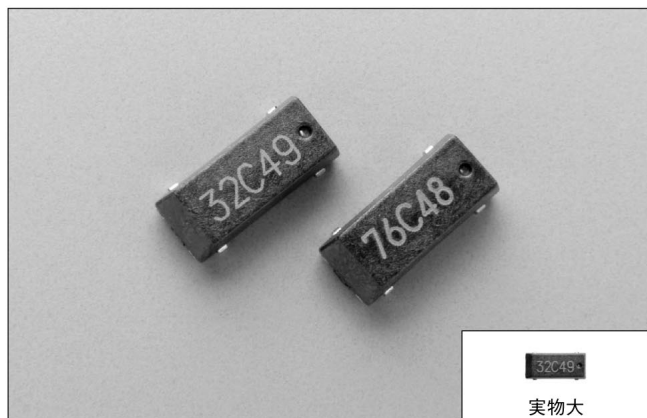


# TUNING FORK CRYSTAL UNITS (SMD • Plastic Package)

RoHS Compliant Optional

## CM200S • CM250S

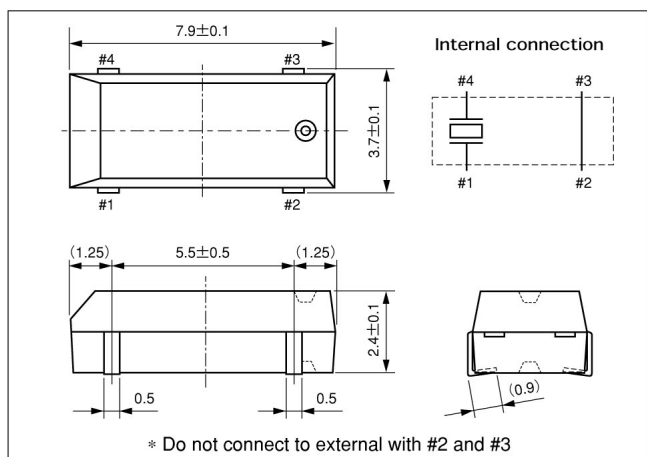
3000pcs/reel



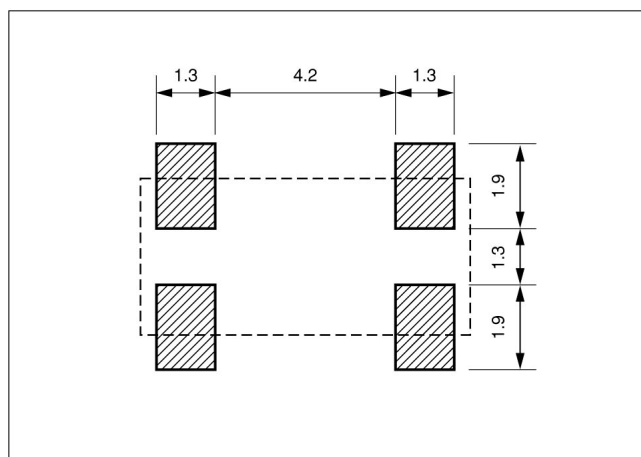
### FEATURES

- Embedded with heat resistant cylinder type crystal bring highly stable characteristics.
- Automatic mounting and reflowable Type.
- Most appropriate for clock source for portable and automotive equipment with low power consumption.

### DIMENSION [mm]



### SOLDER PAD LAYOUT [mm]



### STANDARD SPECIFICATIONS

| Item                         | Model             | CM200S                          | CM250S              | Conditions   |
|------------------------------|-------------------|---------------------------------|---------------------|--|
| Nominal Frequency            | f <sub>0</sub>    | 32.768kHz                       | 30kHz~100kHz        | Need to contact us for the available frequency in CM250S |
| Frequency Tolerance          | △f/f <sub>0</sub> | ±20ppm                          | ±30ppm              | at 25°C  |
| Load capacitance             | C <sub>L</sub>    | 12.5pF                          |                     | Need to specify your requirement                         |
| Operating Temperature Range  | T <sub>OPR</sub>  | -40°C ~ +85°C                   |                     |  |
| Storage Temperature Range    | T <sub>STR</sub>  | -55°C ~ +125°C                  |                     |  |
| Turnover Temperature         | T <sub>M</sub>    | 25°C ±5°C                       |                     | See figure 2 in P4                                       |
| Temperature Coefficient      | β                 | -0.034±0.006ppm/°C <sup>2</sup> |                     |  |
| Motional (series) resistance | R <sub>1</sub>    | 50KΩ Max.                       |                     | at 25°C  |
| Level of drive               | D <sub>L</sub>    | 1 μW Max.                       |                     |  |
| Aging (first year)           | △f/f <sub>0</sub> | ±3ppm Max.                      | ±5ppm Max.          | 25°C ±3°C  |
| Quality Factor               | Q                 | 70000 Typ.                      | 70000 ~ 100000 Typ. | Depend on frequency                                      |
| Shunt capacitance            | C <sub>0</sub>    | 1.35pF Typ.                     | 0.8pF ~ 1.7pF Typ.  | Depend on frequency                                      |

# KHz CRYSTAL Part Numbering System

Example Part Number:

**CM200S      32.768K      D Z F -UT**

## Product Family

For example:

CFS308  
CFS206  
CFS145  
CFV206  
CMR200T  
CMR250T  
CM200S  
CM250S  
CM130  
CM519  
CM415  
CM315

## Frequency

Numerical Value,  
maximum characters as  
follows:

XXX.XXXXXX  
followed by "K" for KHz

## Frequency Tolerance [at 25C]

**A** +/-30ppm (Standard: other than 32.768KHz)  
**B** +/-50ppm •  
**C** +/-100ppm •  
**D** +/-20ppm (Standard: 32.768KHz)  
**E** +/-10ppm •  
**F** +/-15ppm •  
**G** +/-25ppm •

•Consult Citizen

## Packaging method

TR Tape & Reel

B Bulk

-UT RoHS Compliant  
Tape & Reel

-UB RoHS Compliant  
Bulk

## Load Capacitance

|          |                     |   |        |   |        |
|----------|---------------------|---|--------|---|--------|
| A        | Series              | I | 16.0pf | Q | 10.0pf |
| B        | 6.0pf               | J | 18.0pf | R | 50.0pf |
| C        | 9.0pf               | K | 20.0pf | S | 11.0pf |
| D        | 9.5pf               | L | 22.0pf | T | 14.0pf |
| E        | 12.0pf              | M | 25.0pf | U | 17.0pf |
| <b>F</b> | <b>12.5pf (Std)</b> | N | 30.0pf | V | 8.0pf  |
| G        | 13.0pf              | O | 32.0pf |   |        |
| H        | 15.0pf              | P | 33.0pf |   |        |

...others to be assigned

## Frequency Stability

**Z** (Standard for all KHz frequencies)