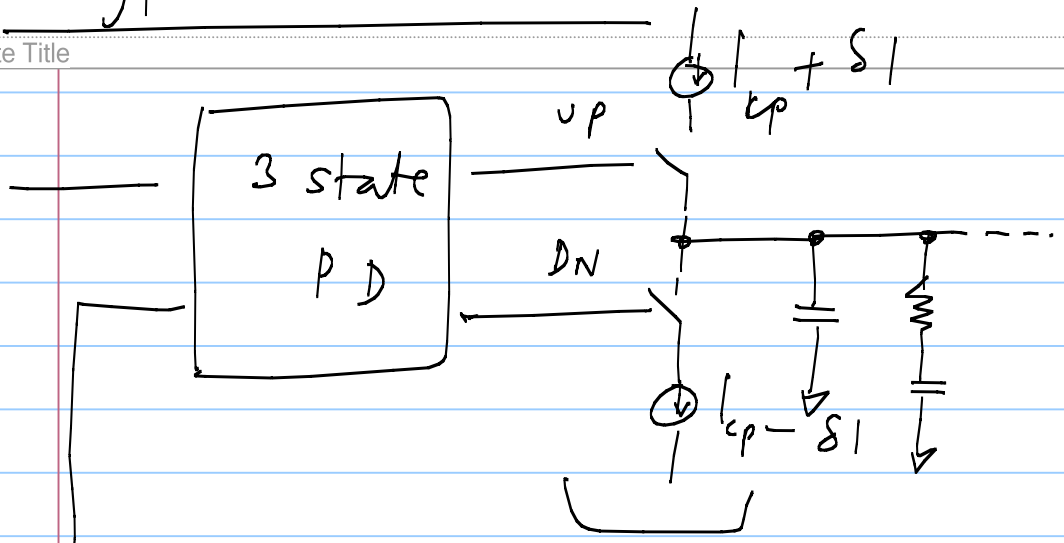
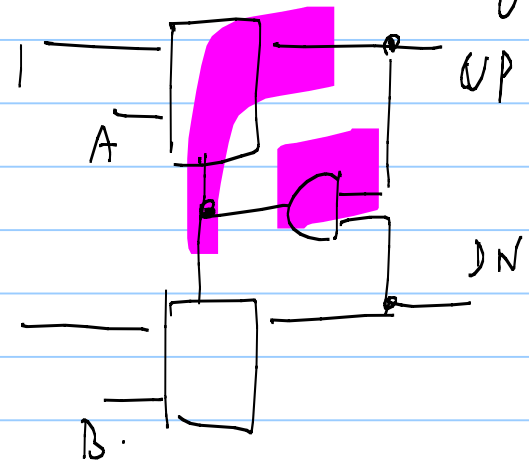
Type II PLL

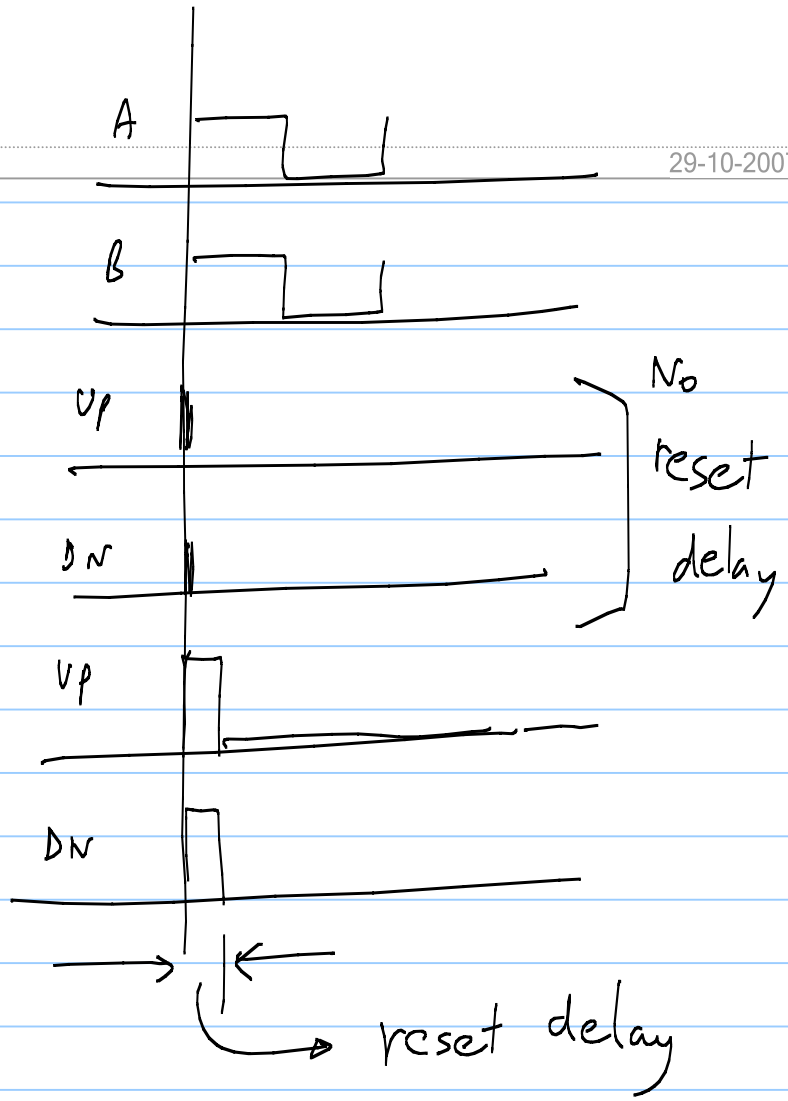
Note Title 29-10-2007

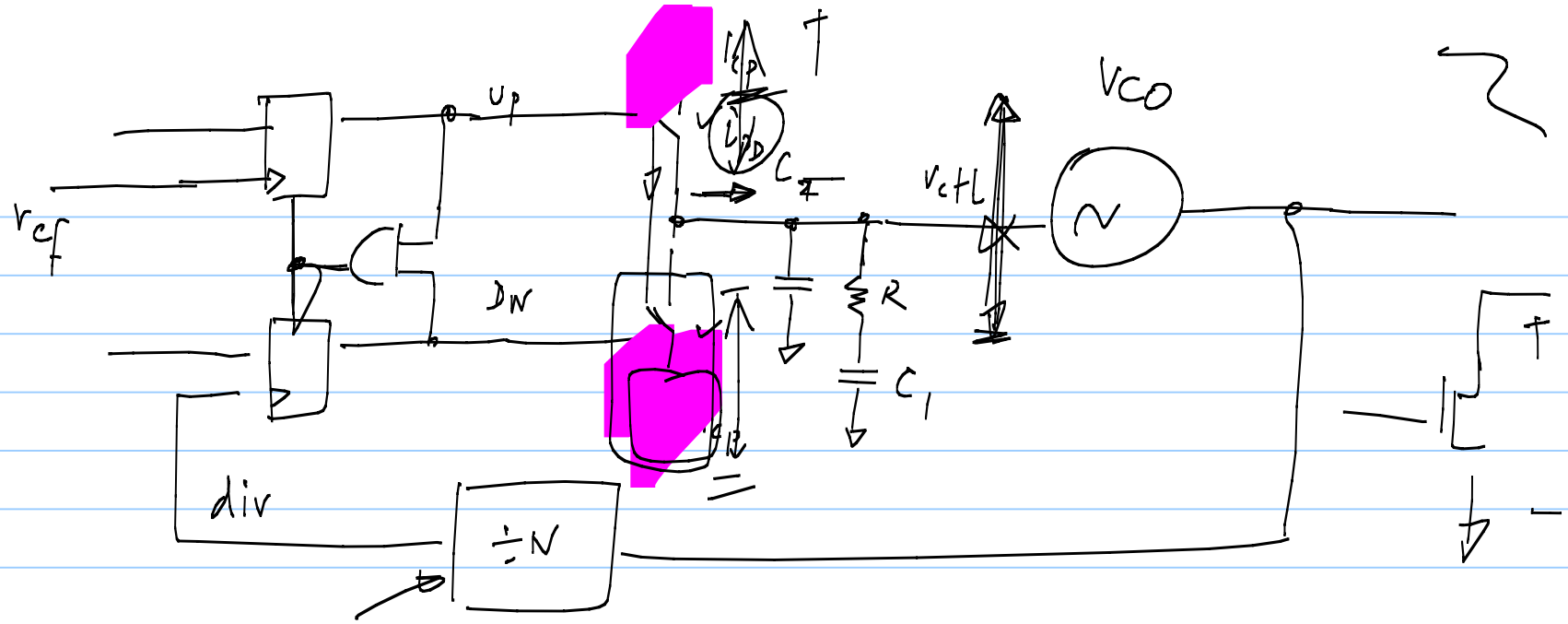


Divider.

Charge pump.







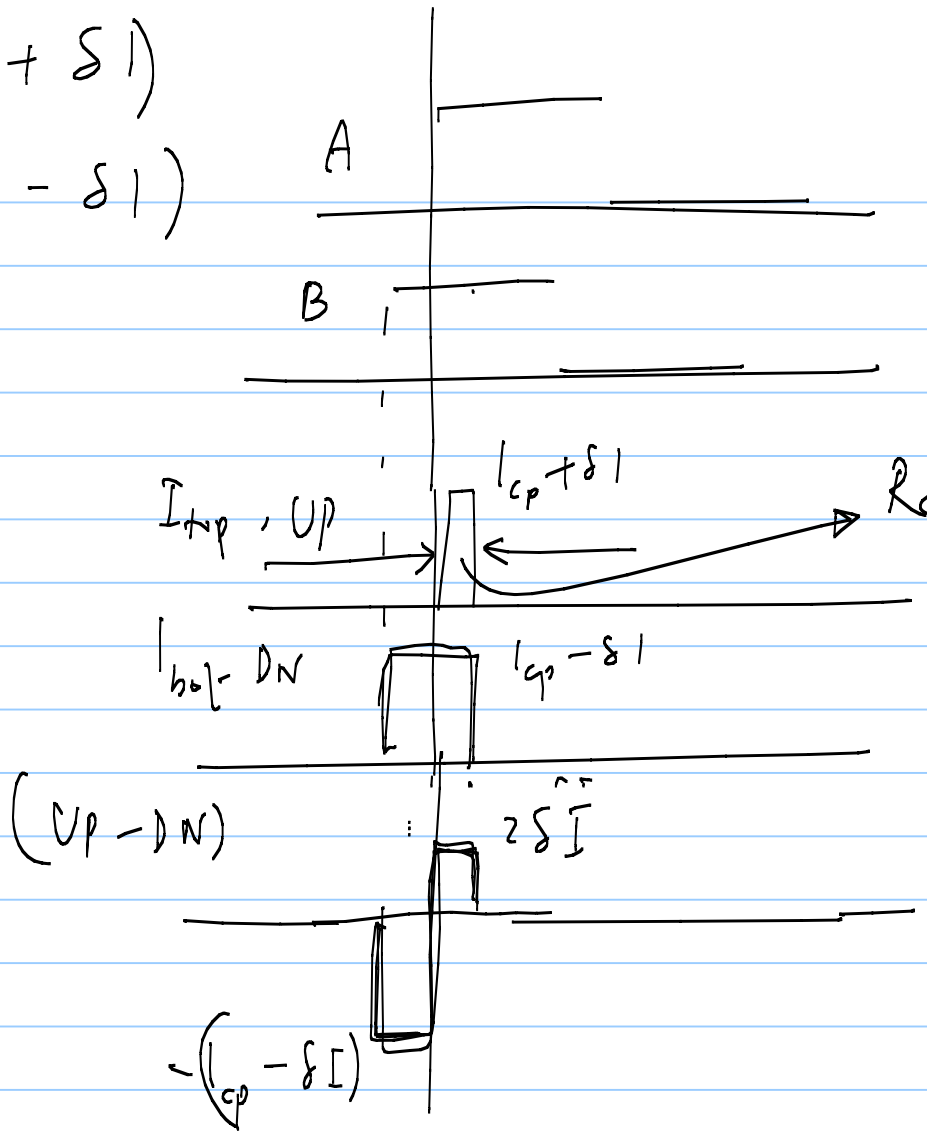
1) No reset delay, no mismatch $\Phi_{div} = \Phi_{ref}$, UP, DN → 0

2) Reset delay, no mismatch $\Phi_{div} = \Phi_{ref}$ $i_{PD} = 0$

3) Reset delay, mismatch

$(I_{cp} + \delta I)$

$(I_{cp} - \delta I)$



$2\delta I \cdot t_{reset}$

$= (I_{cp} - \delta I) \cdot \frac{\Delta\phi}{2\pi} \cdot T_{ref}$

$\Delta\phi = \frac{2\pi}{T_{ref}} \cdot \frac{2\delta I}{I_{cp} - \delta I}$

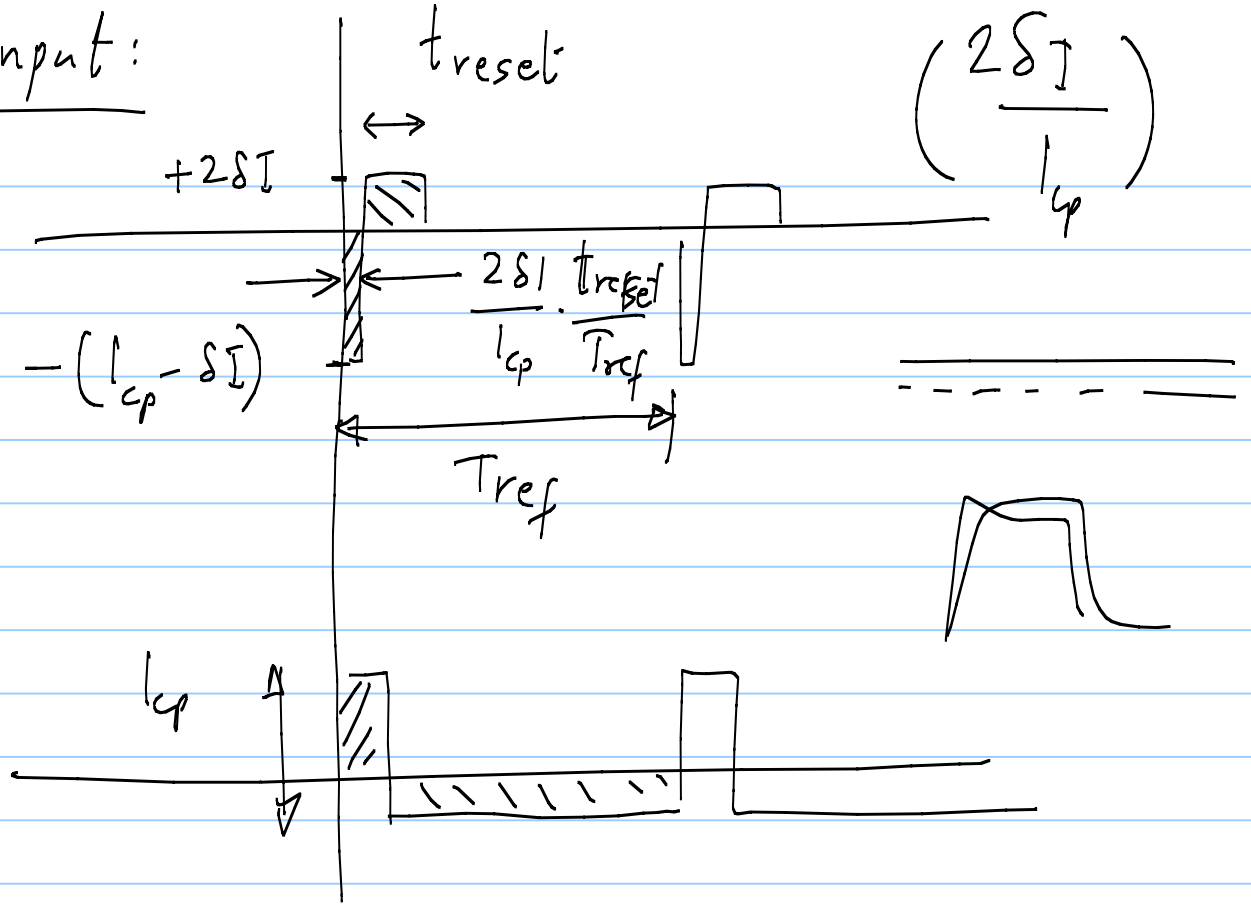
$\approx \frac{2\pi}{T_{ref}} \cdot \left(\frac{2\delta I}{I_{cp}}\right)$

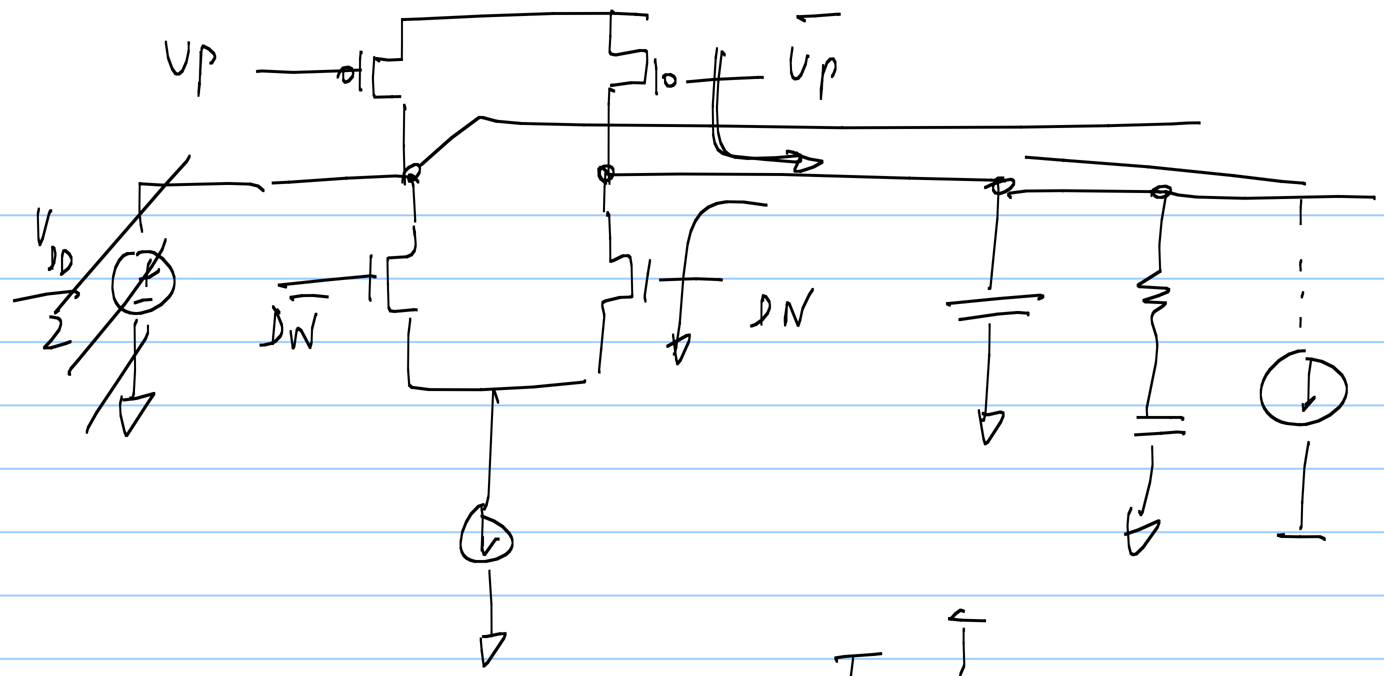
Loop filter input:

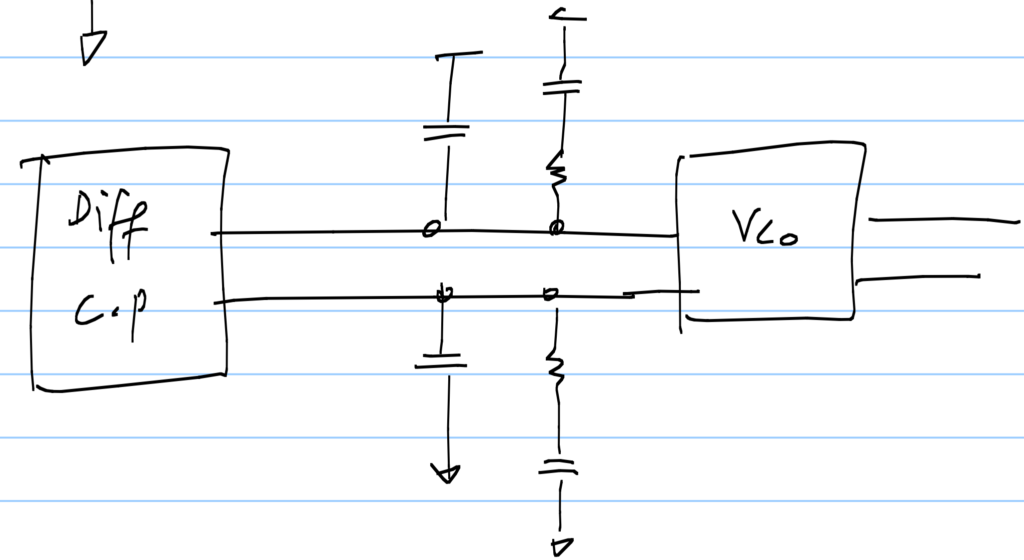
Ref. feed through much smaller than with a type I PLL

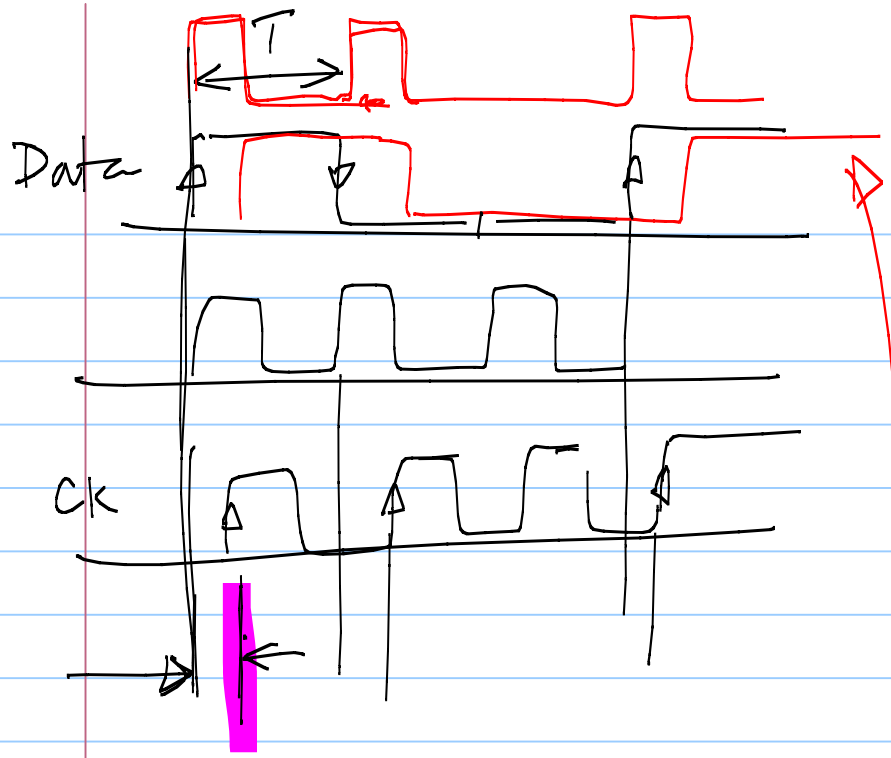
* Area under the pulses

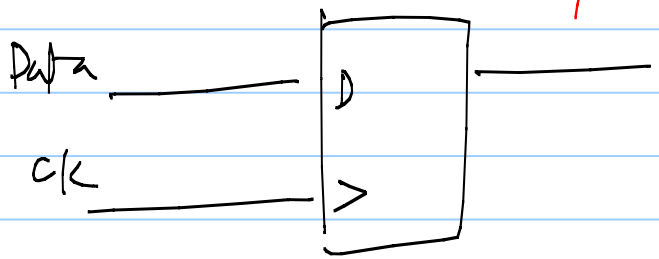
~ mismatch · reset delay




Up
$\overline{Up}$
V_{DD}
$\overline{DN}$
DN


Diff
C.P
VCO





Phase detector for Data:

* Works on both high & low data transitions
* Inhibited when there are no transitions.

Clk
Data
D
Q