

**RoHS Compliant  
Pb - Lead Free  
AEC-Q200 Qualified**

| Ltr | Revisions | Date | Appr |
|-----|-----------|------|------|
|     |           |      |      |
|     |           |      |      |
|     |           |      |      |

### Electrical Specifications:

|                                            |                |                               |         |
|--------------------------------------------|----------------|-------------------------------|---------|
| Frequency Range                            |                | 6.000 to 133.000              | MHz     |
| Mode of Oscillation                        | Fundamental    | 6.000 to 48.000               |         |
|                                            | Third Overtone | 40.000 to 133.000             |         |
| Frequency Tolerance at 25°C                |                | ±50                           | PPM Max |
| Frequency Stability over Temperature Range |                | ±100                          |         |
| Operating Temperature Range                |                | -40 to +125                   | ° C     |
| Storage Temperature Range                  |                | -55 to +150                   |         |
| Aging per Year                             |                | ±3                            | PPM Max |
| Load Capacitance                           |                | 10 to 32 and Series Resonance | pF      |
| Shunt Capacitance                          |                | 7.0                           |         |
| Equivalent Series Resistance (ESR)         |                | See ESR Table                 | Ohm     |
| Drive Level                                |                | 100                           | uW Typ  |
| Insulation Resistance                      |                | 500 at 100 Vdc ± 15 Vdc       | M Ohm   |

### Frequency Range and ESR Values:

| Frequency Range in MHz | ESR Ohm Max | Mode of Operation |
|------------------------|-------------|-------------------|
| 6.000 to 10.000        | 110         | Fundamental       |
| 10.100 to 12.000       | 60          | Fundamental       |
| 12.100 to 20.000       | 45          | Fundamental       |
| 20.100 to 48.000       | 30          | Fundamental       |
| 40.000 to 52.000       | 80          | Fundamental       |
| 52.100 to 133.000      | 60          | Third Overtone    |



11-3 Chien-Kuo Rd T.E.P.Z. 4027 Taiwan, ROC

All dimensions are millimeters.

CAD: TCR

Review: EG

Appr: JL

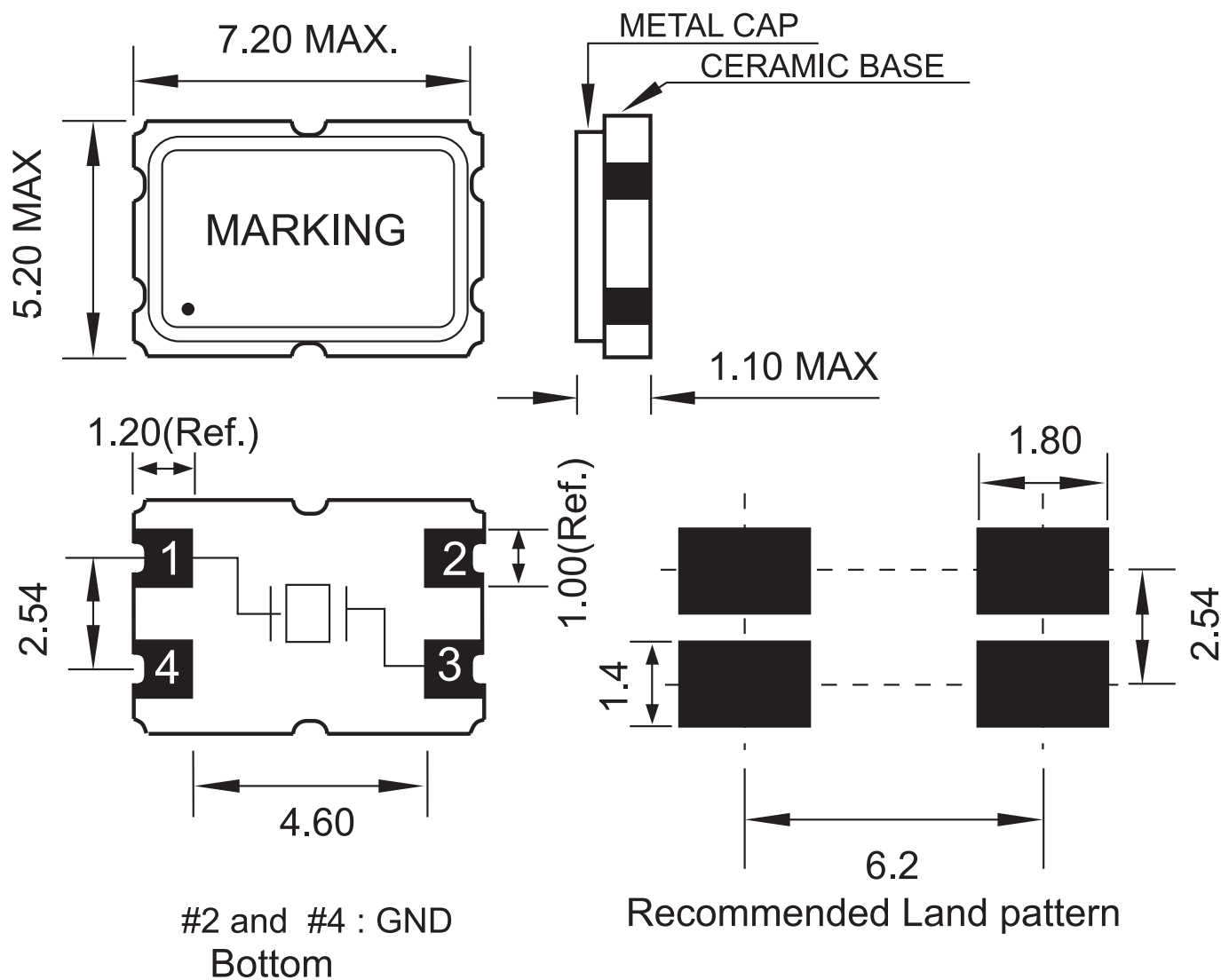
Page: 1/4 Date: April 18, 2008

### Specification Title:

**Microprocessor Crystal Unit  
Automotive Temperature Range  
5 x 7 millimeter Surface Mount - 4 Pad  
General Product Specification**

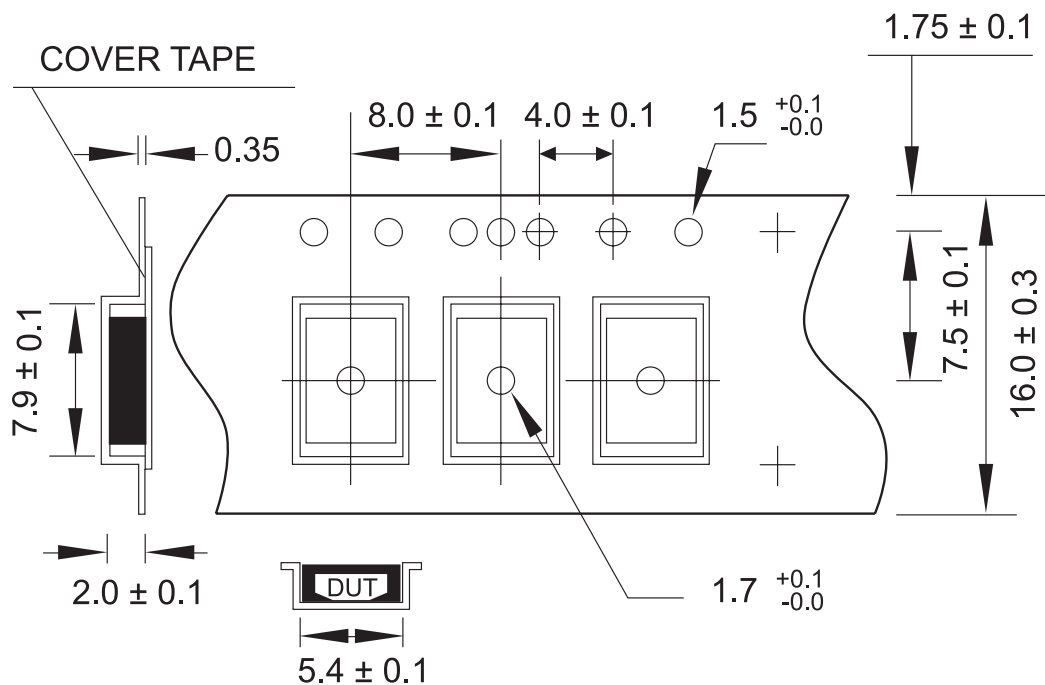
Part Number: **C7S X1 Series**

**Mechanical Outline:**



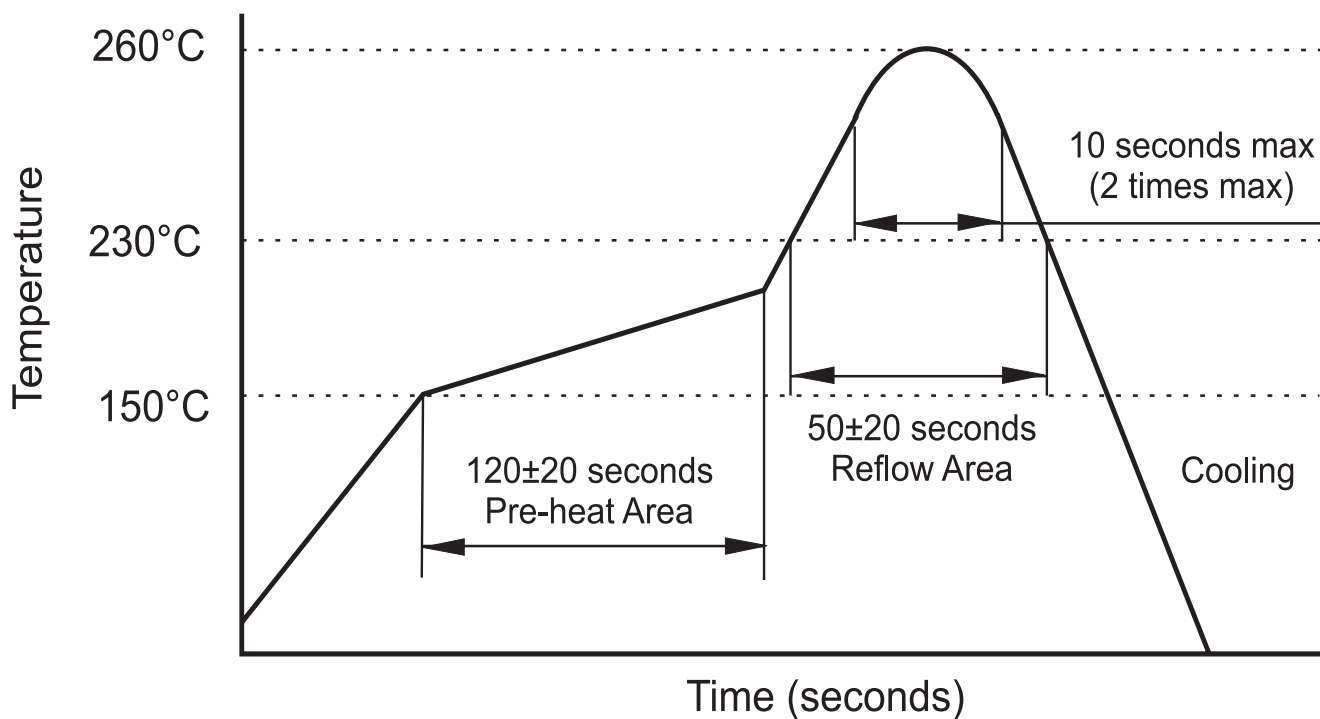
**Package is Seam Sealed Ceramic-Metal.**  
**Dimensions are millimeters.**

## Carrier Tape Dimensions:



Dimensions are millimeters.

## Solder Reflow Characteristics:



**How to build a Part Number:**

|                            |                         |                       |
|----------------------------|-------------------------|-----------------------|
| <b>Series</b>              | <b>C</b>                | <b>Parameter</b>      |
| <b>Package</b>             | <b>7S</b>               | <b>5.0 x 7.0 mm</b>   |
|                            | -                       |                       |
| <b>Frequency</b>           | <b>6.000 to 133.000</b> | <b>MHz</b>            |
|                            | -                       |                       |
| <b>Load Capacitance</b>    | <b>10</b>               | <b>10 pF</b>          |
|                            | <b>12</b>               | <b>12 pF</b>          |
|                            | <b>16</b>               | <b>16 pF</b>          |
|                            | <b>18</b>               | <b>18 pF</b>          |
|                            | <b>20</b>               | <b>20 pF</b>          |
|                            | <b>32</b>               | <b>32 pF</b>          |
|                            | <b>S</b>                | <b>Series</b>         |
|                            | -                       |                       |
| <b>Frequency Tolerance</b> | <b>50</b>               | <b>±50 PPM</b>        |
| <b>Frequency Stability</b> | <b>100</b>              | <b>±100 PPM</b>       |
|                            | -                       |                       |
| <b>Mode of Oscillation</b> | <b>See Notes</b>        | <b>Fundamental</b>    |
|                            | <b>3</b>                | <b>Third Overtone</b> |
|                            | -                       |                       |
| <b>Temperature Range</b>   | <b>X1</b>               | <b>-40 to +125 °C</b> |
|                            | -                       |                       |
| <b>Packaging</b>           | <b>R</b>                | <b>Tape and Reel</b>  |

**Part Number Example:****C7S-64.000-18-50100-3-X1-R****C7S- 5 x 7 mm SMD Seam Seal Package - 4 pad****64.000 MHz Nominal Frequency****18 pF Load Capacitance****50100: ±50 PPM Frequency Tolerance and ±100 PPM Frequency Stability****Third Overtone Mode****X1: -40 to +125° C Automotive Temperature Range****R: Tape and Reel Packaging****Notes:**

- 1- Fundamental mode does not need to be included in Part Number description.
- 2- Product is shipped in Tape and Reel configuration. Each reel contains 1000 pieces.
- 3- Quantities less than 1000 are shipped bulk in ESD pouches.
- 4- Specification subject to change without notice.