

kHz Range Crystal unit

MC-306

SEIKO EPSON CORPORATION

Product name

MC-306 32.768000 kHz 10.0 +10.0-10.0

Product Number / Ordering code

Q13MC30610052xx

Please refer to the 5.Packing information about xx (last 2 digits)

Complies with EU RoHS directive

Reference weight Typ. 126 mg

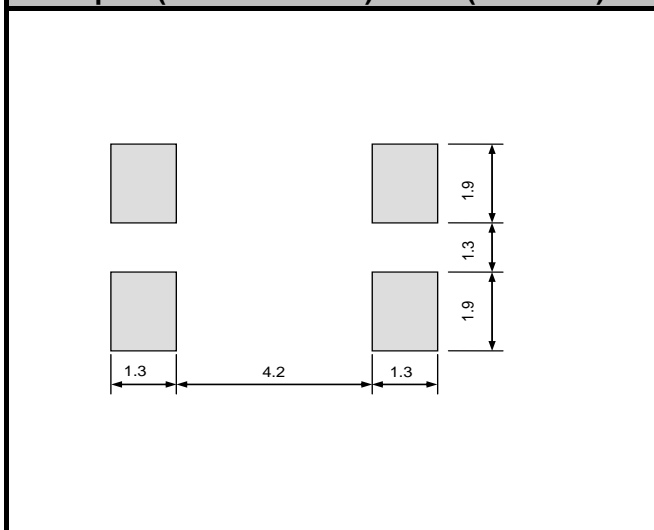
| 1.Absolute maximum ratings |        |      |      |      |      |                           |
|----------------------------|--------|------|------|------|------|---------------------------|
| Parameter                  | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks      |
| Storage temperature        | T_stg  | -55  | -    | 125  | °C   | Storage as single product |
| Maximum drive level        | GL     | -    | -    | 1.0  | μW   |                           |

| 2.Specifications(characteristics) |        |       |        |       |                                     |                      |
|-----------------------------------|--------|-------|--------|-------|-------------------------------------|----------------------|
| Parameter                         | Symbol | Min.  | Typ.   | Max.  | Unit                                | Conditions / Remarks |
| Nominal frequency                 | f_nom  | -     | 32.768 | -     | kHz                                 |                      |
| Operating temperature             | T_use  | -40   | -      | 85    | °C                                  |                      |
| Level of drive                    | DL     | -     | -      | 1.0   | μW                                  |                      |
| Frequency tolerance               | f_tol  | -10.0 | -      | +10.0 | $\times 10^{-6}$                    | +25°C DL=0.1μW       |
| Turnover temperature              | Ti     | 20    | 25     | 30    | °C                                  |                      |
| Parabolic coefficient             | B      | -     | -      | -0.04 | $\times 10^{-6}/^{\circ}\text{C}^2$ |                      |
| Load capacitance                  | CL     | -     | 10.0   | -     | pF                                  |                      |
| Motional resistance (ESR)         | R1     | -     | 35     | 50    | k Ω                                 |                      |
| Motional capacitance              | C1     | -     | 1.8    | -     | fF                                  |                      |
| Shunt capacitance                 | C0     | -     | 0.9    | -     | pF                                  |                      |
| Motional inductance               | L1     | -     | 11.7   | -     | kH                                  |                      |
| Frequency aging                   | f_age  | -3    | -      | 3     | $\times 10^{-6}$ /yea               | @+25°C, First year   |

**3.External dimensions (Unit: mm)**



**4.Footprint(Recommended) (Unit: mm)**



**5.Packing information**

[ 1 ] Product number last 2 digits code (xx) description      The recommended code is "00"

Q13MC30610052xx

| Code | Condition                    | Code | Condition      |
|------|------------------------------|------|----------------|
| 01   | Any Q'ty vinyl bag(Tape cut) | 14   | 1000pcs / Reel |
| 11   | Any Q'ty / Reel              | 15   | 2000pcs / Reel |
| 12   | 250pcs / Reel                | 00   | 3000pcs / Reel |
| 13   | 500pcs / Reel                |      |                |

[ 2 ] Taping specification

Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE1608L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

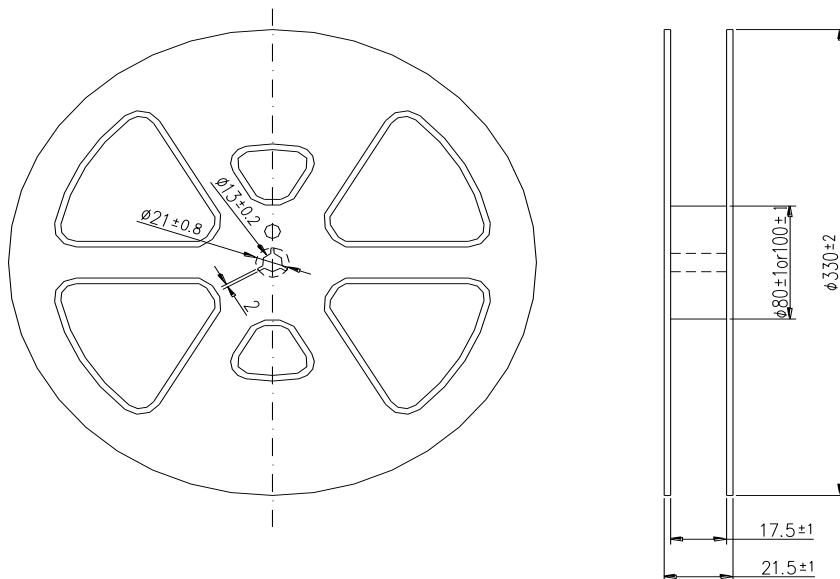
Unit: mm



(2) Reel dimensions

Material of the Reel : PS

Unit: mm



**Reflow profile**

Pre Heating Temperature

Tp1 ~ Tp2 = + 170 °C

Heating Temperature

TMI = + 220 °C

Peak Temperature

TMax. = + 260 °C

Point of measuring

In case of Solder ability

Terminal.

In case of Resistance to soldering heat  
Surface.

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