	1	0	1
	11	x	x	x	x
	10	1	1	x	x

Segment C

$$JK2' JK4' + JK3 + JK2 JK4 + JK1$$

		JK3, JK4			
		00	01	11	10
JK1, JK2	00	1	0	1	1
	01	0	1	1	1
	11	x	x	x	x
	10	1	1	x	x

Segment D

$$JK2' + JK3' JK4' + JK3 JK4$$

		JK3, JK4			
		00	01	11	10
JK1, JK2	00	1	1	1	1
	01	1	0	1	0
	11	x	x	x	x
	10	1	1	x	x

Segment E

$$JK_2' JK_4' + JK_3 JK_4'$$

		JK ₃ , JK ₄			
		00	01	11	10
JK ₁ , JK ₂	00	1	0	0	1
	01	0	0	0	1
	11	x	x	x	x
	10	1	0	x	x

Segment F

$$JK_2' JK_4' + JK_2' JK_3 + JK_3 JK_4' + JK_2 JK_3' JK_4 + JK_1$$

		JK ₃ , JK ₄			
		00	01	11	10
JK ₁ , JK ₂	00	1	0	1	1
	01	0	1	0	1
	11	x	x	x	x
	10	1	1	x	x

Segment G

$$JK_3' + JK_4 + JK_2$$

		JK ₃ , JK ₄			
		00	01	11	10
JK ₁ , JK ₂	00	1	1	1	0
	01	1	1	1	1
	11	x	x	x	x
	10	1	1	x	x

K-MAPS

UNIT DIGIT GENERATOR IC

Segment A

$$JK2' JK3 + JK3 \text{ Enable}' + JK2 \quad JK3' + JK1$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	0	0	1	1
	01	1	1	0	1
	11	x	x	x	x
	10	1	1	x	x

Segment B

$$JK3' \text{ Enable}' + JK2 \quad JK3' + JK2 \text{ Enable}' + JK1$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	1	0	0	0
	01	1	1	0	1
	11	x	x	x	x
	10	1	1	x	x

Segment C

$$JK2' \text{ Enable}' + JK3 + JK2 \text{ Enable} + JK1$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	1	0	1	1
	01	0	1	1	1
	11	x	x	x	x
	10	1	1	x	x

Segment D

$$JK2' + JK3' \text{ Enable}' + JK3 \text{ Enable}$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	1	1	1	1
	01	1	0	1	0
	11	x	x	x	x
	10	1	1	x	x

Segment E

$$JK2' \text{ Enable}' + JK3 \text{ Enable}'$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	1	0	0	1
	01	0	0	0	1
	11	x	x	x	x
	10	1	0	x	x

Segment G

$$JK3' + \text{Enable} + JK2$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	1	1	1	0
	01	1	1	1	1
	11	x	x	x	x
	10	1	1	x	x

Segment F

$$JK2' \text{ Enable}' + JK2' JK3 + JK3 \text{ Enable}' + JK2 JK3' \text{ Enable} + JK1$$

		JK3, Enable			
		00	01	11	10
JK1, JK2	00	1	0	1	1
	01	0	1	0	1
	11	x	x	x	x
	10	1	1	x	x