

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



# HC-46X Quartz Crystal

The HC-46X is the miniature low profile resistance weld type Thru Hole quartz crystal. Reduces footprint of HC-49USX by 50%.



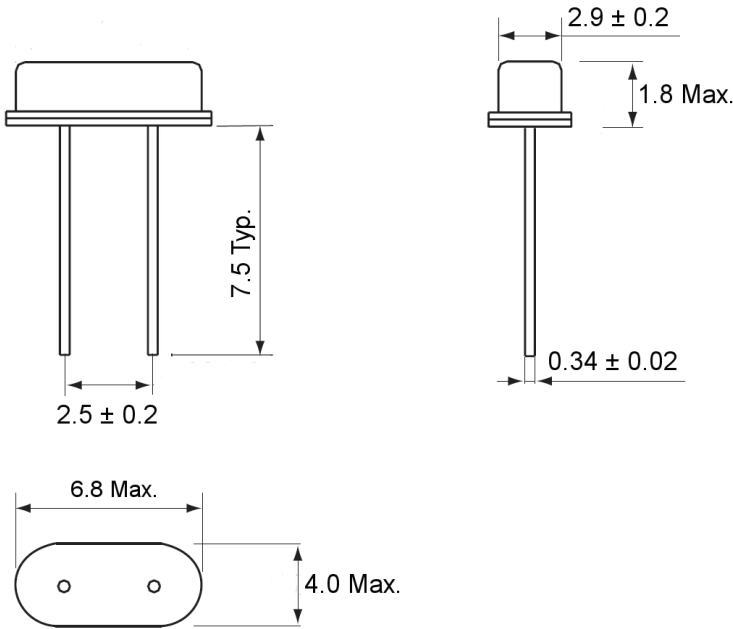
## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	HC-46X			UNITS
		MIN	TYP	MAX	
Frequency Range	$f_0$	12.000		40.000	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				100	µW
Operating Temperature	Standard	-10		+70	°C
Storage Temperature		-40		+85	°C
Aging (First Year)	@ +25°C ±3°C			±5	ppm

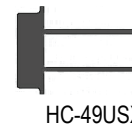
## EQUIVALENT SERIES RESISTANCE/MODE OF OSCILLATION

FREQUENCY RANGE (MHz)	MODE OF OSC	MAX ESR Ω	FREQUENCY RANGE (MHz)	MODE OF OSC	MAX ESR Ω
12.000 ~ 15.999	Fundamental	60	30.000 ~ 40.000	Fundamental	40
16.000 ~ 29.999	Fundamental	50			

## PACKAGE DIMENSIONS (mm)



Actual Size



HC-49USX



HC-46X

Figure 2) Size Comparison

Figure 1) Side, Bottom and End views

## PART NUMBERING GUIDE: Example ECS-200-20-46X

ECS - Frequency Abbreviation - Load Capacitance - Package

200 = 20.000 MHz  
See P/N Guide

20 = 20 pF  
S=Series

46X = HC-46X

### 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