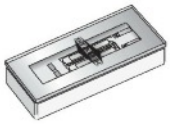
EUROQUARTZ — CX1HSM CRYSTAL

Miniature SMD Crystal for Series Oscillators — 10kHz to 600kHz



FEATURES

- **Frequency Range 10kHz to 600kHz**
- **High shock resistance**
- **Low ageing**
- **Designed for low power applications**
- **Full MIL testing available**

DESCRIPTION

CX1HSM crystals consist of a high quality tuning fork resonator in a rugged, hermetically sealed ceramic package. CX1VSM is intended for use in Series (two cascaded inverters) oscillator circuits. Designed and manufactured by Statek Inc.

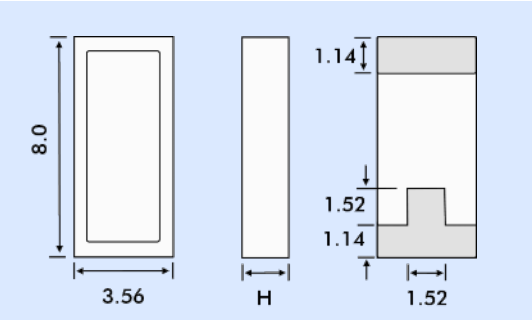
SPECIFICATION

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

Frequency Range:	10.0kHz to 600.0kHz
Standard Calibration Tolerance*:	*see table*
Motional Resistance (R_1):	*Figure 1* Max = 10~169.9kHz, 2x typical 170~600kHz, 2.5x typical
Motional Capacitance (C_1):	*Figure 2*
Quality Factor (Q):	*Figure 3* Min. is 0.25x typical
Shunt Capacitance (C_0):	2.0pF max.
Drive Level	
10~24.9kHz:	1.5µW max.
25~600.0kHz:	3.0µW max.
Turning Point (T_0)**:	*Figure 4*
Temperature Coefficient (k):	-0.035ppm/°C²
Ageing, first year:	5ppm max.
Shock, survival***:	1,000g, 1ms, ½ sine
Vibration, survival***:	20g rms, 10~2000Hz
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

* *Tighter frequency calibration is available.*
** *Other turning point is available*
*** *Higher shock and vibration survival is available*

OUTLINE & DIMENSIONS



DIMENSION 'H'

Terminations	Glass Lid	Ceramic Lid
SM1	1.65	1.78
SM2/SM4	1.70	1.83
SM3/SM5	1.78	1.90

STANDARD CALIBRATION TOLERANCE

Frequency Range (kHz)			
10~74.9	75~169.9	170~249.9	250~600
±30ppm (0.003%)	±50ppm (0.005%)	±100ppm (0.01%)	±200ppm (0.02%)
±100ppm (0.01%)	±100ppm (0.01%)	±200ppm (0.02%)	±500ppm (0.05%)
±1000ppm (0.1%)	±1000ppm (0.1%)	±2000ppm (0.2%)	±5000ppm (0.5%)

PACKAGING OPTIONS

CX1HSM crystals are available either tray packed (<250pcs) or tape and reel (>250 pieces).
16mm tape, 178mm or 330mm reels (EIA 418).

HOW TO ORDER CX1HSM CRYSTALS

CX1H - S - C - SM1 - 32.768K 30 / I

S	C	SM1	32.768K	30	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 @25°C (in ppm)	Temp. Range C = -10° ~ +70°C I = -40° ~ +85°C M = -55° ~ +125°C S = Customer specified

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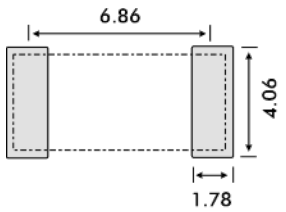
EUROQUARTZ

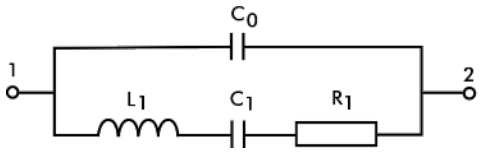
CX1HSM CRYSTAL

Miniature SMD Crystal for Series Oscillators 10kHz to 600kHz

SUGGESTED SOLDERING PATTERN

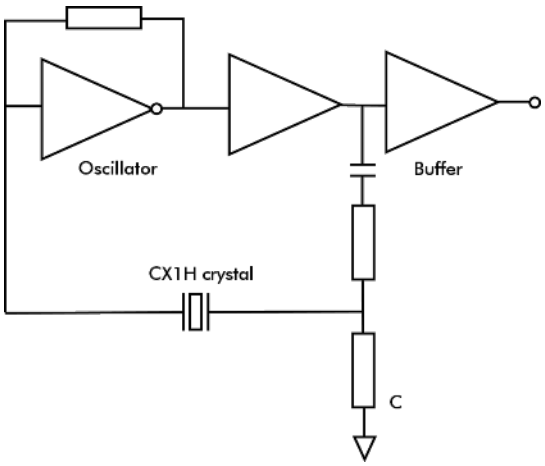


CRYSTAL EQUIVALENT CIRCUIT



R1 Motional Resistance
C1 Motional Capacitance
L1 Motional Inductance
C0 Shunt Capacitance

CONVENTIONAL SERIES OSCILLATOR CIRCUIT



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)

Turning Point Temperature

Note: Frequency f at temperature T is related to frequency F0 at turning point temperature To by:

$$\frac{f-fo}{fo} = k(T-To)^2$$

FIGURE 1
CX1H Typical Motional Resistance R1

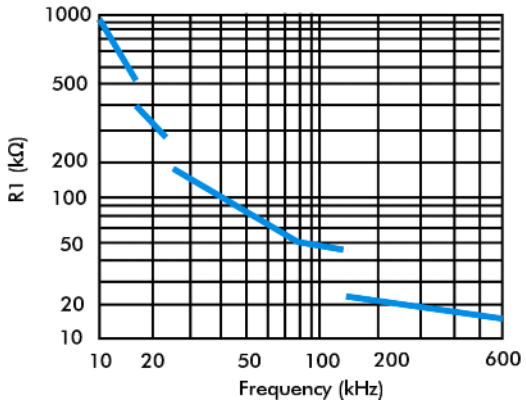


FIGURE 2
CX1H Typical Motional Capacitance C1

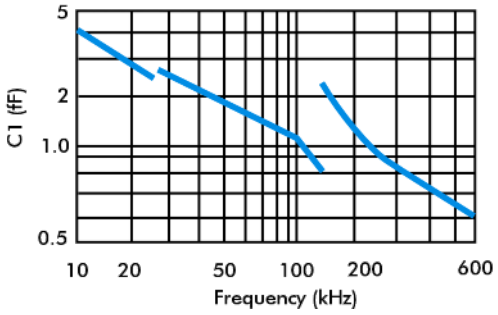


FIGURE 3
CX1H Typical Quality Factor (Q)

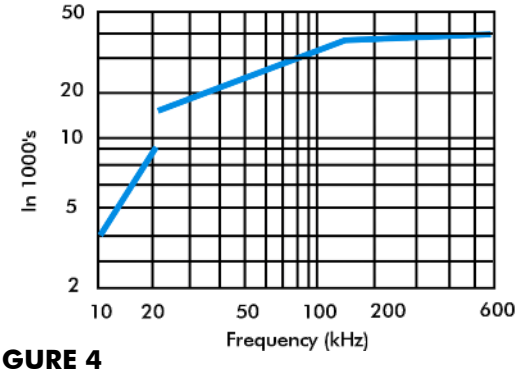
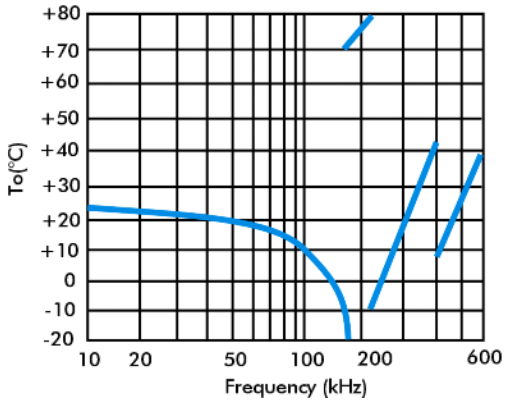


FIGURE 4
CX1H Typical Turning Point Temperature (To)



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