CX9SM AT CRYSTAL

14 MHz to 250 MHz

Low Profile, Ultra-Miniature
Surface Mount AT Quartz Crystal

DESCRIPTION

Designed and manufactured in the USA, Statek's CX9SM AT quartz crystal is the newest device available in frequencies ranging from 14 MHz to 250 MHz. This device has been specifically designed for applications requiring a very small foot print and low profile. It is 4.1 mm x 1.5 mm with a height under 1 mm. Using micro-machining processes, this surface-mountable crystal is hermetically sealed within an ultra-miniature ceramic package to ensure high stability and low aging. Tight calibration and excellent frequency/temperature stability make the CX9SM ideally suited for many high frequency applications.

FEATURES

- Low profile (less than 1 mm)
- Ultra-miniature, surface mount design
- Available with glass or ceramic lid
- Hermetically sealed ceramic package
- High shock and vibration survival
- Excellent aging characteristics
- Designed for low power applications
- Full military testing available
- Designed and manufactured in the USA

APPLICATIONS

Medical

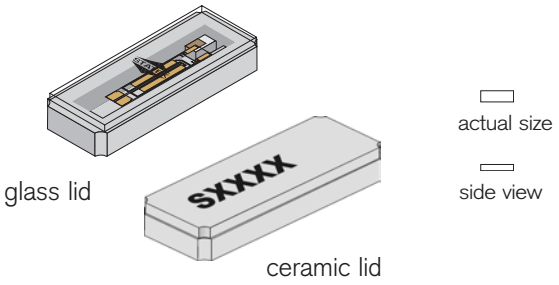
- Neurostimulators
- Medical Telemetry
- Chronic Pain Management
- Cochlear Implants
- Infusion Pumps

Military & Aerospace

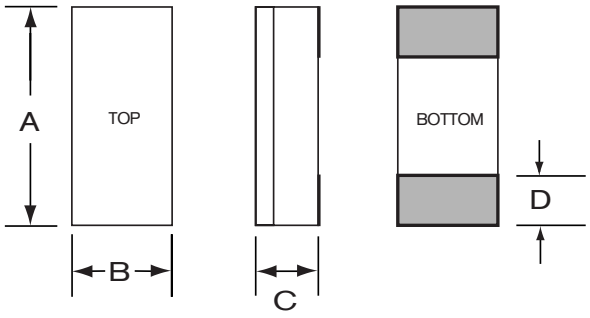
- Avionic Indicators and Instrumnts
- Cockpit Instrumentation Displays
- Data Communications
- Survival radio

Industrial, Computer & Communications

- Communications
- Transmitters
- Pulse Generators
- Tracking Beacons
- Wildlife Telemetry



PACKAGE DIMENSIONS



	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.160	4.10	0.170	4.32
B	0.060	1.50	0.068	1.73
C	-	-	see below	
D	0.031	0.79	0.038	0.97

THICKNESS (DIM C) MAXIMUM

	GLASS LID		CERAMIC LID	
MAX	inches	mm	inches	mm
SM1	0.034	0.87	0.035	0.90
SM2/SM4	0.034	0.87	0.035	0.90
SM3/SM5	0.036	0.91	0.037	0.94

STATEK CORPORATION 512 N. MAIN ST., ORANGE, CA 92868 714-639-7810 FAX: 714-997-1256 **www.statek.com**

SPECIFICATIONS

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

Fundamental Frequency	25 MHz	49 MHz	155.52 MHz
Motional Resistance R_1(Ω)	30	30	25
Motional Capacitance C_1 (fF)	1.8	2.1	2.5
Quality Factor Q (k)	120	60	16
Shunt Capacitance C_0 (pF)	1.0	1.0	1.4

Calibration Tolerance[1]	± 100 ppm, or tighter as required
Load Capacitance	10 pF (unless specified otherwise)
Drive Level	200 µW MAX for f ≤ 50 MHz 100 µW MAX for f > 50 MHz
Frequency-Temperature Stability[1,3]	± 50 ppm to ± 10 ppm (Commercial) ± 100 ppm to ± 20 ppm (Industrial) ± 100 ppm to ± 30 ppm (Military)
Aging, first year[3]	5 ppm MAX (better than 1 ppm available)
Shock, survival	5,000 g, 0.3 ms, 1/2 sine
Vibration, survival[4]	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.

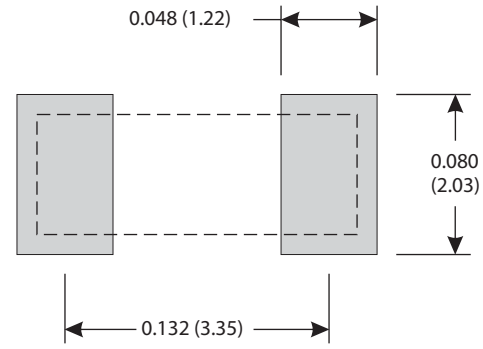
1. Other tolerances available. Contact factory.
2. Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.
3. 5 ppm MAX for frequencies below 40 MHz. For tighter tolerances and higher frequencies contact factory.
4. 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)

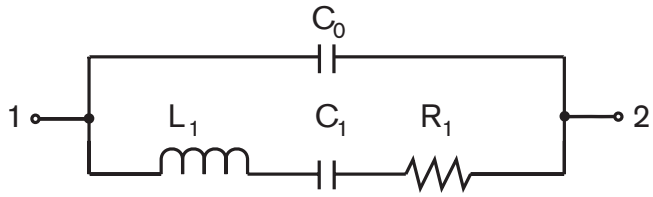
Max Process Temperature 260°C for 20 sec.

SUGGESTED LAND PATTERN



inches (mm)

EQUIVALENT CIRCUIT



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

PACKAGING OPTIONS

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

HOW TO ORDER CX9SM AT CRYSTALS

CX9 / S / C – SM1 – 49.0M , 100 / 100 / — / I

- S: "S" if special or custom design. Blank if Std.
- C: C = Ceramic Lid, Blank = Glass Lid
- SM1: SM1 = Gold Plated; SM2 = Solder Plated; SM3 = Solder Dipped; SM4 = Solder Plated Lead Free; SM5 = Solder Dipped Lead Free
- 49.0M: Frequency M = MHz
- 100: Calibration Tolerance @ 25°C (in ppm)
- 100: Frequency Stability over Temp.Range (in ppm)
- I: Temp. Range: C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

OR

— / — / 200 / I

- 200: Total Frequency Tolerance (in ppm)
- I: Operating Temp. Range: C = -10°C to +70°C; I = -40°C to +85°C; M = -55°C to +125°C; S = Customer Specified

10158 - Rev B