Monolithic Crystal Filter

ECS's Monolithic Crystal Filters have very high Q's and excellent temperature and aging characteristics. These filters offer narrow and intermediate bandwidths. The monolithic crystal filter is smaller and more cost effective than a discrete crystal filter. With the addition of coupling capacitors between two-pole sections. They can be cascaded to produce four, six, and eight (or more) pole filter responses.

Request a Sample

ELECTRICAL CHARACTERISTICS (10.7 and 21.4 MHz)

MCF Series



- High stability for wide temperature ranges
- Sharp cut-off
- RoHS Compliant (Pb Free)

For 12.5 KHz Channel Spacing (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-10.7-7.5A	10.7	2	±3.75	0.5	1.5	20 ±18		35 +300 ~ +1000 50 -200 ~ -1000	1800//5.0	HC-49/U
ECS-10.7-7.5B	10.7	4	±3.75	1.0	2.5	40 ±14		65 +300 ~ +1000 80 -200 ~ -1000	1800//4.0	HC-49/U x 2
ECS-10.7-7.5C	10.7	6	±3.75	2.0	3.5	45 ±8.75	65 ±12.5	65 ±12.5 ~ ±300	1800//3.5	SC-3
ECS-10.7-7.5D	10.7	8	±3.75	2.0	4.0	65 ±8.75	90 ±12.5	90 ±12.5 ~ ±300	1800//3.5	SC-4
ECS-21K7.5A	21.4	2	±3.75	0.5	2.0	18 ±12.5		75 -910	1500//6.0	UM-1
ECS-21K7.5B	21.4	4	±3.75	1.0	2.5	35 ±12.5		90 ±910	850//5.0	UM-1 x 2
ECS-21K7.5C	21.4	6	±3.75	2.0	3.0	45 ±8.75	65 ±12.5	65 ±12.5 ~ ±300	850//5.0	SC-1
ECS-21K7.5D	21.4	8	±3.75	2.0	4.0	65 ±9	90 ±12.5	90 ±12.5 ~ ±300	850//5.0	SC-1

For 20 KHz Channel Spacing (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-10.7-12A	10.7	2	±6.0	0.5	2.0	18 ±23		35 +300 ~ +1000 40 -200 ~ -1000	2500//2.5	HC-49/U
ECS-10.7-12B	10.7	4	±6.0	1.0	2.5	40 ±20		65 +300 ~ +1000 80 -200 ~ -1000	2500//1.5	HC-49/U x 2
ECS-10.7-12C	10.7	6	±6.0	2.0	3.0	45 ±14	60 ±20	65 ±20 ~ ±300	2800//1.0	SC-3
ECS-10.7-12D	10.7	8	±6.0	2.0	4.0	65 ±14	90 ±20	90 ±20 ~ ±300	2800//1.0	SC-4
ECS-21K12A	21.4	2	±6.0	0.5	2.0	18 ±23		35 +350 ~ +1000 50 -200 ~ -1000	1200//3.0	UM-1
ECS-21K12B	21.4	4	±6.0	1.0	2.5	40 ±20		65 +350 ~ +1000 70 -200 ~ -1000	1200//2.5	UM-1 x 2
ECS-21K12C	21.4	6	±6.0	2.0	3.0	45 ±14	65 ±20	65 ±20 ~ ±300	1200//2.5	SC-1
ECS-21K12D	21.4	8	±6.0	2.0	4.0	65 ±14	90 ±20	90 ±20 ~ ±300	1200//2.5	SC-1

For 25 KHz Channel Spacing (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-10.7-15A	10.7	2	±7.5	0.5	2.0	18 ±25		35 +300 ~ +1000 40 -200 ~ -1000	3000//2.0	HC-49/U
ECS-10.7-15B	10.7	4	±7.5	1.0	2.5	40 ±25		55 +300 ~ +1000 80 -200 ~ -1000	3000//2.0	HC-49/U x 2
ECS-10.7-15C	10.7	6	±7.5	2.0	3.0	45 ±17.5	65 ±25	65 ±25 ~ ±300	3000//1.5	SC-3
ECS-10.7-15D	10.7	8	±7.5	2.0	4.0	70 ±17.5	90 ±25	90 ±25 ~ ±300	3000//1.5	SC-4
ECS-21K15A	21.4	2	±7.5	0.5	1.5	18 ±25		35 +350 ~ +1000 50 -200 ~ -1000	1500//3.0	UM-1
ECS-21K15B	21.4	4	±7.5	1.0	2.0	40 ±25		65 +350 ~ +1000 80 -200 ~ -1000	1500//2.0	UM-1 x 2
ECS-21K15C	21.4	6	±7.5	2.0	2.5	45 ±17.5	65 ±25	65 ±25 ~ ±300	1500//2.0	SC-1
ECS-21K15D	21.4	8	±7.5	2.0	3.0	65 ±17.5	90 ±25	90 ±25 ~ ±300	1500//2.0	SC-1

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For 50 KHz Channel Spacing (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-10.7-30A	10.7	2	±15	0.5	1.5	15 ±50		30 +300 ~ +1000 40 -300 ~ -1000	5000//0	HC-49/U
ECS-10.7-30B	10.7	4	±15	1.0	2.5	30 ±40		30 ±40 ~ ±300	5500//-1.0	HC-49/U x 2
ECS-10.7-30C	10.7	6	±15	2.0	3.0	60 ±45		60 ±45 ~ ±300	5500//-1.0	SC-3
ECS-10.7-30D	10.7	8	±15	2.0	3.5	70 ±40	90 ±50	90 ±50 ~ ±300	5500//-1.0	SC-4
ECS-21K30A	21.4	2	±15	0.5	1.5	15 ±45		35 +350 ~ +1000 45 -300 ~ -1000	1500//1.0	UM-1
ECS-21K30B	21.4	4	±15	1.0	2.0	40 ±50		65 +350 ~ +1000 80 -250 ~ -1000	1800//0.5	UM-1 x 2
ECS-21K30C	21.4	6	±15	2.0	2.5	45 ±35	65 ±50	65 ±50 ~ ±300	2200//0.5	SC-1
ECS-21K30D	21.4	8	±15	2.0	3.5	70 ±35	90 ±50	90 ±50 ~ ±300	2200//0.5	SC-1

45 MHz Monolithic Crystal Filters (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-45K7.5A	45.0	2	±3.75	1.0	2.0	10 ±12.5		65 -910	350//10.5	UM-1
ECS-45K7.5B	45.0	4	±3.75	1.0	4.0	30 ±12.5		80 ±910	350//6.5	UM-1 x 2
ECS-45K15A	45.0	2	±7.5	1.0	2.0	15 ±25		70 -910	650//5.0	UM-1
ECS-45K15B	45.0	4	±7.5	1.0	3.0	30 ±25		80 ±910	650//3.0	UM-1 x 2
ECS-45K20A	45.0	2	±10	0.5	2.0	15 ±30		65 -910	910//2.5	UM-1
ECS-45K20B	45.0	4	±10	1.0	3.0	35 ±40		80 ±910	910//2.5	UM-1 x 2
ECS-45K30A	45.0	2	±15	1.0	2.0	15 ±50		70 -910	1200//1.5	UM-1
ECS-45K30B	45.0	4	±15	1.0	3.0	35 ±50		80 ±910	1200//0.7	UM-1 x 2

55 MHz Monolithic Crystal Filters (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-55K15A	55.0	2	±7.5	1.0	2.0	15 ±25		70 -910	600//3.0	UM-1
ECS-55K15B	55.0	4	±7.5	1.0	3.0	30 ±25		80 -910	500//3.5	UM-1 x 2
ECS-55K20A	55.0	2	±10	1.0	2.0	15 ±30		75 -910	910//2.5	UM-1
ECS-55K20B	55.0	4	±10	1.0	3.0	25 ±25		90 ±910	910//1.0	UM-1 x 2
ECS-55K30A	55.0	2	±15	1.0	2.0	15 ±50		70 -910	1200//1.5	UM-1
ECS-55K30B	55.0	4	±15	1.0	3.0	30 ±50		80 -910	550//1.3	UM-1 x 2
ECS-55K32A	55.0	2	±16	0.5	2.5	4 ±29.5		65 -910	1250//1.3	UM-1
ECS-55K32B	55.0	4	±16	1.0	5.0	30 ±52		80 ±910	1250//0.5	UM-1 x 2

70 & 90 MHz Monolithic Crystal Filters (Operating Temperature -20 ~ +70°C)

Model	Normal Freq. (fo) (MHz)	Number of Poles	Passband 3Db Min. (KHz)	Ripple Max. (dB)	Insertion Loss Max. (dB)	Stopband Max. (dB) (KHz)	Stopband Max. (dB) (KHz)	Guaranteed Attenuation (dB) (fo ±KHz)	Terminating Impedance (Ohms/pF)	Case
ECS-70K15A	70.0	2	±7.5	1.0	2.5	15 ±25		35 -910	2000//-1.0	UM-1
ECS-70K15B	70.0	4	±7.5	1.0	4.0	40 ±35		70 ±910	2000//-1.0	UM-1 x 2
ECS-70K20A	70.0	2	±10	1.0	2.5	15 ±28		35 -910	2500//-1.0	UM-1
ECS-70K20B	70.0	4	±10	1.0	4.0	35 ±40		70 ±910	2500//-1.0	UM-1 x 2
ECS-90M20A	90.0	2	±10	1.0	2.5	15 ±30		35 -910	2500//-1.0	UM-1
ECS-90M20B	90.0	4	±10	1.0	4.0	30 ±30		70 ±910	2500//-1.0	UM-1 x 2

Package Dimensions and Electrical Diagrams (mm)

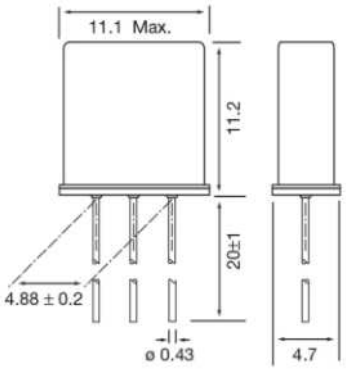


Figure 1) *HC-49/U*

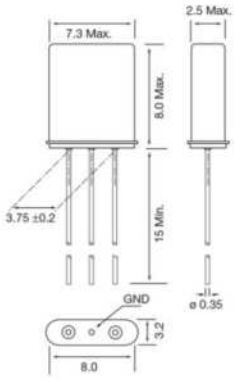


Figure 2) *UM-1*

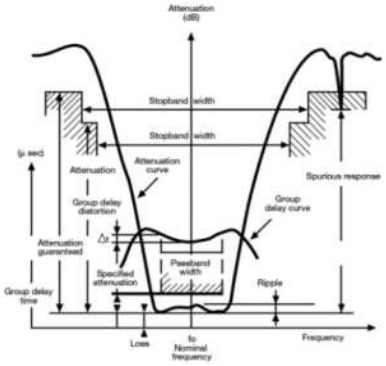
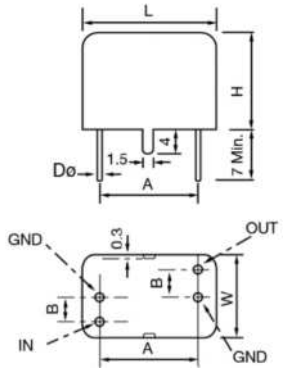


Figure 3) *MCF Characteristics Curve*



Case	Dimensions (mm)					
	L	W	H	A	B	D
SC-1	11	8.5	11.5	7.4	2.0	0.30
SC-2	13.4	8.5	11.5	9.8	2.0	0.30
SC-3	15	12.0	15.0	9.0	2.5	0.43
SC-4	18.5	12.0	15.0	13.4	2.5	0.43

Figure 4) *SC Package with Dimensional Chart*

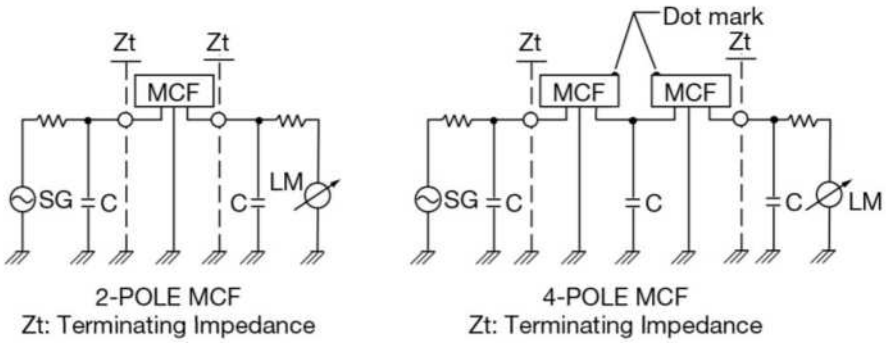


Figure 5) *MCF Test Circuits*