

ISSUE 7; April 2016

### Description

- IQD's ultra-miniature CX4V TF Statek quartz crystals are hermetically sealed in surface mount ceramic packages and custom laser-tuned to frequencies ranging from 30 kHz to 250 kHz. This high quality tuning fork resonator is intended for use in Pierce (single inverter) oscillators with a maximum process temperature not to exceed 260°C.
- C SM1 Ceramic Lid, Gold Plated, Pb Free
- C SM4 Ceramic lid, Solder Plated, Pb Free
- C SM5 Ceramic lid, Solder Dipped, Pb Free
- SM1 Glass Lid, Gold Plated, Pb Free
- SM4 Glass Lid, Solder Plated, Pb Free
- SM5 Glass Lid, Solder Dipped, Pb Free
- Please note that all data is only valid at 25°C unless otherwise stated.

### Frequency Parameters

- Frequency 30.0kHz to 250.0kHz
  - Frequency Tolerance  $\pm 30.00\text{ppm}$  to  $\pm 10,000.00\text{ppm}$
  - Tolerance Condition @ 25°C
  - Ageing  $\pm 3\text{pm}$  max in 1st year
  - Temperature Coefficient (k):  $-0.035 \text{ ppm}/^\circ\text{C}^2$
- Note: Frequency f at temperature T is related to frequency f0 at turning point temperature T0 by:  $(f - f_0)/f_0 = k(T-T_0)^2$

### Electrical Parameters

- Load Capacitance (CL) 4.0pF to 11.0pF
- Shunt Capacitance (C0) 0.7pF typ
- Drive Level 0.5µW max
- Parameters
 

|                              | 32.768 | 100  | 200 |
|------------------------------|--------|------|-----|
| Frequency (kHz)              | 32.768 | 100  | 200 |
| Motional Resistance R1 (kΩ)  | 50     | 18   | 2.4 |
| Motional Capacitance C1 (fF) | 2.3    | 1.07 | 2.2 |
| Quality Factor Q (k)         | 40     | 85   | 140 |
| Shunt Capacitance C0 (pF)    | 1.1    | 0.7  | 1.2 |
| Load Capacitance (pF)        | 9      | 8    | 5   |
| Turning Point (°C)           | 25     | 10   | 29  |

### Operating Temperature Ranges

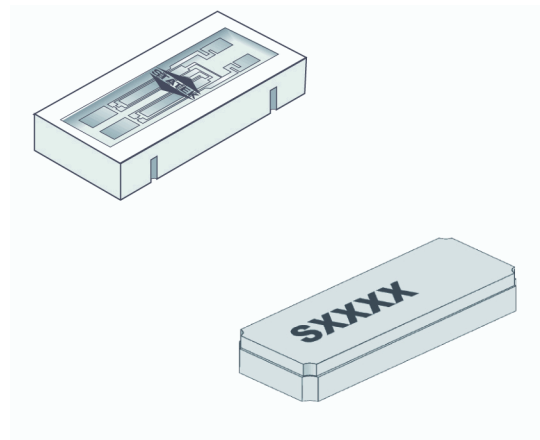
- 10 to 70°C
- 40 to 85°C
- 55 to 125°C

### Environmental Parameters

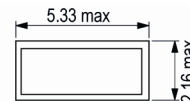
- Shock: 5000 G, 0.3 ms, 1/2 sine
- Vibration: 20 G RMS, 10-2000 Hz random
- Storage Temperature Range: -55 to 125°C

### Manufacturing Details

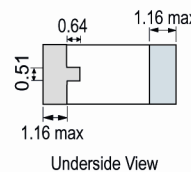
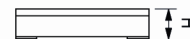
- Process Temperature: 260°C max for no more than 20 sec



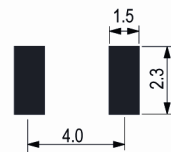
Outline (mm) -SM1 = Glass Lid, Gold Plated, Pb Free



| Height (H) = | Glass Lid | Ceramic Lid |
|--------------|-----------|-------------|
| SM1          | 1.14      | 1.27        |
| SM2          | 1.17      | 1.30        |
| SM3          | 1.22      | 1.35        |
| SM4          | 1.17      | 1.30        |
| SM5          | 1.22      | 1.35        |



Solder Pad Layout



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#### Ordering Information

- Frequency\*
- Model\*
- Lid\*
- Termination Variant\*
- Frequency Tolerance (@ 25°C)\*
- Operating Temperature Range\*
- Load Capacitance\*
- Overtone
- Example:  
32.768kHz CX4V TF C SM1  
100/-55 to 125C/9 FUND  
Note: C=Ceramic Lid, Blank=Glass Lid

#### Compliance

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

#### 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<br>Min | Frequency<br>Max | Temperature Range | Stability<br>(Min) | Over Tone Order | ESR |
|------------------|------------------|-------------------|--------------------|-----------------|-----|
|                  |                  | °C                | ppm                |                 | Ω   |
| 30.00kHz         | 250.00kHz        | -10 to 70         |                    | Fundamental     | -   |
|                  |                  | -40 to 85         |                    |                 | -   |
|                  |                  | -55 to 125        |                    |                 | -   |

\*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.*

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