



## CX20 AT-CUT CRYSTAL

16 MHz to 100 MHz

Miniature Surface Mount Quartz Crystal

### DESCRIPTION

High performance, fundamental mode, AT-Cut quartz crystals designed and manufactured for high-reliability applications.

### FEATURES

- Ultra-miniature footprint
- Helium impermeable housing with ceramic lid
- Hermetically sealed ceramic package
- High shock and vibration survival
- Excellent aging characteristics
- Full military testing available
- Designed and manufactured in the USA

### APPLICATIONS

#### Medical

- Ultra-Low Power Wireless Communications
- Medical Telemetry (MICS, BLE)
- Cardiac Rhythm Management
- Neurostimulators

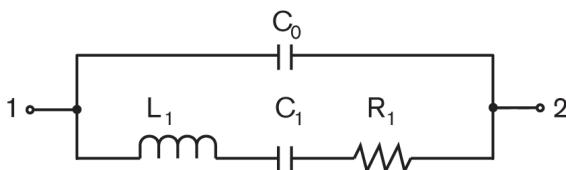
#### Defense

- Smart Munitions
- Guidance and Navigation
- Communication

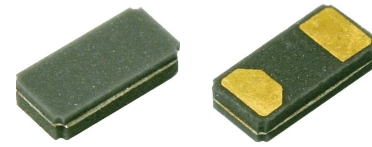
#### Industrial

- Communications
- Transmitters
- Pulse Generators
- Tracking Beacons
- Wildlife Telemetry

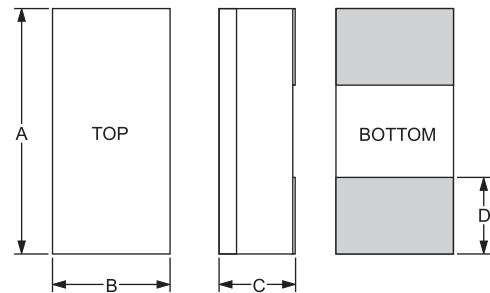
### EQUIVALENT CIRCUIT



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

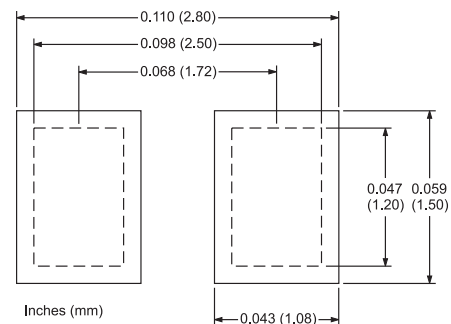


### PACKAGE DIMENSIONS



DIM	TERMINATION	TYPICAL		MAXIMUM	
		inches	mm	inches	mm
A		0.099	2.50	0.102	2.59
B		0.047	1.20	0.051	1.30
C	SM1	0.021	0.53	0.022	0.56
C	SM3/SM4	0.022	0.55	0.023	0.58
D		0.030	0.75	0.032	0.81

### SUGGESTED LAND PATTERN



### PACKAGING OPTIONS

- Tray Pack
- Tape and Reel (per EIA 481). See Tape and Reel datasheet 10109.



## SPECIFICATIONS

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

<b>Fundamental Frequency</b>	16.0 MHz	24.0 MHz
<b>Motional Resitance <math>R_1</math> (<math>\Omega</math>)</b>	150	50
<b>Motional Capacitance <math>C_1</math> (fF)</b>	1.2	1.6
<b>Quality Factor Q</b>	60,000	80,000
<b>Shunt Capacitance <math>C_0</math> (pF)</b>	0.7	0.8
<b>Calibration Tolerance<sup>1</sup></b>	±30 ppm, or tighter as required	
<b>Load Capacitance</b>	9 pF (unless specified otherwise)	
<b>Drive Level</b>	100 $\mu$ W MAX	
<b>Frequency-Temperature Stability<sup>1,2</sup></b>	±50 ppm to ±10 ppm (Commercial) ±100 ppm to ±30 ppm (Industrial) ±100 ppm to ±30 ppm (Military)	
<b>Aging, First Year</b>	3 ppm MAX	
<b>Shock Survival<sup>3</sup></b>	5,000 g, 0.3 ms, 1/2 sine	
<b>Vibration Survival<sup>4</sup></b>	20 g, 10-2,000 Hz swept sine	
<b>Operating Temperature Range</b>	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)	
<b>Storage Temperature Range</b>	-55°C to +125°C	
<b>Max Process Temperature</b>	260°C for 20 seconds	
<b>Moisture Sensitivity Level (MSL)</b>	This component is hermetically sealed and is not moisture sensitive.	

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. For higher shock survival construction contact factory.
4. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

## HOW TO ORDER CX20 CRYSTALS

