

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



# CSM-3X Quartz Crystal

The CSM-3X is the miniature low profile resistance weld type SMD quartz crystal. Reduces footprint of CSM-7X (HC-49USX SMD) by 50%.



## OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	CSM-3X			UNITS
		MIN	TYP	MAX	
Frequency Range	$f_0$	12.000		40.000	MHz
Frequency Tolerance	at +25°C			± 30	ppm
Frequency Stability $_{ref @ +25^\circ C}$	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)

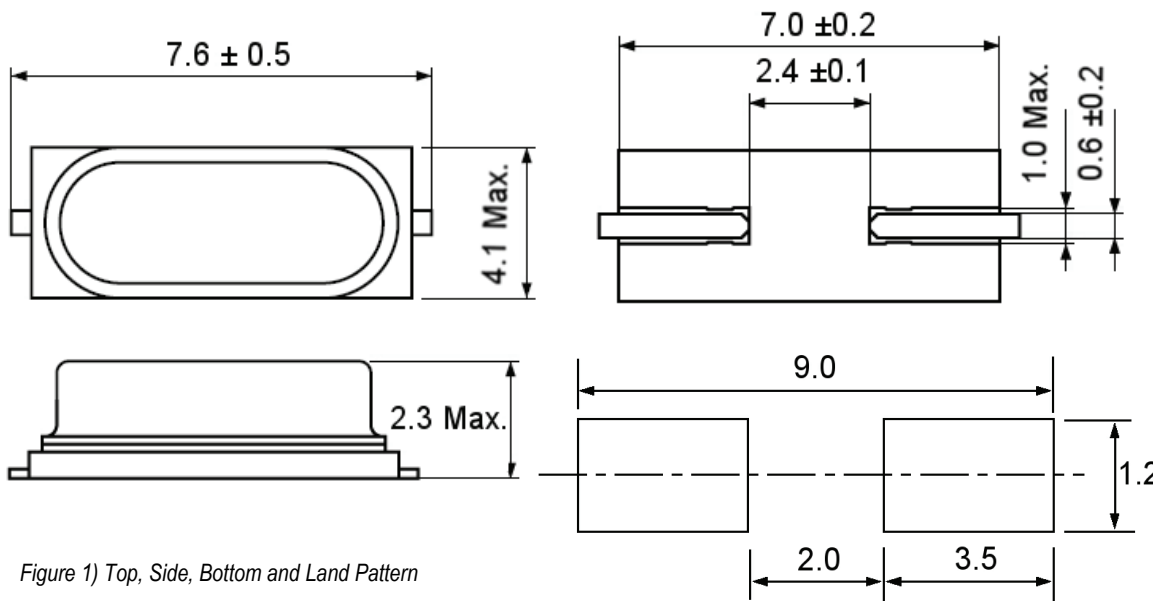


Figure 1) Top, Side, Bottom and Land Pattern

Actual Size



Figure 2) Size Comparison

## PART NUMBERING GUIDE: Example ECS-200-20-3X-TR

ECS - Frequency Abbreviation - Load Capacitance - Package

200 = 20.000 MHz  
See P/N Guide

20 = 20 pF  
S=Series

3X = CSM-3X

### 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

Packaging

-TR  
Tape & Reel  
3K/Reel

\* Consult ECS for available temp range options

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

## ECS:

[ECS-120-20-3X-EN-TR](#) [ECS-120-20-3X-TR](#) [ECS-122.8-20-3X-EN-TR](#) [ECS-122.8-20-3X-TR](#) [ECS-130-20-3X-EN-TR](#)  
[ECS-130-20-3X-TR](#) [ECS-135.6-20-3X-EN-TR](#) [ECS-135.6-20-3X-TR](#) [ECS-143-20-3X-EN-TR](#) [ECS-143-20-3X-TR](#)  
[ECS-147.4-20-3X-EN-TR](#) [ECS-147.4-20-3X-TR](#) [ECS-160-20-3X-EN-TR](#) [ECS-160-20-3X-TR](#) [ECS-184-20-3X-EN-TR](#)  
[ECS-184-20-3X-TR](#) [ECS-196.6-20-3X-EN-TR](#) [ECS-196.6-20-3X-TR](#) [ECS-200-20-3X-EN-TR](#) [ECS-200-20-3X-TR](#)  
[ECS-245.7-20-3X-EN-TR](#) [ECS-245.7-20-3X-TR](#) [ECS-250-20-3X-EN-TR](#) [ECS-250-20-3X-TR](#) [ECS-270-20-3X-EN-TR](#)  
[ECS-270-20-3X-TR](#) [ECS-286.3-20-3X-EN-TR](#) [ECS-286.3-20-3X-TR](#) [ECS-300-20-3X-EN-TR](#) [ECS-300-20-3X-TR](#)  
[ECS-330-20-3X-EN-TR](#) [ECS-330-20-3X-TR](#) [ECS-400-20-3X-EN-TR](#) [ECS-400-20-3X-TR](#)