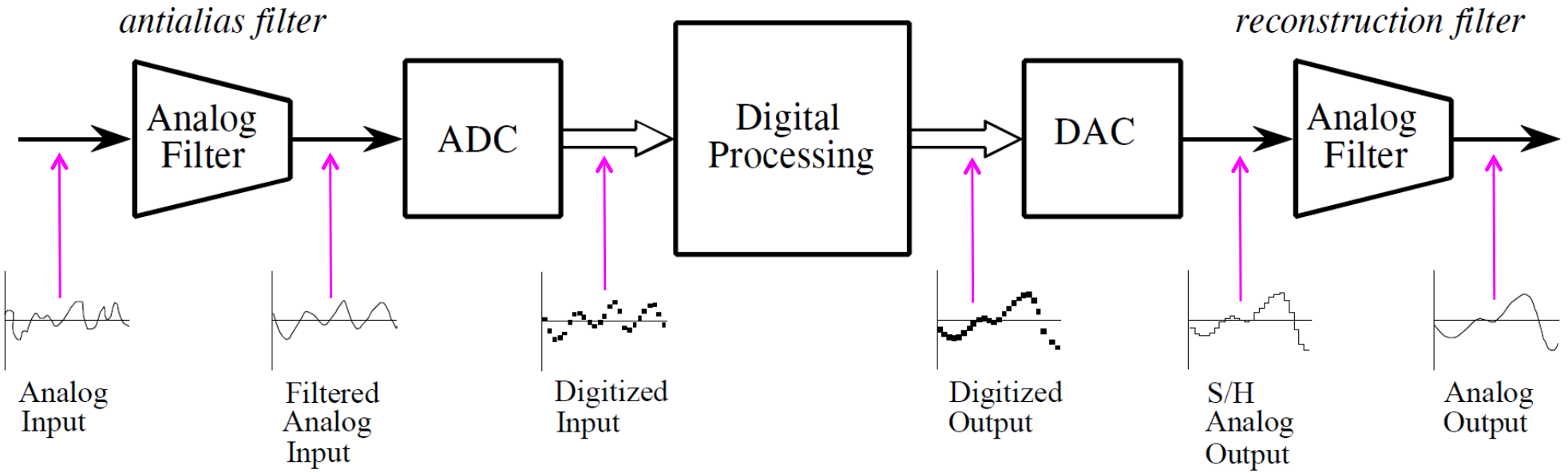
Elektronische signalen 2

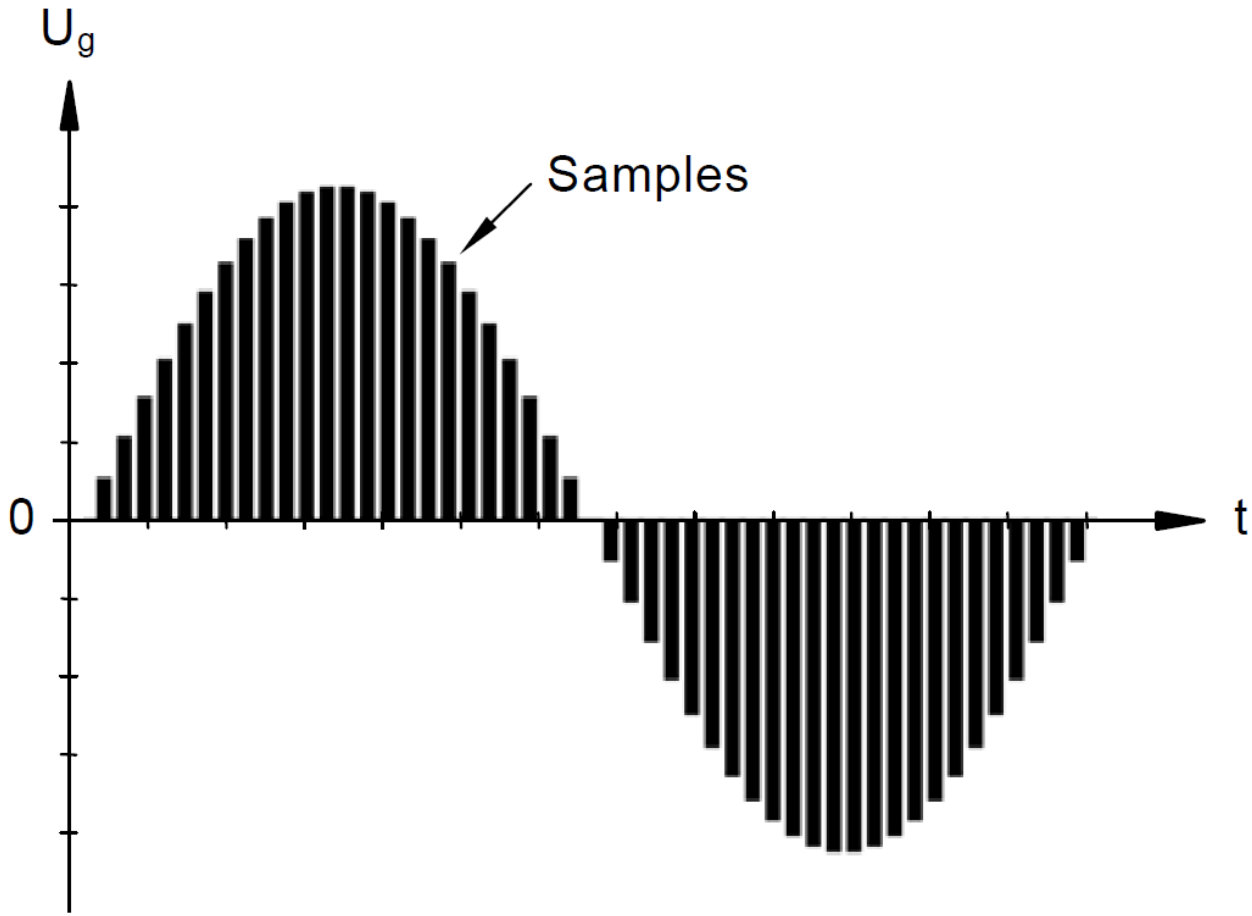
Data conversie schakelingen
Inleiding

P. Debbaut

Blokschema DSP-systeem



Bemonstering

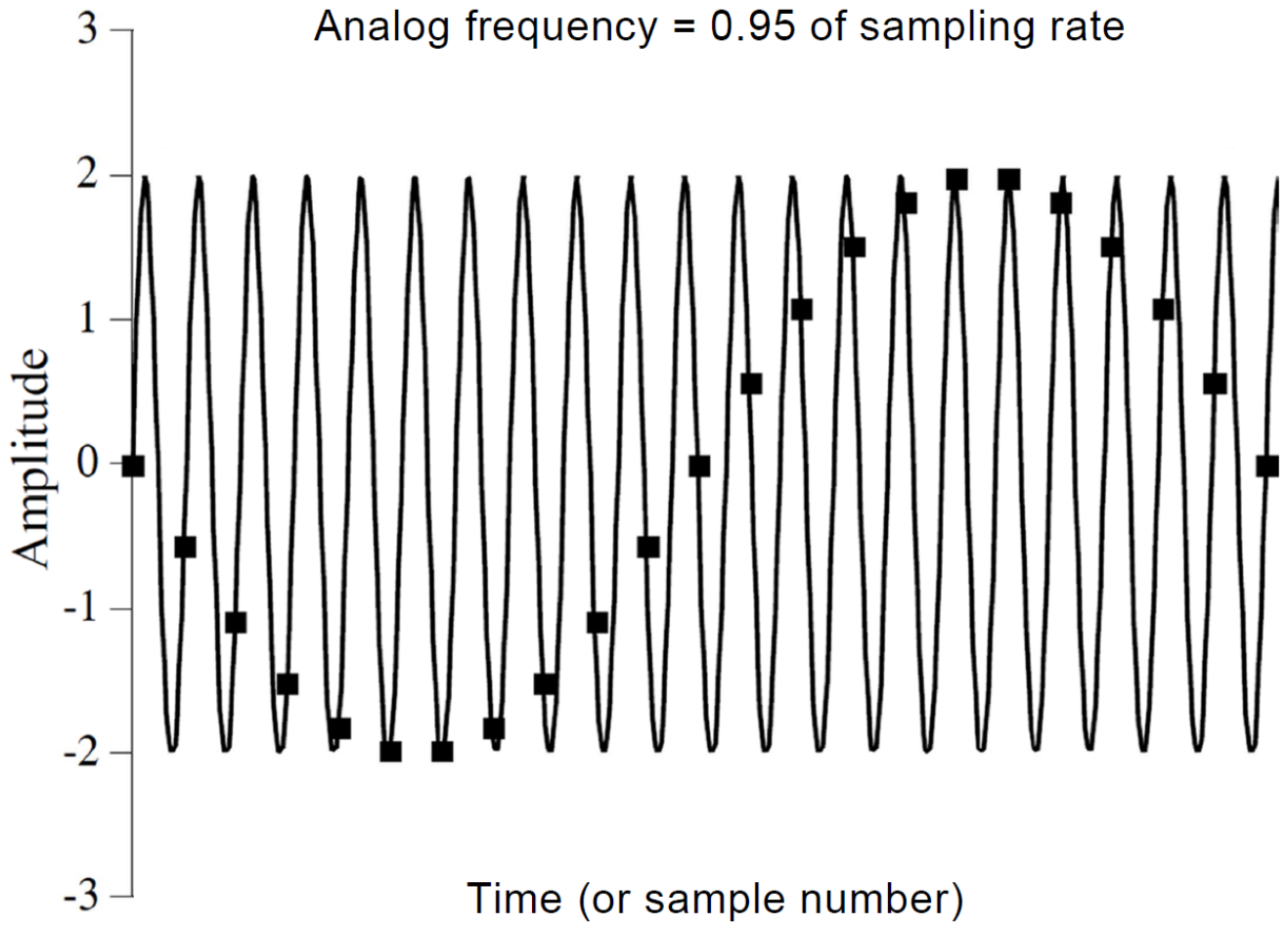


Bemonsteringstheorema Nyquist-Shannon

Bemonsteringsfrequentie ≥ 2x hoogste frequentie ingangssignaal

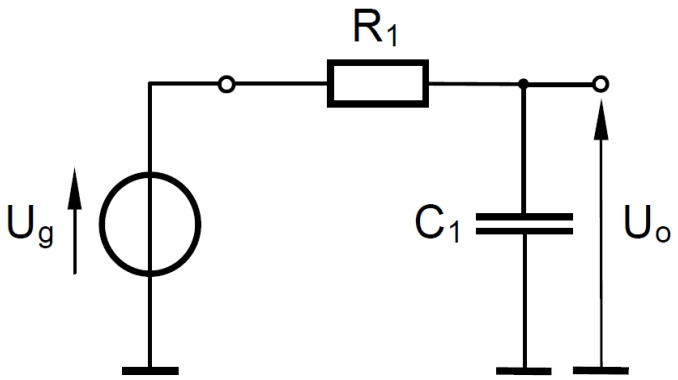
Anders ontstaan er aliasing-fouten!

Aliasing fouten

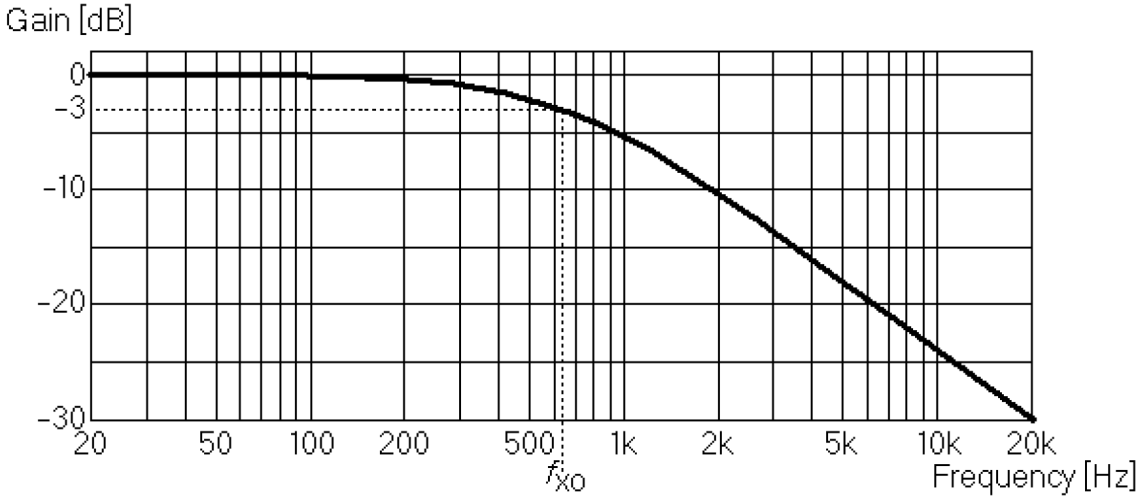


Laagdoorlaatfilter

1e orde RC low pass filter



frequentiekarakteristiek 1e orde LPF



afsnijfrequentie

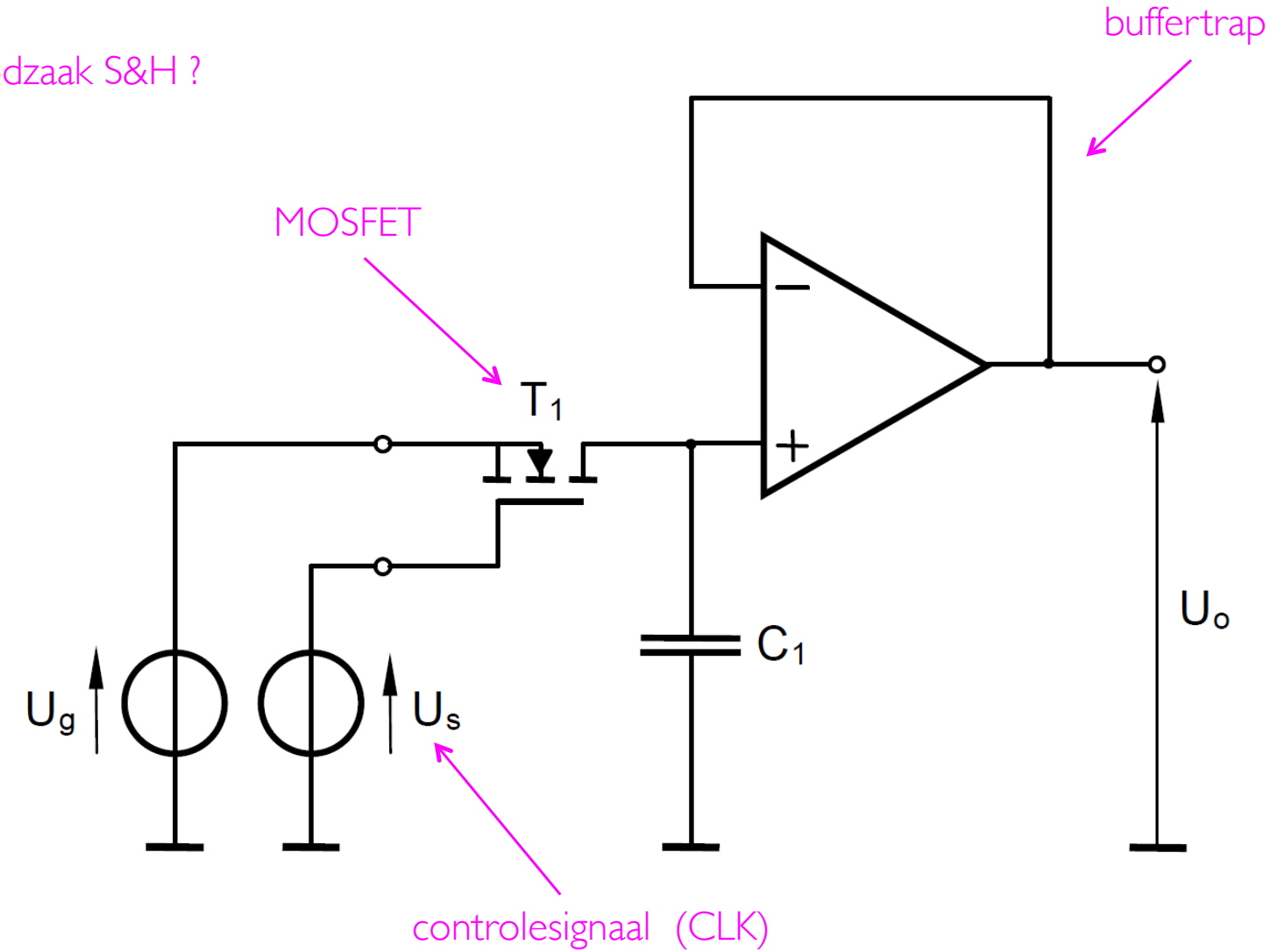
$$f_{xo} = \frac{1}{2\pi R_1 C_1}$$

versterking in dB

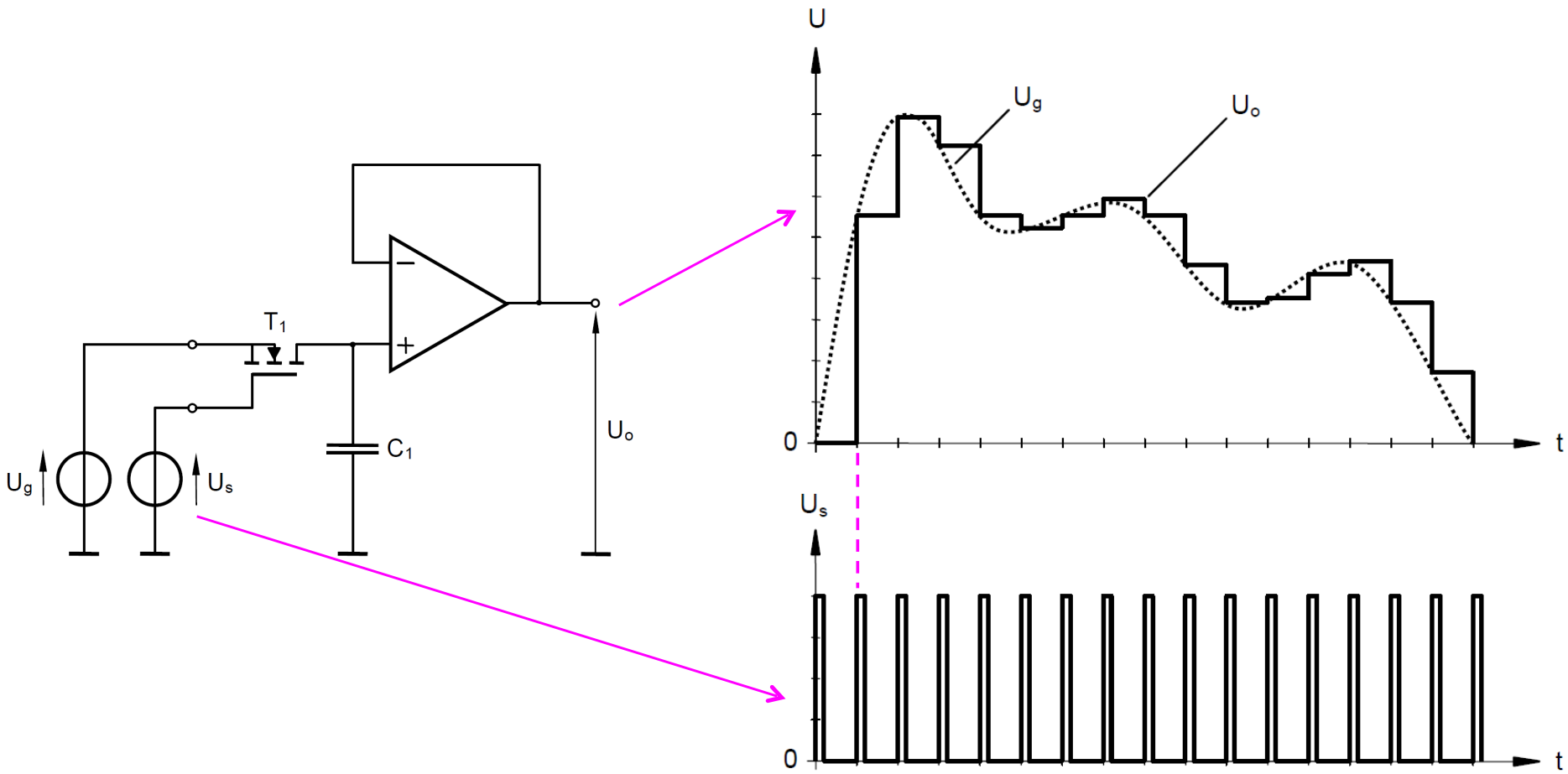
$$Gain[dB] = 20.log\left(\frac{U_{out}}{U_{in}}\right)$$

Sample-and-hold

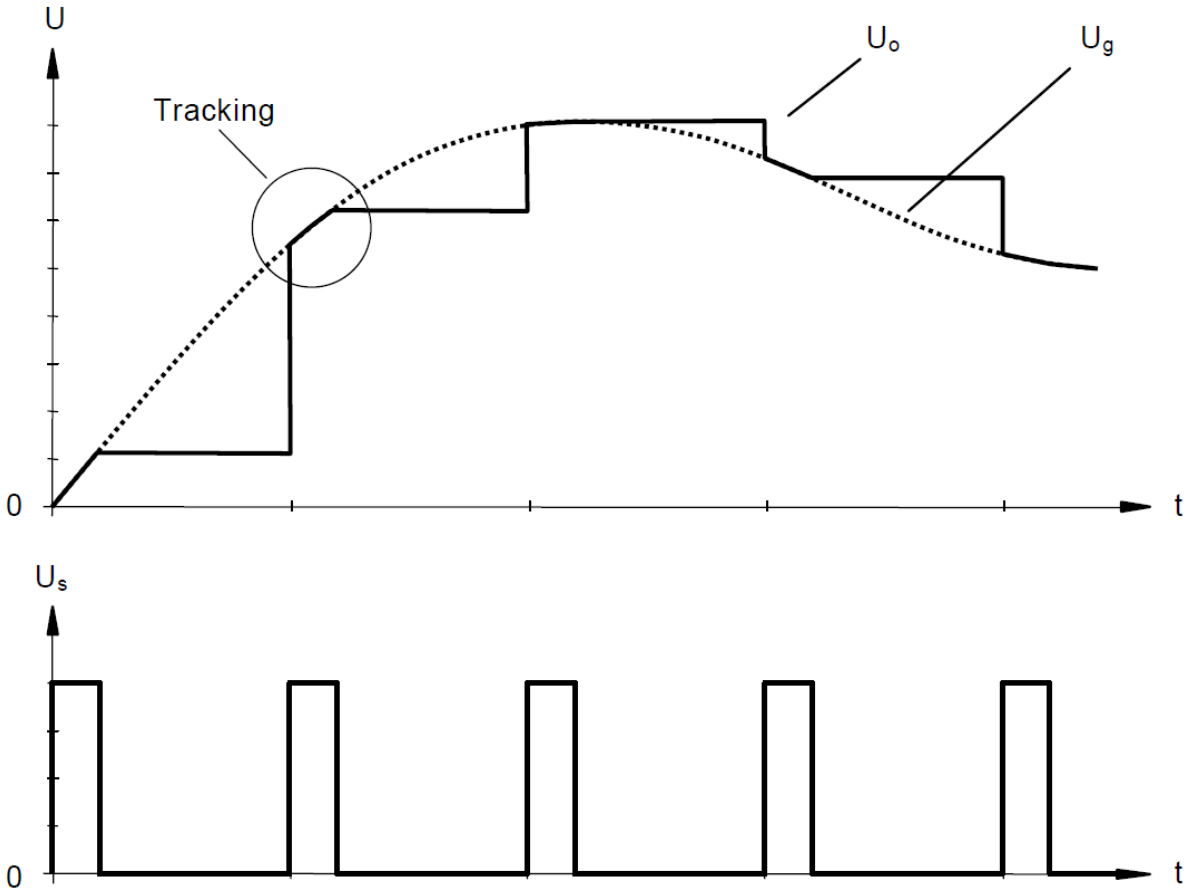
Noodzaak S&H ?



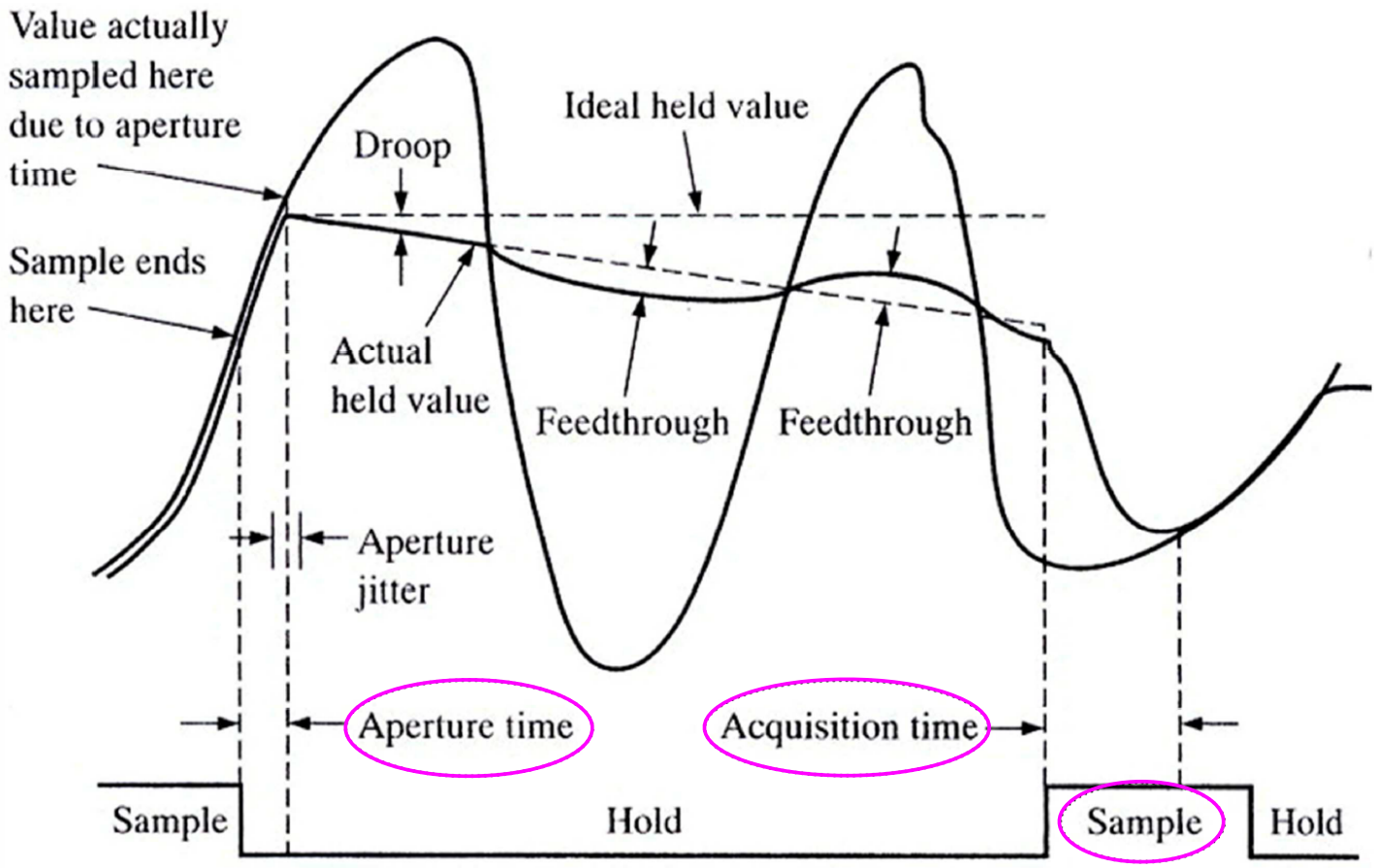
Sample-and-hold



Sample-and-hold
Tracking



Sample-and-hold
Karakteristieke tijden



S&H AD783 – ADC AD670