

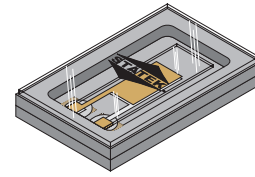


CX17SM AT CRYSTAL

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

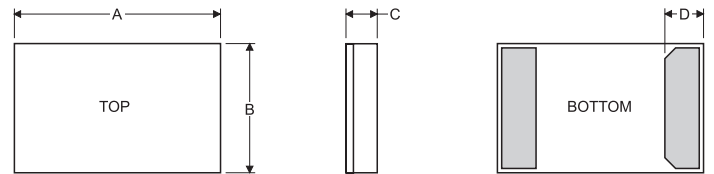
Industrial, Computer, & Communications

- Instrumentation
- Handheld devices

Military & Aerospace

- Communications
- Smart munitions
- Surveillance devices
- Projectile telemetry

PACKAGE DIMENSIONS



PACKAGE DIMENSIONS

| 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 |

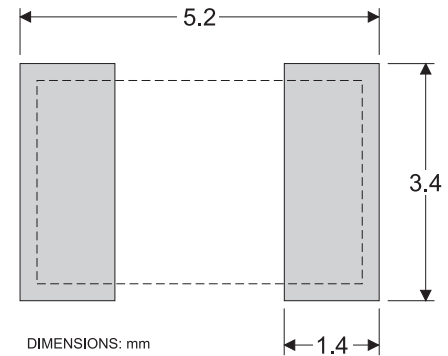
| | |
|--|---|
| Calibration Tolerance ¹ | ±100 ppm, or tighter as required |
| Load Capacitance ² | 10 pF |
| Drive Level ³ | 50 μ W nominal, 500 μ W MAX |
| Frequency-Temperature Stability ^{1,4} | ±50 ppm to ±10 ppm (Commercial) ±100 ppm to ±20 ppm (Industrial) ±100 ppm to ±30 ppm (Military) |
| Aging, 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.

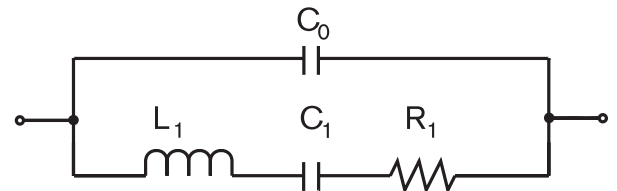
TERMINATIONS

| 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

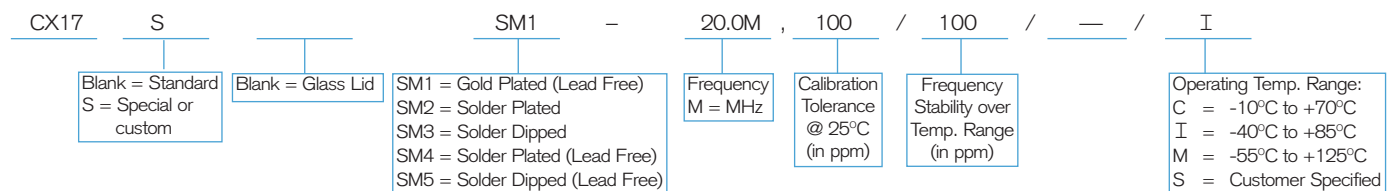


R_1 Motional Resistance L_1 Motional Inductance
 C_1 Motional Capacitance C_0 Shunt Capacitance

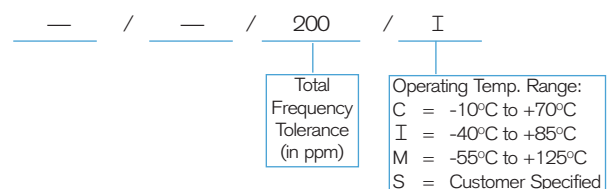
PACKAGING OPTIONS

- Tray Pack

HOW TO ORDER CX17SM AT CRYSTALS



OR



10206 Rev D