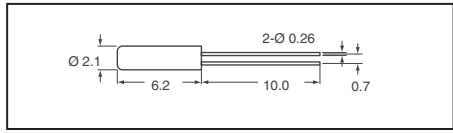




Quartz Crystals — ECS-31 Series

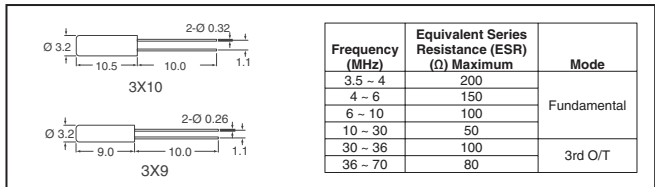
**Specifications:**  
 • Frequency Tolerance: ±30ppm @ 25°C • Temperature Coefficient: 0.034ppm/°C • Operating Temperature: -10°C - 60°C • Storage Temperature: -40°C - 85°C • Equivalent Series Resistance (ESR): 30kΩ - 50kΩ Maximum • Shunt Capacitance: 3pF - 1.7pF • Drive Level: 1µW Maximum • Insulation Resistance: 500MΩ Minimum/DC 100V ±15V • Aging (First Year): ±5ppm Maximum @ 25°C ±3°C



Frequency (kHz)	Load Capacitance	Digi-Key Part No.	Price Each				ECS Part No.
			1	10	100	500	
<b>ECS-31</b>							
32.000	12.5pF	XC972-ND	.66	.60	.48	.43	ECS-320-12.5-13
40.000	12.5pF	XC973-ND	.66	.60	.48	.43	ECS-400-12.5-13
60.000	12.5pF	XC974-ND	.66	.60	.48	.43	ECS-600-12.5-13
65.536	12.5pF	XC975-ND	.66	.60	.48	.43	ECS-655-12.5-13
75.000	12.5pF	XC976-ND	.66	.60	.48	.43	ECS-750-12.5-13
100.000	12.5pF	XC977-ND	.66	.60	.48	.43	ECS-1.00-12.5-13
125.000	12.5pF	XC999-ND	.66	.60	.48	.43	ECS-1.25-12.5-13
153.600	12.5pF	XC978-ND	.66	.60	.48	.43	ECS-1.536-12.5-13
<b>ECS-31X — RoHS Compliant</b>							
32.000	12.5pF	XC1392-ND	.66	.60	.48	.43	ECS-320-12.5-13X
65.536	12.5pF	XC1393-ND	.66	.60	.48	.43	ECS-655-12.5-13X
100.000	12.5pF	XC1394-ND	.66	.60	.48	.43	ECS-1.00-12.5-13X
153.600	12.5pF	XC1395-ND	.66	.60	.48	.43	ECS-1.536-12.5-13X

Quartz Crystals — High Frequency Miniature

**Specifications:**  
 • Frequency Tolerance: ±50ppm @ 25°C and over Operating Temperature • Operating Temperature: -10°C - 60°C • Storage Temperature: -40°C - 85°C • Load Capacitance: 18.0pF • Shunt Capacitance: 5pF Maximum • Drive Level: 50µW - 100µW • Insulation Resistance: 500MΩ Minimum/DC 100V ±5 • Aging (First Year): ±5ppm Maximum @ 25°C ±3°C



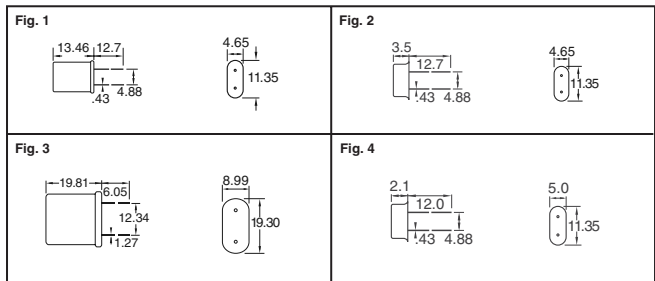
Frequency (MHz)	Equivalent Series Resistance (ESR) (Ω) Maximum	Mode
3.5 - 4	200	Fundamental
4 - 6	150	
6 - 10	100	
10 - 30	50	
30 - 36	100	3rd O/T
36 - 70	80	

Frequency (MHz)	Digi-Key Part No.	Price Each				ECS Part No.
		1	10	100	500	
<b>ECS-3X10</b>						
3.579545	XC944-ND	.58	.53	.42	.38	ECS-35-18-10
3.686400	XC945-ND	.58	.53	.42	.38	ECS-36-18-10
4.000000	XC946-ND	.58	.53	.42	.38	ECS-40-18-10
4.915200	XC947-ND	.58	.53	.42	.38	ECS-49-18-10
6.000000	XC948-ND	.58	.53	.42	.38	ECS-60-18-10
7.372810	XC949-ND	.58	.53	.42	.38	ECS-73-18-10
8.000000	XC950-ND	.58	.53	.42	.38	ECS-80-18-10
<b>ECS-3X10X — RoHS Compliant</b>						
3.579545	XC1371-ND	.58	.53	.42	.38	ECS-35-18-10X
3.686400	XC1372-ND	.58	.53	.42	.38	ECS-36-18-10X
4.000000	XC1373-ND	.58	.53	.42	.38	ECS-40-18-10X
4.915200	XC1374-ND	.58	.53	.42	.38	ECS-49-18-10X
6.000000	XC1375-ND	.58	.53	.42	.38	ECS-60-18-10X
7.372800	XC1376-ND	.58	.53	.42	.38	ECS-73-18-10X
8.000000	XC1377-ND	.58	.53	.42	.38	ECS-80-18-10X

Frequency (MHz)	Digi-Key Part No.	Price Each				ECS Part No.
		1	10	100	500	
<b>ECS-3X9</b>						
8.192000	XC951-ND	.58	.53	.42	.38	ECS-81.92-18-9
9.830400	XC952-ND	.58	.53	.42	.38	ECS-98.3-18-9
10.000000	XC953-ND	.58	.53	.42	.38	ECS-100-18-9
11.059200	XC954-ND	.58	.53	.42	.38	ECS-110.5-18-9
12.000000	XC955-ND	.58	.53	.42	.38	ECS-120-18-9
14.318180	XC956-ND	.58	.53	.42	.38	ECS-143-18-9
14.745600	XC957-ND	.58	.53	.42	.38	ECS-147.4-18-9
16.000000	XC958-ND	.58	.53	.42	.38	ECS-160-18-9
18.432000	XC959-ND	.58	.53	.42	.38	ECS-184-18-9
19.660800	XC960-ND	.58	.53	.42	.38	ECS-196.6-18-9
20.000000	XC961-ND	.58	.53	.42	.38	ECS-200-18-9
24.000000	XC962-ND	.58	.53	.42	.38	ECS-240-18-9
24.576000	XC963-ND	.58	.53	.42	.38	ECS-245.7-18-9
25.000000	XC964-ND	.58	.53	.42	.38	ECS-250-18-9
27.000000	XC965-ND	.58	.53	.42	.38	ECS-270-18-9
32.000000	XC966-ND	.58	.53	.42	.38	ECS-320-18-9-F
32.768000	XC967-ND	.58	.53	.42	.38	ECS-327-18-9-F
40.000000	XC968-ND	.58	.53	.42	.38	ECS-400-18-10-30T
50.000000	XC969-ND	.58	.53	.42	.38	ECS-500-18-9-30T
<b>ECS-3X9X — RoHS Compliant</b>						
10.000000	XC1378-ND	.58	.53	.42	.38	ECS-100-18-9X
11.059200	XC1379-ND	.58	.53	.42	.38	ECS-110.5-18-9X
12.000000	XC1380-ND	.58	.53	.42	.38	ECS-120-18-9X
14.318180	XC1381-ND	.58	.53	.42	.38	ECS-143-18-9X
14.745600	XC1382-ND	.58	.53	.42	.38	ECS-147.4-18-9X
16.000000	XC1383-ND	.58	.53	.42	.38	ECS-160-18-9X
18.432000	XC1384-ND	.58	.53	.42	.38	ECS-184-18-9X
20.000000	XC1386-ND	.58	.53	.42	.38	ECS-200-18-9X
24.576000	XC1387-ND	.58	.53	.42	.38	ECS-245.7-18-9X
25.000000	XC1388-ND	.58	.53	.42	.38	ECS-250-18-9X
27.000000	XC1389-ND	.58	.53	.42	.38	ECS-270-18-9X
32.000000	XC1390-ND	.58	.53	.42	.38	ECS-320-18-9X-F



Through-Hole Quartz Crystals



Series	Frequency Tolerance @ 25°C ppm	Frequency Stability Over Op. Temp. Range ppm	Operating Temp. Range	Package Height (mm)
HC-49U	±30	±50	-10°C - 70°C	13.46
HC-49UX	±30	±50	-10°C - 70°C	13.46
HC-49US	±30	±50	-10°C - 70°C	3.5
HC-49USX	±30	±50	-10°C - 70°C	3.5
HC-49USX-EN	±30	±50	-40°C - 85°C	3.5
HC-49US-DN	±30	±100	-40°C - 85°C	3.5
HC-49US-DN	±30	±100	-40°C - 85°C	3.5
HC-49USSX	±30	±50	-10°C - 70°C	2.1

HC49INS-ND Base Insulator — RoHS Compliant ..... .72/10 6.01/100

Fig.	Frequency (MHz)	Load Capacitance	Digi-Key Part No.	Price Each				ECS Part No.
				1	10	100	500	
<b>HC-49U</b>								
1	1.000000	13pF	X066B-ND‡	14.32	11.90	6.48	6.04	ECS-10-13-1H
	1.843200	Series	X002-ND	1.56	1.30	1.04	.80	ECS-18-S-1
	1.843200	13pF	X067-ND	1.56	1.30	1.04	.80	ECS-18-13-1
	2.000000	Series	X004-ND	1.56	1.30	1.04	.80	ECS-20-S-1
	2.000000	20pF	X068-ND	1.56	1.30	1.04	.80	ECS-20-20-1
	2.048000	12pF	X098-ND	1.56	1.30	1.04	.80	ECS-20.48-12-1
	2.457600	32pF	X069-ND	1.31	1.09	.87	.67	ECS-24-32-1
	2.500000	Series	X070-ND	1.31	1.09	.87	.67	ECS-25-S-1
	3.000000	Series	X009-ND	1.31	1.09	.87	.67	ECS-30-S-1
	3.276800	17pF	X022-ND	.52	.44	.35	.27	ECS-32-17-1
	3.579550	Series	X011-ND	.32	.29	.26	.23	ECS-35-S-1
	3.579550	17pF	X049-ND	.32	.29	.26	.23	ECS-35-17-1
	3.686400	Series	X080-ND	.32	.29	.26	.23	ECS-36-S-1
	3.686400	18pF	X071-ND	.32	.29	.26	.23	ECS-36-18-1
	3.932160	17pF	X013-ND	.32	.29	.26	.23	ECS-39-17-1
	4.000000	Series	X081-ND	.32	.29	.26	.23	ECS-40-S-1
	4.000000	20pF	X006-ND	.32	.29	.26	.23	ECS-40-20-1
	4.032000	Series	X015-ND	.32	.29	.26	.23	ECS-40.3-S-1
	4.032000	20pF	X072-ND	.32	.29	.26	.23	ECS-40.3-20-1

Fig.	Frequency (MHz)	Load Capacitance	Digi-Key Part No.	Price Each				ECS Part No.
				1	10	100	500	
1	4.096000	20pF	X082-ND	.32	.29	.26	.23	ECS-41-20-1
	4.194300	12pF	X007-ND	.32	.29	.26	.23	ECS-42-12-1
	4.433620	20pF	X083-ND	.32	.29	.26	.23	ECS-44-20-1
	4.915200	Series	X050-ND	.32	.29	.26	.23	ECS-49-S-1
	4.915200	20pF	X084-ND	.32	.29	.26	.23	ECS-49-20-1
	5.000000	Series	X099-ND	.32	.29	.26	.23	ECS-50-S-1
	5.000000	20pF	X051-ND	.32	.29	.26	.23	ECS-50-20-1
	5.068000	Series	X052-ND	.32	.29	.26	.23	ECS-51-S-1
	5.068000	20pF	X085-ND	.32	.29	.26	.23	ECS-51-20-1
	5.185000	Series	X053-ND	.32	.29	.26	.23	ECS-52-S-1
	5.185000	32pF	X016-ND	.32	.29	.26	.23	ECS-52-32-1
	5.990400	Series	X073-ND	.32	.29	.26	.23	ECS-59-S-1
	5.990400	20pF	X017-ND	.32	.29	.26	.23	ECS-59.9-20-1
	6.000000	Series	X026-ND	.32	.29	.26	.23	ECS-60-S-1
	6.000000	32pF	X086-ND	.32	.29	.26	.23	ECS-60-32-1
	6.144000	32pF	X054-ND	.32	.29	.26	.23	ECS-61-32-1
	6.553600	12pF	X018-ND	.32	.29	.26	.23	ECS-65-12-1
	7.372800	Series	X074-ND	.32	.29	.26	.23	ECS-73-S-1
7.372800	20pF	X019-ND	.32	.29	.26	.23	ECS-73-20-1	

‡ 1.0 Frequency: 100ppm @ 25°C; ±100ppm from 0°C - 60°C † 3rd Overtone (Continued)

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