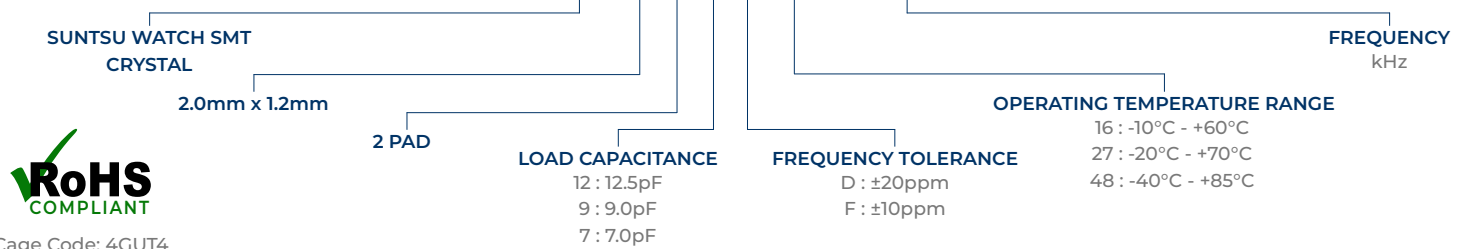


| Features   |
|--|
| <ul style="list-style-type: none"> <li>±20ppm (Tolerance) Available</li> <li>Ultra-Miniature Package</li> <li>Tape and Reel</li> </ul> |

| Applications  |
|---|
| <ul style="list-style-type: none"> <li>Real Time Clock</li> <li>Measurement instruments</li> <li>Wireless Applications</li> </ul> |


**Part Numbering Guide**
**SWS 21 2 12 D 48 - 32.768K**


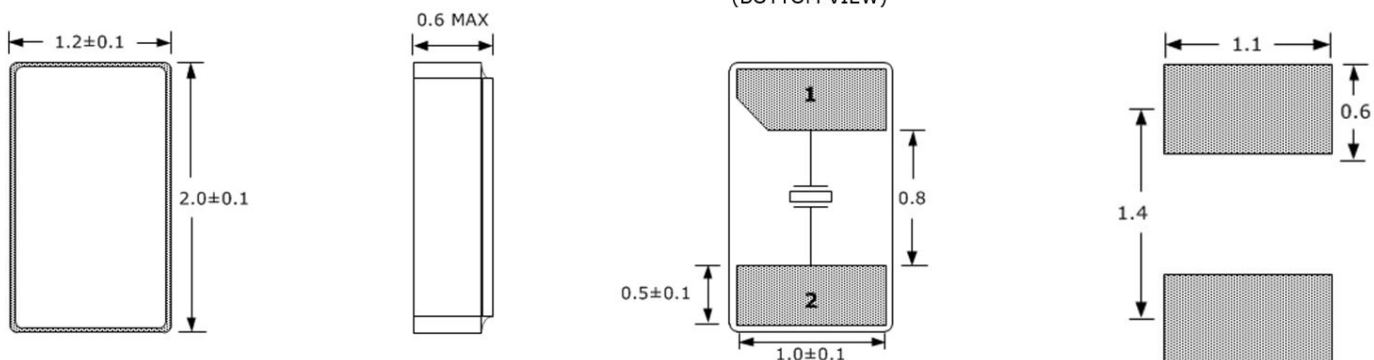
Cage Code: 4GUT4

To customize your parameters contact a Suntsu representative.

| Electrical Parameters         | Units              | Minimum | Typical | Maximum | Remarks                               |
|-------------------------------|--------------------|---------|---------|---------|---------------------------------------|
| Frequency Range               | kHz                |         | 32.768  |         |                                       |
| Frequency Tolerance at +25°C  | ppm                | -20     |         | +20     | See part numbering guide for options. |
| Frequency Stability vs. Aging | ppm                | -3      |         | +3      | First year @ +25°C.                   |
| Frequency Coefficient (β)     | ppm/T <sup>2</sup> | -0.040  | -0.030  | -0.020  |                                       |
| Operating Temperature         | °C                 | -40     |         | +85     | See part numbering guide for options. |
| Turnover Temperature          | °C                 | +20     | +25     | +30     |                                       |
| Storage Temperature           | °C                 | -55     |         | +125    |                                       |
| Load Capacitance              | pF                 |         |         | 12.5    | See part numbering guide for options. |
| Shunt Capacitance             | pF                 |         | 1.3     |         |                                       |
| Drive Level                   | μW                 |         |         | 0.5     |                                       |
| Insulation Resistance         | MΩ                 | 500     |         |         | @ 100VDC ± 15V.                       |
| Equivalent Series Resistance  | kΩ                 |         |         | 90      |                                       |

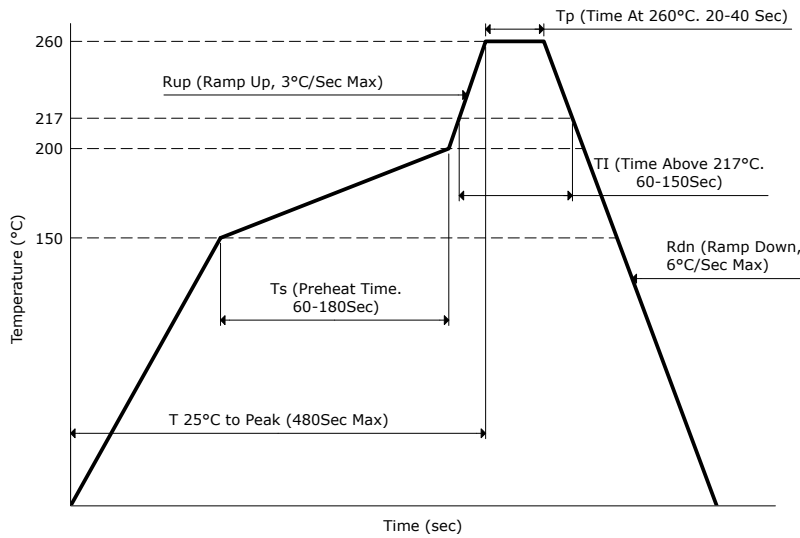
**Outline Drawing & Recommended Land Pattern**

All dimensions are in millimeters (mm) unless otherwise noted. Drawings are not to scale.

**ELECTRODE ARRANGEMENT (BOTTOM VIEW)**


| Environmental Specifications |                                       | Mechanical Specifications    |                                       |
|------------------------------|---------------------------------------|------------------------------|---------------------------------------|
| Temperature Cycling          | MIL-STD-883, Method 1010, Condition B | Mechanical Shock             | MIL-STD-202, Method 213, Condition B  |
| Fine Leak Test               | MIL-STD-883, Method 1014, Condition A | Vibration                    | MIL-STD-883, Method 2007, Condition A |
| Gross Leak Test              | MIL-STD-883, Method 1014, Condition C | Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition K  |
| Moisture Resistance          | MIL-STD-883, Method 1004              | Resistance to Solvents       | MIL-STD-202, Method 215               |
| Moisture Sensitivity         | J-STD-020, MSL 1                      | Solderability                | MIL-STD-883, Method 2003              |

**Reflow Profile & Part Marking**



Line 1: XXXXX  
 ↑  
 Lot Code

**Tape And Reel Dimensions**

All dimensions are in millimeters (mm) unless otherwise noted. Drawings are not to scale.

3,000pcs / Reel

