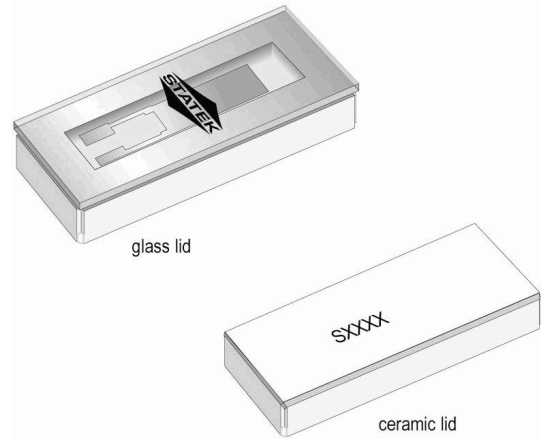


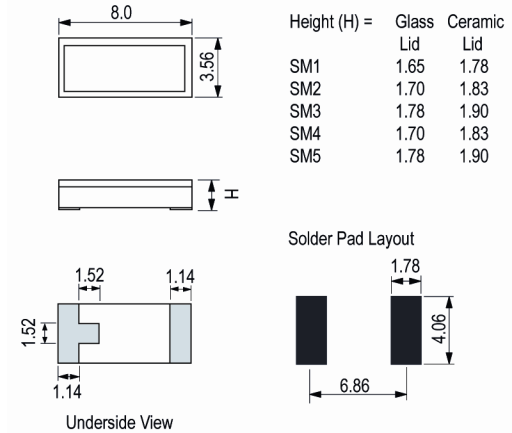
ISSUE 1; June 2016

**Description**

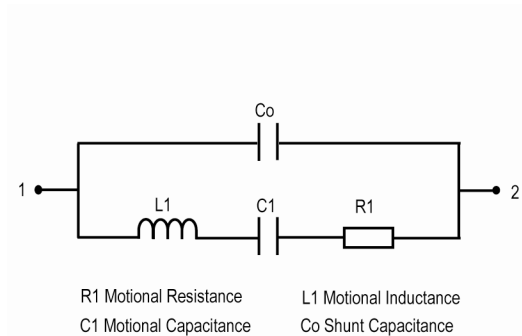
- The miniature CX1HG AT crystal is a leadless ceramic package designed for surface mounting on printed circuit boards or hybrid substrates. These rugged crystals are designed for applications requiring exceptional shock and vibration survival.
- -C-SM1 Ceramic Lid, Gold Plated (Lead Free)
- Ceramic Lid, Gold Plated (Lead Free)
- -C-SM4 Ceramic Lid, Solder Plated (Lead Free)
- Ceramic Lid, Solder Plated (Lead Free)
- -C-SM5 Ceramic Lid, Solder Dipped (Lead Free)
- Ceramic Lid, Solder Dipped (Lead Free)
- -SM1 Glass Lid, Gold Plated (Lead Free)
- Glass Lid, Gold Plated (Lead Free)
- -SM4 Glass Lid, Solder Plated (Lead Free)
- Glass Lid, Solder Plated (Lead Free)
- -SM5 Glass Lid, Solder Dipped (Lead Free)
- Glass Lid, Solder Dipped (Lead Free)
- FEATURES:
  - High shock and vibration resistance
  - Designed for surface mount applications using infrared, vapour phase or epoxy mount techniques
  - Low profile hermetically sealed ceramic package
  - Available with glass or ceramic lid
  - Custom designs available
  - Full military testing available
- APPLICATIONS:
  - Industrial -
    - Down-hole Data Recorder
    - Process Control
    - Environmental Control
    - Engine Control
    - Telemetry
    - Ruggedised Instrumentation
  - Automotive Control
  - Military & Aerospace -
    - Smart Munitions
    - Timing Devices (Fuses)
    - Surveillance Devices
    - Missile Telemetry
    - Ruggedised Communications
  - Aviation Equipment
- Please note that all data is only valid at 25°C unless otherwise stated.



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



**Equivalent Circuit**



**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)

### Frequency Parameters

- Frequency 6.0MHz to 250.0MHz
- Frequency Tolerance  $\pm 100.00\text{ppm}$
- Tolerance Condition @ 25°C
- Frequency Stability  $\pm 10.00\text{ppm}$  to  $\pm 100.00\text{ppm}$
- Ageing  $\pm 10\text{ppm}$  max in 1st year (f<40MHz)
- Notes:
  - Frequency Stability does not include Frequency Tolerance @ 25°C
- Ageing at  $\pm 10\text{ppm}$  max applies for frequencies below 40MHz - for details on higher frequencies and also tighter ageing requirements please contact an IQD Sales Office
- Tighter Frequency Tolerances are available - for details please contact an IQD Sales Office

### Electrical Parameters

- Load Capacitance (CL) 10.0pF to 20.0pF
- Shunt Capacitance (C0) 2.3pF typ
- Drive Level 500 $\mu$ W max f $\leq$ 50MHz, 200 $\mu$ W max f>50MHz
- Electrical Parameters (typ):

Frequency (MHz)	10	32	155.52
Motional Resistance R1 ( $\Omega$ )	30	25	15
Motional Capacitance C1 (fF)	5.5	6.2	4.0
Quality Factor Q (k)	100	30	30
Shunt Capacitance C0 (pF)	2.2	2.3	2.3

### Operating Temperature Ranges

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

### Environmental Parameters

- Shock: 10000G, 0.2ms, 1/2 sine
- Note: Higher Shock values up to 100000G are available - for details please contact an IQD Sales Office
- Vibration: MIL-STD-202G, Method 204D, Condition E: 20G, 10-2000Hz swept sine
- Note: Random vibration testing also available - for details please contact an IQD Sales Office
- Storage Temperature Range: -55 to 125°C

### Manufacturing Details

- Maximum Process Temperature: 260°C for 20sec

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### Ordering Information

- Frequency\*
- Model\*
- Lid\*
- Termination Variant\*
- Frequency Tolerance (@ 25°C)\*
- Frequency Stability (over operating temperature range)\*
- Operating Temperature Range\*
- Load Capacitance
- Overtone
- (\*minimum required)
- Lid Variants:
  - Blank = Glass
  - C = Ceramic
- Termination Variants:
  - SM1 = Gold Plated (RoHS)
  - SM2 = Solder Plated (non-RoHS)
  - SM3 = Solder Dipped (non-RoHS)
  - SM4 = Solder Plated (RoHS)
  - SM5 = Solder Dipped (RoHS)
- Example:
  - 10.0MHz CX1HG AT-SM1
  - 100/100/-40 to 85C/20 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	Frequency Max	Temperature Range	Stability (Min)	Over Tone Order	ESR
		°C	ppm		Ω
6.0MHz	250.0MHz	-10 to 70	±10	Fundamental	-
		-40 to 85	±20		-
		-55 to 125	±30		-

\*Stability Maximum values ±100ppm

*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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