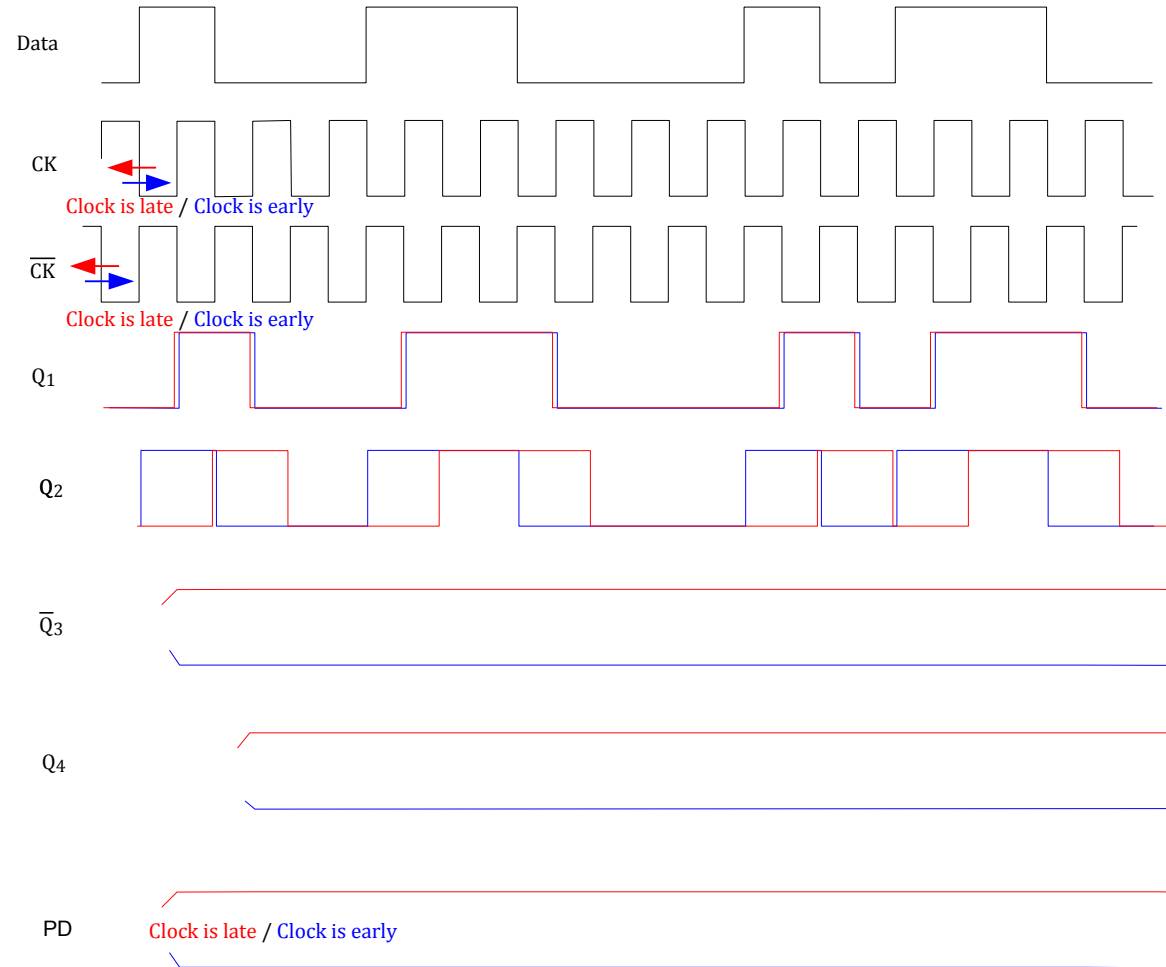
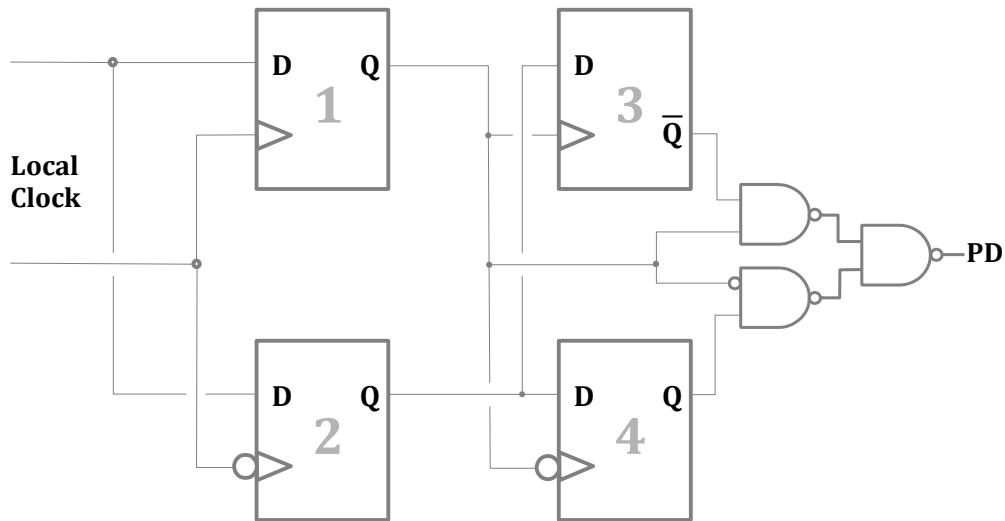


Bang-bang Phase Detector with "hold"

The output is held constant within data transitions (3 and 4 are clocked by Q₁)
 Waveforms correspond to a condition close to lock but without bang-bang

NRZ incoming data



Q ₁	Q ₃	Q ₄	PD
Regenerated Data	Q ₂ @ previous ↑ of Q ₁	Q ₂ @ previous ↓ of Q ₁	If no transition: HOLD
↑ 1	1	X	0 = \bar{L}
↑ 1	0	X	1 = E
↓ 0	X	1	1 = E
↓ 0	X	0	0 = \bar{L}