

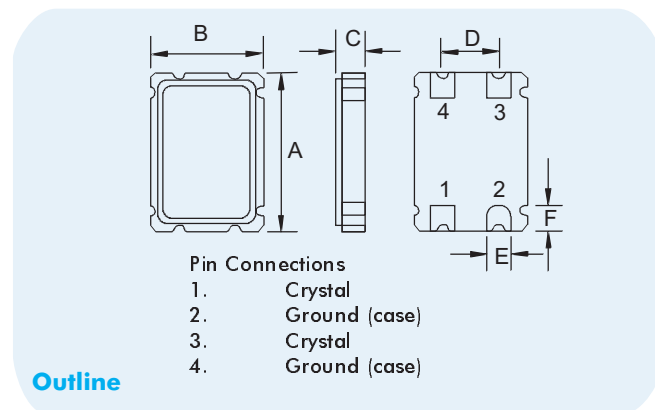
CX-5-SM
8MHz to 160MHz
 LOW-PROFILE
 SMD CRYSTAL

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General Description

The CX-5-SM series surface-mount quartz crystals are leadless devices designed for surface-mounting on printed circuit boards or hybrid substrates. The packages are hermetically sealed and designed specifically for process temperatures up to 260°C.



Specification

Frequency Range:

8MHz to 70MHz Fundamental
 48MHz to 160MHz 3rd O/T

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

Calibration Tolerance*:

A $\pm 0.005\%$

B $\pm 0.1\%$

C $\pm 1.0\%$

Load Capacitance:

Customer specified

Drive Level:

500 μ W max.

Temperature Stability:**

-10° to +70°C from ± 5 ppm

-40° to +85°C from ± 30 ppm

-55° to +125°C from ± 30 ppm

± 1 ppm typ., ± 5 ppm max.

Ageing, first year:

Shock, survival*:**

3000g 1ms, 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

Specifications are typical at 25°C unless otherwise indicated.

* Tighter tolerances available

** Does not include calibration tolerance

*** Higher shock available

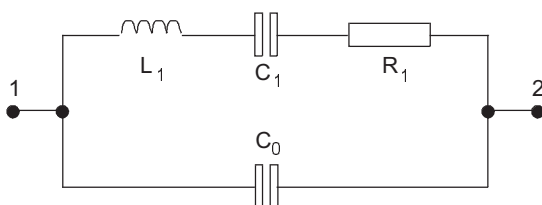
CX-5-SM Package Dimensions

Dimension	(mm)	Dimension Value
A	7.67	max.
B	5.18	max.
C	1.30	max.
D	2.54	typ.
E	1.02	typ.
F	1.40	typ.

CX-5-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)
12MHz	58	2.2	108.6	1.3
16MHz	35	4.3	65	1.8
155MHz	50	0.5	41	3.2

Equivalent Circuit



R_1 Motional Resistance L_1 Motional Inductance

C_1 Motional Capacitance C_0 Shunt Capacitance

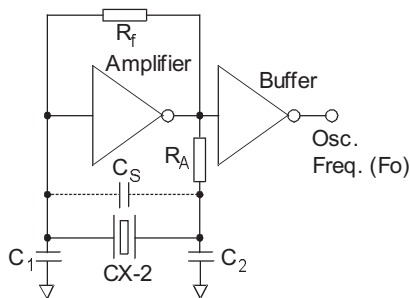
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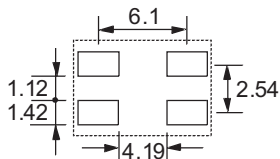
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Circuit Design

Conventional HCMOS Pierce Oscillator Circuit



Suggested Solder Pad Layout



Terminations

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

Order Code

CX-5 **-SM1** **10.0MHz** (**A** / **I**)

"S" if special or custom design
 Blank if standard

SM1
 SM3

Frequency

Calibration Tolerance* @ 25°C
 A, B, C

Temperature Range:
 C = Commercial
 I = Industrial
 M = Military
 S = Specify

*For other calibration tolerances enter figure in ppm

Process Temperatures

- 1.) Vapour Phase 253°C or 215°C for 10 sec. to 5 min.
- 2.) Wave Solder 260°C for 10 sec.
- 3.) Infrared 240°C for 10 sec.
- 4.) Conductive Epoxy 165°C for 30 min.

Packaging

- CX-5-SM - Tray Pack (Standard)
- Bulk Pack (Optional)
- 16mm tape, Single Pitch, 178mm or 330mm reels (Optional) per EIA 481