

REVISION RECORD

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- A	4 1-2	ORIGINAL CR3678	9-14-95 9-19-95	AWS AWS



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SIGNATURES		DATE	TITLE	DOCUMENT NUMBER
ORIG	AWS	9-15-95	PRECISION CRYSTAL SPECIFICATION	02-35650
APPD	WAZ	9-15-95	10.000MHz RH P/N 04-35650-001	PAGE 1 OF 4

CODE IDENT 82567	<p>THESE DRAWINGS, DESIGNS AND SPECIFICATIONS, AND THE IDEAS EMBODIED THEREIN, ARE THE EXCLUSIVE PROPRIETARY AND CONFIDENTIAL PROPERTY OF REEVES-HOFFMAN DIVISION AND ARE DELIVERED TO YOU IN TRUST AND CONFIDENCE. THIS MATERIAL SHALL NOT BE USED BY YOU FOR ANY PURPOSE EXCEPT IN CONNECTION WITH WORK DONE BY YOU FOR R-H OR IN ACCORDANCE WITH THE TERMS OF ANY AGREEMENT IN EFFECT BETWEEN YOU AND R-H. YOU MUST RETURN THIS MATERIAL IMMEDIATELY IF REQUESTED BY R-H.</p>	
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Precision Crystal Specification

1. **Frequency Range:**
10.000 Mhz
2. **Type:**
3rd Overtone SC Cut
3. **Circuit Operation:**
Parallel
4. **Finish Point:**
22 pF \pm 0.1 pF
5. **Motional Parameters:**
 - a. Motional Capacity: 0.00024 pF \pm 10%
 - b. Series Resistance: 65 ohms max.
 - c. Minimum Q: 900K
 - d. Shunt Capacity: 3.4 pF nominal
6. **Resistance Variation:**
Less than 0.1 dB for a Drive Level change from 1 to 100 uW.
7. **Setting Tolerance:**
0 to +3 PPM at 22pF and Turnover Temperature.
8. **Temperature Performance:**
 - a) Turnover temperature: Between +60°C and +80°C .
 - b) Perturbations: Not to exceed 5×10^{-10} within $\pm 5^\circ\text{C}$ of Turn Point Temperature.
9. **Operating Temperature Range:**
-20 Deg. C. to +100 Deg. C
10. **Retrace:**
Crystal units shall retrace to within 1×10^{-9} of the frequency at turn-off within 20 minutes after turn-on following a 24 hour off period.
11. **Aging Restabilization:** N/A

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Precision Crystal Specification

12. Aging Rate:

Long Term: $\pm 5 \times 10^{-10}$ /Day after 7 Days
 $\pm 5 \times 10^{-8}$ /Year
 ± 1 PPM / 20 Years operation maximum

13. G Sensitivity:

$< 2 \times 10^{-9}$ per G each axis (2 G Tipover test)

14. Phase Noise:

The design of the resonator should optimize low offset frequency (< 1 Hz) phase noise performance. Blank preparation should include processing steps for good surface finish and stress relief to minimize "phase pops".

15. Holder Type:

TO-8 size coldweld, high vacuum enclosure.

16. Blank Orientation and Mount

All crystal blanks will be mounted consistently with respect to their principle axes and a reference point on the enclosure within TBD degrees. Crystal will be mounted using a conventional 3 point mount with blank oriented for optimal thermal transient performance.

17. Solderability:

All crystal leads will be solderable to within .025" of the base.

18. Marking:

Each crystal will be marked with the Part Number 04-35650-001, S/N, Turn Point, and Date Code.

19. Change Control:

No changes to the crystal design or process after initial qualification is to be made without prior approval of the RH Oscillator Engineering Department.

20. Test Data

Test data is required on all units for items 5a, 5b, 5d, 7, and 8a.

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Precision Crystal Specification

DATE
9-12-05
9-19-05

21. Approved Sources:

Identification of a source of supply is not to be construed as a guarantee of continued availability.

Manufacturer

Manufacturer's
P/N

Bliley Crystal Corporation



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