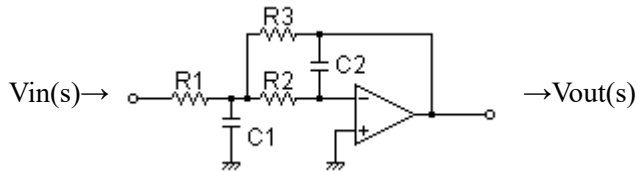


Multiple Feedback Low-pass Filter Design Tool - Result -

Calculated the Transfer Function for the multiple feedback Low-pass filter, displayed on graphs, showing Bode diagram, Nyquist diagram, Impulse response and Step response

Multiple Feedback Filter



Transfer Function:

$$G(s) = \frac{-90909090.909091}{s^2 + 19181.818181818s + 90909090.909091}$$

Cut-off frequency

$$f_c = 1517.4828413163[\text{Hz}]$$

Gain at f=0Hz

$$G_{pk} = -1[\text{times}] (0)[\text{dB}]$$

Quality factor

$$Q = 0.49706580481998$$

Damping ratio

$$\zeta = 1.0059030316541$$

Pole(s)

$$\begin{aligned} p &= -1361.3142667097[\text{Hz}] \\ |p| &= 1361.3142667097[\text{Hz}] \\ p &= -1691.5669144167[\text{Hz}] \\ |p| &= 1691.5669144167[\text{Hz}] \end{aligned}$$

Phase margin

$$pm = \text{INF}[\text{deg}] (f=0[\text{Hz}])$$

$$R1 = 11\text{k} \, \Omega$$

$$C1 = 10\text{n} \, \text{F}$$

$$R2 = 100\text{k} \, \Omega$$

$$C2 = 1\text{n} \, \text{F}$$

$$R3 = 11\text{k} \, \Omega$$

p:pico, n:nano, u:micro, k:kilo, M:mega

Frequency analysis

- ☒ Bode diagram
 - ☐ Phase ☒ Group delay
- ☒ Nyquist diagram
- ☒ Pole, zero
- ☒ Phase margin
- ☒ Oscillation analysis

Analysis on frequency range:

f1 = ~ f2 = [Hz] (optional)

Transient analysis

- ☒ Step response
- ☐ Impulse response
- ☒ Overshoot
- ☒ Final value of the step response

Analysis on time range:

0 ~ [sec] (optional)

Calculate

The system does not oscillate.

Overshoot (in absolute value)

The peak of transient waveform is not detected.

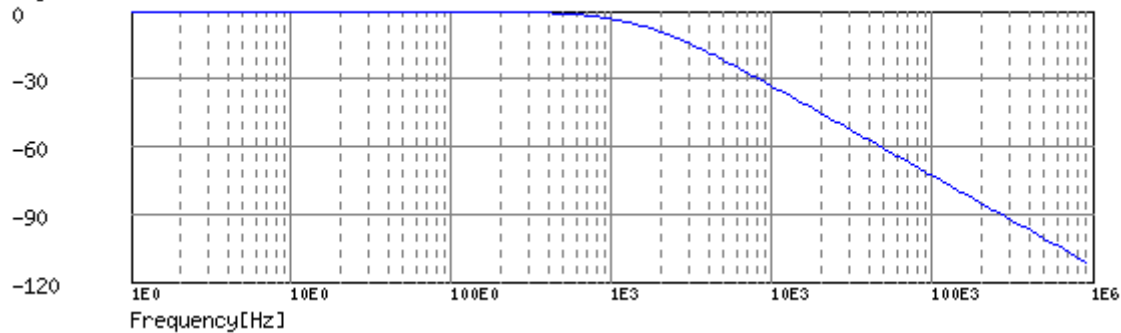
Final value of the step response (on the condition that the system converged when t goes to infinity)

$$g(\infty) = -1$$

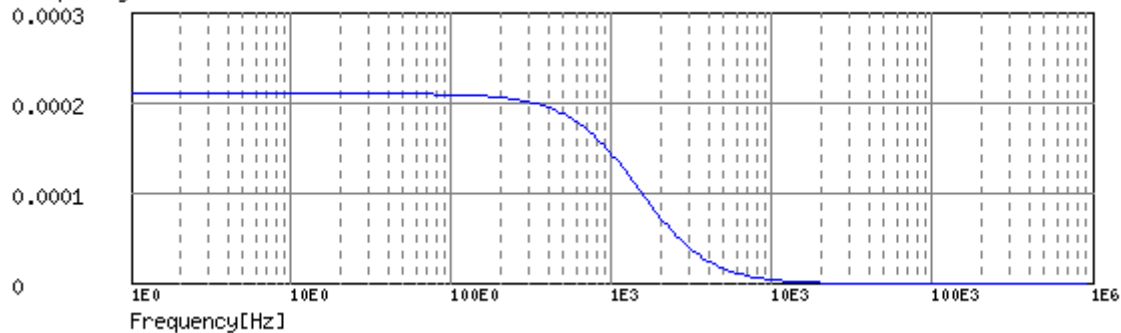
Frequency analysis

BodeDiagram

Magnitude[dB]



GroupDelay[sec]



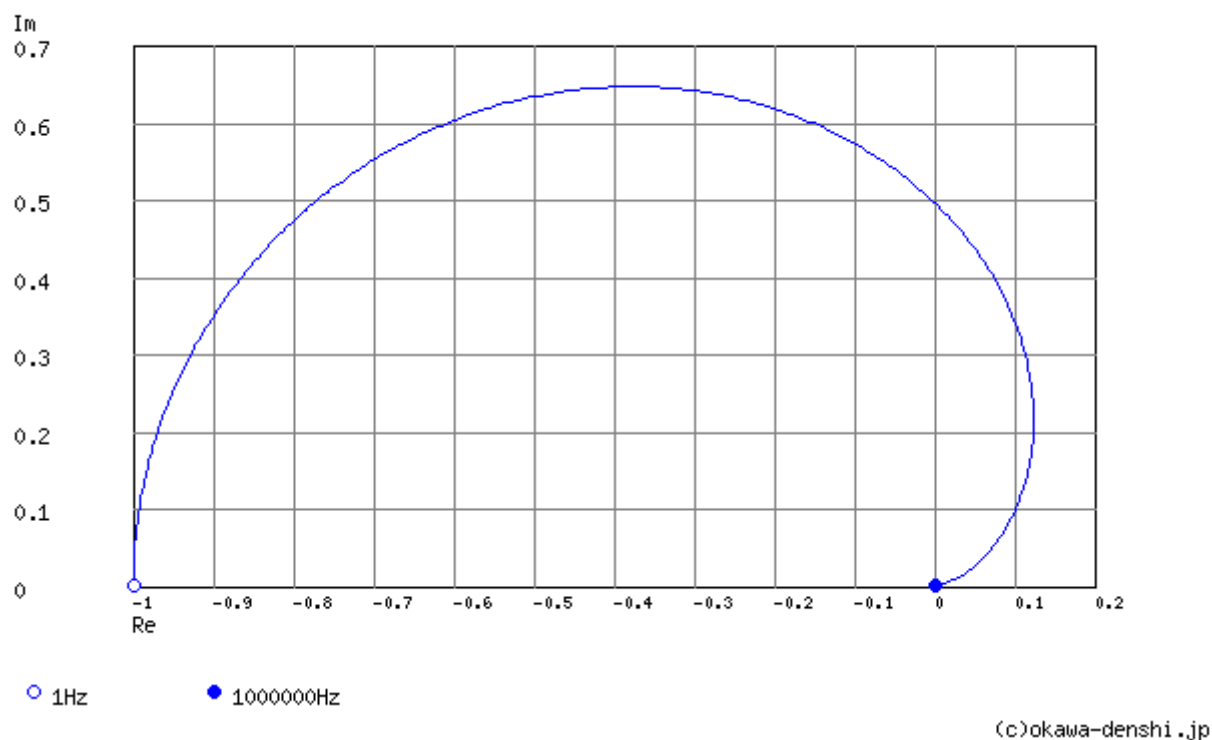
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[Gain characteristics at the Bode Diagram](#) (provides up to 1 minute)

[Group delay characteristics](#) (provides up to 1 minute)

[Bode Diagram text data](#) (provides up to 1 minute)

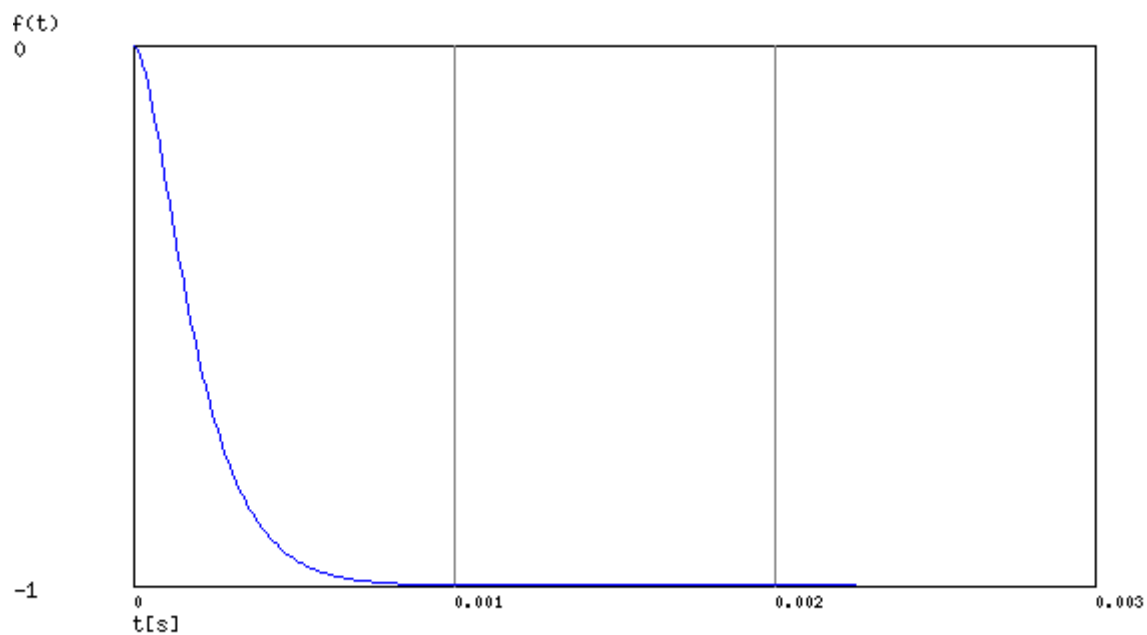
NyquistDiagram



[Nyquist Diagram text data](#) (provides up to 1 minute)

Transient analysis

StepResponse



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[Step Response text data](#) (provides up to 1 minute)

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We'll use your suggestion to improve site quality in future.

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