





# **SNS COLLEGE OF TECHNOLOGY**

## **(AN AUTONOMOUS INSTITUTION)**

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Recognized by UGC saravanampatti (post), Coimbatore-641035.



## **Department of Biomedical Engineering**

### **Course Name: 23BMB201: Analog and Digital ICs.**

Vision Tit 2

Vision Title 3

**II Year : III Semester**

**Unit 1 –INTRODUCTION TO OPERATIONAL AMPLIFIER AND ITS APPLICATIONS**

**Topic :BAND STOP FILTER**

**23BMB201-Analog and Digital Ics /Unit 1/N.Jayashree/AP/BME**



# Active Band Stop Filter

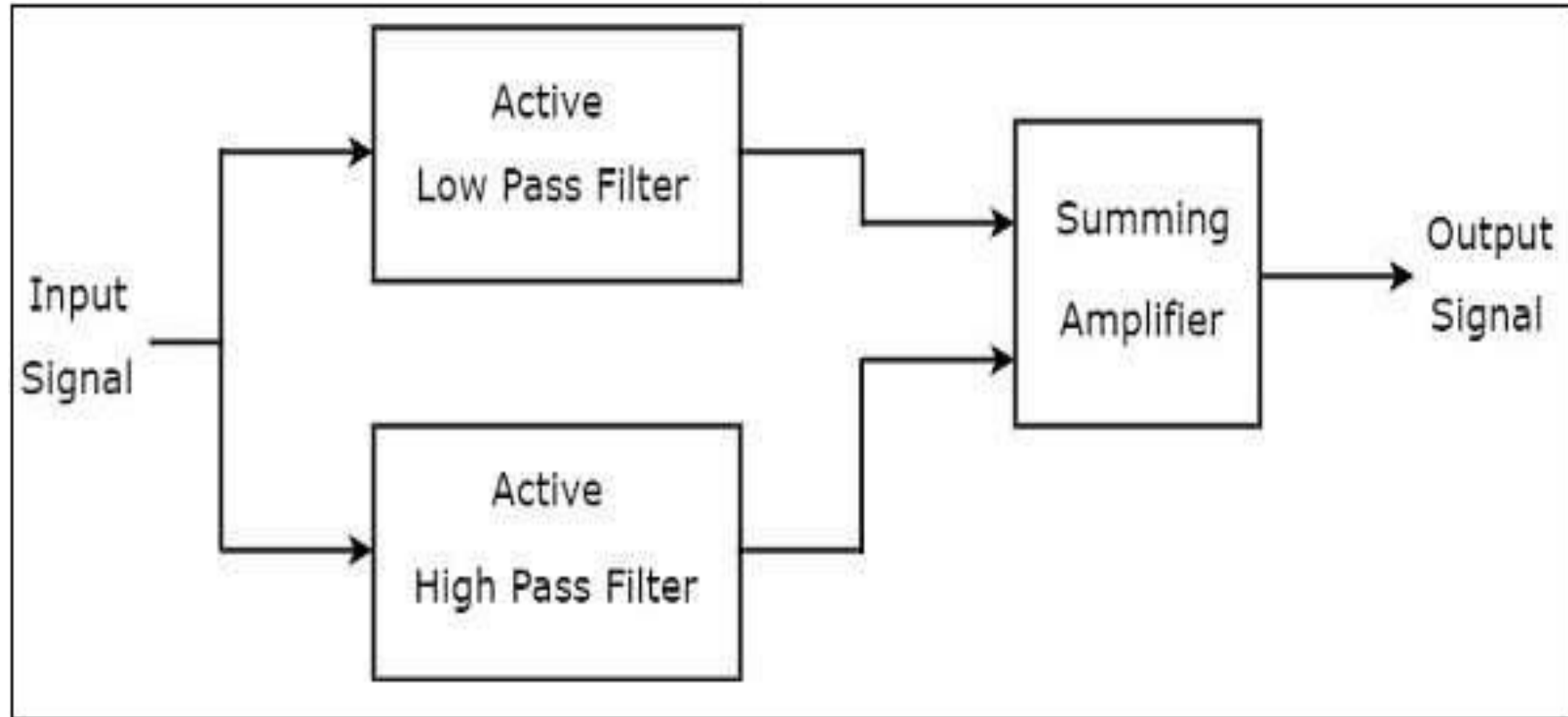
If an active filter rejects (blocks) a particular band of frequencies, then it is called as an **active band stop filter**.

In general, this frequency band lies between low frequency range and high frequency range. So, active band stop filter allows (passes) both low and high frequency components.

The **block diagram** of an active band stop filter is shown in the following figure –



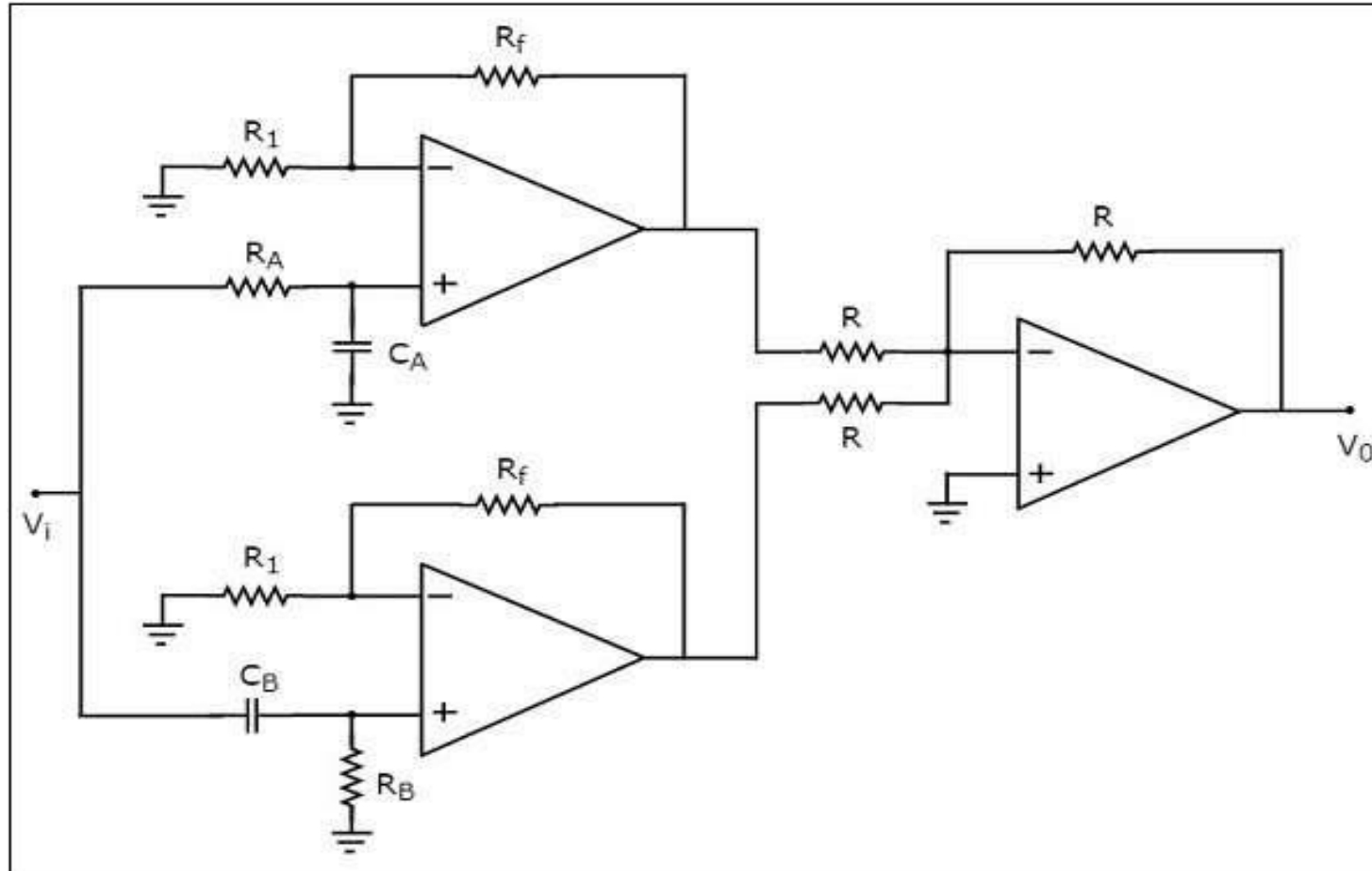
# Active Band Stop Filter



Title 3



# Active Band Stop Filter



Vision Title 3



# Active Band Stop Filter

**1. Interference Rejection:** Band-stop filters are used to reject specific interfering frequencies while allowing the desired signal frequencies to pass through. This is particularly useful in communication systems, where narrowband interference from sources such as power lines or other communication channels can degrade signal quality.

Vision Tit 2

**2. Power Line Interference Removal:** In electronic equipment and instrumentation, band-stop filters are employed to remove power line interference at 50 Hz or 60 Hz (depending on the region) and its harmonics. This interference can be induced by nearby power lines or electrical devices and can affect sensitive measurements or audio signals.

Vision Title 3

**3. Audio Equalization:** Band-stop filters are used in audio processing for equalization purposes to suppress specific frequencies that cause unwanted resonances or feedback. This helps in improving the clarity and fidelity of audio signals in recording studios, live sound reinforcement systems, and public address systems.



# Active Band Stop Filter

**1. Biomedical Signal Processing:** In biomedical applications, band-stop filters are utilized to remove interference caused by power line noise and muscle artifacts from physiological signals such as electrocardiogram (ECG) and electromyogram (EMG). This ensures that only the relevant physiological information is preserved for accurate analysis and diagnosis.

**2. Environmental Monitoring:** Band-stop filters are used in environmental monitoring systems to eliminate interference from sources such as electrical machinery, power lines, or environmental noise, allowing for accurate detection and measurement of specific environmental parameters such as seismic activity or air pollution levels.

**3. RF Coexistence:** In wireless communication systems, band-stop filters are used to mitigate interference between different frequency bands or wireless technologies operating in close proximity. By selectively attenuating interfering frequencies, band-stop filters help improve the coexistence and performance of diverse wireless devices and networks.