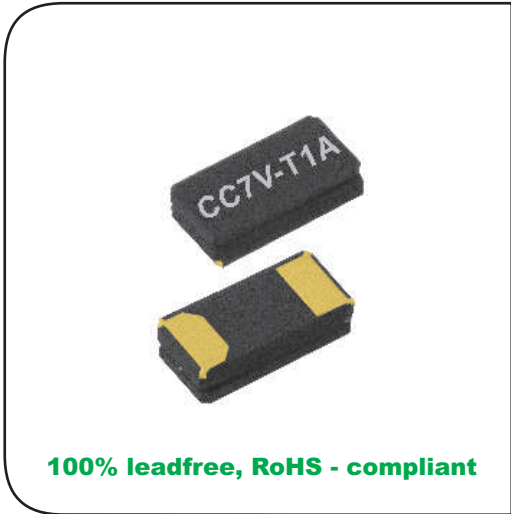
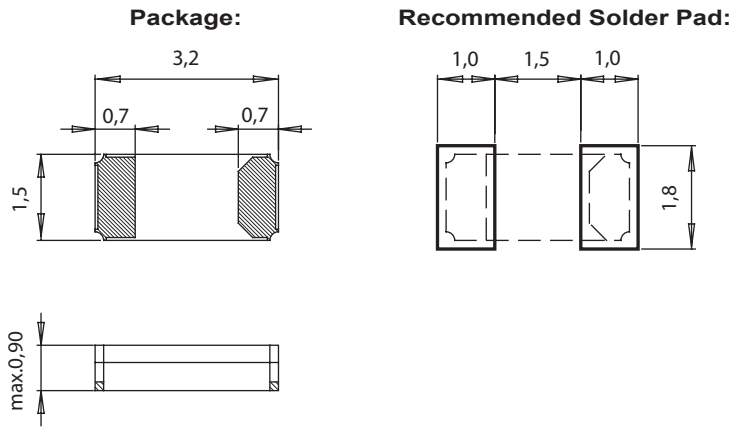


# CC7V-T1A

## Tuning Fork Crystal 32.768 kHz



### DIMENSIONS



All dimensions in mm typical

**Miniature SMT ceramic package**  
**Package height 0.90 mm**  
**SMD-package in Tape and Reel**  
**Ind. and Ext. temperature ranges**  
**High stability**  
**Low aging**  
**Low power consumption**  
**High shock and vibration resistance**

### DESCRIPTION:

This SMD ceramic package has been specially designed for miniature telecom and portable applications. A special crystal manufacturing process is used to achieve improved electrical characteristics and a miniaturized blank size.

The crystals are supplied in special trays (200 crystals per tray).

For pick-and-place equipment, the parts are available in 12 mm tape:

- 7" (178 mm) reel with 3'000 crystals
- 13" (330 mm) reel with 14'000 crystals

### ELECTRICAL CHARACTERISTICS AT 25°C:

| Nominal Frequency           | <sup>1)</sup> F <sub>L</sub> | 32.768   | kHz |
|-----------------------------|------------------------------|--|-----|
| Load capacitance            | <sup>2)</sup> C <sub>L</sub> | 7.0 / 9.0 / 12.5   | pF  |
| Frequency tolerance         | <sup>3)</sup> ΔF/F           | +/-20  | ppm |
|                             |                              | +/-30  | ppm |
|                             |                              | +/-100   | ppm |
| Series resistance typ./max. | R <sub>s</sub>               | 50 / 70  | kΩ  |
| Motional capacitance typ.   | C <sub>1</sub>               | 3.7  | fF  |
| Static capacitance typ.     | C <sub>0</sub>               | 1.2  | pF  |
| Drive level max.            | P                            | 1.0  | μW  |
| Insulation resistance min.  | R <sub>i</sub>               | 500  | MΩ  |
| Aging first year max.       | ΔF/F                         | +/-3   | ppm |
| Turnover temperature        | T <sub>0</sub>               | 25 +/-5  | °C  |
| Frequency vs. temperature   | ΔF/F <sub>0</sub>            | -0.035 ppm/°C <sup>2</sup> (T - T <sub>0</sub> ) <sup>2</sup> +/-10% | ppm |

- 1) Other frequencies on request.
- 2) Other load capacitances on request.
- 3) Tighter and wider frequency tolerances on request.

**STANDARD FREQUENCIES:**

|                              |
|------------------------------|
| <b>Frequency<br/>kHz</b>     |
| 32.768                       |
| Other frequencies on request |

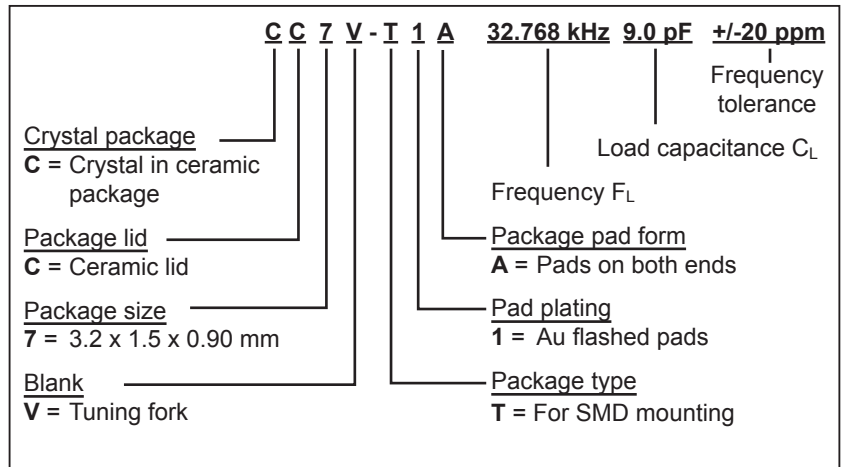
**ENVIRONMENTAL  
CHARACTERISTICS:**

|                                  |      | <b>Conditions</b>      | <b>Max. Dev.</b> |
|----------------------------------|------|------------------------|------------------|
| Storage temp. range              |      | -55 to +125°C          |                  |
| Industrial operating temp. range |      | -40 to +85°C           |                  |
| Extended operating temp. range   |      | -55 to +125°C          |                  |
| Shock resistance                 | ΔF/F | 5000 g, 0.3 ms, ½ sine | +/-5 ppm         |
| Vibration resistance             | ΔF/F | 20 g / 10–2000 Hz      | +/-5 ppm         |

**TERMINATIONS AND  
PROCESSING:**

| <b>Type</b> | <b>Termination</b>                  | <b>Processing</b>                     |
|-------------|-------------------------------------|---------------------------------------|
| CC7V-T1A    | For SMD mounting<br>Au flashed pads | Reflow soldering<br>260°C / 20 s max. |

**PART NUMBER/  
ORDERING INFORMATION  
EXAMPLE:**



All specifications subject to change without notice. 09.09



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