

FEATURES

- Frequency Range 32kHz to 160kHz
- High shock resistance
- Ultra-small ceramic package
- Low ageing
- Designed for low power applications
- Full MIL testing available

DESCRIPTION

CX9VSM crystals are leadless devices designed for surface mounting on PCBs or hybrid substrates. The crystals have a very low-profile (<0.94mm) and are suited for all low frequency applications.

SPECIFICATION

Specifications stated are typical at 25°C unless otherwise indicated. Specifications may change without notice.

Parameters	Fundamental	
Frequency (kHz):	32.768	100.0
Motional Resistance R1 (kΩ):	70	19
Motional Capacitance C1 (ff):	2.2	1.0
Quality Factor Q (k):	27	80
Shunt Capacitance C0 (pF):	1.1	0.84
Load Capacitance (pF) ¹ :	9	5
Turning Point (°C) ² :	20	16

Standard Calibration Tolerance for 32.768kHz (3)			
Glass Lid:	A = ±50ppm (0.003%)	B = ±100ppm (0.01%)	C = ±1000ppm (0.1%)
Ceramic Lid:	A = ±100ppm (0.01%)	B = ±1000ppm (0.1%)	C = ±10000ppm (1.0%)

Drive Level:	0.5µW max.
Temperature Coefficient (k):	-0.035ppm/°C ²
Ageing, first year:	5ppm max.

Note: Frequency f at temperature T is related to frequency Fo at turning point temperature To by:

$$\frac{f-f_0}{f_0} = k(T-T_0)^2$$

Shock, survival:	5000g, 0.3ms, ½ sine
Vibration, survival:	20g rms, 10~2000Hz random

Operating Temperature Range	
Commercial:	-10° to +70°C
Industrial:	-40° to +85°C
Military:	-55 to +125°C

Storage Temperature Range:	-55° to +125°C
Maximum Process Temperature:	+260°C for 20 seconds

1. Other load capacitance values are available.
2. Other temperature available.
3. Tighter tolerances available.

HOW TO ORDER CX9VSM CRYSTALS

CX9V - S - C - SM1 - 100.0K, 100 / I

'S' if special, custom design. Otherwise leave blank

Blank = glass lid
C = ceramic lid

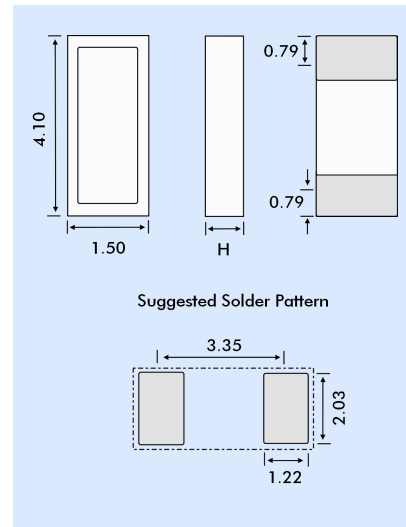
Terminations
SM1 = Gold plated *
SM2 = Solder plated
SM3 = Solder dipped
SM4 = Solder plated *
SM5 = Solder dipped *
* = Lead free

Frequency
K = kHz

Calibration Tolerance*
A
B
C

Temp. Range
C = -10° ~ +70°C
I = -40° ~ +85°C
M = -55° ~ +125°C
S = Customer specified

OUTLINE & DIMENSIONS

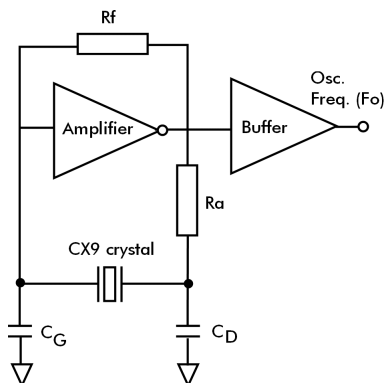


Dim. H	Glass Lid	Ceramic Lid
SM1	0.87	0.90
SM2	0.87	0.90
SM3	0.91	0.94
SM4	0.87	0.90
SM5	0.91	0.94

TERMINATIONS - PLATING

Designation	Termination
SM1	Gold Plated (Lead Free)
SM2	Solder Plated
SM3	Solder Dipped
SM4	Solder Plated (Lead Free)
SM5	Solder Dipped (Lead Free)

Conventional CMOS Pierce Oscillator Circuit



PACKAGING OPTIONS

CX9VSM crystals are available either tray packed (<250pcs) or tape and reel (>250 pieces).

16mm tape, 178mm or 330mm reels (EIA 418).