COLLEGE OF ENGINEERING AND TECHNOLOGIES
ALMUSTAQBAL UNIVERSITY

Digital Signal Processing (DSP)

CTE 306

Lecture 14

- Introduction to Filters -

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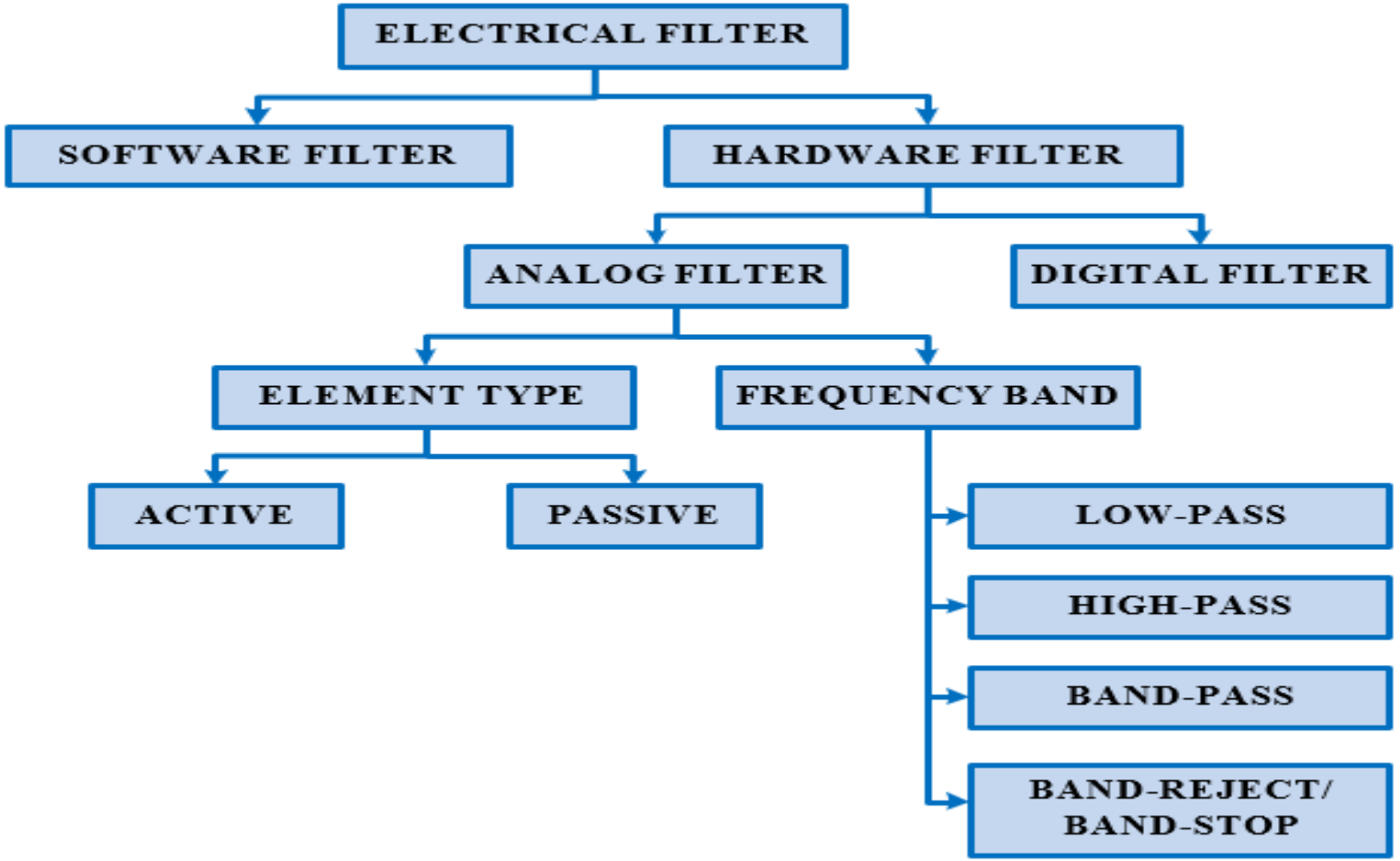
Contents

- Classification of Filters
- Ideal Filters
- Practical Filters

Filters

- A filter is a circuit that is designed to pass signals with desired frequencies and reject or attenuate others.

Filters


ELECTRICAL FILTER
SOFTWARE FILTER
HARDWARE FILTER
ANALOG FILTER
DIGITAL FILTER
ELEMENT TYPE
FREQUENCY BAND
ACTIVE
PASSIVE
LOW-PASS
HIGH-PASS
BAND-PASS
BAND-REJECT/
BAND-STOP

Types of filters

- Low pass filter: passes low frequencies and stops high frequencies.

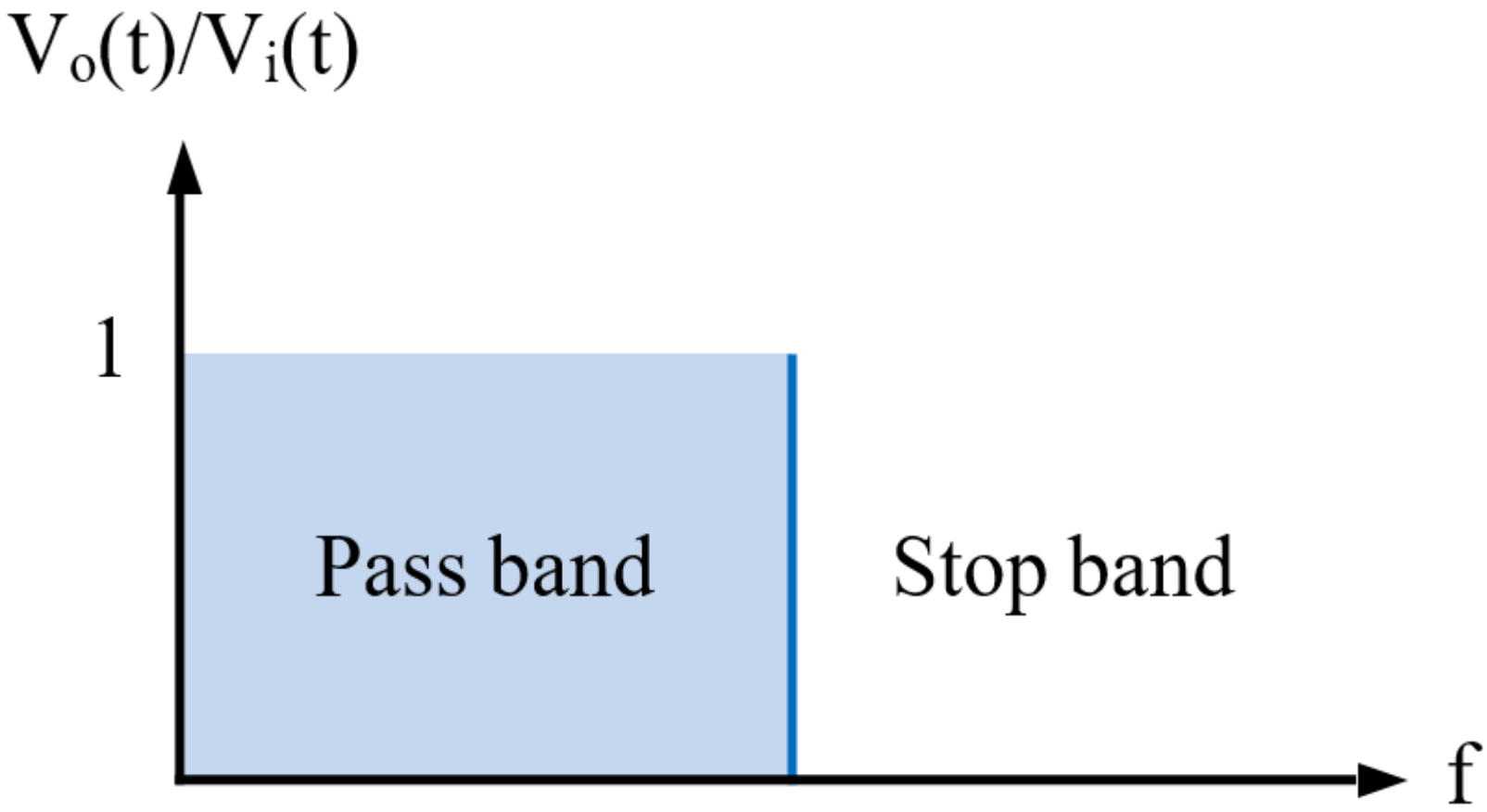
- High pass filter: passes high frequencies and rejects low frequencies.

Types of filters

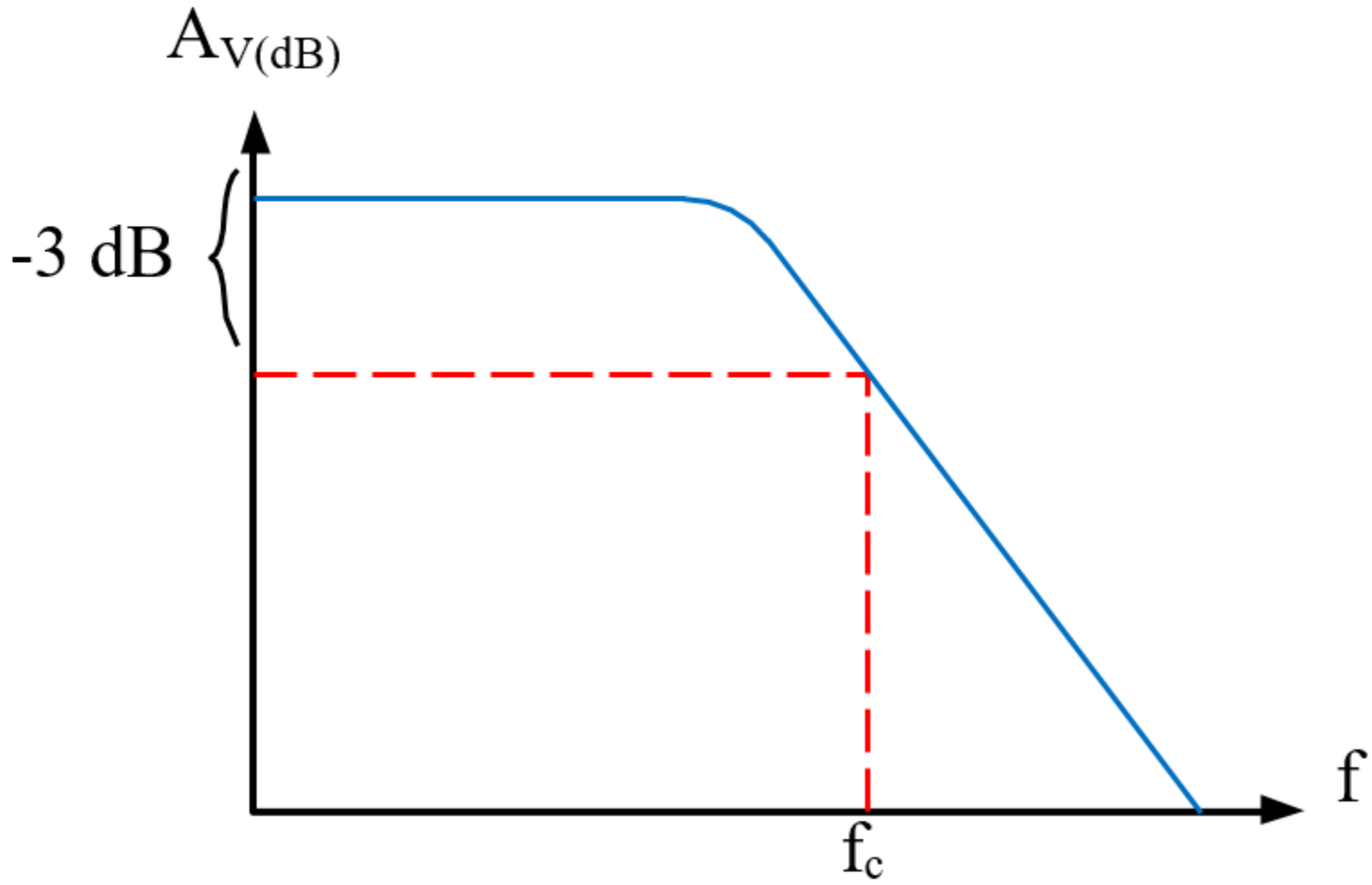
- Band pass filter: passes frequencies within a frequency band and blocks or attenuates frequencies outside the band.

- Band stop filter: passes frequencies outside a frequency band and blocks or attenuates frequencies within the band.

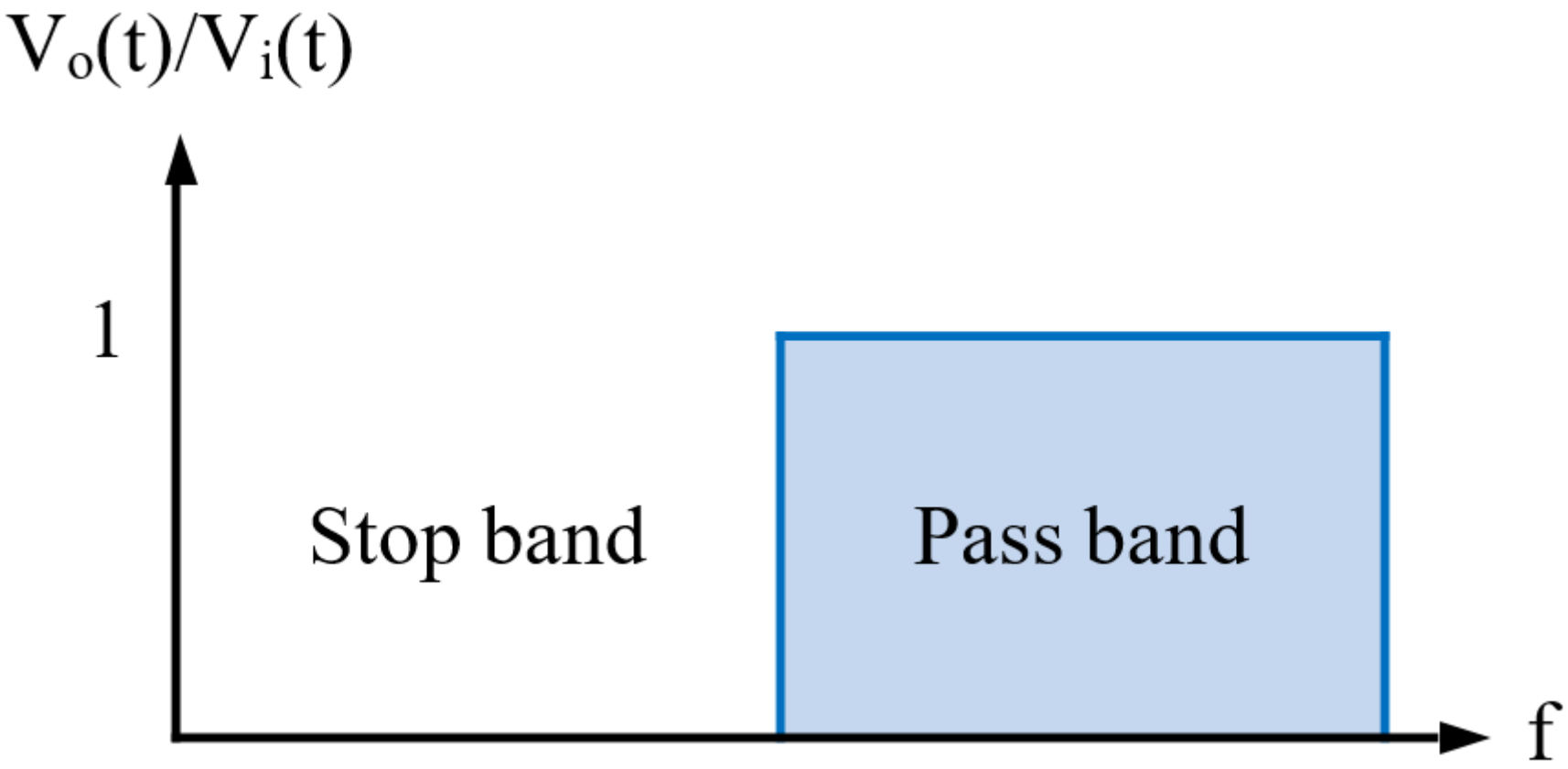
Ideal Low Pass Filter



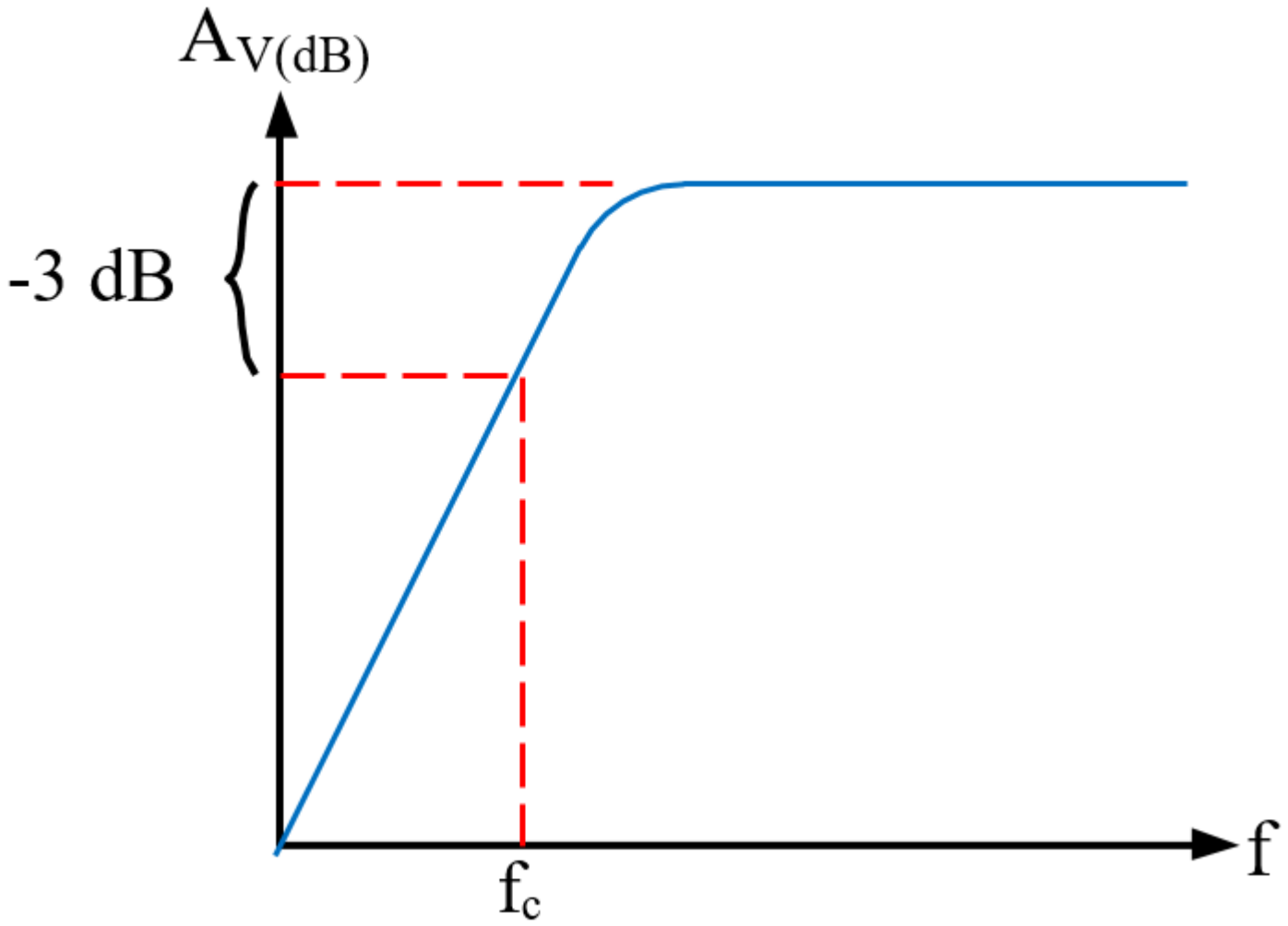
Practical Low Pass Filter



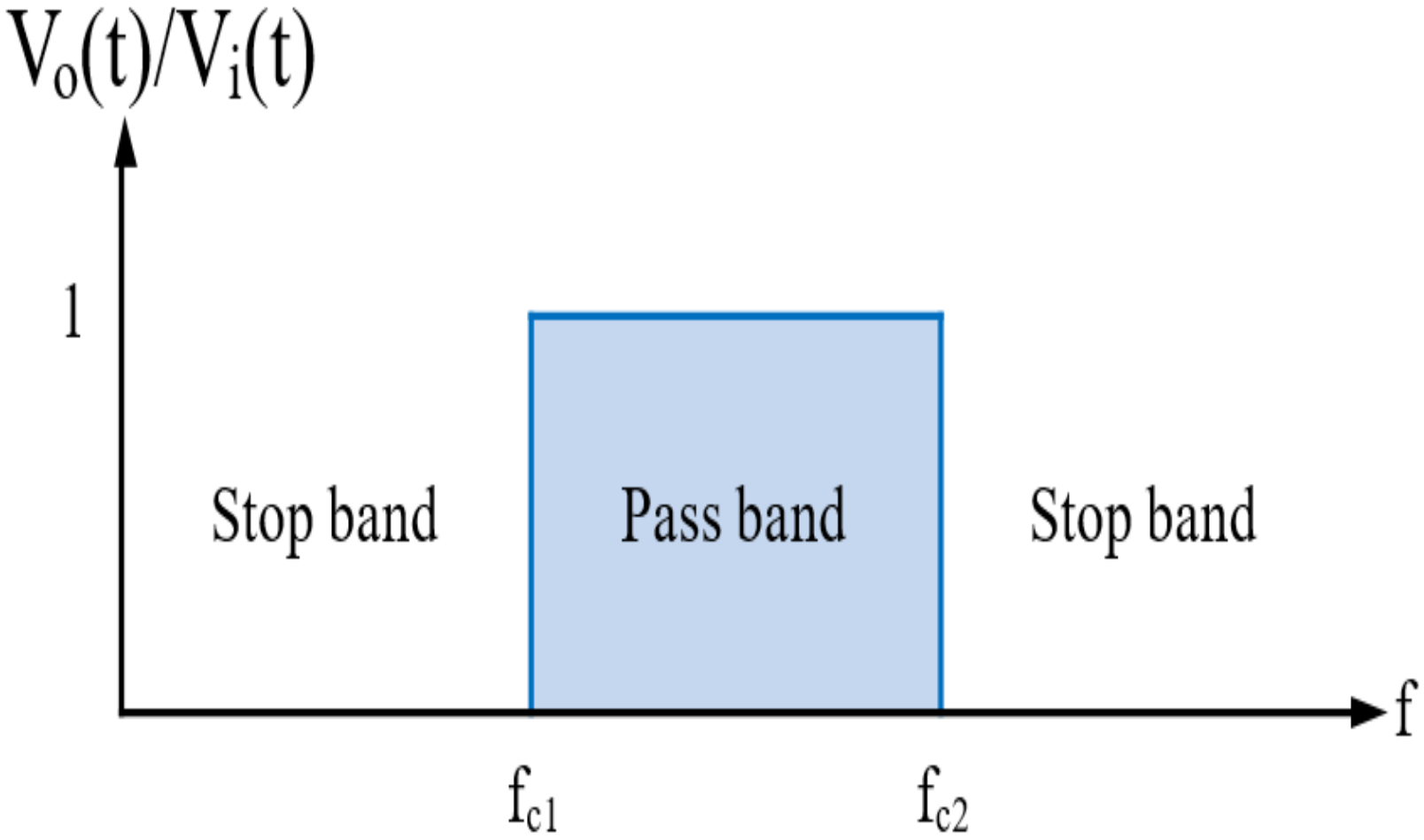
Ideal High Pass Filter



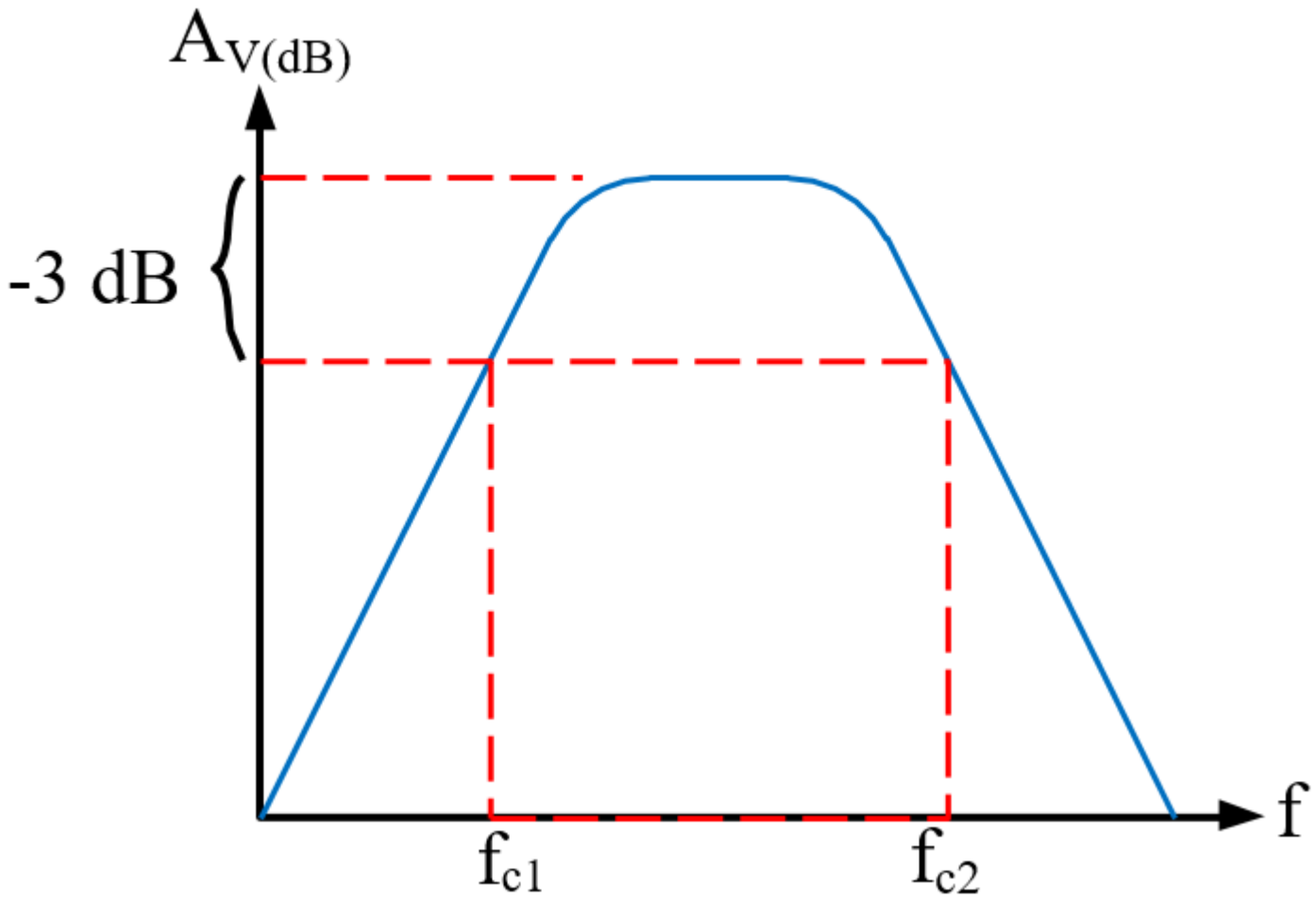
Practical High Pass Filter



Ideal Band Pass Filter

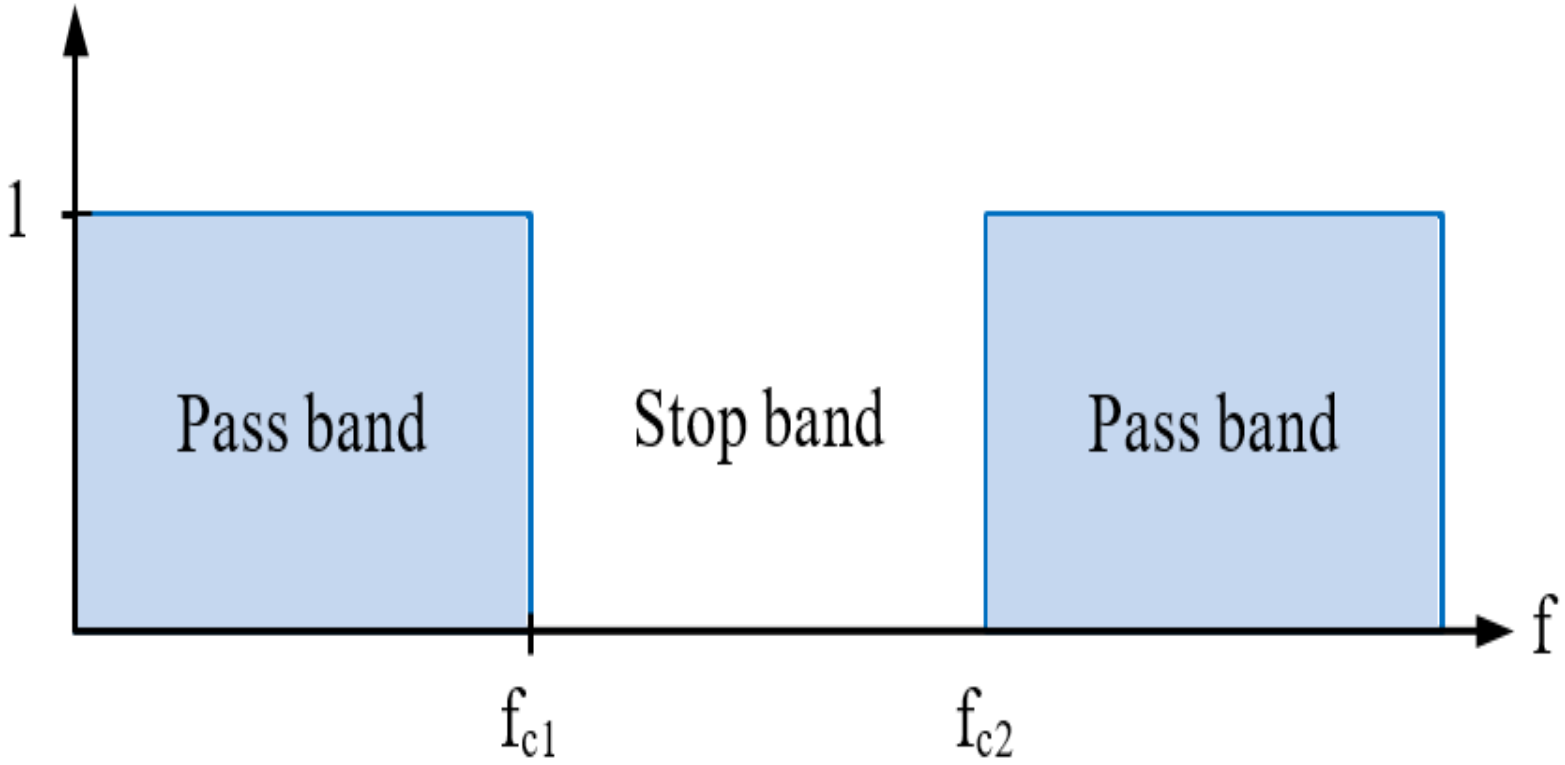
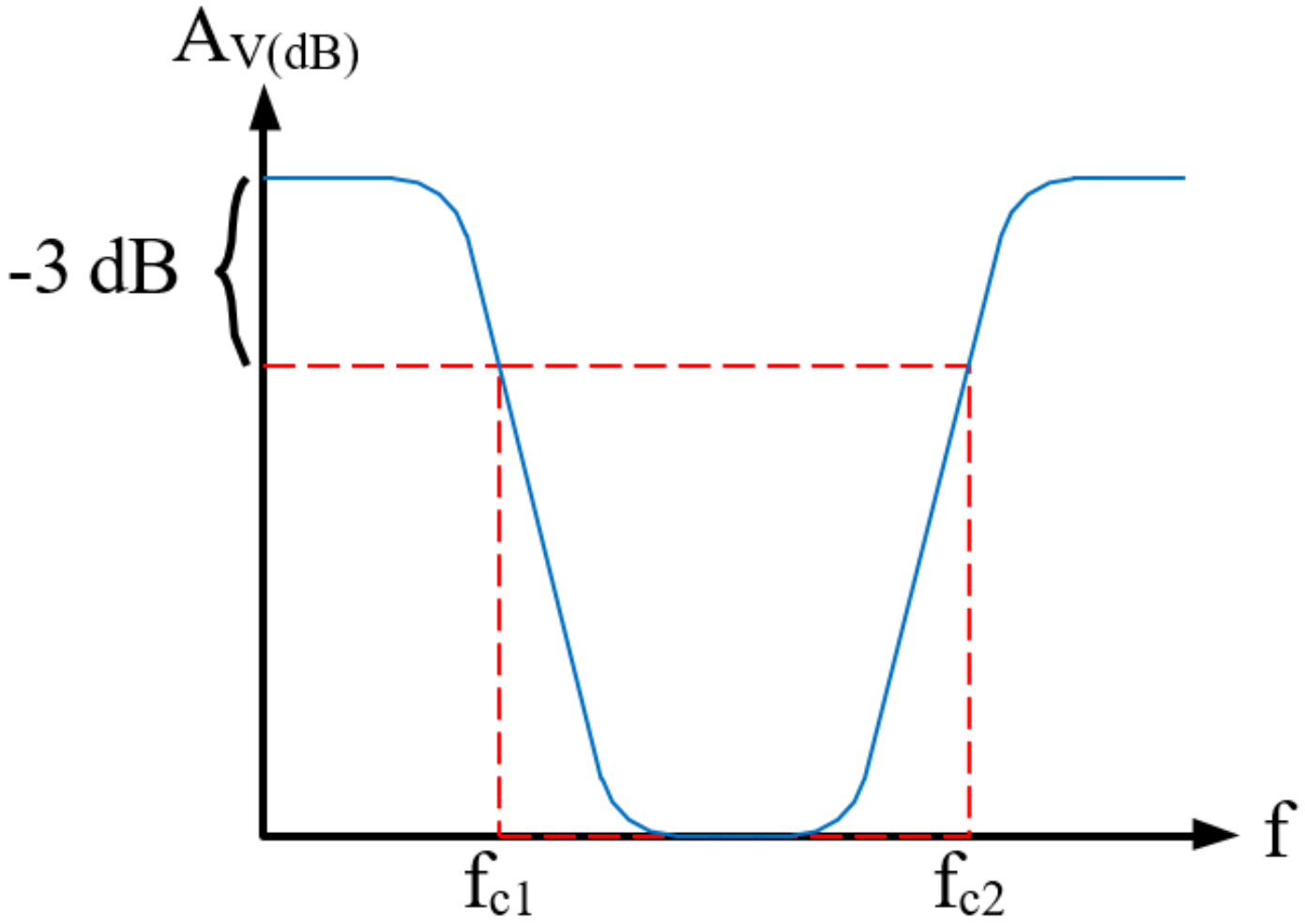


Practical Band Pass Filter



Ideal Band Stop Filter

$V_o(t)/V_i(t)$



Practical Band Stop Filter