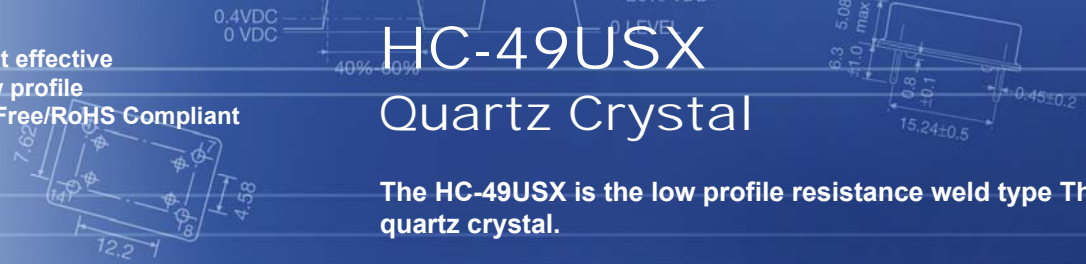


- ▶ Cost effective
- ▶ Low profile
- ▶ Pb Free/RoHS Compliant

# HC-49USX Quartz Crystal

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



## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	HC-49USX			UNITS
		MIN	TYP	MAX	
Frequency Range	$f_0$	3.57		70.000	MHz
Frequency Tolerance	at +25°C			± 30	ppm
Frequency Stability ref @ 25°C	Standard -10 to +70°C			± 50	ppm
Shunt Capacitance	$C_0$			7	pF
Load Capacitance (CL)	Specify in P/N	10	20	Series	pF
Drive Level				500	µW
Operating Temperature	Standard	-10		+70	°C
Storage Temperature		-55		+125	°C
Aging (First Year)	@ +25°C ±3°C			±5	ppm

## EQUIVALENT SERIES RESISTANCE/MODE OF OSCILLATION

FREQUENCY RANGE (MHz)	MODE OF OSC	MAX ESR Ω	FREQUENCY RANGE (MHz)	MODE OF OSC	MAX ESR Ω
3.57 ~ 3.999	Fundamental	200	9.000 ~ 12.999	Fundamental	60
4.000 ~ 4.999	Fundamental	150	13.000 ~ 19.999	Fundamental	40
5.000 ~ 5.999	Fundamental	120	20.000 ~ 30.000	Fundamental	30
6.000 ~ 6.999	Fundamental	100	27.000 ~ 70.000	3rd Overtone	100
7.000 ~ 8.999	Fundamental	80			

## PACKAGE DIMENSIONS (mm)

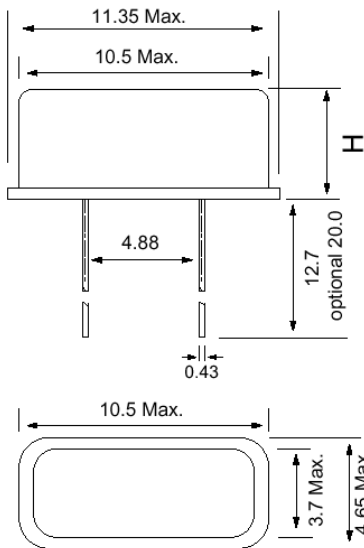


Figure 1) Side and Top views

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

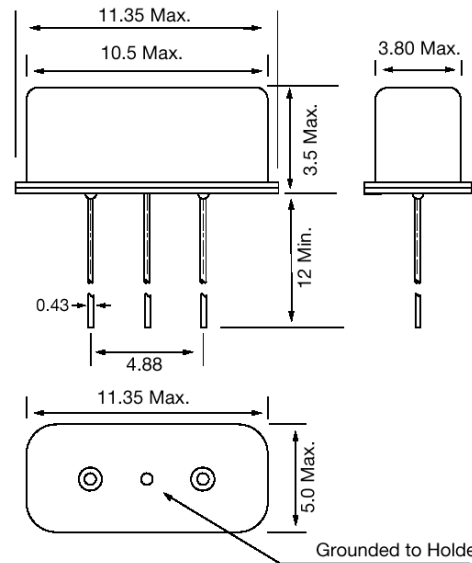


Figure 2) HC-49USX (-4X-3IL) 3rd In Line Lead Base Side, Bottom and End View.

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

ECS - Frequency Abbreviation - Load Capacitance - Package

200 = 20.000 MHz  
See P/N Guide

20 = 20 pF  
S=Series

4X = 3.5 mm  
4LX = 2.5 mm  
4X-3IL = 3rd  
In Line Lead Base

## Custom Options

Tolerance

A= ±25 ppm  
C= ±10 ppm

Stability

D= ±100 ppm  
E= ±50 ppm  
G= ±30 ppm  
H= ±25 ppm  
K= ±10 ppm

Temp Range

L= -10 ~ +70°C  
M= -20 ~ +70°C  
N= -40 ~ +85°C  
P= -40 ~ +105°C  
S= -40 ~ +125°C  
U= -55 ~ +125°C