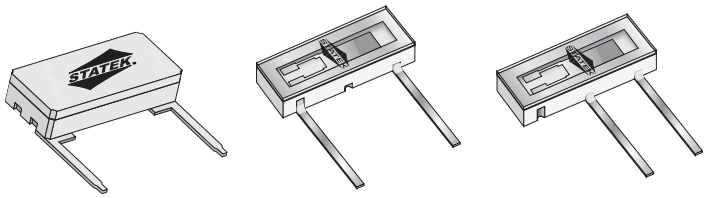
# HIGH TEMPERATURE CRYSTALS

**Leaded/High Temperature/High Frequency**

## DESCRIPTION

An increasing number of applications require the use of high-temperature crystals. For these applications, Statek offers the CX1HT-06, CX2HT-06 and CX2HT-07 leaded crystals. These crystals are designed to operate at temperatures up to and including 175°C. The frequency range offered is 6 MHz to 250 MHz for CX1HT-06 and 9.6 MHz to 250 MHz for CX2HT-06 and CX2HT-07 crystals. The expected life at 175°C is in excess of 1,000 hours.

| CX1**HT-06** | CX2**HT-06** | CX2**HT-07** |
|---|---|---|
| 6 MHz - 250 MHz | 9.6 MHz - 250 MHz | 9.6 MHz - 250 MHz |



## FEATURES

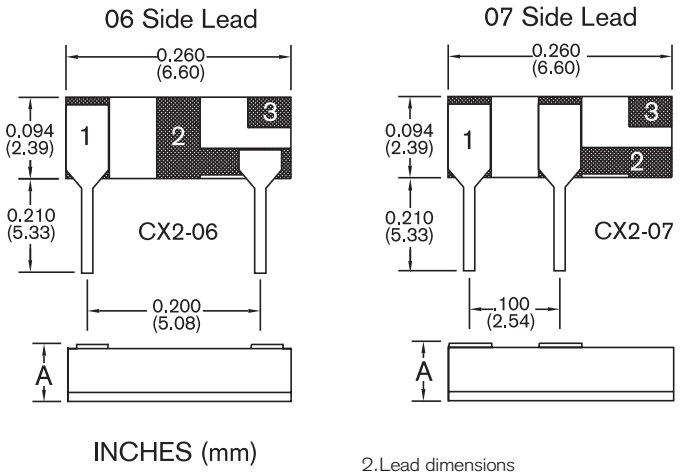
- High temperature operation up to 175°C
- High shock resistance
- Hermetically sealed ceramic package
- Through-hole leaded package
- Reduces mechanical and thermal mounting stresses

## APPLICATIONS

**Industrial**

- Downhole instrumentation
- Rotary shaft sensors
- Underground boring tools

## PACKAGE DIMENSIONS - CX2HT

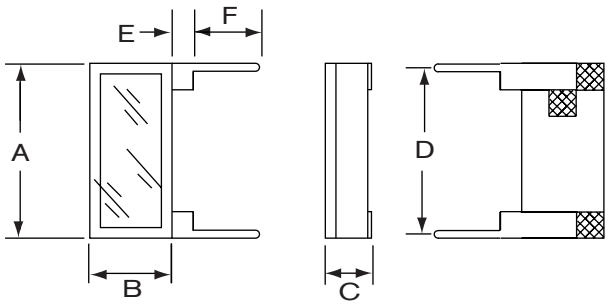



INCHES (mm)

Notes:

1. Terminal 1 is electrically connected internally to terminal 3.
2. Lead dimensions
   Width: 0.013" (0.33mm) Typical
   Thickness: 0.0055" (0.14mm) Typical
3. A = Glass Lid 0.080 (2.03) max.
   Ceramic Lid 0.095 (2.41) max.

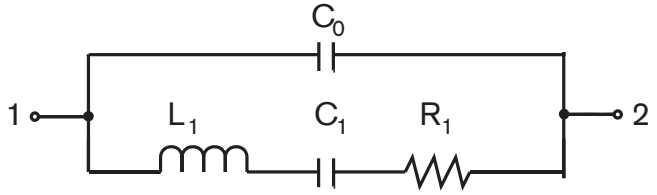
## PACKAGE DIMENSIONS - CX1HT-06




| CX1HT | TYPICAL | | MAXIMUM | |
|---|---|---|---|---|
| DIM | INCHES | mm | INCHES | mm |
| A | 0.315 | 8.00 | 0.330 | 8.38 |
| B | 0.140 | 3.56 | 0.155 | 3.94 |
| C | | | 0.080 | 2.03 (glass) |
| C | | | 0.095 | 2.41 (ceramic) |
| D | 0.300 | 7.62 | 0.310 | 7.87 |
| E | 0.020 | 0.51 | 0.040 | 1.02 |
| F | 0.150 | 3.81 | 0.160 | 4.06 |

Leads: Thickness 0.010" x 0.018" Width (0.25 x 0.46 mm) typical.

## EQUIVALENT CIRCUIT




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

10202 Rev B

## SPECIFICATIONS

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

| | |
|---|---|
| Frequency Range | See Specifications Table below |
| Calibration Tolerance[1] | ± 100 ppm, or tighter, as required |
| Operating Temperature Range[2] | +25°C up to +175°C |
| Frequency-Temperature Stability[3] | ± 125 ppm for +25°C to +150°C<br>± 150 ppm for +25°C to +175°C |
| Total Tolerance[4] | ± 200 ppm for +25°C to +175°C |
| Aging, first year | 5 ppm at 25°C |
| Shock, survival[5] | 1,000 g, 1 ms, ½ sine |
| Vibration, survival[5] | 20 g RMS, 10-2,000 Hz |

1. Tighter frequency calibration available. Contact factory.
2. Other temperature ranges available.
3. Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the thickness-shear mode.
4. Includes calibration tolerance.
5. Higher shock and vibration available.

## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Storage Temperature | -55°C to 125°C |
| Maximum Process Temperature | 200°C for 10 sec. |

## PACKAGING OPTIONS

- Tray Pack

## PACKAGE HANDLING

Take proper soldering consideration as the melting temperature of the lead-attach solder is 217°C

## SPECIFICATIONS TABLE[1] (Specifications shown are typical unless otherwise noted.)

| | Frequency Range | Motional Resistance R1 @ 25°C | Motional Capacitance C1 @ 25°C | Shunt Capacitance C0 @ 25°C | Quality Factor Q @ 25°C | Load Capacitance CL Load | Drive Level |
|---|---|---|---|---|---|---|---|
| CX1HT | 6 MHz to 250 MHz | 30 Ω @ 10 MHz<br>25 Ω @ 32 MHz | 5.5 fF @ 10 MHz<br>6.2 fF @ 32 MHz | 2.2 pF @ 10 MHz<br>2.3 pF @ 32 MHz | 100 K @ 10 MHz<br>30 K @ 32 MHz | 20 pF for f ≤ 50 MHz<br>10 pF for f > 50 MHz | 500 µW MAX. for f ≤ 50 MHz<br>200 µW MAX. for f > 50 MHz |
| CX2HT | 9.6 MHz to 250 MHz | 60 Ω @ 10 MHz<br>30 Ω @ 32 MHz | 2.8 fF @ 10 MHz<br>6.2 fF @ 32 MHz | 1.4 pF @ 10 MHz<br>2.3 pF @ 32 MHz | 95 K @ 10 MHz<br>30 K @ 32 MHz | 20 pF for f ≤ 50 MHz<br>10 pF for f > 50 MHz | 200 µW MAX. for f ≤ 50 MHz<br>100 µW MAX. for f > 50 MHz |

1. For more detailed specifications on high frequency crystals, refer to standard high frequency crystal datasheets (CX1SM, CX2SM)

## HOW TO ORDER CX1VHT-06, CX2VHT-06 and CX2VHT-07 CRYSTALS

| CX1HT | S | | 06 | 20.0M | , 100 | / 175 | / — | / S |
|---|---|---|---|---|---|---|---|---|
| CX1HT<br>CX2HT | "S" if special or custom design. Blank if Std. | C = Ceramic Lid<br>Blank = Glass Lid | - 06<br>- 07 | Frequency<br>M = MHz | Calibration Tolerance @ 25°C (in ppm) | Frequency Stability over Temp. Range (in ppm) | | Temp. Range: S = Customer Specified Temp. Range |

OR

| — | / — | / 200 | / S |
|---|---|---|---|
| | | Total Frequency Tolerance (in ppm) | Temp. Range: S = Customer Specified Temp. Range |



STATEK CORPORATION 512 N. MAIN ST., ORANGE, CA 92868 714-639-7810 FAX: 714-997-1256 **www.statek.com**