



CX17SM AT CRYSTAL

12 MHz to 200 MHz

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

DESCRIPTION

The CX17SM is a miniature, low profile, surface-mount AT quartz crystal that is ideal for many applications.

FEATURES

- Small footprint (4.8 mm x 3.0 mm typical)
- Low profile (0.90 mm typical)
- Designed for surface-mount applications
- High shock and vibration resistance
- Custom designs available
- Full military testing available
- Designed and manufactured in the USA

APPLICATIONS

Medical

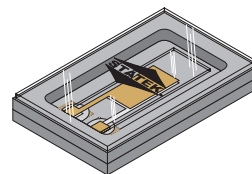
- Medical telemetry

Industrial, Computer, & Communications

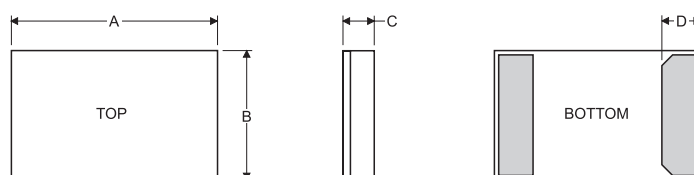
- Instrumentation
- Handheld devices

Military & Aerospace

- Communications
- Smart munitions
- Surveillance devices
- Projectile telemetry



PACKAGE DIMENSIONS



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Dimension	Minimum mm	Typical mm	Maximum mm
A	4.70	4.80	4.90
B	2.90	3.00	3.10
C	See below		
D	0.80	0.90	1.00

THICKNESS (DIM C)

Lid	Termination	Minimum mm	Typical mm	Maximum mm
Glass	SM1	0.80	0.90	1.00
	SM2/SM4	0.82	0.92	1.02
	SM3/SM5	0.83	0.94	1.05



SPECIFICATIONS

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

Fundamental Frequency	12 MHz	20 MHz	32 MHz
Motional Resistance R_1 (Ω)	35	15	10
Motional Capacitance C_1 (fF)	2.8	4.2	5.4
Quality Factor Q (k)	130	120	90
Shunt Capacitance C_0 (pF)	1.1	1.2	1.5

Calibration Tolerance ¹	±100 ppm, or tighter as required
Load Capacitance ²	10 pF
Drive Level ³	50 μ W nominal, 500 μ W MAX
Frequency-Temperature Stability ^{1,4}	±50 ppm to ±10 ppm (Commercial) ±100 ppm to ±20 ppm (Industrial) ±100 ppm to ±30 ppm (Military)
Aging, first year ⁵	5 ppm MAX (better than 1 ppm available)
Shock, survival ⁶	5,000 g, 0.3 ms, 1/2 sine
Vibration, survival ⁷	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 s

1. Other tolerances available. Contact factory.

2. Unless specified otherwise.

3. Crystals are characterized and tested at 50 μ W, unless specified otherwise. Operation at higher drive levels can result in sub-optimal behavior.

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

5. 5 ppm MAX for frequencies 50 MHz and lower. For tighter tolerances and higher frequencies contact factory.

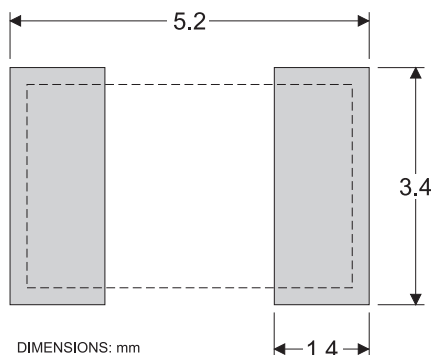
6. Higher shock version available.

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

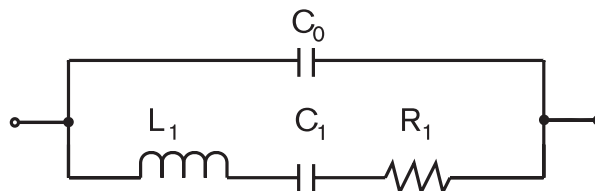
TERMINATIONS

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

SUGGESTED LAND PATTERN



EQUIVALENT CIRCUIT



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

PACKAGING OPTIONS

- Tray Pack

HOW TO ORDER CX17SM AT CRYSTALS

CX17	S		SM1	-	20.0M	,	100	/	100	/	-	/	I
Blank = Standard S = Special or custom	Blank = Glass Lid		SM1 = Gold Plated (Lead Free) SM2 = Solder Plated SM3 = Solder Dipped SM4 = Solder Plated (Lead Free) SM5 = Solder Dipped (Lead Free)		Frequency M = MHz		Calibration Tolerance @ 25°C (in ppm)		Frequency Stability over Temp. Range (in ppm)				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
				Total Frequency Tolerance (in ppm)		Operating Temp. Range: C = -10°C to +70°C I = -40°C to +85°C M = -55°C to +125°C S = Customer Specified