

## Monolithic Crystal Filters (MCFs)



Monolithic Crystal Filters (MCFs) are small, lightweight and exhibit excellent group delay characteristics, by using low impedance fundamental frequencies.

### 10.7MHz Series

ELECTRICAL CHARACTERISTICS									
Model Number	Center Frequency (MHz)	Number of Poles	Pass Band KHz/dB	Attenuation KHz/dB	Pass Band Ripple (dB)	Insertion Loss(dB)	Guaranteed Attenuation (dB)	Termination (kΩ//pF)	Package
10M7A	10.700	2	±3.75/3	±18/20	0.5	1.5	20	1.8//5	HC49U HC49T
10M8A	10.700	2	±4.0/3	±30/30	0.5	2.0	20	1.8//5	
10M10A	10.700	2	±5.0/3	±22.5/18	0.5	2.0	18	2.0	
10M15A	10.700	2	±7.5/3	±25/15	0.5	2.0	15	3.0/1	
10M20A	10.700	2	±10/3	±35/18	0.5	2.0	18	2.0 3.0	
10M30A	10.700	2	±15/3	±50/15	0.5	2.0	15	5.5//-1	
10M7B	10.700	4	±3.75/3	±14/40	1.0	2.5	40	1.8//4	HC49Ux2 HC49Tx2 M-A
10M8B	10.700	4	±4.0/3	±15/40	1.0	2.5	40	1.8//4	
10M10B	10.700	4	±5.0/3	±20/40	1.0	2.0	40	2.0	
10M15B	10.700	4	±7.5/3	±27/40	1.0	2.5	40	3.0//1.5	
10M20B	10.700	4	±10/3	±34/40	1.0	2.5	40	2.0 3.0	
10M25B	10.700	4	±12.5/3	±45/40	2.0	3.0	40	2.0	
10M30B	10.700	4	±15/3	±40/30	1.0	2.5	30	5.5//-1	M-3
10M7C	10.700	6	±3.75/3	±12.5/65	2.0	3.5	65	1.8//3.5	
10M15C	10.700	6	±7.5/3	±25/60	2.0	3.0	60	2.0	
10M15C1	10.700	6	±7.5/6	±23/60	2.0	3.0	60	3.0//1	
10M20C	10.700	6	±10/3	±35/60	2.0	3.0	65	3.0	
10M20C1	10.700	6	±10/6	±34/65	2.0	3.0	65	3.0	
10M25C	10.700	6	±12.5/3	±45/60	2.0	3.0	60	3.0	M-4
10M30C	10.700	6	±15/3	±45/65	2.0	3.0	65	5.5//-1	
10M15D	10.700	8	±7.5/3	±25/80	2.0	4.0	80	2.0	
10M15D1	10.700	8	±7.5/6	±20/80	2.0	4.0	80	3.0//1	

### 21.4MHz Series

ELECTRICAL CHARACTERISTICS									
Model Number	Center Frequency (MHz)	Number of Poles	Pass Band KHz/dB	Attenuation KHz/dB	Pass Band Ripple (dB)	Insertion Loss(dB)	Guaranteed Attenuation (dB)	Termination (kΩ//pF)	Package
21M7A	21.400	2	±3.75/3	±14/18	0.5	2.0	35	0.85//5	UM1 UM5
21M13A	21.400	2	±6.5/3	±23/15	0.5	2.0	35	1.2//3	
21M15A	21.400	2	±7.5/3	±25/18	0.5	2.0	35	1.5//3	
21M20A	21.400	2	±10/3	±25/10	1.0	2.0	35	1.8//1.5	
21M30A	21.400	2	±15/3	±45/15	2.0	2.0	35	1.8//1.5	
21M7B	21.400	4	±3.75/3	±14/40	1.0	2.5	50	0.85//5	UM1x2 UM5x2
21M13B	21.400	4	±6.5/3	±25/40	1.0	2.5	50	1.2//3	
21M15B	21.400	4	±7.5/3	±30/40	1.0	2.5	50	1.5//2	
21M20B	21.400	4	±10/3	±34/40	1.0	2.5	50	1.5	
21M30B	21.400	4	±15/3	±50/40	2.0	3.0	65	1.5	
21M15C	21.400	6	±7.5/3	±25/60	2.0	3.0	65	1.5	M-1
21M20C	21.400	6	±10/3	±32.5/60	2.0	3.0	65	1.5	
21M15D	21.400	8	±7.5/3	±20/80	2.0	3.0	80	1.5	M-2

## 45MHz Series

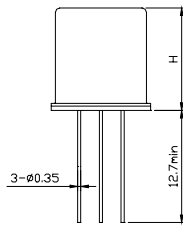
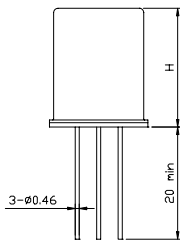
ELECTRICAL CHARACTERISTICS									
Model Number	Center Frequency (MHz)	Number of Poles	Pass Band KHz/dB	Attenuation KHz/dB	Pass Band Ripple (dB)	Insertion Loss(dB)	Guaranteed Attenuation (dB)	Termination (k $\Omega$ //pF)	Package
45M15A	45.000	2	$\pm 7.5/3$	$\pm 25/15$	1.0	2.5	35	0.8//2	UM1 UM5
45M20A	45.000	2	$\pm 10/3$	$\pm 34/15$	1.0	2.5	35	0.65//1.5	
45M30A	45.000	2	$\pm 15/3$	$\pm 50/15$	1.0	2.5	35	2.0	
45M50A	45.000	2	$\pm 25/3$	$\pm 100/15$	1.0	2.5	35	2.0	
45M15B	45.000	4	$\pm 7.5/3$	$\pm 25/30$	1.0	3.0	70	0.8//2	UM1x2 UM5x2
45M20B	45.000	4	$\pm 10/3$	$\pm 34/30$	1.0	3.0	70	0.65//1.5	
45M30B	45.000	4	$\pm 15/3$	$\pm 50/30$	1.0	3.0	70	2.0	
45M50B	45.000	4	$\pm 25/3$	$\pm 100/30$	1.0	3.0	70	2.0	

## Other Frequency Series

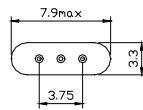
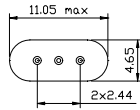
ELECTRICAL CHARACTERISTICS									
Model Number	Center Frequency (MHz)	Number of Poles	Pass Band KHz/dB	Attenuation KHz/dB	Pass Band Ripple (dB)	Insertion Loss(dB)	Guaranteed Attenuation (dB)	Termination (k $\Omega$ //pF)	Package
8M10A	8.192	2	$\pm 5/3$	$\pm 22/20$	0.5	1.5	20	2.0	HC49T
12M10A	12.800	2	$\pm 5/3$	$\pm 22/20$	0.5	1.5	15	1.2	
12M10B	12.800	4	$\pm 5/3$	$\pm 20/40$	1.0	2.0	35	1.2	HC49Tx2
14M20B	14.500	4	$\pm 10/3$	$\pm 35/40$	2.0	3.0	35	1.5	
16M20A	16.900	2	$\pm 10/3$	$\pm 35/18$	0.5	1.5	35	2.0	UM1 UM2
17M15A	17.900	2	$\pm 10/3$	$\pm 25/18$	0.5	1.5	35	2.0//2	
46M15A	46.300	2	$\pm 7.5/3$	$\pm 25/15$	1.0	2.5	35	0.47//5	UM-5x2
46M15B	46.300	4	$\pm 7.5/3$	$\pm 25/30$	1.0	3.0	65	0.47//5	
49M8A	49.875	2	$\pm 4/3$	$\pm 35/18$	1.5	2.0	35	0.5	HC49T
54M10A	54.900	2	$\pm 5/3$	$\pm 20/18$	1.5	2.0	35	1.0	UM1 UM5
64M10A	64.800	2	$\pm 5/3$	$\pm 20/18$	1.5	2.0	35	1.0	
69M7A	69.900	2	$\pm 3.75/3$	$\pm 16/18$	1.5	2.0	35	1.2	
70M15A	70.000	2	$\pm 7.5/3$	$\pm 30/15$	1.0	2.0	35	2.0	
70M20A	70.000	2	$\pm 10/3$	$\pm 40/15$	1.0	2.0	35	2.0	
70M30A	70.000	2	$\pm 15/3$	$\pm 50/15$	1.0	2.0	35	2.0	
70M15B	70.000	4	$\pm 7.5/3$	$\pm 30/25$	1.5	3.0	70	2.0	
70M20B	70.000	4	$\pm 10/3$	$\pm 40/35$	1.5	3.0	70	2.0	UM1x2 UM5x2
70M30B	70.000	4	$\pm 15/3$	$\pm 50/30$	1.5	3.0	70	2.0	
90M15A	90.000	2	<b><math>\pm 7.5/3</math></b>	<b><math>\pm 30/15</math></b>	<b>1.0</b>	<b>2.0</b>	<b>35</b>	<b>1.2</b>	UM1/UM5

- ◆ Operating temperature range of -20 to +70°C
- ◆ Most UM1/5 modes also available in HC49U/T
- ◆ Formed leads and jacket SM option available for UM1 and UM5
- ◆ The filters should NOT be exposed to temperature higher than 150°C
- ◆ For M series filters, hand solder is required. Use low melting point solder (lower than 160°C typical) on the leads, no more than 3 seconds
- ◆ Please consult VTC support for the other specifications not listed above.

PACKAGE OUTLINE DIMENSIONS (UNIT: MM)

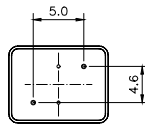
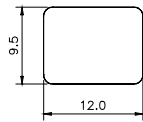
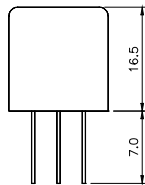
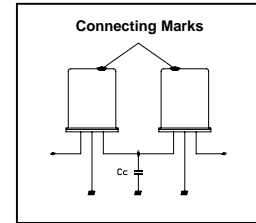


Package	Height
HC49U	13.5
HC49T	11.0
UM1	8.0
UM5	5.8

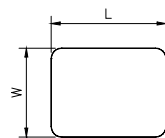
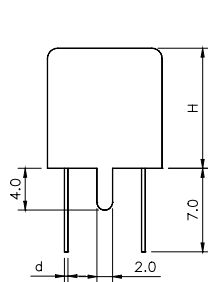


HC49U, HC49T

UM1, UM5



M-A



Tolerance:

L,W,H : ±0.5

A,B : ±0.25

d : ±0.1

Type	L	W	H	A	B	d
M-1B	8.5	8.5	11.5	5.2	2.0	0.35
M-1	11.0	8.5	11.5	7.4	2.0	0.35
M-2	13.4	8.5	11.5	9.8	2.0	0.35
M-3	15.0	12.0	15.0	9.0	2.5	0.42
M-4	18.5	12	15	13.4	2.5	0.42
M-5	23	12	15	17.8	2.5	0.42
M-6	28	12	15	22.2	2.5	0.42

