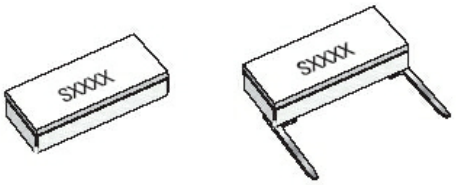
EUROQUARTZ SWCX1 SWEPT QUARTZ CRYSTALS

Radiation-Resistant Miniature Crystals 8MHz to 250MHz

FEATURES

- **Radiation tolerance up to 100kRad total dose**
- **High shock and vibration resistance**
- **Ultra-high reliability**
- **Custom designs available**
- **Military and space screening available**
- **Low ageing**
- **Critical processes performed in Class 10 cleanroom**



DESCRIPTION

SWCX1 swept quartz crystals are designed for applications requiring resistance to ionizing radiation. SWCX1 crystals are produced from cultured quartz that is electrically 'swept' at high temperature to remove interstital impurities within the crystalline structure. This process produces crystal resonators that are superior to those utilizing non-swept quartz on that they maintain their frequency and other electrical characteristics under exposure to radiation levels of 100kRad (1kGy) and greater.

Further, as such applications requiring radiation resistance typically also require various degrees of of high-reliability components, we offer these resonators in three distinct screening options to meet mission critial programme requirements from engineering to flight.

APPLICATIONS

- Military and aerospace
- Satellite
- Space exploration systems
- Deep space probes
- Telemetry

PACKAGING OPTIONS

SWCX1 crystals are avaialble in SMD or leaded formats.
Supplied: Tray packed (option for SM crystals)
16mm tape on 178mm or 330mm reels (only for SM crystals)
Per EIA 481 (see tape and reel data sheet 10109)

PACKAGE DIMENSIONS

Dim.	SWCX1 Surface-mount (mm)	SWCX1 Leaded (03) (mm)
A	8.00	8.00
B	3.56	3.56
C (max.)	1.78	1.78
D	1.14	7.87
E	1.52	1.02
F	-	3.81

ELECTRICAL SPECIFICATION

Specifications are typical unless otherwise noted.

Package Style:	SWCX1 (SM) SWCX1 (03)
Frequency Range:	8.0MHz to 250.0MHz
Motional Resistance (R1) @ 25°C	
at 32MHz:	25Ω
at 155.2MHz:	15Ω
Motional Capacitance (C1) @ 25°C	
at 32MHz:	6.2fF
at 155.2MHz:	1.0fF
Shunt Capacitance (C0) @25°C:	2.3pF
Quality Factor (Q) @ 25°C:	30k
Load Capacitance (CL)	
<50MHz:	20pF
>50MHz:	10pF
Drive Level	
<50MHz:	500µW maximum
>50MHz:	200µW maximum

GENERAL SPECIFICATION

Specifications are typical unless otherwise noted.

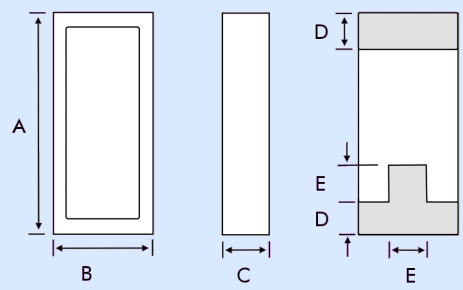
Calibration Tolerance @ 25°C:	±100ppm *or tighter, as required*
Temperature Stability:	*Refer to CX1 AT datasheet*
Ageing First Year:	±2ppm maximum.
Shock Survival*:	3,000g peak 0.3ms, ½ sine
Vibration Survival:	20g, 10~2,000Hz swept sine

TERMINATIONS - PLATING

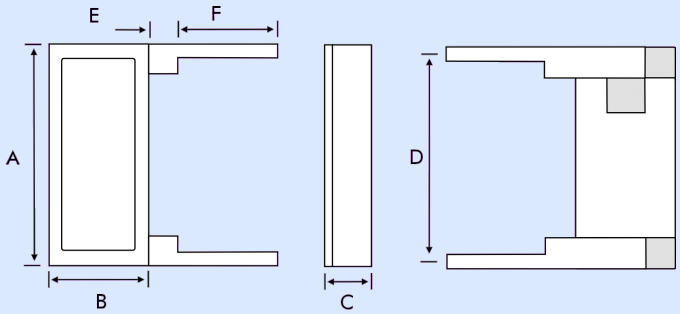
Designation	Termination
SM1	Gold Plated
SM2	Solder Plated
SM3 / 03	Solder Dipped

OUTLINES

SWCX1 SM



SWCX1 Leaded



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STANDARD TESTS AND SCREENING OPTIONS

Code			Item	Method	Comments
S	M	E			
X	X	X	Made with swept quartz		
X	X		Internal visual (pre-seal)	Company internal standard	
X			PIND testing	MIL-STD-883 Method 2020 Cond. A	Performed in both width and thickness directions
X			Radiographic inspection	MIL-STD-202 Method 209	
X	X		Unwanted modes	MIL-PRF-3098	Spurious mode ratio 2:1 or greater
X	X		Low temperature storage	MIL-PRF-3098	Resistance must meet specification at this low temperature.
X	X		Frequency and resistance over operating temperature range	MIL-PRF-3098	Measure every 2.5 degree C or tighter over operating temperature range; frequency and resistance must meet specification.
X	X	X	Accelerated ageing	105 degree C for a minimum of 160 hours	Frequency and resistance must meet specification after ageing; maximum allowed change in series frequency 5ppm
X	X	X	Seal test (fine leak)	MIL-STD-883 Method 1014 Cond. A1	
X	X	X	Seal test (gross leak)	MIL-STD-883 Method 1014 Cond. C	
X	X	X	External visual (post seal)	Company internal standard	

Notes:
S: for space-based applications.
M: for military appl.ications (MIL-PRF-3098)
E: For engineering prototypes and applications not requiring additional screening.

HOW TO ORDER SWCX1 SWEPT CRYSTALS

SWCX1 - S - S - C - SM1 - 20.0M , 100 / 100 / – / I

- SWCX1 — Swept Quartz Crystal
- S — Screening per option code: S = Space, M = Military, E = Engineering
- S — 'S' for special or custom design
- C — 'C' = Ceramic Lid
- SM1 — Leaded 03, Surface Mount SM1, SM2, SM3
- 20.0M — Frequency M = MHz
- 100 — Calibration Tolerance @25°C (in ppm)*
- 100 — Frequency Stability over temperature (in ppm)*
- I — Temp. Range: C = -10° ~ +70°C, I = -40° ~ +85°C, M = -55° ~ +125°C, S = Customer specified

Or:

- / - / 200 / I

- 200 — Total frequency tolerance (ppm)
- I — Temp. Range: C = -10° ~ +70°C, I = -40° ~ +85°C, M = -55° ~ +125°C, S = Customer specified

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