



**THE DATASHEET OF
ECS-110.5-20-4X-EN**



The HC-49USX is the low profile resistance weld type Thru Hole quartz crystal.

HC-49USX QUARTZ CRYSTAL

Request a Sample

HC-49USX QUARTZ CRYSTAL

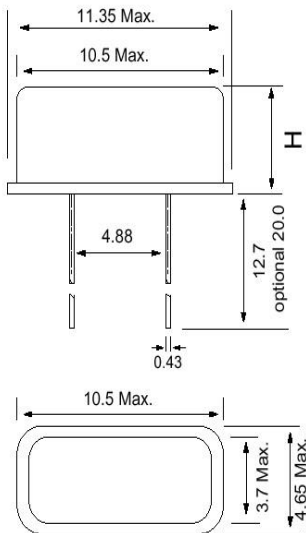


- Cost Effective
- Low Profile
- Pb Free/RoHS Compliant
- MSL 1

OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	HC-49USX			UNITS
		MIN	TYP	MAX	
Frequency	Fo	3.570		70.000	MHz
Frequency Tolerance*	@ +25°C			± 30	ppm
Frequency Stability*	-10 ~ +70°C			± 50	ppm
Shunt Capacitance	Co			7	pF
Load Capacitance	Specify in P/N	10	20	Series	pF
Drive Level	DL			500	μW
Operating Temperature*	Topr	-10		+70	°C
Storage Temperature	Tstg	-55		+125	°C
Aging (First Year)	@ +25°C ±3°C			±5	ppm

DIMENSIONS (mm)



Height "H" MAX	
-4X	3.5 mm
-4LX	2.5 mm

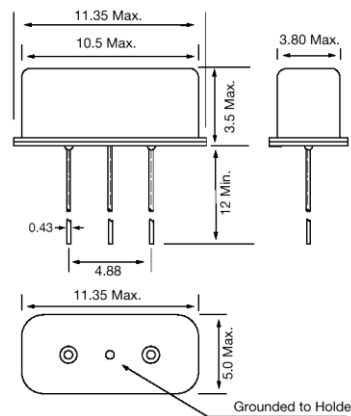


Figure 1) Side and Bottom

Frequency (MHz)	ESR Ω Max.	Mode of Osc.
3.570 ~ 3.999	200	Fundamental
4.000 ~ 4.999	150	Fundamental
5.000 ~ 5.999	120	Fundamental
6.000 ~ 6.999	100	Fundamental
7.000 ~ 8.999	80	Fundamental
9.000 ~ 12.999	60	Fundamental
13.000 ~ 19.999	40	Fundamental
20.000 ~ 30.000	30	Fundamental
27.000 ~ 70.000	100	3 rd Overtone

Figure 2) HC-49USX (-4X-3IL) 3rd In Line Lead Base, Side, and End View

PART NUMBERING GUIDE: Example ECS-200-20-4X

ECS - FREQUENCY ABBREVIATION	LOAD CAPACITANCE	PACKAGE	AVAILABLE OPTIONS			PACKAGING	
			Tolerance	Stability	Temp Range		
ECS	200 = 20.000 MHz See P/N Guide	20 = 20 pF S = Series	4X = 3.5 mm 4LX = 2.5 mm 4X-3IL = 3 rd In Line Lead Base	Blank = Std A = ± 25 ppm J = ± 20 ppm R = ± 15 ppm C = ± 10 ppm	Blank = Std D = ± 100 ppm E = ± 50 ppm G = ± 30 ppm H = ± 25 ppm T = ± 20 ppm † W = ± 15 ppm † K = ± 10 ppm †	Blank = Std L = -10 ~ +70°C M = -20 ~ +70°C Y = -30 ~ +85°C N = -40 ~ +85°C P = -40 ~ +105°C S = -40 ~ +125°C U = -55 ~ +125°C	Bulk

* Specify available options in P/N.

† Contact ECS for availability over extended temp range.

Rev.2017

SOLDER PROFILE
Peak solder Temp +260°C Max 10 sec Max.
2 Cycles Max.
MSL 1, Lead Finish Sn/Cu Matte

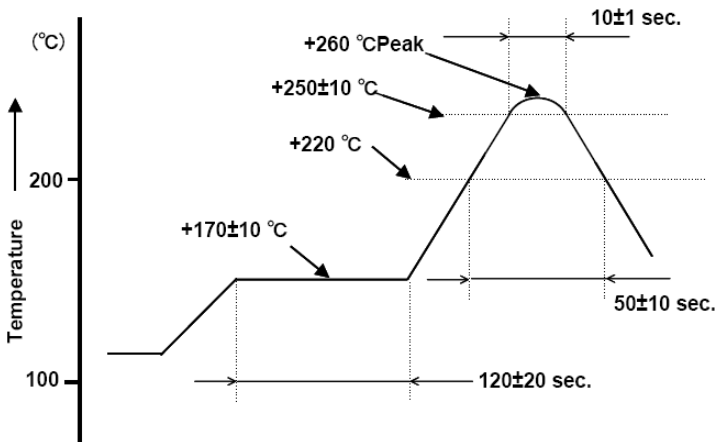



Figure 1) Suggested Solder Profile

DEVELOPED FREQUENCIES			
Abbreviation	Frequency (MHZ)	Abbreviation	Frequency (MHZ)
035	3.579545	120	12.000
036	3.6864	122.8	12.288
040	4.000	129.6	12.960
040.3	4.032	135	13.5168
041	4.096	143	14.31818
042	4.194034	147.4	14.7456
044	4.433618	150	15.000
049	4.9152	153	15.360
050	5.000	160	16.000
051	5.0688	163.8	16.384
060	6.000	177.3	17.734475
061	6.144	180	18.000
065	6.500	184	18.432
073	7.3728	196.6	19.6608
076.8	7.680	200	20.000
080	8.000	220	22.000
085	8.500	221	22.1184
090	9.000	240	24.000
092.1	9.216	245.7	24.576
098.3	9.8304	250	25.000
100	10.000	270	27.000
102.4	10.240	282.24	28.224
107.3	10.738635	286.3	28.63636
110	11.000	320	32.000
110.5	11.0592	400	40.000
115.2	11.520	480	48.000
119.8	11.98135	500	50.000

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