



## CX16 TELEMETRY CRYSTAL

24 MHz to 50 MHz

Low Profile, Ultra-Miniature  
Surface Mount Quartz Crystal

### DESCRIPTION

When miniaturization is paramount, Statek's low profile CX16 AT quartz crystal is an excellent choice. This crystal has a typical footprint of 2.0 mm x 1.2 mm, and a typical height of 0.43 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 and fast start-up times, this crystal is well suited for applications that have a space restraint and require a crystal with a low profile.

### FEATURES

- Ultra-miniature, surface mount design
- Ultra-low profile
- Hermetically sealed ceramic package
- High shock and vibration survival
- Excellent aging characteristics
- Full military testing available
- Designed and manufactured in the USA

### APPLICATIONS

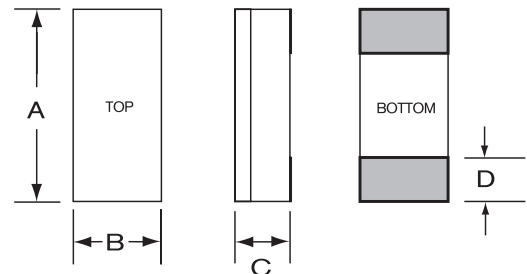
Medical

- Medical Telemetry
- Pacemakers
- Defibrillators
- Neurostimulators
- Infusion Pumps
- Cochlear Implants



ceramic lid

### PACKAGE DIMENSIONS



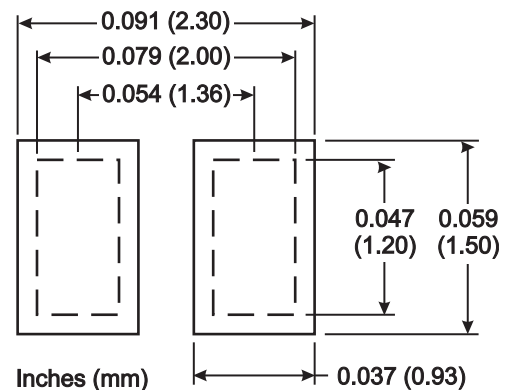
#### TYPICAL

| DIM | inches | mm   |
|-----|--------|------|
| A   | 0.079  | 2.00 |
| B   | 0.047  | 1.20 |
| C   | -      | -    |
| D   | 0.025  | 0.64 |

#### THICKNESS (DIM C)

| Lid     | Termination | Typical |      |
|---------|-------------|---------|------|
|         |             | inches  | mm   |
| Ceramic | SM1         | 0.017   | 0.43 |
|         | SM2/SM4     | 0.018   | 0.44 |
|         | SM3/SM5     | 0.019   | 0.47 |

### LAND PATTERN



10200 Rev B



## SPECIFICATIONS

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

|                                              |                                         |                 |
|----------------------------------------------|-----------------------------------------|-----------------|
| Fundamental Frequency                        | <u>24 MHz</u>                           | <u>26.5 MHz</u> |
| Motional Resistance $R_1(\Omega)$            | 100                                     | 90              |
| Motional Capacitance $C_1$ (fF)              | 1.3                                     | 1.4             |
| Quality Factor Q (k)                         | 30                                      | 30              |
| Shunt Capacitance $C_0$ (pF)                 | 0.6                                     | 0.6             |
| Calibration Tolerance                        | ±100 ppm, or tighter as required        |                 |
| Load Capacitance                             | 10 pF (unless specified otherwise)      |                 |
| Drive Level                                  | 100 µW MAX                              |                 |
| Frequency-Temperature Stability <sup>1</sup> | ±50 ppm to ±10 ppm (Commercial)         |                 |
|                                              | ±100 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 <sup>2</sup>             | 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.                       |                 |

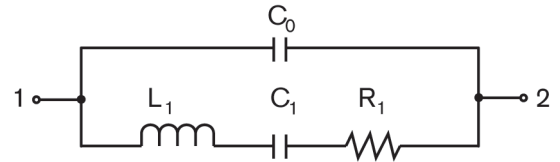
1. Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.  
 2. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

## 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.

## EQUIVALENT CIRCUIT



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

## PACKAGING OPTIONS

- Tray Pack
- 8mm tape, 7" or 13" reels (Per EIA 481)

## HOW TO ORDER CX16 AT CRYSTALS

|                                           |                 |                                                                                                                                                   |                      |                                       |                                               |                                                                                                           |                                       |   |    |   |   |   |   |   |      |
|-------------------------------------------|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------|---|----|---|---|---|---|---|------|
| CX16                                      | S               | C                                                                                                                                                 | SM4                  | —                                     | 24.0M                                         | ,                                                                                                         | 30                                    | / | 10 | / | — | / | I | , | 3 pF |
| Blank = Standard<br>S = Special or custom | C = Ceramic Lid | SM1 = Gold Plated (Lead Free)<br>SM2 = Solder Plated<br>SM3 = Solder Dipped<br>SM4 = Solder Plated (Lead Free)<br>SM5 = Solder Dipped (Lead Free) | Frequency<br>M = MHz | Calibration Tolerance @ 25°C (in ppm) | Frequency Stability over Temp. Range (in ppm) | Temp. Range:<br>C = -10°C to +70°C<br>I = -40°C to +85°C<br>M = -55°C to +125°C<br>S = Customer Specified | Load Capacitance (Customer Specified) |   |    |   |   |   |   |   |      |