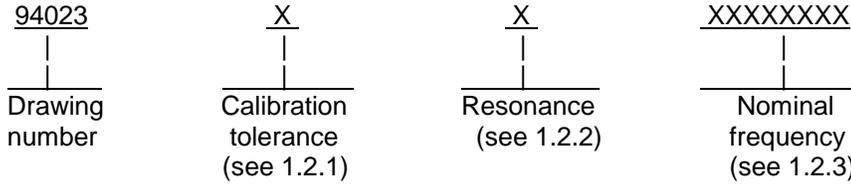




1. SCOPE

1.1 Scope. This drawing describes the requirements for a miniature quartz crystal unit, surface mount, with a frequency range of 10 to 2100 kilohertz, supplied to the requirements of this drawing specified herein.

1.2 Part or Identifying Number (PIN). The PIN for the drawing will be as shown in the following example:



1.2.1 Calibration tolerance. The calibration tolerance will be denoted by the use of one of three letters (see table I).

TABLE I. Calibration tolerance.

Frequency mode of vibration at +25°C	A	B	C
10 - 74.9 kHz tuning fork flexure	± 0.003%	± 0.01%	± 0.10%
75 - 169 kHz tuning fork flexure	± 0.005%	± 0.01%	± 0.10%
170 - 249 kHz tuning fork flexure	± 0.010%	± 0.02%	± 0.20%
250 - 600 kHz tuning fork flexure	± 0.020%	± 0.05%	± 0.50%
530 - 2.10 MHz extentional mode	± 0.050%	± 0.10%	± 1.0%

1.2.2 Resonance. The resonance of the crystal unit can be denoted with either an H or V letter.

H: Denotes parts that are designed for series oscillator circuits.

V: Denotes parts that are designed for Pierce oscillator circuits.

1.2.3 Nominal frequency. The nominal frequency expressed in hertz is identified by a field of eight characters consisting of digits and a letter (M or K) representing, simultaneously, the decimal point and the kilohertz or megahertz multiplier.

All digits preceding and following the letter (M or K) of the group represent significant figures.

The following are examples of using the eight characters in constructing the frequency.

<u>Compressed notation</u>	<u>Used for frequencies in the noted range</u>
DDKDDDDD	10.00000 to 41.00000 kilohertz
DMDDDDDD	5.000000 to 9.999999 megahertz
DDMDDDDD	10.00000 to 41.00000 megahertz

Where D signifies a single digit from 0 to 9.

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2. APPLICABLE DOCUMENT

2.1 Government document.

2.1.1 Standards. The following standards form a part of this drawing to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation.

STANDARD

MILITARY

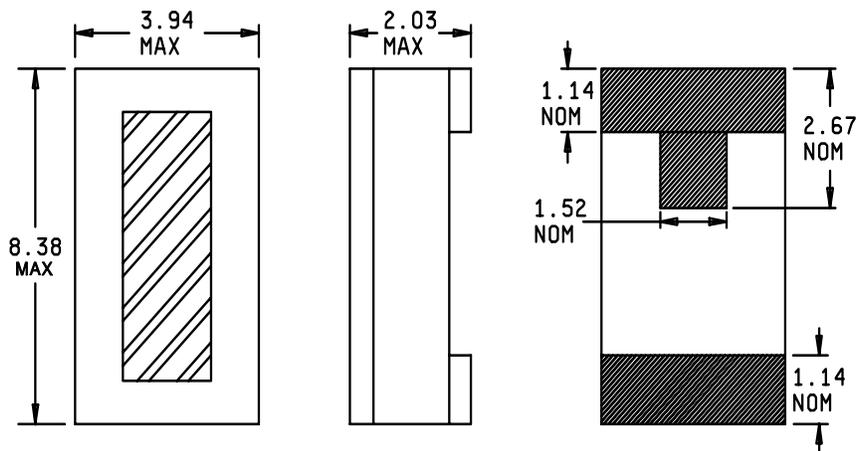
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
- MIL-STD-1285 - Marking of Electrical and Electronic parts.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Defense Automated Printing Service, Building 4D (DPM-DODSSP), 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.2 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Interface and physical dimensions. The individual item requirements shall be as specified herein and table II.



Inches	mm	Inches	mm
.045	1.14	.105	2.67
.060	1.52	.155	3.94
.080	2.03	.330	8.38

NOTES:

1. Dimensions are in metrics.
2. Inch equivalents are given for general information only.
3. Unless otherwise specified, tolerances are  $\pm 0.25$  mm (.010 inch) for two place decimals.

FIGURE 1. Design and dimensions.

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TABLE II. Requirements

Requirements	Specified value or condition.
Dimensions and configurations	See figure 1.
Temperature range	-55°C to +125°C.
Frequency range	10 to 2100 kHz.
Drive level	For V resonance:
	10 - 25 kHz tuning fork flexure - 0.5 $\mu$ W maximum. 25 - 600 kHz tuning fork flexure - 1.0 $\mu$ W maximum. 530 - 2.10 MHz extentional mode - 3.0 $\mu$ W maximum.
	For H resonance:
	10 - 25 kHz tuning fork flexure - 1.5 $\mu$ W maximum. 25 - 600 kHz tuning fork flexure - 3.0 $\mu$ W maximum. 530 - 2.10 MHz extentional mode - 5.0 $\mu$ W maximum.
Calibration tolerance	In accordance with table I.
Capacitance, shunt	1.5 pF for 10-600 kHz tuning fork flexure. 1.2 pF for 530-2000 kHz extentional mode.
Aging, during first year	5 ppm maximum for 10-499 kHz. 10 ppm maximum for 500-2000 kHz.
Shock	10 kHz - 600 kHz tuning fork flexure, method 213 of MIL-STD-202, test condition E.
	530 kHz - 2.10 MHz extentional mode, method 213 of MIL-STD-202, using peak value of 750 g's, 1 ms duration and 1/2 sine wave.
Thermal shock	Method 107 of MIL-STD-202, test condition B.
Vibration	10 kHz - 600 kHz tuning fork flexure, method 204 of MIL-STD-202, test condition D.
	530 kHz - 2.10 MHz extentional mode, method 204 of MIL-STD-202, test condition C.
Moisture resistance	Method 106 of MIL-STD-202.
Resistance to soldering heat	Method 210 of MIL-STD-202, test condition B.
Solderability of leads	Method 208 of MIL-STD-202.

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3.2 Marking. Marking of the miniature crystal unit is not required; however, each unit package shall be marked in accordance with MIL-STD-1285 and include the PIN as specified herein (see 1.2), the manufacturer's name or Commercial and Government Entity (CAGE) code, and date lot codes.

3.3 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Certificate of compliance. A certificate of compliance shall be required from manufacturers requesting to be a suggested source of supply (see 4.3 and 6.5).

3.5 Workmanship. The miniature crystal units shall be uniform in quality and free from any defects that will affect life, serviceability, or appearance.

#### 4. VERIFICATION

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection, examination, and test requirements specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections, examinations, or tests set forth in this description where such inspections, examinations, and tests are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Contractor certification statement. The contractor shall certify and maintain objective quality evidence that the product offered meets the requirements of this drawing, and that the product conforms to the producer's own drawings, specifications, standards, quality assurances practices, and is the same as the product provided as a bid sample. The Government reserves the right to require proof of such conformance prior to the first delivery and thereafter as may be otherwise provided for under the provisions of the contract.

4.3 Certificate of compliance. A certificate of compliance shall accompany all miniature crystal units supplied to this drawing.

#### 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

#### 6. NOTES

(This section contains information of a general or explanatory nature which may be helpful, but is not mandatory.)

6.1 Intended use. Crystal units conforming to this drawing are intended for use when military specifications do not exist and qualified military devices that will perform the required function are not available for OEM application. This drawing is intended exclusively to prevent the proliferation of unnecessary duplicate specifications, drawings, and stock catalog listings. When a military specification exists and the product covered by this drawing has been qualified for listing, this drawing will become inactive for new design. The qualified product will be the preferred item for all applications.

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6.2 Ordering data. The contract or purchase order should specify the following:

- a. Complete PIN number (see 1.2).
- b. Requirements for notification of change in product to acquiring activity, if applicable.
- c. Requirements for packaging, and packing.

6.3 Users of record. Coordination of this document for future revisions are coordinated only with the suggested sources of supply and the users of record of this document. Requests to be added as a recorded user of this drawing should be in writing to: Defense Supply Center, Columbus, ATTN: DSCC/VAT, Post Office Box 3990, Columbus, OH 43216-5000 or by telephone (614) 692-0548 or DSN 850-0548.

6.4 Submission of certificate of compliance. The certificate of compliance submitted to DSCC/VAT, prior to listing as a suggested source, will state the manufacturer's product meets the requirements herein.

6.5 Suggested sources of supply. Suggested sources of supply are listed herein. Additional sources will be added as they become available. For assistance in the use of this drawing, contact Defense Supply Center, Columbus, ATTN: DSCC/VAT, Post Office Box 3990, Columbus, OH 43216-5000 or by telephone (614) 692-0548 or DSN 850-0548.

DSCC drawing PIN <u>1/</u>	Vendor commercial PIN	Vendor CAGE number	Vendor name and address
94023AH(XXXXXXXX)	CX-1HS-SM2*****A	51791	Statek Corporation 512 North Main Street Orange, CA 92868
94023AV(XXXXXXXX)	CX-1VS-SM2*****A	51791	
94023BH(XXXXXXXX)	CX-1HS-SM2*****B	51791	
94023BV(XXXXXXXX)	CX-1VS-SM2*****B	51791	
94023CH(XXXXXXXX)	CX-1HS-SM2*****C	51791	
94023CV(XXXXXXXX)	CX-1VS-SM2*****C	51791	

1/ Parts must be purchased to this DSCC PIN to assure that all performance requirements and tests are met.

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