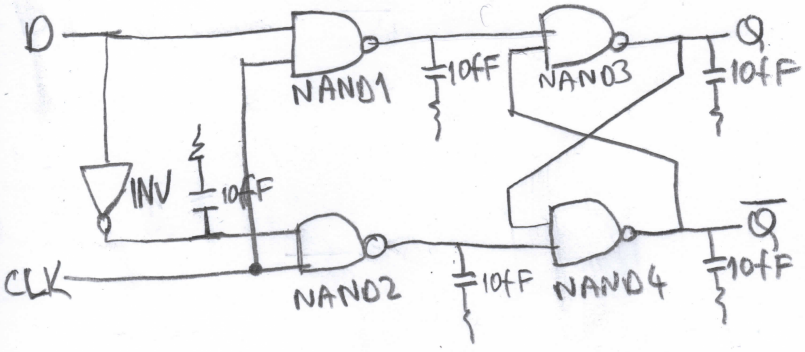

(It is supposed that the nodes in NANDs does not have paresitic capacitance.)

$t_{PLH-INV} = 0{,}69 \cdot 1{,}5k\Omega \cdot 10fF = 10{,}35\ ps$

$t_{PHL-INV} = 0{,}69 \cdot 1k\Omega \cdot 10fF = 6{,}9\ ps$

$t_{PHL-NAND} = 0{,}69 \cdot 2k\Omega \cdot 10fF = 13{,}8\ ps$

$t_{PLH-NAND} = 0{,}69 \cdot 0{,}75k\Omega \cdot 10fF = 5{,}175\ ps$

$t_{PLH-NAND-1tran} = 0{,}69 \cdot 1{,}5k\Omega \cdot 10fF = 10{,}35\ ps$

$CLK=1,\ D=1 \Rightarrow Q=1,\ \overline{Q}=0$

$D=0 \Rightarrow Q=0,\ \overline{Q}=1$

D: 0 → 1

$t_{PLH-Q} = t_{PHL-NAND1} + t_{PLH-NAND3-1tran} = 13{,}8 + 10{,}35 = \underline{24{,}15\ ps}$ //

$t_{PHL-INV} + t_{LH-NAND2-1tran} = 10{,}35 + 10{,}35 = 20{,}7\ ps < t_{PLH-Q} = 24{,}15\ ps$

$t_{PHL-\overline{Q}} = t_{PLH-Q} + t_{PHL-NAND4} = 24{,}15 + 13{,}8 = \underline{37{,}95\ ps}$ //

D: 1 → 0

$t_{PLH-\overline{Q}} = t_{PLH-INV} + t_{PHL-NAND2} + t_{PLH-NAND4-1tran} = 10{,}35 + 13{,}8 + 10{,}35 = \underline{34{,}5\ ps}$ //

$t_{PLH-NAND1-1tran} = 10{,}35ps < t_{PLH-\overline{Q}} = 34{,}5ps$

$t_{PHL-Q} = t_{PLH-\overline{Q}} + t_{PHL-NAND3} = 34{,}5 + 13{,}8 = \underline{48{,}3\ ps}$ //

In simulation; while $L=0{,}6u$, W_p should be in the interval $[1{,}5u, 2{,}5u]$

W_n should be in the interval $[1u, 2u]$