

- ▶ Cost effective
- ▶ Low profile
- ▶ Pb Free/RoHS Compliant
- ▶ Tape & Reel (1,000 pcs)

# CSM-7X

## SMD Quartz Crystal

The CSM-7X is an excellent choice for the SMD versions of the HC-49USX leaded crystal. The CSM-7X has a case height of 4.3 mm Max in a resistance weld metal package. A package profile of 3.2 mm Max is also available.

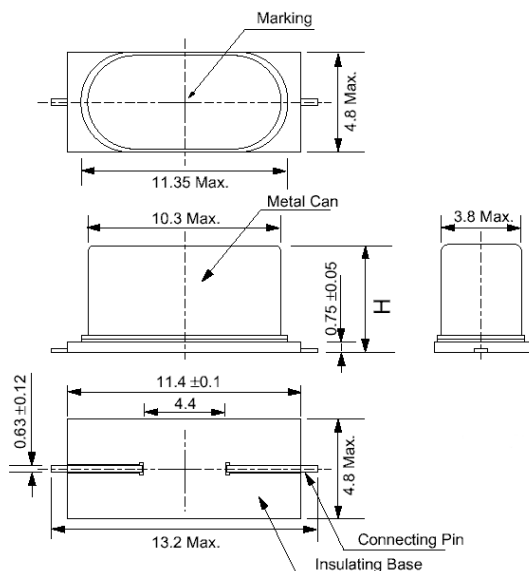
### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| PARAMETERS                     | CONDITIONS            | CSM-7X |     |        | UNITS |
|--------------------------------|-----------------------|--------|-----|--------|-------|
|                                |                       | MIN    | TYP | MAX    |       |
| Frequency Range                | $f_o$                 | 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              | $C_o$                 |        |     | 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 ~ 4.999          | Fundamental | 150       | 13.000 ~ 19.999       | Fundamental  | 40        |
| 5.000 ~ 5.999         | Fundamental | 80        | 20.000 ~ 30.000       | Fundamental  | 30        |
| 6.000 ~ 6.999         | Fundamental | 70        | 26.000 ~ 39.999       | 3rd Overtone | 100       |
| 7.000 ~ 8.999         | Fundamental | 60        | 40.000 ~ 70.000       | 3rd Overtone | 80        |
| 9.000 ~ 12.999        | Fundamental | 50        |                       |              |           |

### DIMENSIONS (mm)



| Height "H" MAX |        |
|----------------|--------|
| -5PX           | 4.3 mm |
| -5PLX          | 3.2 mm |

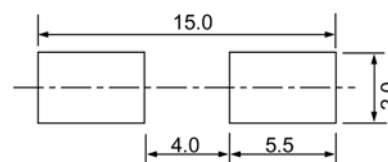


Figure 1) Top, Side and Bottom views

Figure 2) Suggested Land Pattern

### PART NUMBERING GUIDE: Example ECS-200-20-5PX-TR

ECS - Frequency Abbreviation - Load Capacitance - Package

200 = 20.000 MHz  
See P/N Guide

20 = 20 pF  
S=Series

5PX = 4.3 mm  
5PLX = 3.2 mm

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

- Packaging

TR= Tape & Reel  
1K/Reel

\* Consult Factory for available stability options over extended temp range.