

## CX-6-SM

9.6MHz to 160MHz

ULTRA-LOW PROFILE

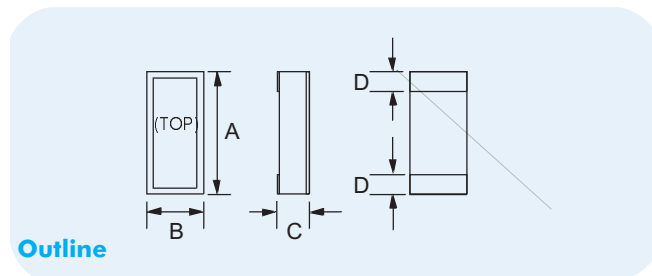
MINIATURE SMD CRYSTAL

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## General Description

The CX-6-SM AT-cut quartz crystals are leadless devices designed for surface mounting on printed circuit boards or hybrid substrates. The crystals are intended for use in Pierce oscillators. Hermetically sealed in a miniature ceramic package, the crystals are produced utilizing a photo-lithographic process ensuring consistent high quality production units.



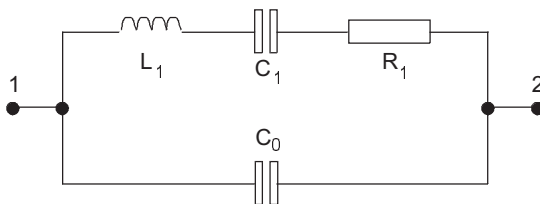
Outline

### CX-6-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

Dimension "C"	Glass Lid (mm max.)	Ceramic Lid (mm max.)
SM1	0.99	1.35
SM2	1.04	1.40
SM3	1.12	1.47

### Equivalent Circuit



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

- Ultra-low profile (1mm)
- Ideal for use with microprocessors
- Designed for low power applications
- Compatible with hybrid or PCB packaging
- High shock and vibration resistance
- Low ageing
- Full military environmental testing available
- Custom designs available

## Specification

<b>Frequency Range:</b>	9.6MHz to 70MHz Fundamental 70MHz to 160MHz 3rd O/T
<b>Motional Resistance (<math>R_1</math>):</b>	see table
<b>Motional Capacitance (<math>C_1</math>):</b>	see table
<b>Quality Factor (Q):</b>	see table
<b>Shunt Capacitance (<math>C_0</math>):</b>	see table
<b>Calibration Tolerance*:</b>	A $\pm 0.01\%$ ( $\pm 100$ ppm) B $\pm 0.1\%$ C $\pm 1.0\%$
<b>Load Capacitance:</b>	20pF (or other as specified)
<b>Drive Level:</b>	500 $\mu$ W max.
<b>Temperature Stability**:</b>	-10 $^\circ$ to +70 $^\circ$ C from $\pm 10$ ppm -40 $^\circ$ to +85 $^\circ$ C from $\pm 20$ ppm -55 $^\circ$ to +125 $^\circ$ C from $\pm 30$ ppm $\pm 5$ ppm max.
<b>Ageing, first year:</b>	$\pm 5$ ppm max.
<b>Shock, survival***:</b>	3000g peak, 0.3ms, 1/2 sine
<b>Vibration, survival:</b>	20g rms 10-2,000Hz random
<b>Operating Temperature:</b>	-10 $^\circ$ ~+70 $^\circ$ C (commercial) -40 $^\circ$ ~+85 $^\circ$ C (industrial) -55 $^\circ$ ~+125 $^\circ$ C (military)
<b>Storage Temperature:</b>	-55 $^\circ$ C~+125 $^\circ$ C
<b>Process Temperature:</b>	260 $^\circ$ C for 20 sec.

Specifications are typical at 25 $^\circ$ C unless otherwise indicated.

Note: the frequency stability characteristics follow that of AT-cut thickness-shear mode.

- \* Closer calibration available, from  $\pm 5$ ppm
- \*\* Does not include calibration tolerance
- \*\*\* Higher shock version available

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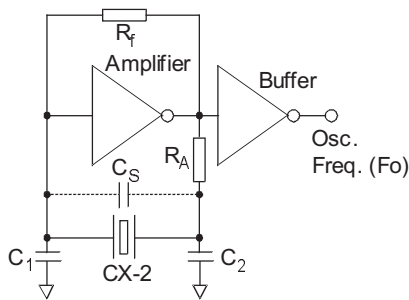
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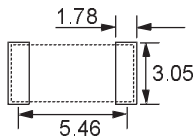
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## Circuit Design

### Conventional HCMOS Pierce Oscillator Circuit



## Solder Pad Layout



## Terminations

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

## Packaging

- CX-6-SM - Bulk Pack (Standard)
- 16mm tape, 178mm or 330mm reels (Optional) per EIA 481
- Tray Pack (Optional)

## Order Code

