MADE-TO-ORDER CRYSTAL FILTERS

FILTER DESIGN CONSIDERATIONS

EUROQUARTZ FILTERS
Tel: +44(0)1460 230000
Fax: +44(0)1460 230001
Email: sales@euroquartz.co.uk
Web: www.euroquartz.co.uk

BAND PASS FILTERS

NARROW BAND PASS CRYSTAL FILTERS
1.0MHz to 100.0MHz
Operating Temperatures: 0°C to 50°C,
-10° to 60°C,
-20°C to 70°C,
-40°C to 90°C,

Narrow band pass crystal filters are designed to pass a narrow frequency band and reject all other frequencies. The maximum band width using fundamental mode crystals is 0.3% of the centre frequency and is 0.03% when using third overtones.

INTERMEDIATE BAND PASS CRYSTAL FILTERS
1.0MHz to 100.0MHz

The maximum bandwidth of this range of crystal filters is 2.0% of the centre frequency.

BAND PASS FILTERS

LINEAR PHASE CRYSTAL FILTERS
1.0MHz to 180.0MHz

To avoid distortion and ringing due to group delay it is necessary to have a flat time-delay characteristic. The group delay of a highly selective filter varies considerably within the pass band. This introduces distortion into digital and low noise transmission signals. These problems can be overcome by specifying a Linear Phase Crystal Filter.

SPECIALIST CRYSTAL FILTERS

COMB FILTER BANKS
1.0MHz to 100.0MHz

A comb filter bank is made up of a number of crystal filter elements which are used to divide a particular frequency spectrum into discrete elements.

BAND-REJECT FILTERS
1.0MHz to 100.0MHz

A band reject filter is a narrow band device which will reject a single frequency from a spectrum of frequencies

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 Filters' possess this facility and can 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 customer's requirements. Our design engineers will be pleased to advise on the most suitable package for any particular application.