Simulation result : Feedforward (AC-coupling) vs Feedback roop (AGC TIA)

Result and discussion
・Even when a feedforward equivalent AC coupling and a feedback based AGC TIA have the same time constant of LPF, the AGC TIA need a longer burst overhead time due to the roop convergence time.
・Generally, there is trade-off between the roop convergence time and the roop stability, and a lack of stability can induce penalties or self-oscillation at worst. Thus, we need enough roop convergence time for implementation.
・Although the required response time of AGC TIA is depend on circuit design, thorough my experience, I believe that the AGC TIA need about 5x or more longer time than that predicted value estimated by feedforward roop with the same time constant.

So, I agree with the Hamano-san's proposal of Treceiver_setting = 800-ns (max)
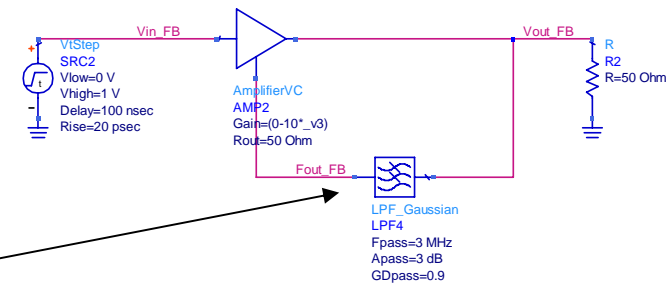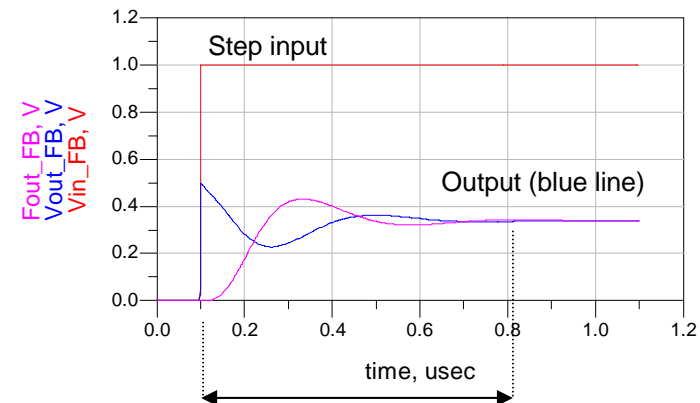
Feedforward model (AC-coupling)

Feedback model (AGC TIA)
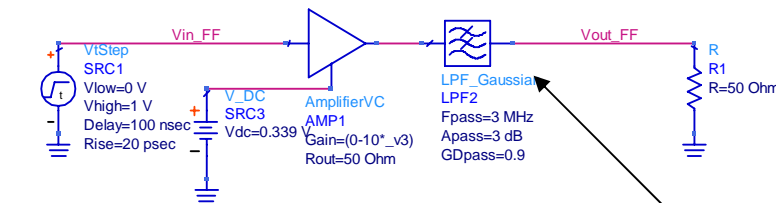
Same time constant

Feedforward
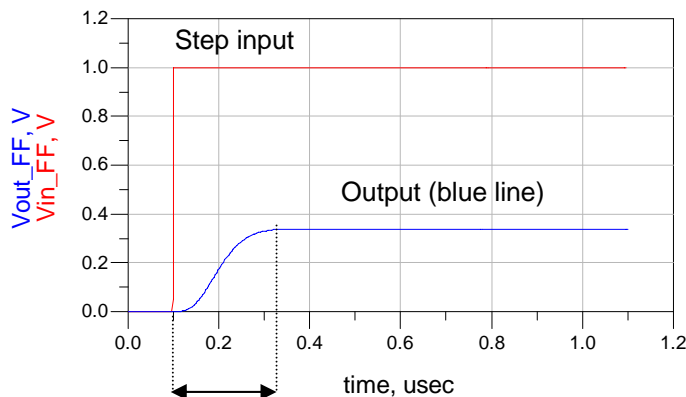
Shorter Burst overhead time < 150-ns

Feedback

Longer Burst overhead time < 800-ns