Band-Reject Filter

The band-rejection filter is also called as band stop or band elimination filter. In this filter, frequencies sre attenuated in the stop band while they are passed out side this band.

There are two types of band-reject filters.

1. Wide band reject filter (quality factor Q> 10)
2. Narrow band reject filter (quality factor Q<10)

Quality factor Q = fc/B.W

Narrow band reject filter is commonly called as notch filter.

A band-rejection filter is used to suppress a certain frequency rather than a range of frequencies. Two of the most popular band-rejection filters are the active twin-T and the active Wien Robinson circuit, both of which are second-order filters.

To generate the transfer function of a second-order band-rejection filter, replace the S term of a first-order low-pass response with the transformation

$$\frac{\Delta\Omega}{s + \frac{1}{s}}$$

$$A(s) = \frac{A_0(1 + s^2)}{1 + \Delta\Omega \cdot s + s^2}$$

Thus the pass band characteristic of the low-pass filter is transformed into the lower pass band of the band-rejection filter. The lower pass band is then mirrored at the mid frequency, fm (Ω=1), into the upper pass band half

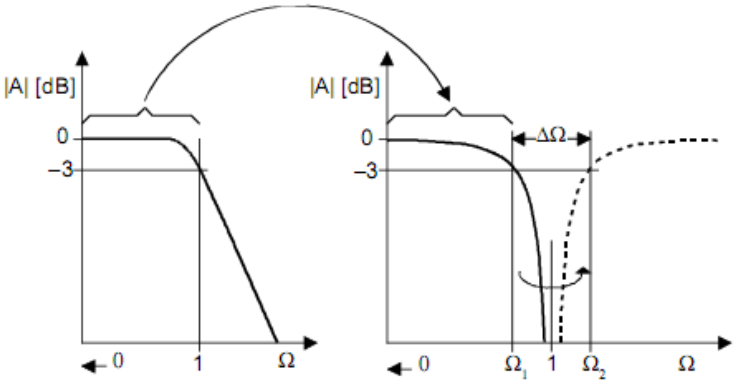

Figure 3.5

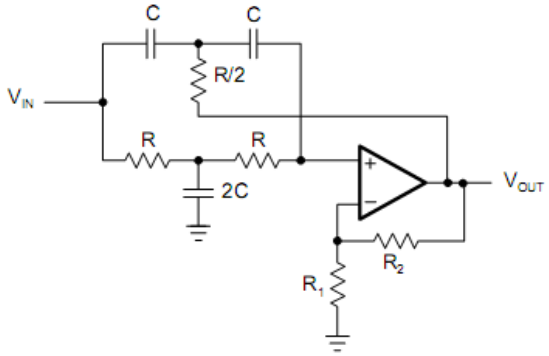

Figure 3.6