



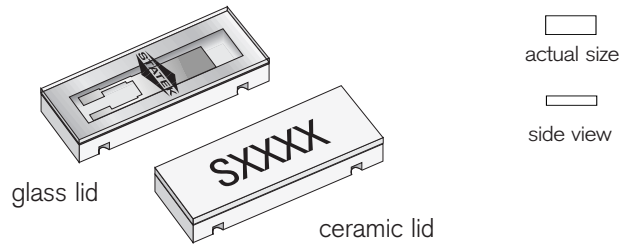
# CX3SM AT CRYSTAL

9.6 MHz to 250 MHz  
Low Profile Miniature Surface Mount AT Quartz Crystal

Fundamental Mode: 9.6 MHz - 250 MHz

## DESCRIPTION

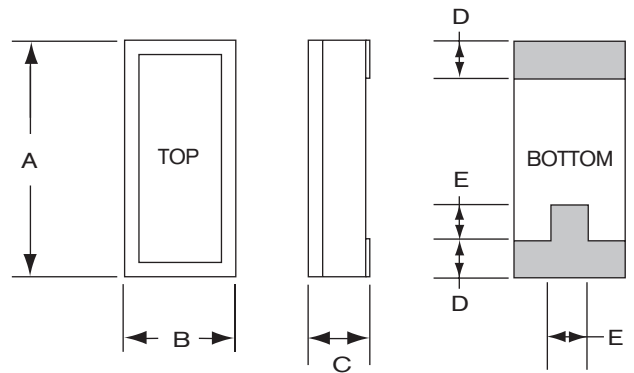
STATEK's miniature CX3SM AT crystals in leadless ceramic packages are designed for surface mounting on printed circuit boards or hybrid substrates. These crystals are low profile and have a small land pattern.



## FEATURES

- Designed for surface mount applications using infrared, vapor phase, or epoxy mount techniques.
- Low profile (less than 1.5 mm available) hermetically sealed ceramic package
- Excellent aging characteristics
- Available with glass or ceramic lid
- High shock and vibration resistance
- Custom designs available
- Full military testing available
- Designed and manufactured in the USA

## PACKAGE DIMENSIONS



## APPLICATIONS

### Medical

- Monitoring Equipment

### Industrial, Computer & Communications

- Instrumentation
- Down-hole Data Recorder
- Engine Control
- Handheld Inventory Control
- Telemetry

### Military & Aerospace

- Communications
- Smart Munitions
- Timing Devices
- Surveillance Devices

DIM	TYPICAL		MAXIMUM	
	inches	mm	inches	mm
A	0.263	6.68	0.270	6.86
B	0.097	2.46	0.104	2.64
C	-	-	see below	
D	0.052	1.32	0.058	1.47
E	0.030	0.76	0.035	0.89

## THICKNESS (DIM C) MAXIMUM

	GLASS LID		CERAMIC LID	
	inches	mm	inches	mm
SM1	0.053	1.35	0.067	1.70
SM2/SM4	0.055	1.40	0.069	1.75
SM3/SM5	0.058	1.47	0.072	1.83

10120 - Rev E



## SPECIFICATIONS

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

Fundamental Frequency	10 MHz	32 MHz	155.52 MHz
Motional Resistance $R_1$ ( $\Omega$ )	60	25	10
Motional Capacitance $C_1$ (fF)	2.8	6.2	4.0
Quality Factor Q (k)	95	30	30
Shunt Capacitance $C_0$ (pF)	1.4	2.3	2.3
Calibration Tolerances <sup>1</sup>	$\pm 100$ ppm, or tighter as required		
Load Capacitance <sup>2</sup>	20 pF for $f \leq 50$ MHz		
	10 pF for $f > 50$ MHz		
Drive Level	500 $\mu$ W MAX for $f \leq 50$ MHz		
	200 $\mu$ W MAX for $f > 50$ MHz		
Frequency-Temperature Stability <sup>1,3</sup>	$\pm 50$ ppm to $\pm 10$ ppm (Commercial)		
	$\pm 100$ ppm to $\pm 20$ ppm (Industrial)		
	$\pm 100$ ppm to $\pm 30$ ppm (Military)		
Aging, first year <sup>4</sup>	5 ppm MAX (less than 1 ppm available)		
Shock, survival <sup>5</sup>	3,000 g, 0.3 ms, 1/2 sine		
Vibration, survival <sup>6</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.		

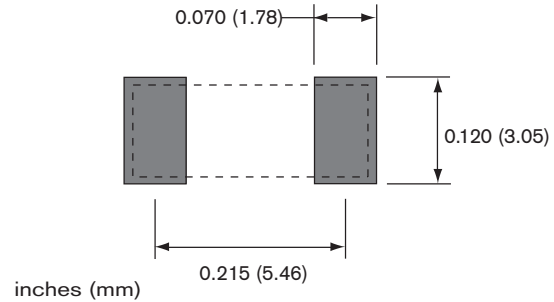
- Other tolerances available. Contact factory.
- Unless specified otherwise.
- Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.
- 10 ppm MAX for frequencies below 40 MHz. For tighter tolerances and higher frequencies contact factory.
- Higher shock version available.
- Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

## TERMINATIONS

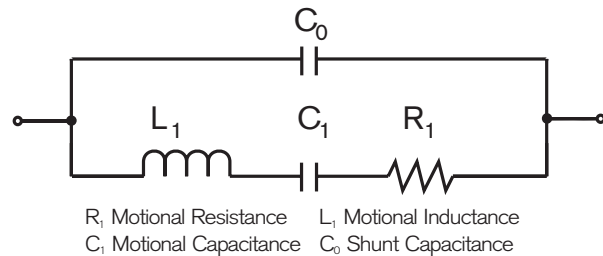
Designation	Termination
SM1	Gold Plated
SM2	Solder Plated
SM3	Solder Dipped
SM4	Solder Plated (Lead Free)
SM5	Solder Dipped (Lead Free)

Max Process Temperature 260°C for 20 sec.

## SUGGESTED LAND PATTERN



## EQUIVALENT CIRCUIT



## PACKAGING OPTIONS

- Tray Pack
- 16mm tape, 7" or 13" reels  
Per EIA 481 (see Tape and Reel data sheet 10109)

## HOW TO ORDER CX3SM AT CRYSTALS

