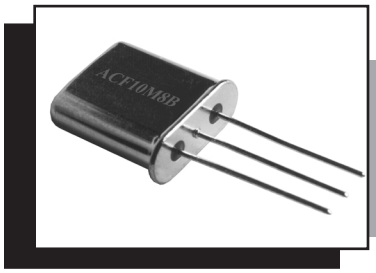


10.7 MHz

MONOLITHIC CRYSTAL FILTERS

ACF10M Series

FEATURES:

- Excellent Attenuation Bandwidth.
- Compact Design.

APPLICATIONS:

- Mobile Communication Systems.
- Cellular & Cordless Phones.
- Pagers.
- Radios.

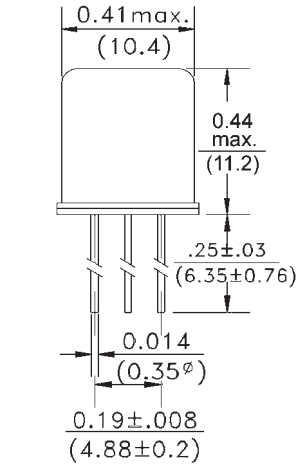
STANDARD SPECIFICATIONS

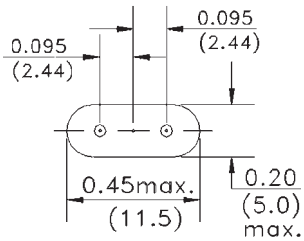
ABRACON PIN NO.	POLE	PASSBAND dB	PASSBAND kHz	STOPBAND dB	STOPBAND kHz	STOPBAND dB	STOPBAND kHz	RIPPLE dB	LOSS dB	TERMINATING IMPEDANCE*	PACKAGE CONF.
8 Series			**CHANNEL SPACING: 12.5 kHz**								
ACF10M 8A	2	3	± 3.75	20	±18.0			0.5	2.0	1800 // 5	HC49U3x1
ACF10M 8B	4	3	± 3.75	40	±14.0			1.0	2.5	1800 // 4.5	HC49U3x2
ACF10M 8C	6	3	± 3.75	45	± 8.75	65	±12.5	2.0	3.5	3300 // 2.0	L1
ACF10M 8D	8	3	± 3.75	65	± 8.75	90	±12.5	2.0	4.0	3300 // 2.0	L2
ACF10M 8E	10	6	± 3.75	75	± 8.75	90	±10.5	2.0	5.0	3300 // 2.0	L3
12 Series			**CHANNEL SPACING: 20.0 kHz**								
ACF10M 12A	2	3	± 6.0	20	±25.0			0.5	1.5	2500 // 2.5	HC49U3x1
ACF10M 12B	4	3	± 6.0	40	±20.0			1.0	2.5	2500 // 1.5	HC49U3x2
ACF10M 12C	6	3	± 6.0	45	±14.0	65	±20.0	2.0	3.5	2500 // 1.5	L1
ACF10M 12D	8	3	± 6.0	65	±14.0	90	±20.0	2.0	4.0	2500 // 1.5	L2
15 Series			**CHANNEL SPACING: 25.0 kHz**								
ACF10M 15A	2	3	± 7.5	18	±25.0			0.5	1.5	3000 // 2.0	HC49U3x1
ACF10M 15B	4	3	± 7.5	40	±25.0			1.0	2.5	3000 // 1.5	HC49U3x2
ACF10M 15C	6	3	± 7.5	45	±17.5	65	±25.0	2.0	3.0	3300 // 1.5	L1
ACF10M 15D	8	3	± 7.5	65	±17.5	90	±25.0	2.0	4.0	3300 // 1.5	L2
ACF10M 15E	10	6	± 7.5	75	±16.0	90	±18.0	2.0	5.0	3300 // 2.0	L3
30 Series			**CHANNEL SPACING: 50.0 kHz**								
ACF10M 30A	2	3	± 15.0	15	±50.0			0.5	1.5	5000 // 0	HC49U3x1
ACF10M 30B	4	3	± 15.0	30	±40.0			1.0	2.5	5500 // -1.0	HC49U3x2
ACF10M 30C	6	3	± 15.0	60	±45.0			2.0	3.0	5500 // -1.0	L1
ACF10M 30D	8	3	± 15.0	60	±30.0	80	±40.0	2.0	4.0	5500 // -1.0	L2

(*) Terminating Impedance = (Ω) // (pF) // (pF)

For test circuit, waveforms, and application notes, please see page 66.
Environmental and mechanical specifications on page 68, Group 1. Marking, see page 77.

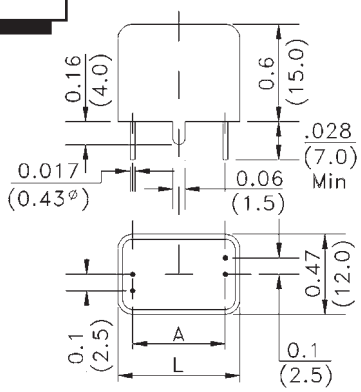
Operating Temperature: -20°C to + 70°C.





HC49U3
Package Configuration

Dimensions: Inches (mm)



PACKAGE CONFIGURATION

PACKAGE TITLE	A Inches	A (mm)	L Inches	L (mm)
L1	0.35	(9.0)	0.59	(15.0)
L2	0.53	(13.4)	0.73	(18.5)
L3	0.7	(17.8)	0.91	(23.0)

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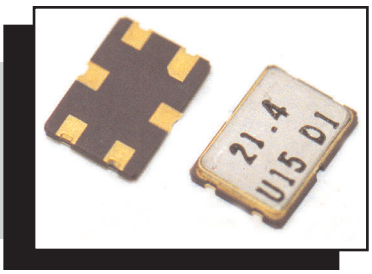
ABRACON IS ISO 9001 / QS 9000 CERTIFIED

21.4MHz

CERAMIC SURFACE-MOUNT MONOLITHIC CRYSTAL FILTERS

ASCF21U Series



FEATURES:

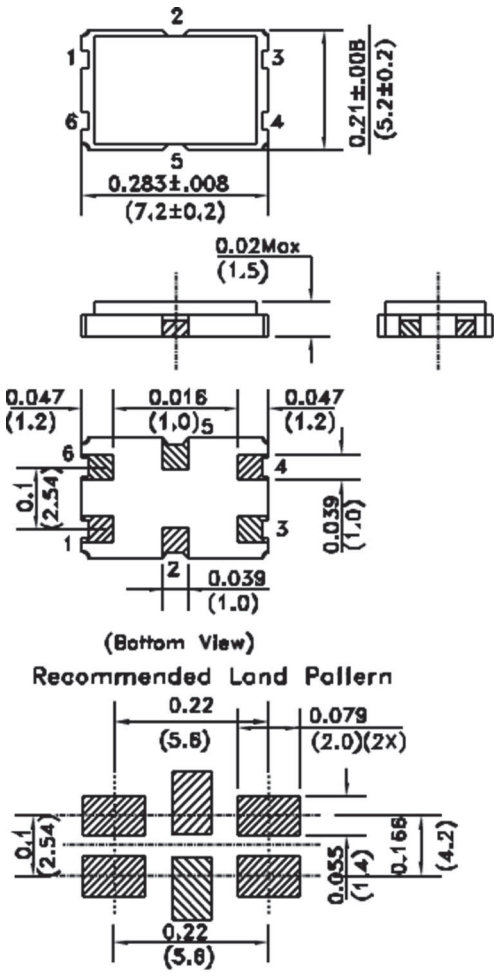
- Surface-Mount ceramic package.
- Excellent attenuation Bandwidth.
- Reflow capable.
- Low height (1.5mm max.).

APPLICATIONS:

- Mobile Communication Systems.
- Cellular & Cordless Phones.
- Pagers.
- Radios.

STANDARD SPECIFICATIONS

ABRACON PIN NO.	POLE	PASSBAND		STOPBAND		RIPPLE	LOSS	TERMINATING IMPEDANCE
		dB	kHz	dB	kHz	dB	dB	(W / pF)
ASCF21U8	2	3	±3.75	20	±18.0	1.0	2.0	(850 // 5.0)
ASCF21U15	2	3	±7.50	18	±25.0	1.0	2.0	(1500 // 1.0)
ASCF21U20	2	3	±10.00	10	±30.0	1.0	2.0	(1800 // 1.0)
ASCF21U30	2	3	±15.00	15	±45.0	1.0	2.0	(2000 // 1.5)



Environmental and mechanical specifications, Group 2.

We Manufacture to your Custom Specifications. Please Call for Details

Operating Temperature: -20°C to + 70°C.

PIN CONNECTIONS

PIN	FUNCTION
1	IN
2	GND
3	GND
4	OUT
5	GND
6	GND

Dimensions: Inches (mm)

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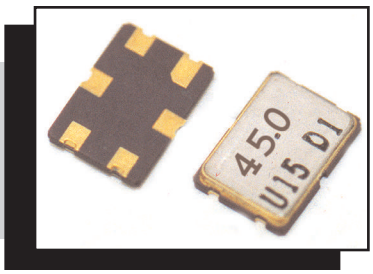
ABRACON® CORPORATION

45MHz Fundamental

CERAMIC SURFACE-MOUNT MONOLITHIC CRYSTAL FILTERS

ASCF45U Series



FEATURES:

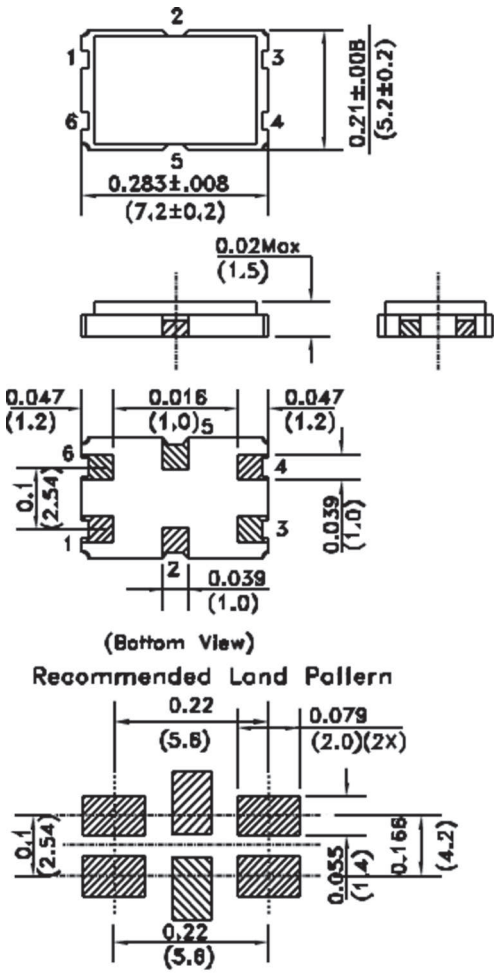
- Surface-Mount ceramic package.
- Excellent attenuation Bandwidth.
- Reflow capable.
- Low height (1.5mm max.).

APPLICATIONS:

- Mobile Communication Systems.
- Cellular & Cordless Phones.
- Pagers.
- Radios.

STANDARD SPECIFICATIONS

ABRACON PIN NO.	POLE	PASSBAND		STOPBAND		RIPPLE	LOSS	TERMINATING IMPEDANCE
		dB	kHz	dB	kHz	dB	dB	(W / pF)
ASCF45U8	2	3	± 3.75	20	±25.0	1.0	2.5	(650 // 3.5)
ASCF45U12	2	3	± 6.00	15	±20.0	1.0	2.5	(650 // 5.0)
ASCF45U15	2	3	± 7.50	15	±25.0	1.0	2.5	(650 // 3.5)
ASCF45U30	2	3	±15.00	15	±60.0	1.0	2.5	(1200 // -3.0)



Environmental and mechanical specifications, Group 2.

We Manufacture to your Custom Specifications. Please Call for Details

Operating Temperature: -20°C to + 70°C.

PIN CONNECTIONS

PIN	FUNCTION
1	IN
2	GND
3	GND
4	OUT
5	GND
6	GND

Dimensions: Inches (mm)

ABRACON IS ISO 9001 / QS 9000 CERTIFIED

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TECHNICAL TERMS • TESTS • APPLICATIONS

TECHNICAL TERMS

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.

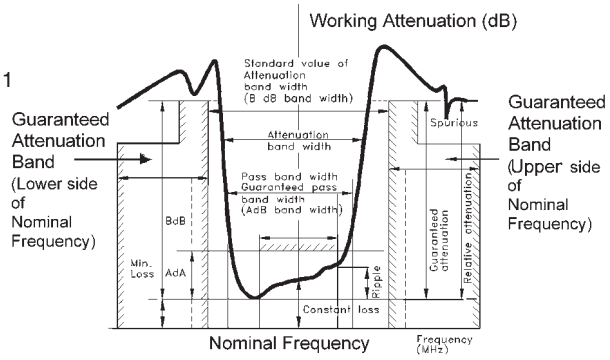
Termination Impedance: Either of the impedance presented to the filter by the source or by the load, and described the resistive portion (Rt) and the parallel capacitive portion (Ct) including stray capacitance.

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

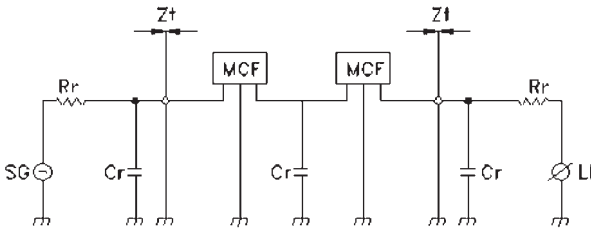
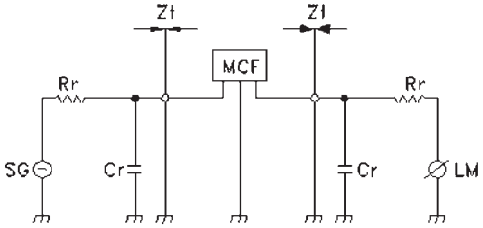


Figure 3
4 Pole MCF



APPLICATIONS

Crystal filters 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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