

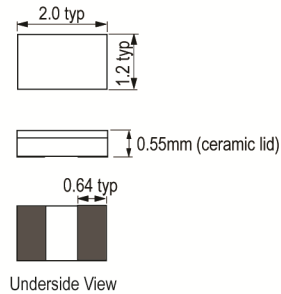
**ISSUE 1; February 2019**

**Description**

- When miniaturisation is paramount the low profile CX16 quartz crystal is an excellent choice. Available in a frequency of 32.768kHz, this crystal has a typical footprint of 2.0mm x 1.2mm, and a typical height of 0.55mm. The resonator is manufactured using Statek's photolithographic and chemical milling processes and then sealed within a ceramic package for high stability and low ageing. Available with tight calibration tolerances and high stability over temperature, this crystal is well suited for applications that have a space restraint and require a crystal with a low profile.
- -C SM1 Gold plated, ceramic lid
- -SM1 Gold plated, glass lid
- FEATURES:
  - Surface mount design
  - Ultra-miniature
  - Ultra-low profile
  - Hermetically sealed
  - High shock and vibration survival
  - Excellent ageing characteristics
- APPLICATIONS:
  - Medical -
    - Main Clock/Real-Time Clock in:
    - Glucose Monitoring Systems
    - Catheter Tips
    - Surgical Instruments
- Please note that all data is only valid at 25°C unless otherwise stated.



**Outline (mm) -SM1 = Gold plated, glass lid**



**Frequency Parameters**

- Frequency 32.768kHz
- Frequency Tolerance ±100.00ppm
- Tolerance Condition @ 25°C
- Ageing ±3ppm max in 1st year @ 25°C
- Turnover Temperature (To): 25°C
- Frequency Stability Coefficient (k): -0.035ppm/°C<sup>2</sup>
- The crystal frequency f as a function of temperature T follows the parabolic relationship:  
 $f(T) = f(T_0) [1 + k (T - T_0)^2]$   
 where  $T_0$  is the turnover temperature and k is the frequency stability coefficient
- Note: Other Turnover Temperatures and tighter Frequency Tolerances are available - please contact an IQD Sales Office

**Electrical Parameters**

- Load Capacitance (CL) 9.0pF
- Shunt Capacitance (C0) 1.2pF typ
- Drive Level 0.5µW max
- Motional Capacitance C1: 5fF typ
- Quality Factor Q: 13000 typ
- Note: Other Load Capacitances are available - please contact an IQD Sales Office

**Operating Temperature Ranges**

- -10 to 70°C
- -40 to 85°C
- -55 to 125°C

**Sales Office Contact Details:**

UK: +44 (0)1460 270200  
Germany: 0800 1808 443

France: 0800 901 383  
USA: +1.760.318.2824

Email: [info@iqdfrequencyproducts.com](mailto:info@iqdfrequencyproducts.com)  
Web: [www.iqdfrequencyproducts.com](http://www.iqdfrequencyproducts.com)

#### Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine
- Vibration: 20G, 10-2000Hz swept sine
- Storage Temperature Range: -55 to 125°C

#### Manufacturing Details

- Maximum Process Temperature: 260°C for 20sec max

#### Ordering Information

- Frequency\*  
Model\*  
Termination Variant  
Frequency Tolerance (@ 25°C)\*  
Operating Temperature Range\*  
Load Capacitance\*  
(\*minimum required)
- Termination Variants:  
SM1 = Gold Plated, glass lid  
SM1-C = Gold Plated, ceramic lid
- Example  
32.768kHz CX16 TF-C SM1  
100/-/-55 to 125C/9 FUND

#### 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      Supplied on a tray  
Pack Size: 1

#### Electrical Specification - maximum limiting values

Frequency Min	Temperature Range	Stability (Min)	Over Tone Order	ESR
	°C	ppm		Ω
32.768000kHz	-10 to 70	-	Fundamental	75,000
	-40 to 85	-	Fundamental	75,000
	-55 to 125	-	Fundamental	75,000

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