



## CX4 AT-CUT CRYSTAL

14 MHz to 250 MHz  
Surface Mount Quartz Crystal

### DESCRIPTION

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

### FEATURES

- Hermetically sealed ceramic package with ceramic lid
- Excellent long term aging characteristics
- Broad operating temperature ranges
- Designed and manufactured in the USA

### APPLICATIONS

#### Medical Telemetry (MICS, BLE)

- Neurostimulators
- Cochlear Implants
- Infusion Pumps

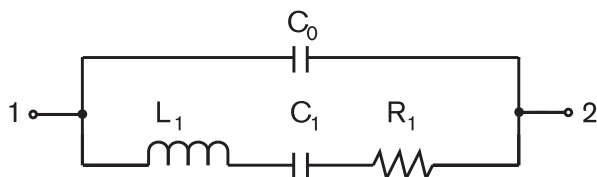
#### Industrial, Computer & Communications

- Transmitters
- Pulse Generators
- Wildlife Telemetry

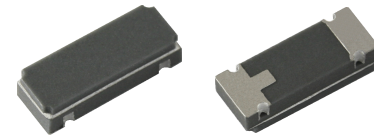
#### Military & Aerospace

- Smart Munitions
- Telemetry

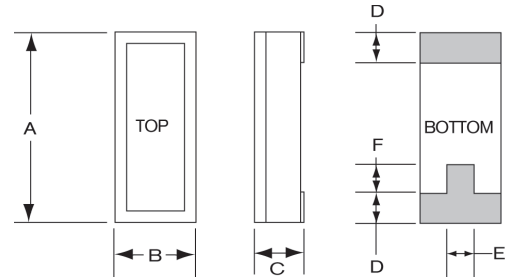
### EQUIVALENT CIRCUIT



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

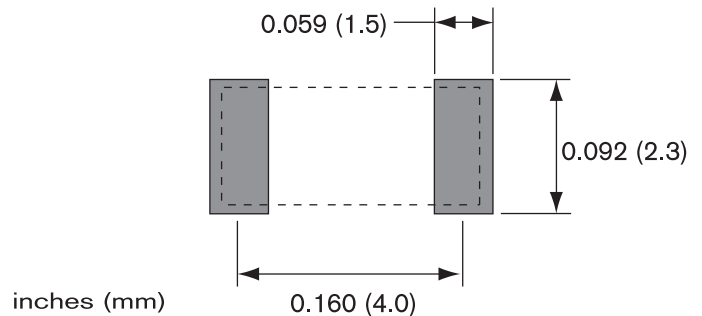


### PACKAGE DIMENSIONS



DIM	Termination	TYPICAL		MAXIMUM	
		inches	mm	inches	mm
A		0.197	5.00	0.210	5.33
B		0.072	1.83	0.085	2.16
C	SM1	—	—	0.050	1.27
C	SM2/SM4	—	—	0.051	1.30
C	SM3/SM5	—	—	0.053	1.35
D		0.036	0.91	0.046	1.16
E		0.020	0.51	—	—
F		0.025	0.64	—	—

### 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.

Fundamental Frequency (MHz)	14.7456	16.0	20.0	32.0	40.0	80.0	160.0	200.0
Motional Resitance $R_1$ ( $\Omega$ )	60	75	50	30	30	30	30	40
Motional Capacitance $C_1$ (fF)	1.4	1.5	1.4	2.5	1.5	1.8	2.5	2.0
Quality Factor Q (k)	120	90	110	70	90	40	20	15
Shunt Capacitance $C_0$ (pF)	0.8	0.9	0.9	1.1	1.0	1.0	1.5	1.5
Calibration Tolerance <sup>1</sup>	±50 ppm to ±10 ppm							
Load Capacitance	Customer specified (9 pF standard)							
Drive Level	200 $\mu$ W MAX							
Frequency-Temperature Stability <sup>1,2,3</sup>	±50 ppm to ±10 ppm (Commercial) ±50 ppm to ±20 ppm (Industrial) ±50 ppm to ±30 ppm (Military)							
Aging, First Year <sup>4</sup>	3 ppm MAX							
Shock Survival	5,000 g, 0.3 ms, 1/2 sine							
Vibration Survival <sup>5</sup>	20 g, 10-2,000 Hz swept sine							
Operating Temperature Range <sup>3</sup>	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)							
Storage Temperature Range	-55°C to +125°C							
Max Process Temperature	260°C for 20 seconds							
Moisture Sensitivity Level (MSL)	This component is hermetically sealed and is not moisture sensitive.							

1. Tighter tolerances available.
2. Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.
3. Broader temperature ranges available. Contact factory.
4. Better than 1 ppm aging available.
5. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

## HOW TO ORDER CX4 CRYSTALS

