

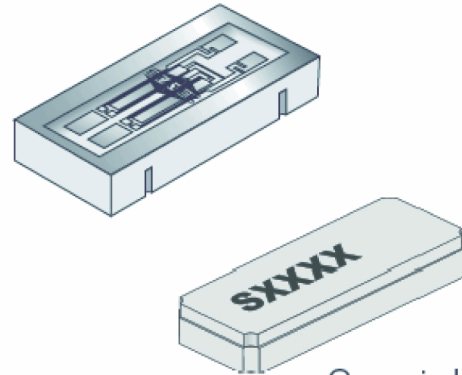
ISSUE 2; June 2019

**Description**

- This product is designed and manufactured by Statek Corporation in California, USA and distributed by IQD. The CX9V TF quartz crystal is available in frequencies from 32 kHz to 160 kHz. Using micro-machining processes, this surface-mountable crystal is hermetically sealed within an ultra-miniature ceramic package to ensure high stability and low ageing. Tight calibration and high frequency/temperature stability make the CX9V TF ideally suited for all low frequency applications.
- -SM1 SM1 (Gold Plated RoHS)
- -SM1-C SM1-C (Gold Plated, ceramic lid, RoHS)
- -SM2 SM2 (Solder plated, non RoHS)
- -SM2-C SM2-C (Solder plated, ceramic lid, non RoHS)
- -SM3 SM3 (Solder dipped, non RoHS)
- -SM3-C SM3-C (Solder dipped, ceramic lid, non RoHS)
- -SM4 SM4 (Solder Plated, RoHS)
- -SM4-C SM4-C (Solder Dipped, ceramic lid, RoHS)
- -SM5 SM5 (Solder Dipped, RoHS)
- -SM5-C SM5-C (Solder Dipped, ceramic lid, RoHS)
- FEATURES:  
Ultra-miniature, surface mount design  
Low profile  
Available with glass or ceramic lid  
Hermetically sealed ceramic package  
High shock and vibration survival  
Excellent ageing characteristics  
Designed for low power applications
- APPLICATIONS:  
Medical -  
Defibrillator  
Medical instruments  
Industrial, Computer & Communications -  
Smart card  
Down hole instrumentation  
Transponder / Animal migration  
Process instrumentation  
Aerospace -  
Airborne hybrid  
Navigational computer  
Real time clock
- Please note that all data is only valid at 25°C unless otherwise stated.

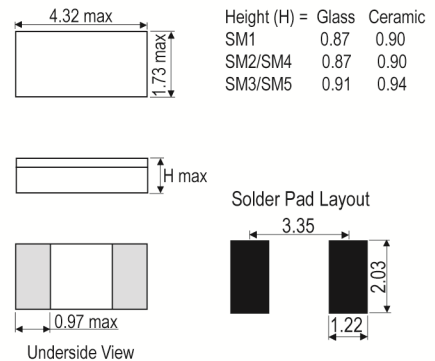
**Frequency Parameters**

- Frequency 32.0kHz to 160.0kHz
- Frequency Tolerance ±30.00ppm to ±10,000.00ppm
- Tolerance Condition @ 25°C
- Ageing ±5ppm max in 1st year @ 25°C
- Frequency (f) at temperature (T) deviation from frequency (fo) at turning point temperature (To):  $(f - fo)/fo = k(T - To)^2$
- Note: Tighter Frequency Tolerances are available - please contact an IQD Sales Office

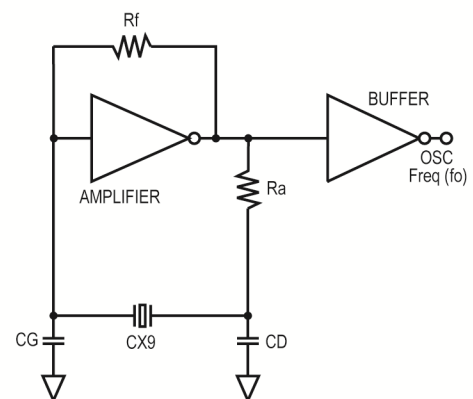


Ceramic Lid

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



**Conventional CMOS Pierce Oscillator Circuit**



**Sales Office Contact Details:**

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#### Electrical Parameters

- Load Capacitance (CL) 5.0pF to 9.0pF
- Shunt Capacitance (C0) 1.0pF typ
- Drive Level 0.5μW max
- Typical Motional Values:

Frequency	32.768kHz	100kHz
Motional Resistance R1 (kΩ)	60	19
Motional Capacitance C1 (fF)	2.2	1.0
Quality Factor Q (k)	37	80
Shunt Capacitance C0 (pF)	1.0	0.84
Load Capacitance (pF)	9	5
Turning Point (°C)	20	16
- Note: Other load capacitances and other turning point temperatures are available - please contact an IQD Sales Offices
- Temperature Coefficient: -0.035ppm/°C<sup>2</sup>

#### Operating Temperature Ranges

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

#### Environmental Parameters

- Shock: 5000G, 0.3ms, 1/2 sine  
Note: Higher shock values also available - please contact an IQD Sales Offices
- Vibration: 20G rms, 10-2000Hz random
- Storage Temperature Range: -55 to 125°C

#### Manufacturing Details

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

#### Ordering Information

- Frequency\*
- Model\*
- Lid Variant\*
- Termination Variant\*
- Frequency Tolerance (@ 25°C)\*
- Operating Temperature Range\*
- Load Capacitance\*  
(\*minimum required)
- Lid Variants:
  - Blank = Glass
  - C = Ceramic
- Termination Variants:
  - SM1 = Gold Plated
  - SM4 = Solder Plated
  - SM5 = Solder DippedNote: non-RoHS compliant terminations SM2 and SM3 are available - please contact an IQD Sales Office
- Example
  - 100.0kHz CX9V TF-C-SM1
  - 100/-/-40 to 85C/5 FUND

#### Compliance

- RoHS Status (2015/863/EU) Optional
- REACH Status Compliant
- MSL Rating (JDEC-STD-033): Not Applicable

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**Packaging Details**

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

**Electrical Specification - maximum limiting values**

Frequency Min	Frequency Max	Temperature Range	Stability (Min)	Over Tone Order	ESR
		°C	ppm		Ω
32.000kHz	160.00kHz	-10 to 70		Fundamental	- 0
		-40 to 85			- 0
		-55 to 125			- 0

\*Stability Maximum values  $\pm 0$ ppm

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

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