

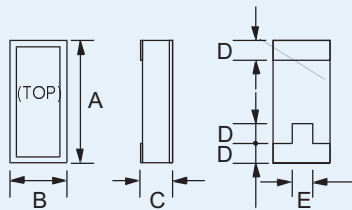
CX-3-SM
9.6MHz to 160MHz
 LOW-PROFILE
 MINIATURE AT-CUT
 SMD CRYSTAL

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General Description

CX-3-SM AT-cut crystals are leadless devices designed for surface-mounting on printed circuit boards or hybrid circuits. The crystals are low profile with a very small land area.



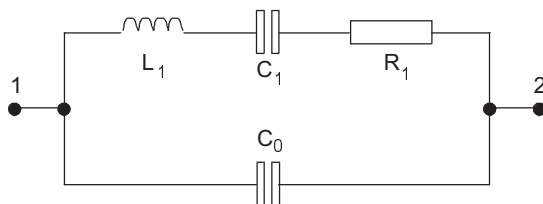
Outline

CX-3-SM Package Dimensions

Dimension	Typical (mm)	Maximum (mm)
A	6.73	7.11
B	2.62	2.90
C	-	see below
D	1.27	1.52
E	1.32	1.57

Dimension "C"	Glass Lid (mm max.)	Ceramic Lid (mm max.)
SM1	1.47	1.75
SM2	1.52	1.80
SM3	1.60	1.88

Equivalent Circuit



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

- Designed for surface-mount applications using infrared, vapour phase, wave solder or epoxy mount techniques
- Ideal for use with microprocessors
- Designed for low power applications
- Compatible with hybrid or PCB mounting
- Low ageing
- Full military environmental testing available
- Custom designs available

Specification

Frequency Range:	9.6MHz to 160MHz
Calibration Tolerance*:	A: ±0.01% (±100ppm) B: ±0.1% C: ±1.0%
Load Capacitance:	20pF (unless other specified)
Motional Resistance (R_1):	see table below
Motional Capacitance (C_1):	see table below
Quality Factor (Q):	see table below
Shunt Capacitance (C_0):	see table below
Drive Level:	500µW max.
Frequency Stability Temp**:	-10° to +70°C from ±10ppm -40° to +85°C from ±20ppm -55° to +125°C from ±30ppm
Ageing, first year:	±5ppm max.
Shock, survival***:	3,000g peak, 0.3ms, 1/2 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
Max. Process Temperature:	260°C for 20 seconds

Note: temperature stability characteristics follow those of AT-cut thickness-shear mode.

Specifications are typical at 25°C unless otherwise indicated.

* Closer frequency calibration available

** Other turning point available

*** Higher shock version available

CX-3-SM 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	60	2.8	95	1.4
32MHz	20	7.8	36	2.4
155MHz	50	0.5	41	3.2

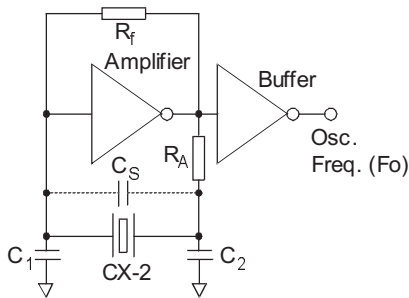
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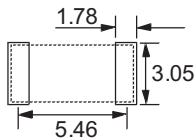
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Circuit Design

Conventional HCMOS Pierce Oscillator Circuit



Solder Pad Layout



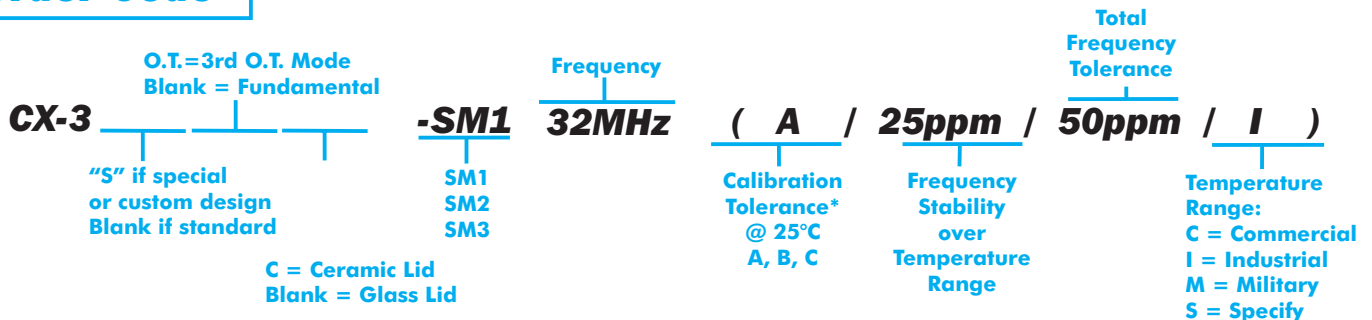
Packaging

- CX-3H-SM- Bulk Pack (Standard)
- 16mm tape, 178mm or 330mm reels (Optional) per EIA 481
 - Tray Pack (Optional)

Terminations

Designation	Termination
SM1	Gold Plated
SM2	Nickel, Silver Plated
SM3	Nickel, Solder Plated and Solder Dipped

Order Code



*For other calibration tolerances enter figure in ppm