CX20 AT-CUT CRYSTAL

16 MHz to 100 MHz

Miniature High Shock 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

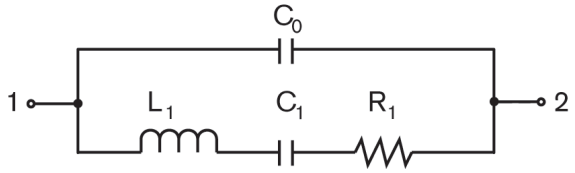
Defense

- Smart Munitions
- Guidance and Navigation
- Communication

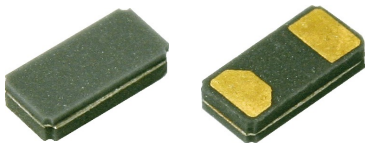
Industrial

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

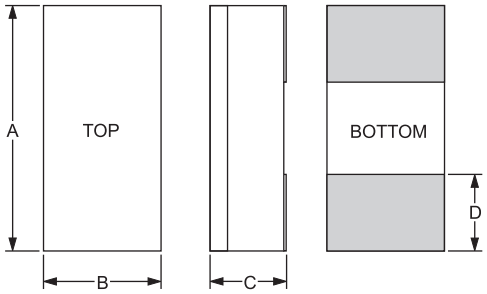
EQUIVALENT CIRCUIT



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

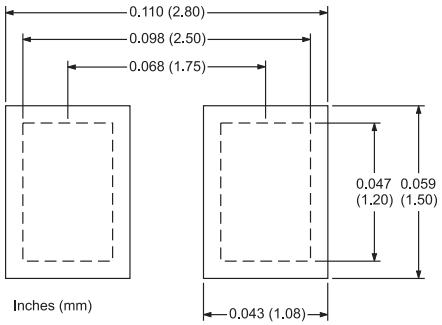


PACKAGE DIMENSIONS



DIM	TERMINATION	MINIMUM	TYPICAL	MAXIMUM
		mm	mm	mm
A		2.41	2.50	2.59
B		1.10	1.20	1.30
C	SM1	0.50	0.53	0.56
	SM3/SM5	0.52	0.55	0.58
D		0.69	0.75	0.81

SUGGESTED LAND PATTERN



PACKAGING OPTIONS

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

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

SPECIFICATIONS

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

Fundamental Frequency	16.0 MHz	24.0 MHz
Motional Resitance R_1 (Ω)	150	50
Motional Capacitance C_1 (fF)	1.2	1.6
Quality Factor Q	60,000	80,000
Shunt Capacitance C_0 (pF)	0.7	0.8
Calibration Tolerance[1]	±30 ppm, or tighter as required	
Load Capacitance	9 pF (unless specified otherwise)	
Drive Level	100 µW MAX	
Frequency-Temperature Stability[1,2]	±50 ppm to ±10 ppm (Commercial) ±100 ppm to ±30 ppm (Industrial) ±100 ppm to ±40 ppm (Military)	
Aging, First Year	3 ppm MAX	
Shock Survival	Up to 75,000 g, 0.3 ms, ½ sine	
Vibration Survival[3]	20 g, 10-2,000 Hz swept sine	
Operating Temperature Range	-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. 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. Per MIL-STD-202G, Method 204D, Condition D. Random vibration testing also available.

HOW TO ORDER CX20 CRYSTALS

CX20 S HG1 C SM1 — 16.0M , 30 / 50 / — / I , 9 pF

Special
Blank = Standard
S = Special or Custom

Shock Level Code
Blank = 5,000 g
HG1 = 10,000 g
HG2 = 20,000 g
HG3 = 30,000 g
HG4 = 50,000 g
HG5 = 75,000 g

Lid
C = Ceramic Lid

Terminations
SM1 = Gold Plated (Pb Free)
SM3 = Solder Dip (60/40 Sn-Pb)
SM5 = Solder Dip (Pb Free)

Frequency
M = MHz

Calibration Tolerance @ 25°C
(in ppm)

Frequency Stability over Temp. Range
(in ppm)

Operating Temp. Range
C = -10°C to +70°C
I = -40°C to +85°C
M = -55°C to +125°C
S = Customer Specified

Load Capacitance
(Customer Specified)

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