

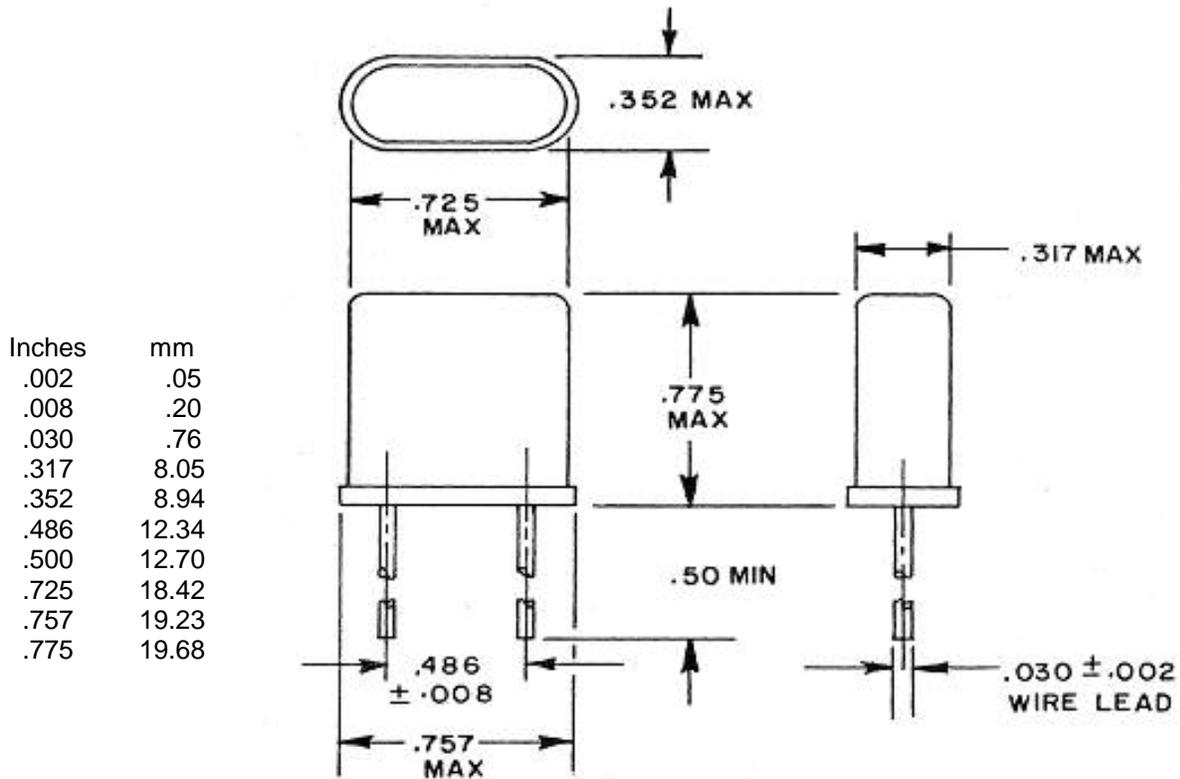
PERFORMANCE SPECIFICATION SHEET

CRYSTAL UNIT, QUARTZ, CR104/U

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification and MIL-PRF-3098.

Pertinent characteristics: 200 kHz to 580 kHz; fundamental; controlled; antiresonance.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Marking to be in accordance with MIL-PRF-3098.

FIGURE 1. Type CR104/U, crystal unit.

REQUIREMENTS:

Dimensions, marking, and configuration: See figure 1.

Frequency range: 200 kHz to 580 kHz, inclusive.

Mode of oscillation: Fundamental.

Rated drive level: 1.0 mW, maximum.

Calibration values:

Resistance: 2,000 ohms.

Resistor voltage drop: 2.0 volts.

Antiresonance, load capacitance: 21.5 pF  $\pm$ 0.5 pF.

Reference temperature: +75°C  $\pm$ 1°C

Operating temperature (controlled): +70°C to +80°C, inclusive.

Frequency tolerance: See table I.

Equivalent resistance: 200 kHz to 300 kHz: 3,000 ohms, maximum.  
300+ kHz to 580 kHz: 2,500 ohms, maximum.

Frequency stability:  $\pm$ 5 parts per million (ppm).

Operable temperature range: -40°C to +70°C, inclusive.

Shock:

Frequency change permitted:  $\pm$  5 ppm.

Equivalent resistance change permitted:  $\pm$ 15 percent.

Vibration: Method 201 of MIL-STD-202, amplitude 0.015 inch (total excursion 0.030 inch).

Frequency change permitted:  $\pm$  5 ppm.

Equivalent resistance change permitted:  $\pm$ 15 percent.

Thermal shock:

Frequency change permitted:  $\pm$  10 ppm.

Equivalent resistance change permitted:  $\pm$ 15 percent.

Bond strength: See table II.

TABLE I. Frequency response.

Frequency range, inclusive	Maximum resistance
<u>kHz</u>	<u>Ohms</u>
200 to 339	±20 ppm
339+ to 484.999	±15 ppm
485 to 580	±10 ppm

1/ Crystal units in the frequency range 485 through 580 kHz (frequency tolerance ±10 PPM) shall be identified by a blue lacquer dot approximately .125 inch (3.18 mm) diameter. It shall be located on top of the can to the right of the letters "kHz."

TABLE II. Bond strength.

Frequency range, inclusive (kHz)	Grams, minimum
200 to 250	700
250+ to 320	500
320+ to 370	400
370+ to 435	300
435+ to 580	250

Reference documents. In addition to MIL-PRF-3098, this document references the following:

MIL-STD-202

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:  
Army - CR  
Navy - EC  
Air Force - 11  
DLA - CC

Preparing activity:  
DLA - CC  
  
(Project 5955-0753)

Review activities:  
Air Force - 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at [www.dodssp.daps.mil](http://www.dodssp.daps.mil).