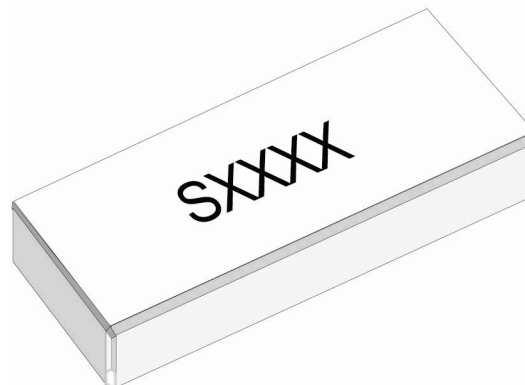


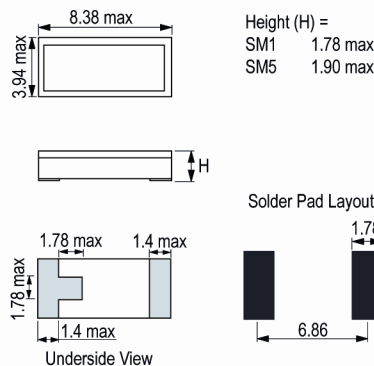
ISSUE 2; October 2018

**Description**

- An increasing number of applications require the use of high-temperature crystals. For these applications, IQD offers Statek's CX1VHT crystals. These crystals are designed to operate at temperatures up to and including 200°C, and feature an expected life in excess of 1,000 hours at these temperatures. The frequency range offered is 10kHz to 600kHz.
- -SM1 SM1 (Gold Plated, RoHS compliant)
- -SM5 SM5 (Solder Dipped, RoHS compliant)
- Features:  
High temperature operation up to 200°C  
High shock resistance  
Hermetically sealed ceramic package
- Applications:  
Industrial  
Downhole instrumentation  
Rotary shaft sensors  
Underground boring tools



**Outline (mm) -SM1 = SM1 (Gold Plated, RoHS compliant)**



**Frequency Parameters**

- Frequency 10.0kHz to 600.0kHz
- Frequency Tolerance ±30.00ppm to ±5,000.00ppm
- Ageing ±5ppm max in 1st year @ 25°C
- Frequency Stability:  $(f(T) - f(T_0)) / f(T_0) = k(T - T_0)^2$   
where  $f(T)$  = frequency at temperature T, T = temperature,  $T_0$  = turnover temperature,  $F_0$  = frequency at turnover temperature  $T_0$
- Temperature Coefficient (k): -0.035ppm/°C<sup>2</sup>

**Electrical Parameters**

- Load Capacitance (CL) 4.0pF to 11.0pF
- Shunt Capacitance (C0) 1.7pF typ 32.768kHz
- Drive Level 0.5µW 10-24.9kHz, 1µW max 25-600kHz
- Motional Resistance (@ 32.768kHz): 40kΩ typ, 55kΩ @ 150°C, 73kΩ @ 200°C  
Motional Capacitance (@ 32.768kHz): 2.3fF typ  
Quality Factor (@ 32.768kHz): 53k typ  
Turnover Temperature (To): 26°C
- Please note that all data is only valid at 25°C unless otherwise stated.

**Operating Temperature Ranges**

- 0 to 200°C

**Environmental Parameters**

- Shock: 1000g, 1ms, 1/2 sine
- Vibration: 20g rms, 10-2000Hz
- Storage Temperature: -55 to 125°C
- Higher shock and vibration specifications available: please contact the IQD Sales Office to discuss specific requirements
- RoHS Reflow 260°C max for 20 sec max

**Frequency Shift vs Time**

Temp.	Frequency shift after:			
	1008 hours (Actual Data)	1824 hours (Actual Data)	4320 hours <sup>2</sup> (Actual Data)	8760 hours <sup>2</sup> (Actual Data)
150°C	1.97ppm	2.51ppm	3.30ppm	3.94ppm
175°C	4.80ppm	5.66ppm	6.94ppm	7.99ppm
200°C	29.40ppm	36.82ppm	47.61ppm	56.46ppm

1. The data listed in this table is for a 32.768kHz CX4 crystal.  
2. The data shown for 4320 hours and 8760 hours is data that has been projected using a curve-fitting method.

**Sales Office Contact Details:**

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#### Compliance

- RoHS Status (2011/65/EU)      Optional
- REACH Status                      Compliant
- MSL Rating (JDEC-STD-033):    Not Applicable

#### Packaging Details

- Pack Style: Reel      Tape & reel in accordance with EIA-481-D  
    Pack Size: 1,000
- Pack Style: Tray      Tray  
    Pack Size: 1

#### Electrical Specification - maximum limiting values

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Over Tone Order	ESR
		°C	ppm		Ω
10.00kHz	600.0kHz	0 to 200		Fundamental	-

\*Stability Maximum values  $\pm 0\text{ppm}$

*This document was correct at the time of printing; please contact your local sales office for the latest version.*

[Click to view latest version on our website.](#)

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