MONOLITHIC QUARTZ CRYSTAL FILTERS

Holder: A case housing a thin piece of quartz crystal with vacuum-evaporated metal electrodes and terminals for connections.

Nominal Frequency: Normally this refers to the nominal value of the center frequency given in the specifications, to which other frequencies may be referred. Nominal frequency usually indicates the Center Frequency (F_O) and Carrier Frequency (F_C).

Pass Bandwidth: The pass bandwidth in which the attenuation is equal to or less than a specified value insertion loss.

Stop Bandwidth: The stop bandwidth in which the attenuations are equal to or greater than specified values in the stop band attenuation.

Ripple: The ripple (in pass band) is the difference between the maximum and minimum attenuation within a passband.

Insertion Loss: The logarithmic ratio of the power delivered to the load impedance before insertion of the filter to the power delivered to the load impedance after insertion of the filter.

Attenuation Bandwidth: The frequency width at the value that assures the relative attenuation is of the same value or higher than the specified attenuation.

Attenuation Guaranteed: The maximum attenuation guaranteed at the specified frequency range.

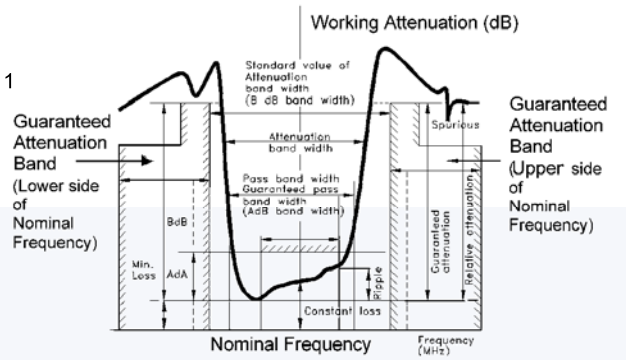
Termination Impedance: Either of the impedance presented to the filter by the source or by the load, and described the resistive portion (Rt) and the parallel capacitive portion (Ct) including stray capacitance.

Spurious Response: Minimum attenuation caused by extraordinary response in the stopband. Spurious response usually appears at a frequency higher than the center frequency.

Group Delay distortion: The difference between the maximum and minimum group delay within pass bandwidth unless otherwise specified.

Balanced Type and Unbalanced Type: A balanced type is one in which a pair of terminals is not connected to the case. An unbalanced type is one in which one of a pair of terminals is connected to the case.

Figure 1



NOTES: (1) AdB: Attenuation which specifies the band width.
(2) BdB: Attenuation which specifies the Attenuation Band Width.

CRYSTAL FILTERS TEST SET-UP

The termination impedance presented by the source or by the load is either represented by a resistor and a capacitor (capacitive type) or by a resistor and a "negative" capacitor (inductive type). For a capacitive type, specified value of capacitor as given in table can be used in the test circuit. For an inductive type ("negative capacitance"), a L-C network is required to compensate the negative capacitance.

TESTING CONFIGURATION

Two pole filters are cascaded to produce four, six, eight or more pole filter responses with the addition of coupling capacities between two pole sections.

Figure 2
4 Pole MCF

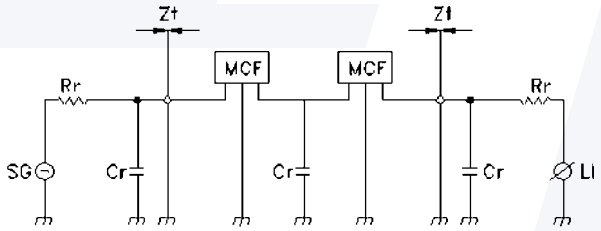
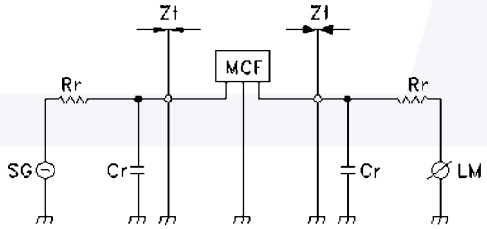


Figure 3
4 Pole MCF



APPLICATIONS

Crystal filters have high stability temperature characteristics and have narrow band, low loss and good attenuation bandwidth. Thay are widely used in mobile communications systems, mobile and cordless telephones, pagers and radios. Abracon will manufacture crystal filters per custom specifications, including termination impedance, pass band width and attenuation band width.

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