



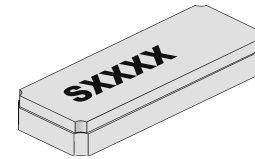
CX9 TELEMETRY CRYSTAL

14 MHz to 250 MHz

Low Profile, Ultra Miniature
Surface Mount AT Quartz Crystal

DESCRIPTION

Designed and manufactured in the USA, the CX9 family of medical RF telemetry crystals provide the widest frequency range for this application. Using micro-machining processes, this surface mount crystal is hermetically sealed within an ultra miniature ceramic package to ensure high stability and low aging. Small size, tight calibration and excellent frequency/temperature stability make the CX9 telemetry crystal ideally suited for medical applications.



ceramic lid

FEATURES

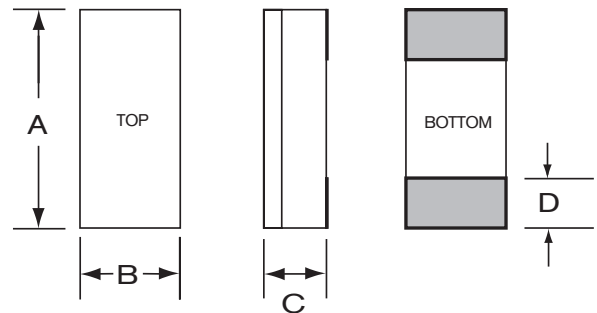
- Low profile (less than 1 mm)
- Ultra-miniature, surface mount design
- Hermetically sealed ceramic package
- Excellent aging characteristics
- Designed and manufactured in the USA

APPLICATIONS

Medical RF Telemetry

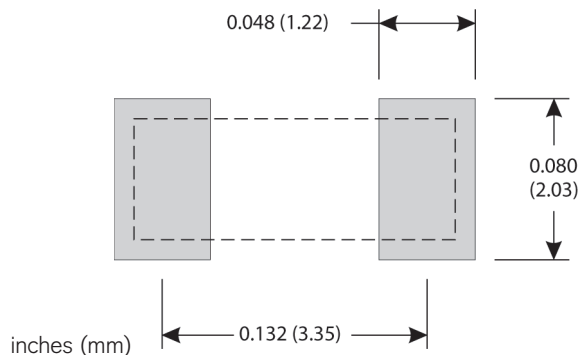
- Pacemakers
- Defibrillators
- Neurostimulators
- Infusion Pumps
- Glucose Monitors

DIMENSIONS



DIM	TYPICAL		MAXIMUM	
	inches	mm	inches	mm
A	0.160	4.10	0.170	4.32
B	0.060	1.50	0.068	1.73
C	-	-	see below	
D	0.031	0.79	0.038	0.97

SUGGESTED LAND PATTERN



THICKNESS (DIM C) MAXIMUM

TERMINATION	CERAMIC LID		GLASS LID	
	inches	mm	inches	mm
SM1	0.035	0.90	0.034	0.87
SM2/SM4	0.035	0.90	0.034	0.87
SM3/SM5	0.037	0.94	0.036	0.91

10187 Rev B



SPECIFICATIONS

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

Fundamental Frequency	<u>14.7456 MHz</u>	<u>24.0 MHz</u>	<u>26.5 MHz</u>
Motional Resistance R_1 (Ω)	80	30	30
Motional Capacitance C_1 (fF)	1.2	1.6	1.8
Quality Factor Q (k)	115	150	100
Shunt Capacitance C_0 (pF)	0.6	0.8	0.8
Calibration Tolerance ¹	±40 ppm, or tighter as required		
Load Capacitance	10 pF (unless specified otherwise)		
Drive Level	200 μ W MAX		
Frequency-Temperature Stability ^{1,2}	±50 ppm to ±10 ppm (Commercial)		
	±100 ppm to ±20 ppm (Industrial)		
	±100 ppm to ±30 ppm (Military)		
Aging, first year ³	5 ppm MAX (better than 1 ppm available)		
Shock, survival	5,000 g, 0.3 ms, 1/2 sine		
Vibration, survival ⁴	20 g, 10-2,000 Hz swept sine		
Operating Temp. Range	-10°C to +70°C (Commercial)		
	-40°C to +85°C (Industrial)		

Storage Temp. Range -55°C to +125°C
Max Process Temperature 260°C for 20 sec.

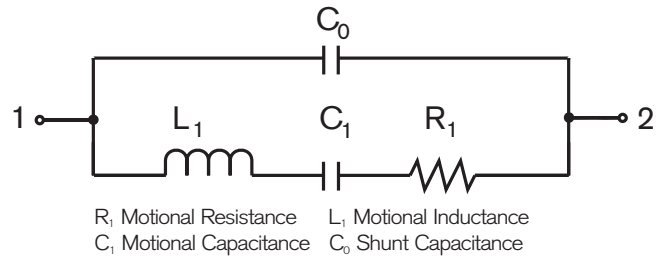
- Other tolerances available. Contact factory.
- Does not include calibration tolerance. The characteristics of the frequency stability over temperature follow that of the AT thickness-shear mode.
- 5 ppm MAX for frequencies below 40 MHz. For tighter tolerances and higher frequencies contact factory.
- 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.

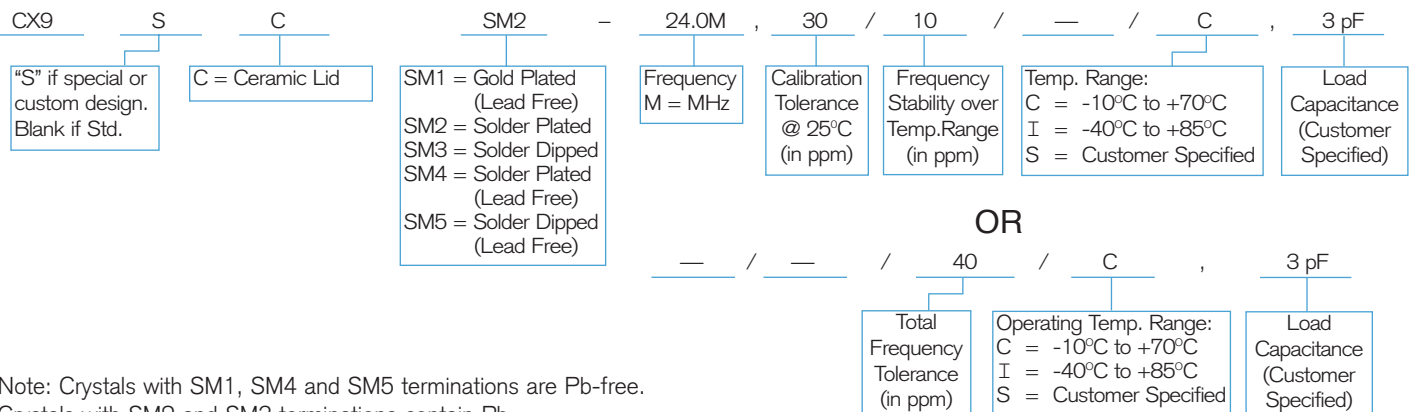
EQUIVALENT CIRCUIT



PACKAGING OPTIONS

- Tray Pack
- 16mm tape, 7" or 13" reels
Per EIA 481 (see Tape and Reel data sheet 10109)

HOW TO ORDER CX9 TELEMETRY CRYSTALS



Note: Crystals with SM1, SM4 and SM5 terminations are Pb-free.
Crystals with SM2 and SM3 terminations contain Pb