



# CX11L TELEMETRY CRYSTAL

16 MHz to 250 MHz

Telemetry, Ultra Low Profile, Ultra-Miniature  
Surface Mount Quartz Crystal

## DESCRIPTION

When miniaturization is paramount, Statek's low profile CX11L AT quartz crystal is an excellent choice. Available in frequencies from 16 MHz to 250 MHz, this crystal has a typical footprint of 3.2 mm x 1.5 mm, and a typical height of 0.5 mm. The resonator is manufactured using Statek's photolithographic and chemical milling processes and then sealed within a ceramic package for high stability and low aging. Available with tight calibration tolerances and high stability over temperature, this crystal is well suited for applications that have a space restraint and require a crystal with a low profile.

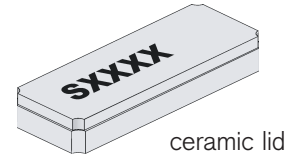
## FEATURES

- Ultra-miniature, surface mount design
- Ultra-low profile
- Hermetically sealed ceramic package
- High shock and vibration survival
- Excellent aging characteristics
- Full military testing available
- Designed and manufactured in the USA

## APPLICATIONS

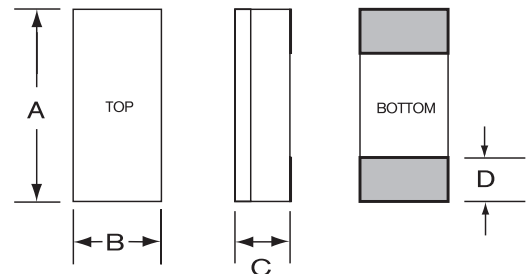
### Medical

- Medical Telemetry
- Pacemakers
- Defibrillators
- Neurostimulators
- Infusion Pumps
- Cochlear Implants



ceramic lid

## PACKAGE DIMENSIONS

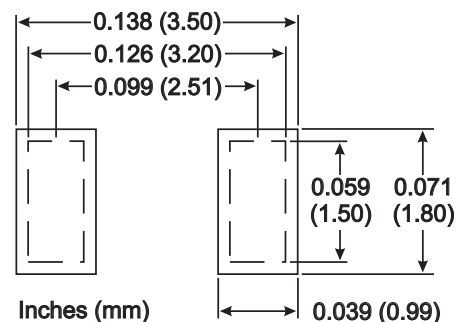


DIM	TYPICAL		MAXIMUM	
	inches	mm	inches	mm
A	0.127	3.20	0.135	3.43
B	0.060	1.50	0.068	1.73
C	-	-	see below	
D	0.028	0.71	0.037	0.94

### THICKNESS (DIM C)

Lid	Termination	Typical		Maximum	
		inches	mm	inches	mm
Ceramic	SM1	0.020	0.51	0.023	0.59
	SM2/SM4	0.021	0.53	0.024	0.61

## SUGGESTED LAND PATTERN



10188 Rev D



## SPECIFICATIONS

Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice.

Fundamental Frequency	<u>16 MHz</u>	<u>24 MHz</u>	<u>26.5 MHz</u>
Motional Resistance $R_1(\Omega)$	90	30	30
Motional Capacitance $C_1$ (fF)	1.5	1.4	1.6
Quality Factor Q (k)	70	150	120
Shunt Capacitance $C_0$ (pF)	0.7	0.7	0.7
Calibration Tolerance <sup>1</sup>	±100 ppm, or tighter as required		
Load Capacitance	10 pF (unless specified otherwise)		
Drive Level	200 µW MAX		
Frequency-Temperature Stability <sup>1,2</sup>	±50 ppm to ±10 ppm (Commercial) ±100 ppm to ±20 ppm (Industrial) ±100 ppm to ±30 ppm (Military)		
Aging, first year	3 ppm MAX (better than 1 ppm available)		
Shock, survival	5,000 g, 0.3 ms, 1/2 sine		
Vibration, survival <sup>3</sup>	20 g, 10-2,000 Hz swept sine		
Operating Temp. Range	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)		
Storage Temp. Range	-55°C to +125°C		
Max Process Temperature	260°C for 20 sec.		

1. Other tolerances available. Contact factory.

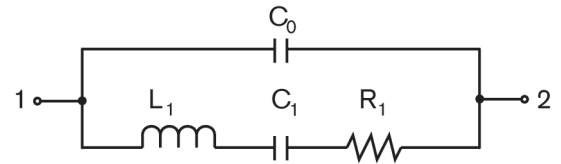
2. Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.

3. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

## TERMINATIONS

Designation	Termination
SM1	Gold Plated (Lead Free)
SM2	Solder Plated
SM4	Solder Plated (Lead Free)

## EQUIVALENT CIRCUIT



$R_1$  Motional Resistance     $L_1$  Motional Inductance  
 $C_1$  Motional Capacitance     $C_0$  Shunt Capacitance

## PACKAGING OPTIONS

- Tray Pack
- 12 mm tape, 7" or 13" reels  
Per EIA 481 (see Tape and Reel data sheet 10109)

## HOW TO ORDER LOW PROFILE CX11L AT CRYSTALS

