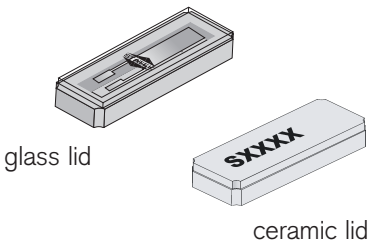
CX11SM CRYSTAL

16 MHz to 250 MHz

Ultra Miniature
Surface Mount Quartz Crystal



DESCRIPTION

When miniaturization is paramount, Statek's CX11SM AT quartz crystal is an excellent choice. Available in frequencies from 16 MHz to 250 MHz, this crystal has a 3.2 mm x 1.5 mm footprint and a height under 1.0 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 many demanding applications.

FEATURES

- Ultra-miniature package
- Ultra-low profile
- Hermetically sealed package
- Excellent aging characteristics
- Full military testing available
- Designed and manufactured in the USA

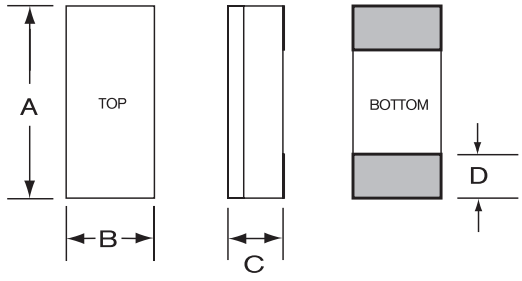
APPLICATIONS

Medical
- Medical Telemetry
- Cardiac Rhythm Management
- Medical Telemetry
- Cochlear Implants
- Infusion Pumps

Military & Aerospace
- Avionic Indicators and Instruments
- Cockpit Instrumentation Displays
- Data Communications
- Survival radio

Industrial, Computer & Communications
- Communications
- Transmitters
- Pulse Generators
- Tracking Beacons
- Wildlife Telemetry

PACKAGE DIMENSIONS

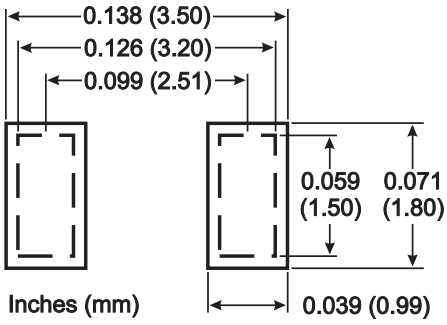


	TYPICAL		MAXIMUM	
DIM	inches	mm	inches	mm
A	0.127	3.20	0.135	3.43
B	0.060	1.50	0.068	1.73
C	-	-	see below	
D	0.027	0.69	0.037	0.94

THICKNESS (DIM C)

Lid	Termination	Typical		Maximum	
		inches	mm	inches	mm
Ceramic	SM1	0.030	0.77	0.035	0.90
	SM2/SM4	0.031	0.79	0.036	0.92
	SM3/SM5	0.033	0.84	0.038	0.97
Glass	SM1	0.029	0.74	0.034	0.87
	SM2/SM4	0.030	0.77	0.035	0.89
	SM3/SM5	0.032	0.81	0.037	0.94
Thin Glass	SM1	0.025	0.64	0.030	0.77
	SM2/SM4	0.026	0.66	0.031	0.79
	SM3/SM5	0.028	0.71	0.033	0.84

SUGGESTED LAND PATTERN



10179 Rev B

SPECIFICATIONS

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

Fundamental Frequency	16.0 MHz	24.0 MHz	155.52 MHz
Motional Resistance R_1 (Ω)	90	30	25
Motional Capacitance C_1 (fF)	1.5	1.6	2.8
Quality Factor Q (k)	70	150	16
Shunt Capacitance C_0 (pF)	0.7	0.7	1.4

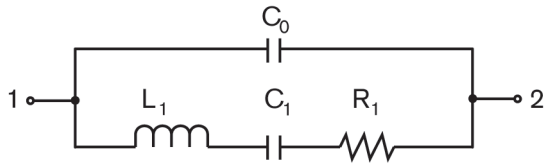
Calibration Tolerance[1]	±100 to ±30 ppm, or tighter as required
Load Capacitance	9 pF (unless specified otherwise)
Drive Level	200 μW MAX
Frequency-Temperature Stability[1,2]	±50 ppm to ±10 ppm (Commercial) ±50 ppm to ±20 ppm (Industrial) ±100 ppm to ±30 ppm (Military)
Aging, first year	3 ppm MAX (better than 1 ppm available)
Shock, survival	5,000 g, 0.3 ms, 1/2 sine
Vibration, survival[3]	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
SM3	Solder Dipped
SM4	Solder Plated (Lead Free)
SM5	Solder Dipped (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 CX11 AT CRYSTALS

CX11 — S — C — SM1 — 24.0M , 50 / 50 / — / I

- S: Blank = Standard; S = Special or custom
- C: Blank = Glass Lid; T = Thin Glass Lid; C = Ceramic Lid
- SM1: SM1 = Gold Plated (Lead Free); SM2 = Solder Plated; SM3 = Solder Dipped; SM4 = Solder Plated (Lead Free); SM5 = Solder Dipped (Lead Free)
- 24.0M: Frequency; M = MHz
- 50: Calibration Tolerance @ 25°C (in ppm)
- 50: 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

— / — / 100 / I

- 100: 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

Note: Crystals with SM1, SM4 or SM5 terminations are Pb-free.
Crystals with SM2 or SM3 terminations contain Pb.

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