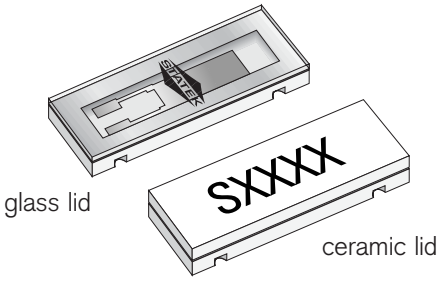
CX6SM AT CRYSTAL

9.6 MHz to 250 MHz

Ultra-Low Profile Miniature
Surface Mount AT Quartz Crystal

Fundamental Mode: 9.6 MHz - 250 MHz
Third Overtone Mode: 48 MHz - 160 MHz



DESCRIPTION

STATEK's miniature CX6SM AT crystals in leadless ceramic packages are designed for surface mounting on printed circuit boards or hybrid substrates. These crystals have a small land pattern and a low profile. They are manufactured using the STATEK-developed photolithographic process, and were designed utilizing the experience acquired by producing millions of crystals for industrial, commercial, military and medical applications.

FEATURES

- Ultra low profile (less than 1 mm available) hermetically sealed ceramic package
- Designed for surface mount applications using infrared, vapor phase, or epoxy mount techniques.
- 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

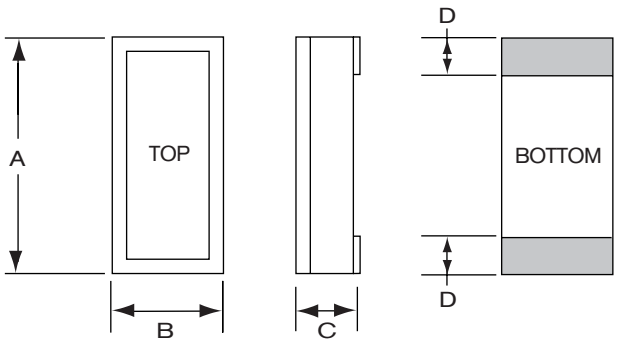
APPLICATIONS

Medical
- Monitoring Equipment

Industrial, Computer & Communications
- Down-hole Data Recorder
- Environmental Controls
- Handheld Inventory Control
- Telemetry

Military & Aerospace
- Communications
- Smart Munitions
- Timing Devices (Fuzes)
- Surveillance Devices

PACKAGE DIMENSIONS



	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.265	6.73	0.280	7.11
B	0.103	2.62	0.114	2.90
C	-	-	see below	
D	0.050	1.27	0.060	1.52

THICKNESS (DIM C) MAXIMUM

	GLASS LID		CERAMIC LID	
	inches	mm	inches	mm
SM1	0.039	0.99	0.053	1.35
SM2/SM4	0.041	1.04	0.055	1.40
SM3/SM5	0.044	1.12	0.058	1.47

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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 (Ω)	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 Tolerance[1]	± 100 ppm, or tighter as required
Load Capacitance[2]	20 pF for f ≤ 50 MHz 10 pF for f > 50 MHz
Drive Level	500 µW MAX for f ≤ 50 MHz 200 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 (below 1 ppm available)
Shock, survival[4]	3,000 g, 0.3 ms, 1/2 sine
Vibration, survival[5]	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.

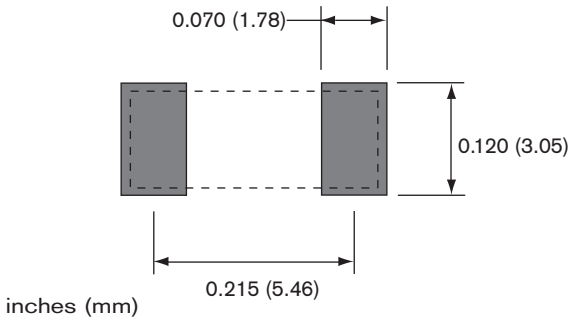
1. Other tolerances available. Contact factory.
2. Unless specified otherwise.
3. Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.
4. 10 ppm MAX for frequencies below 40 MHz. For tighter tolerances and higher frequencies contact factory.
5. Higher shock version available.
6. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

TERMINATIONS

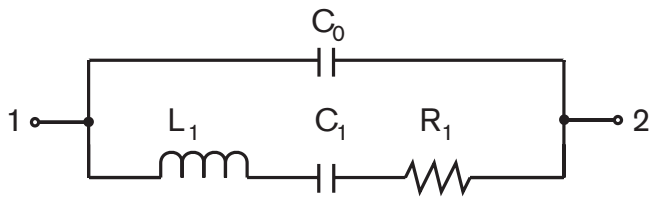
Designation	Termination
SM1	Gold Plated (Lead Free)
SM2	Solder Plated
SM3	Solder Dipped
SM4	Solder Plated (Lead Free)
SM5	Solder Dipped (Lead Free)

Max Process Temperature 260°C for 20 sec.

SUGGESTED LAND PATTERN



EQUIVALENT CIRCUIT



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

PACKAGING

- Tray Pack
- Tape and Reel
  Per EIA 481 (see Tape and Reel data sheet 10109)

HOW TO ORDER CX6SM AT CRYSTALS

CX6 S — C SM1 – 32.0M , 100 / 100 / — / I

- S: "S" if special or custom design. Blank if Std.
- O.T. = 3rd Overtone Mode; Blank = Fundamental Mode
- C = Ceramic Lid; Blank = Glass Lid
- SM1 = Gold Plated (Lead Free); SM2 = Solder Plated; SM3 = Solder Dipped; SM4 = Solder Plated (Lead Free); SM5 = Solder Dipped (Lead Free)
- 32.0M: Frequency M = MHz
- 100: Calibration Tolerance @ 25°C (in ppm)
- 100: Frequency Stability over Temp. Range (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

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

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