Design Considerations

BAND PASS CRYSTAL FILTERS

Design considerations

To obtain an optimum design many factors require consideration. All specification variations are interdependent and computer simulation is the only satisfactory means of realizing a design. Euroquartz possess this facility and will design a filter to your requirement if the general specification is known.

Specifying the Passband

It is necessary to specify the filter centre frequency in MHZ and the band width in kHz. The bandwidth is normally specified at some level of attenuation say -0.5dB or -3dB etc. Variation within the Passband is specified in dB and is termed Ripple. This is defined as the maximum variation of output within the Passband at the specified bandwidth. Insertion loss is the relative loss in dB at the normal bandwidth and is a function of the complexity of a filter.

Specifying the Stopband

It is necessary to specify the attenuation at a defined level of bandwidth (e.g ± 20kHz at -40dB) along with the maximum attenuation. It is also necessary to know input and output impedances. These are normally specified in terms of resistance and capacitance. e.g 1500Ω//2.0pF

Phase response

A filters' phase response is the phase difference between the output sine voltage and the input sine voltage.

Group delay

Group delay is determined from the slope of the filter phase characteristic and is an indication of the time delay that occurs when a modulated signal passes through the filter.

Packaging

The filter assembly is available packaged in a wide range of different styles which can be chosen to suit a customers requirements. The design department will be pleased to advise on the most suitable package for a particular application.

EUROQUARTZ LIMITED Blacknell Lane CREWKERNE Somerset UK TA18 7HE
Tel: +44(0)1460 230000 Fax: +44(0)1460 230001 Email: sales@euroquartz.co.uk www.euroquartz.co.uk