CX-1-03

8MHz to 160MHz

MINIATURE AT-CUT QUARTZ CRYSTAL

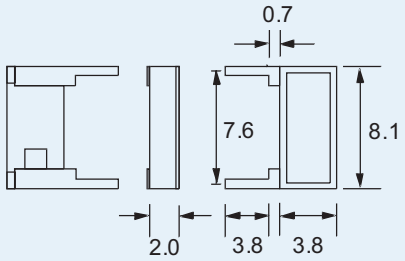
EUROQUARTZ

Telephone: +44(0)1460 230000
Fax: +44(0)1460 230001
Email: sales@euroquartz.co.uk
Web: www.euroquartz.co.uk

General Description

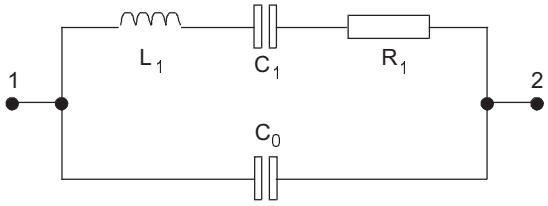
The CX-1 quartz crystal is a high quality miniature AT-cut resonator. The CX-1 is hermetically sealed in a rugged, miniature ceramic package, a quarter of the size of an eight pin dual-in-line package. The crystal is manufactured utilizing a photo-lithographic process, ensuring consistency and repeatability of electrical characteristics.

- Low-profile hermetically sealed package
- Excellent ageing characteristics
- Fundamental or 3rd Overtone mode
- High shock resistance
- Full military environmental testing available



Outline and Dimensions

Equivalent Circuit



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

Standard Frequencies (MHz)		
10.0	19.6608	32.0
11.0592	20.0	35.2512
12.0	24.0	36.0
14.318	24.576	40.0
16.0	30.0	

Specification

Frequency Range:	8MHz to 160MHz
Calibration Tolerance*:	A ±0.01% (±100ppm) B ±0.1% C ±1.0%
Load Capacitance:	20pF (unless other required)
Motional Resistance (R_1):	See table
Motional Capacitance (C_1):	See table
Quality Factor (Q):	See table
Shunt Capacitance (C_0):	See table
Drive Level:	500µW max.
Temperature Stability:**	-10° to +70°C (Commercial) -40° to +85°C (Industrial) -55° to +125°C (Military)
Ageing, first year:	±5ppm max.
Shock, survival*:**	3000g 0.3ms, ½ sine
Vibration, survival:	20g rms 10-2,000Hz random
Operating Temperature:	-10°~+70°C (commercial) -40°~+85°C (industrial) -55°~+125°C (military)
Storage Temperature:	-55°C~+125°C
Process Temperature:	Lead to Package temp. not to exceed 175°C Glass lid to package seal rim temp. not to exceed 210°C

Specifications are typical at 25°C unless otherwise indicated.
The characteristics of the frequency stability parameter follow that of AT-cut, thickness-shear mode crystals.

* Closer calibration available, as low as ±5ppm
** Does not include calibration tolerance
** A higher shock version is available, refer to data sheet for the model CX-1HG

CX-1 Motional Parameters, Q and C_0

Frequency	Motional Resistance R_1 (Ω)	Motional Capacitance C_1 (fF)	Quality Factor '000s	Shunt Capacitance C_0 (pF)
10.0MHz	50	5.5	80	2.2
32MHz	20	7.8	36	2.6
155MHz	50	0.5	41	3.2

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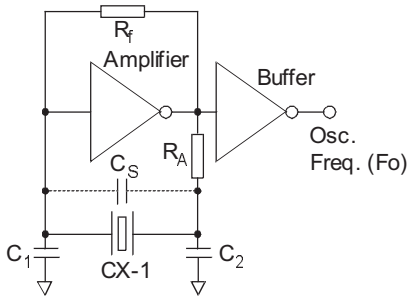
Circuit Design

Typical HCMOS Pierce Oscillator

A conventional HCMOS Pierce oscillator is shown below. The crystal oscillates at a frequency f_o above the crystal's series-resonant frequency. The crystal is effectively inductive and in combination with R_f, C_1 and C_2 in the feedback loop, provides approximately 180° of the phase shift necessary to ensure oscillation.

Conventional HCMOS Pierce Oscillator Circuit



Packaging

CX-1-03 - Bulk Pack (Standard)
Tray Pack (Optional)

Order Code

CX-1 — O.T.=3rd O.T. Mode, Blank = Fundamental; "S" if special or custom design, Blank if standard; C = Ceramic Lid, Blank = Glass Lid — **-03** (Side leads) — Frequency: **32MHz** — **(A / 25ppm / 50ppm / I)** — Total Frequency Tolerance

- Calibration Tolerance* @ 25°C: A, B, C
- Frequency Stability over Temperature Range
- Temperature Range: C = Commercial, I = Industrial, M = Military, S = Specify

*For other calibration tolerances enter figure in ppm