Filter Wizard

Filter Wizard Design

Created on 02/19/2025

ANALOG DEVICES

Filter Wizard Design Report

Filter Requirements for Low-Pass, 4th order Chebyshev

Specifications: Optimize: Power; +Vs: 5; -Vs: -5

Gain: 0 dB

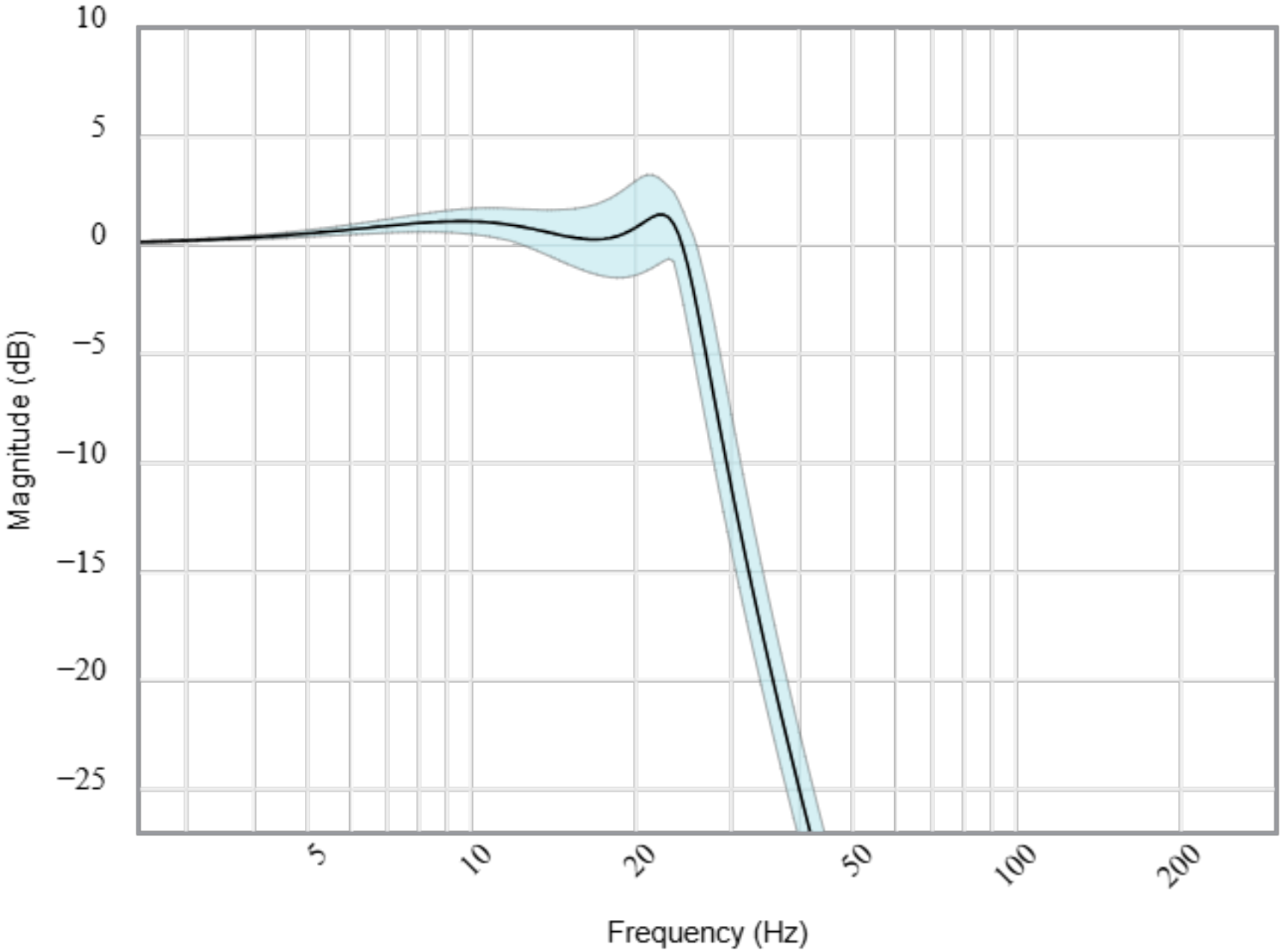
Passband: -1dB at 25Hz

Stopband: -7dB at 30Hz

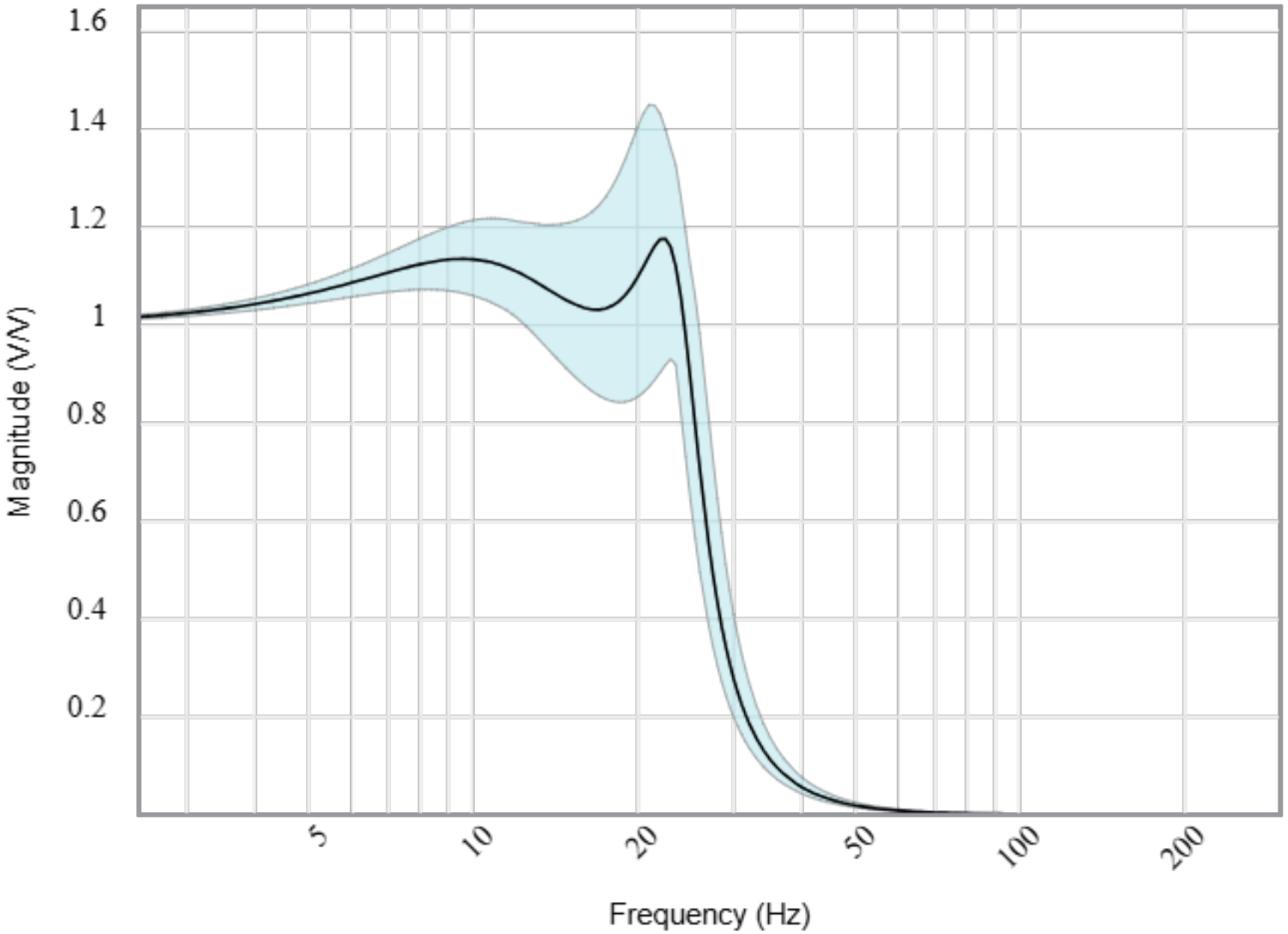
Component Tolerances: Capacitor = 5%; Resistor = 1%; Inductor = 5%; Op Amp GBW = 20%

BOM: refer to BOM.csv file

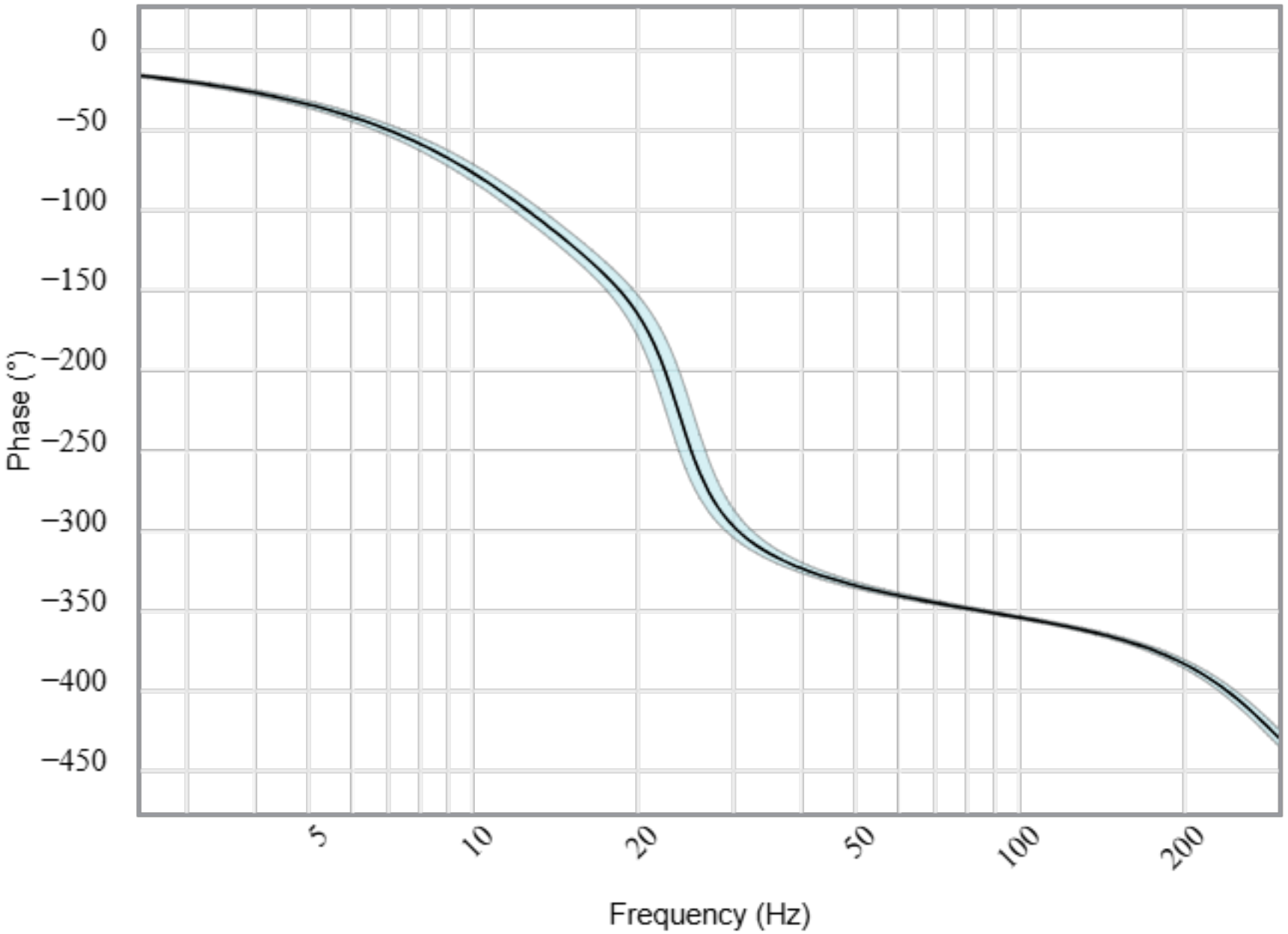
Magnitude(dB)



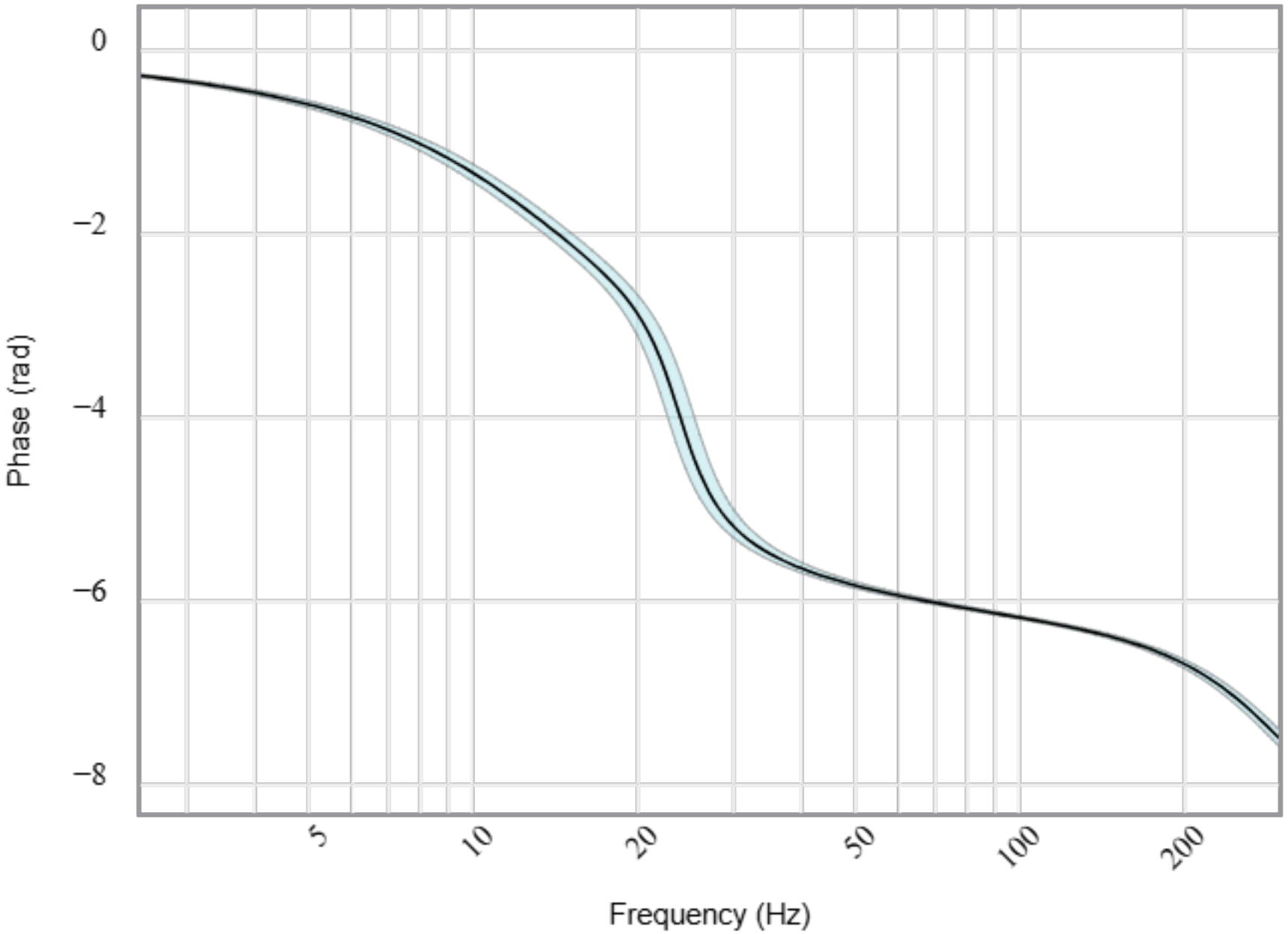
Magnitude(Volts per Volt)



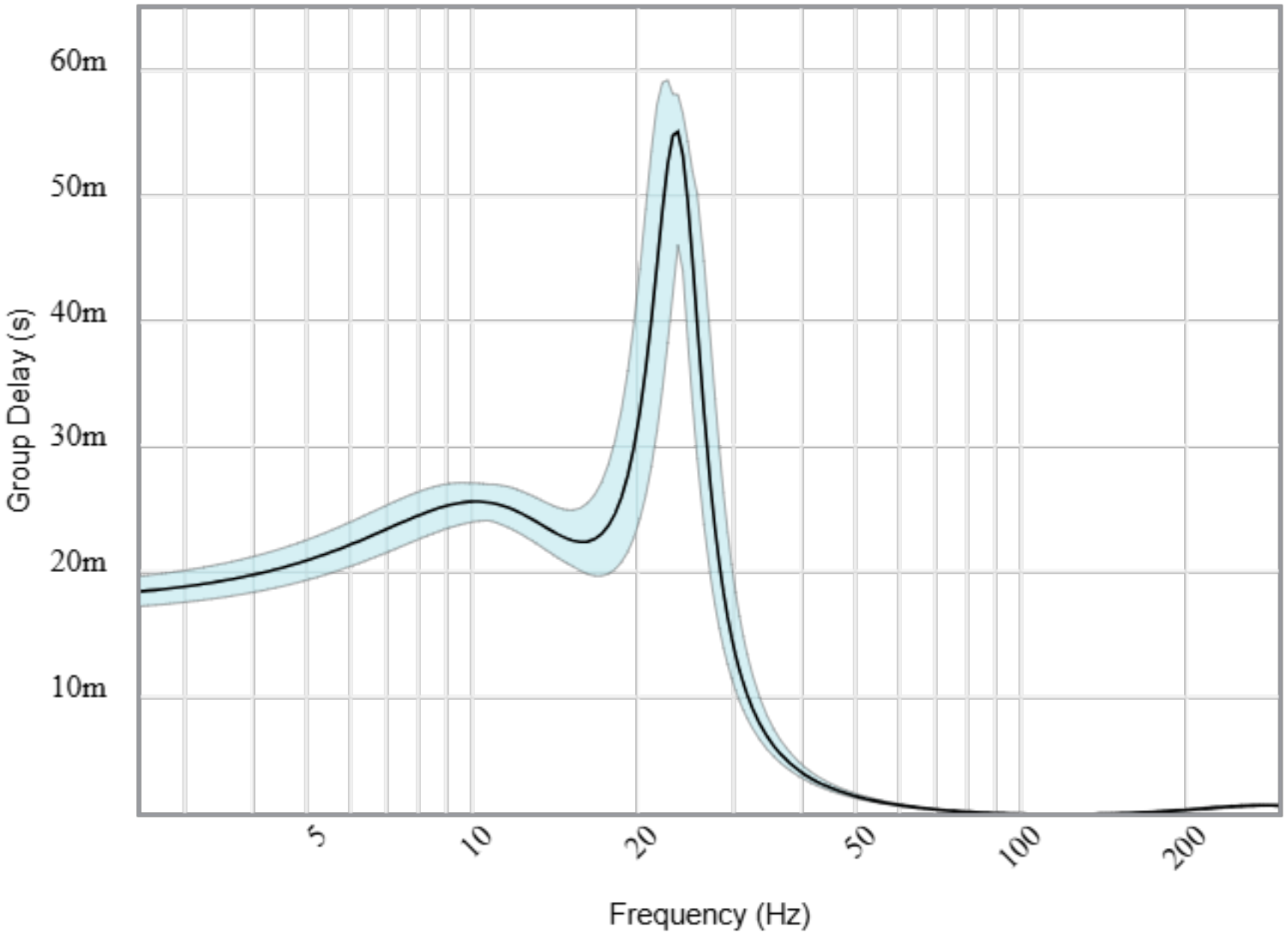
Phase(degrees)



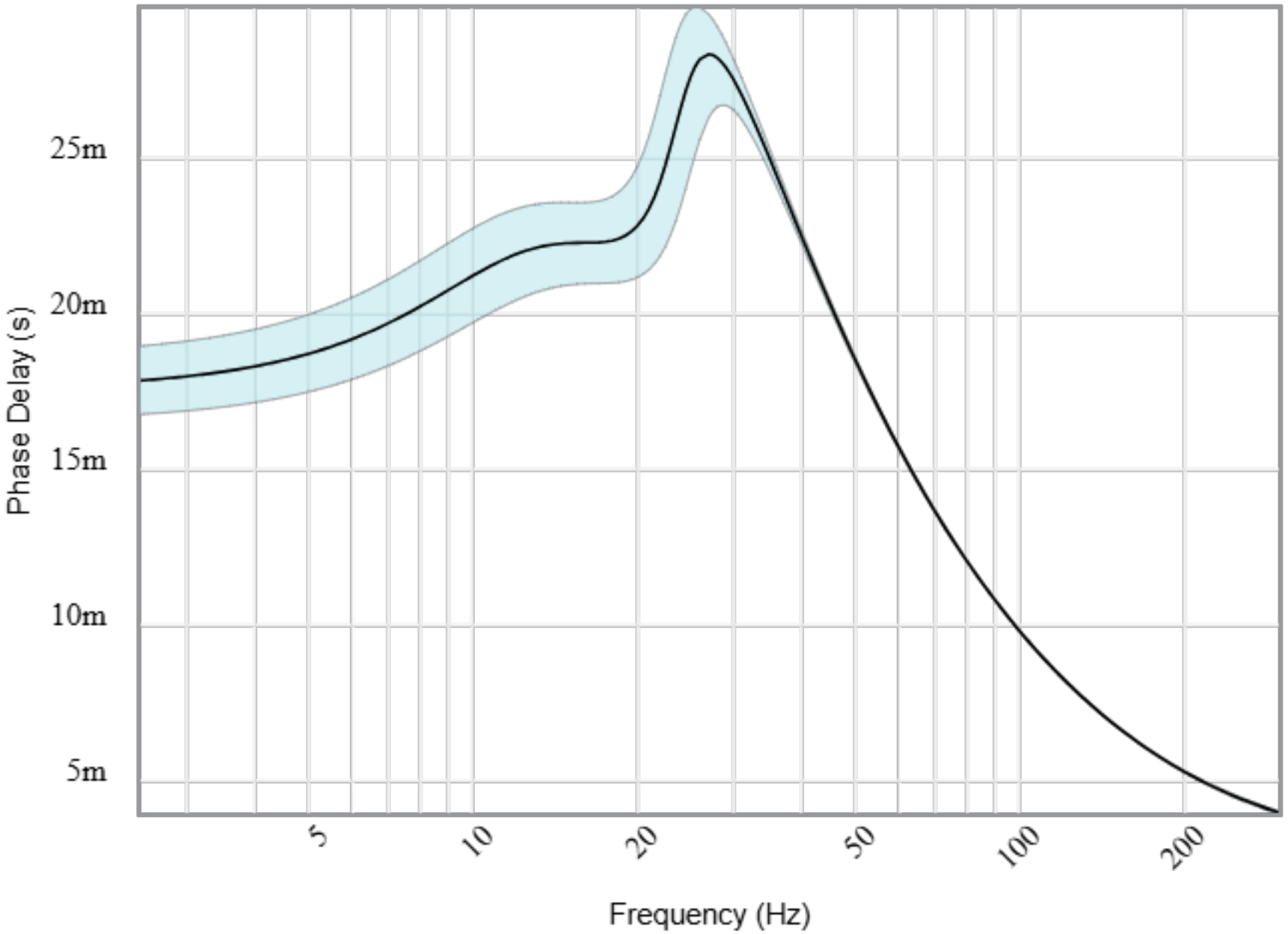
Phase(radians)



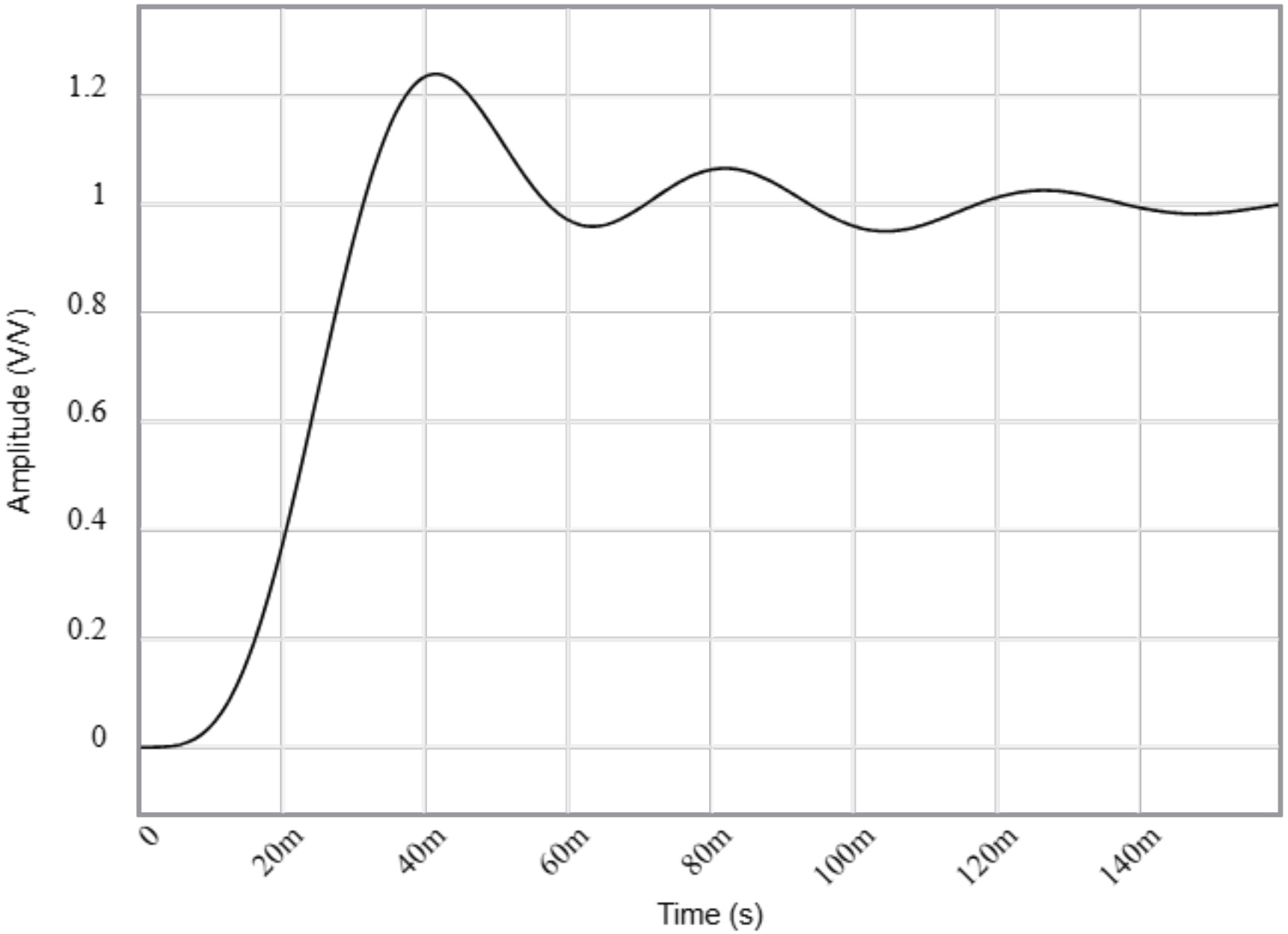
Group Delay


60m
50m
40m
30m
20m
10m
Group Delay (s)
5
10
20
50
100
200
Frequency (Hz)

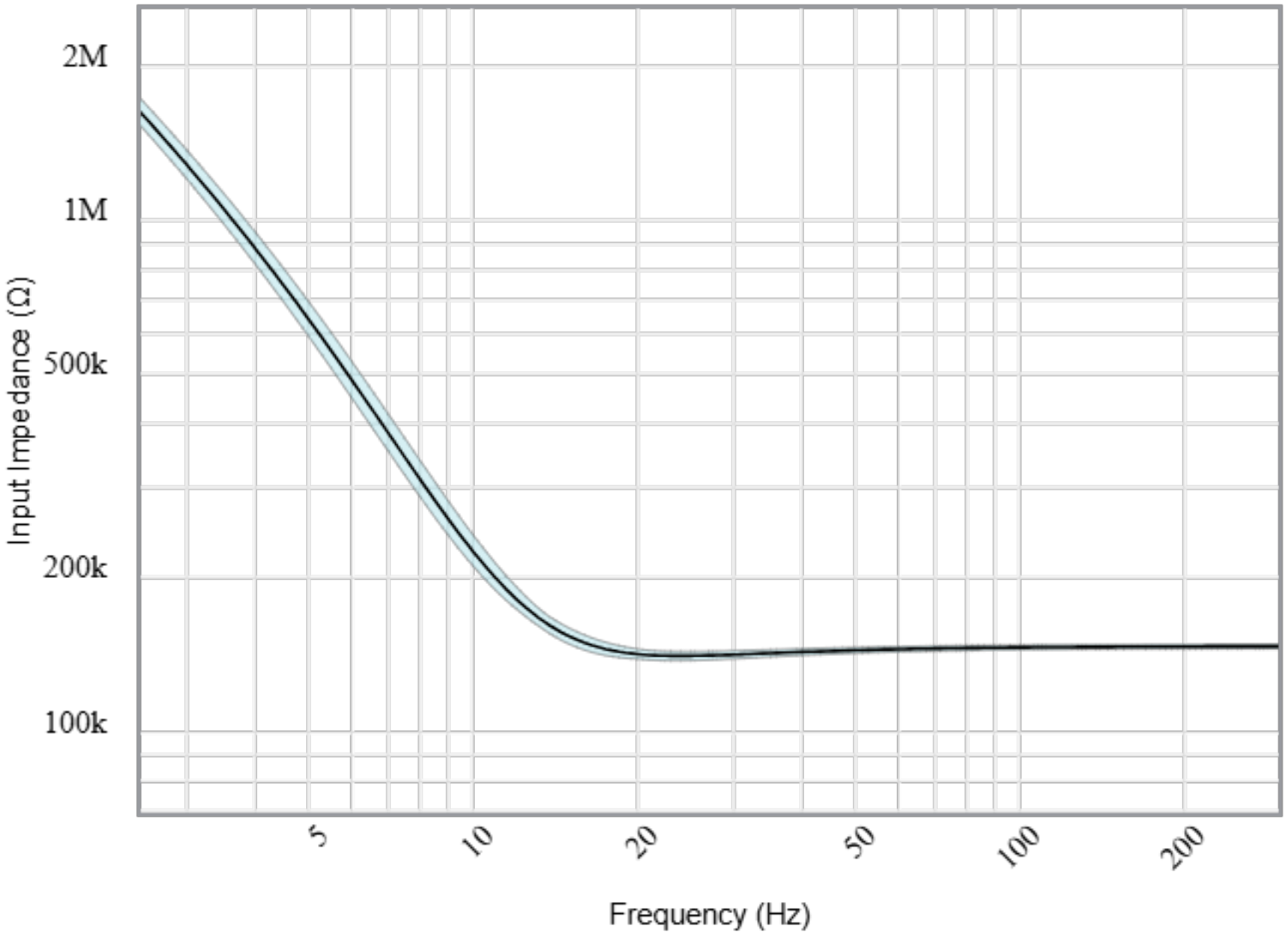
Phase Delay



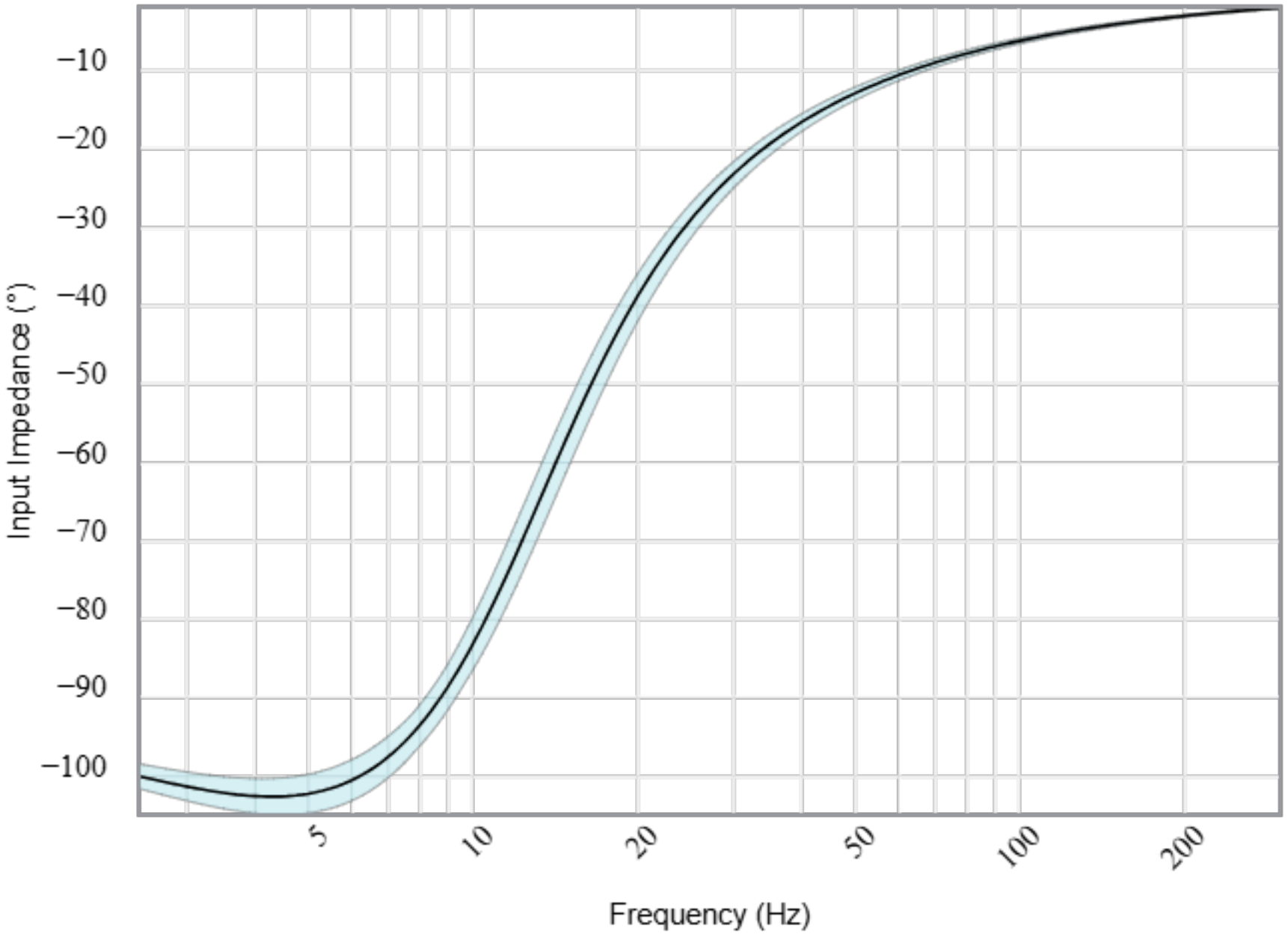
Step Response



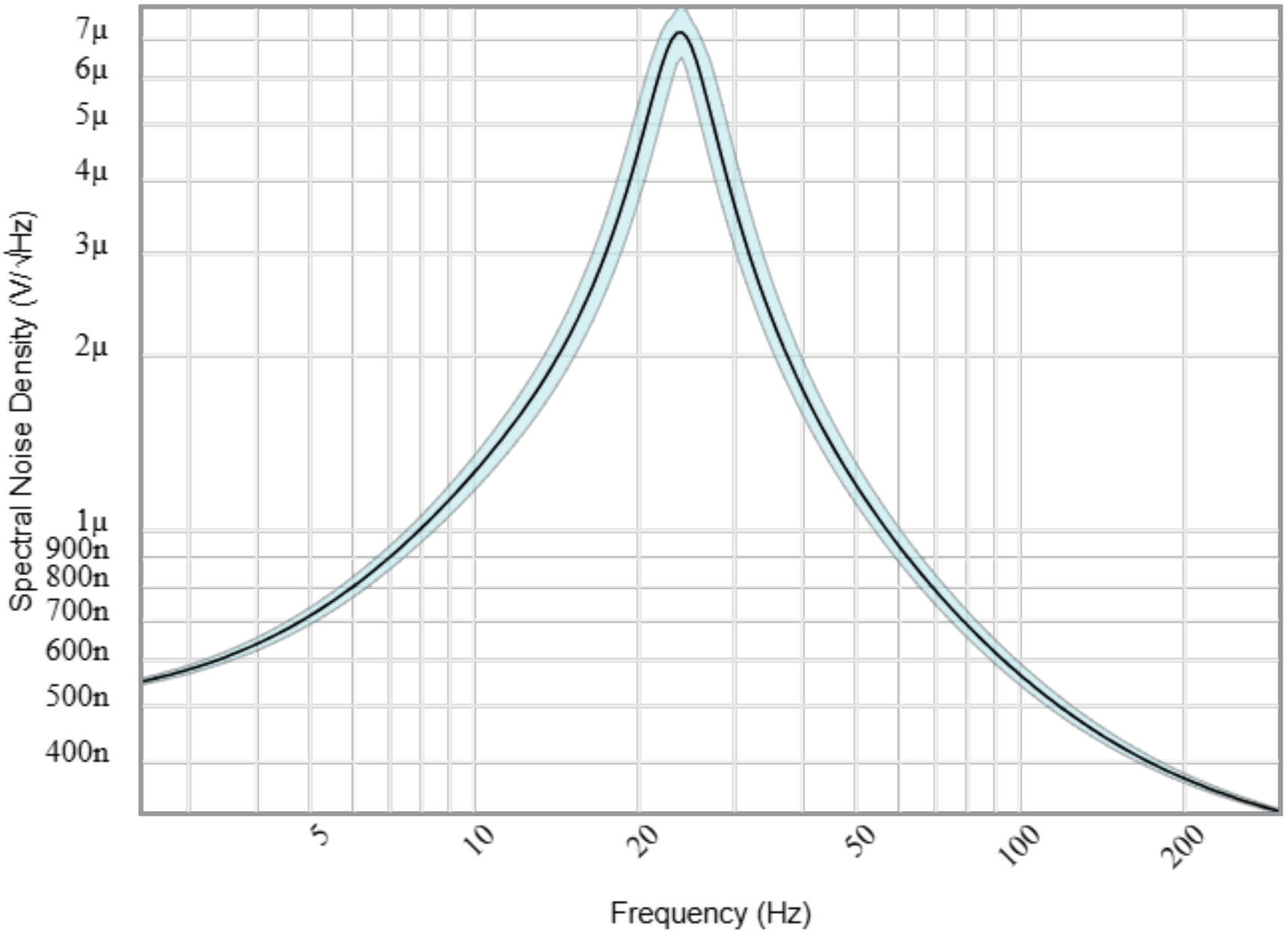
Input Impedance Magnitude



Input Impedance Phase



Noise

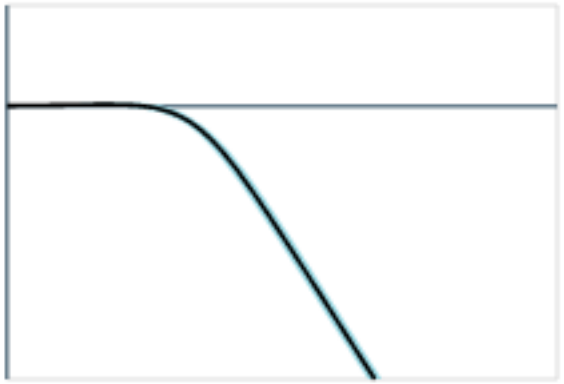

7µ
6µ
5µ
4µ
3µ
2µ
1µ
900n
800n
700n
600n
500n
400n
Spectral Noise Density (V/√Hz)
5
10
20
50
100
200
Frequency (Hz)

Stages

Your filter requires 2 op amp stage(s) with the following characteristics

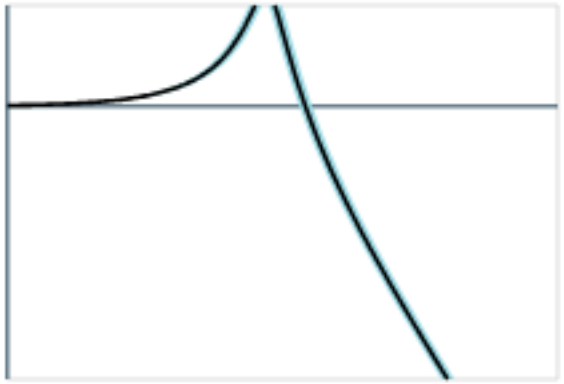
A — 2nd order Low-Pass Sallen Key

	Target	Simulated
Gain (V/V):	1	1 to 1
f_p (Hz):	12.8	12.1 to 13.7
Q:	784m	751m to 835m

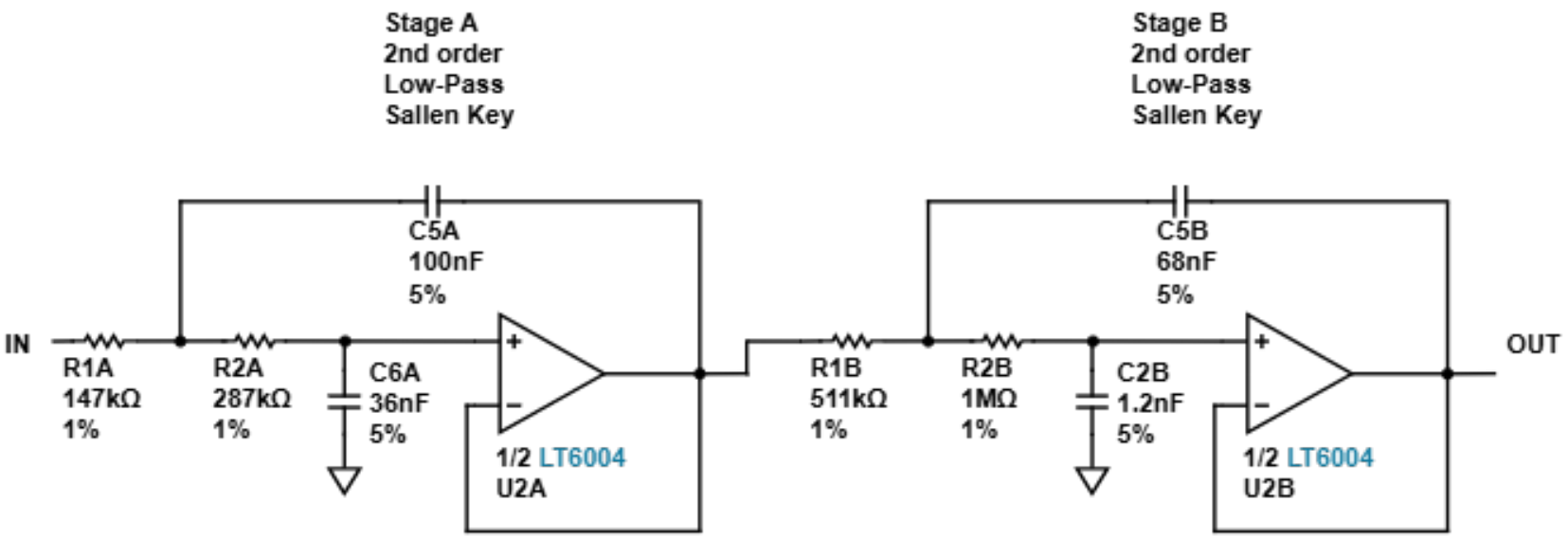


B — 2nd order Low-Pass Sallen Key

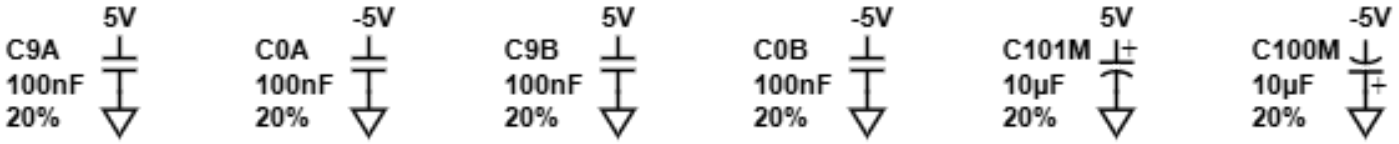
Target	Simulated
1	1 to 1
24.1	22.7 to 25.3
3.56	3.46 to 3.85



Circuit



BYPASS CAPACITORS



SPARES Why The Spares?