

### FEATURES

- Frequency Range 80kHz to 160kHz
- High shock resistance
- Ultra-small ceramic package
- Low ageing
- Designed for low power applications
- Full MIL testing available

### DESCRIPTION

CX7VSM crystals are leadless devices designed for surface mounting on PCBs or hybrid substrates. The crystals are intended for use in Pierce (single inverter) oscillator circuits.

### SPECIFICATION

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

Parameters	Fundamental	
Frequency (kHz):	100.0	153.6
Motional Resistance R1 (kΩ):	19	11
Motional Capacitance C1 (ff):	1.0	0.8
QualityFactor Q (k):	86	110
Load Capacitance (pF):	5	5
Turning Point (°C):	10	5

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 <sup>2</sup>
Ageing, first year:	5ppm max.

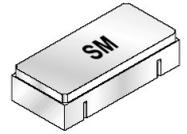
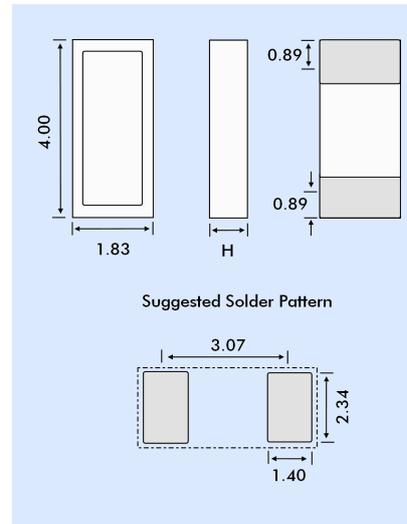
Note: Frequency f at temperature T is related to frequency Fo at turning point temperature To by:

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

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.

### OUTLINE & DIMENSIONS

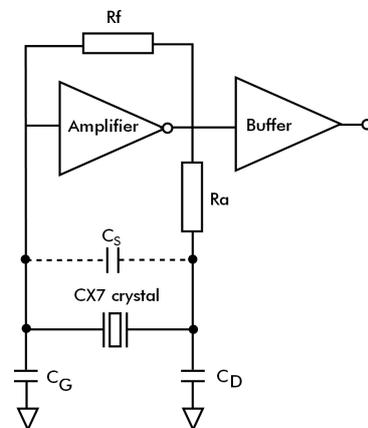


Dim. H	Glass Lid	Ceramic Lid
SM1	1.14	1.27
SM2	1.17	1.30
SM3	1.22	1.35

### TERMINATIONS - PLATING

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

### Conventional CMOS Pierce Oscillator Circuit



### PACKAGING OPTIONS

CX7VSM crystals are available either tray packed (<250pcs) or tape and reel (>250 pieces).  
16mm tape, 178mm or 330mm reels (EIA 418).

### HOW TO ORDER CX7VSM CRYSTALS

<b>CX7V</b>	<b>- S</b>	<b>- C</b>	<b>- SM1</b>	<b>- 100.0K,</b>	<b>A</b>	<b>/ I</b>
'S' if special, custom design. Otherwise leave blank	Blank = glass lid C = ceramic lid	Terminations SM1 = Gold plated * SM2 = Solder plated SM3 = Solder dipped	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	

\* If other calibration required enter in ppm.