

kHz Range Crystal unit

MC-306

SEIKO EPSON CORPORATION

Product name

MC-306 32.768000 kHz 7.0 +20.0-20.0

Product Number / Ordering code

Q13MC30620004xx

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**

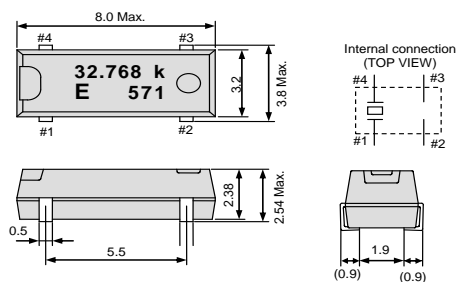
| Parameter           | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks      |
|---------------------|--------|------|------|------|------|---------------------------|
| Storage temperature | T_stg  | -55  | -    | 125  | °C   | Storage as single product |
| Maximum drive level | GL     | -    | -    | 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  | -20.0 | -      | +20.0 | x 10 <sup>-6</sup>                  | +25°C DL=0.1μW       |
| Turnover temperature      | Ti     | 20    | 25     | 30    | °C                                  |                      |
| Parabolic coefficient     | B      | -     | -      | -0.04 | x 10 <sup>-6</sup> /°C <sup>2</sup> |                      |
| Load capacitance          | CL     | -     | 7.0    | -     | 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     | x10 <sup>-6</sup> /yea              | @+25°C, First year   |

**3.External dimensions**

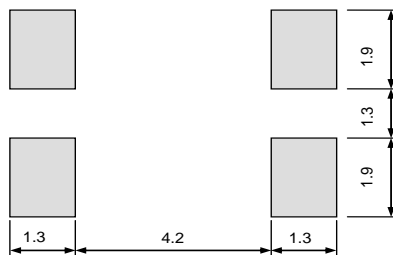
(Unit: mm)



Do not connect #2 and #3 to external device.  
The metal case inside of the molding compound may be exposed on the top or bottom of this product.  
This purely cosmetic and does not have any effect on quality, reliability or electrical specs.

**4.Footprint(Recommended)**

(Unit: mm)



**5.Packing information**

[ 1 ]Product number last 2 digits code (xx) description

The recommended code is "00"

Q13MC30620004xx

| 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

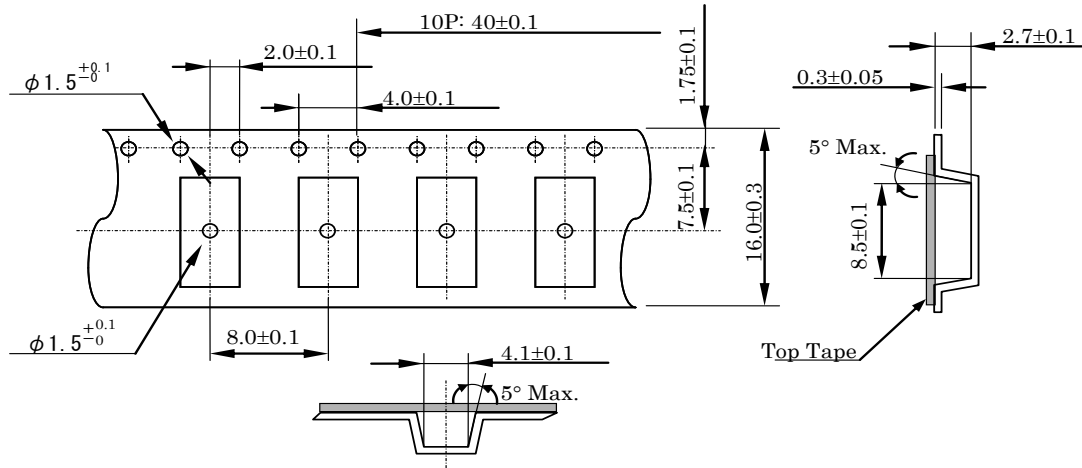
Subject to EIA-481 & IEC-60286

(1) Tape dimensions TE1608L

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

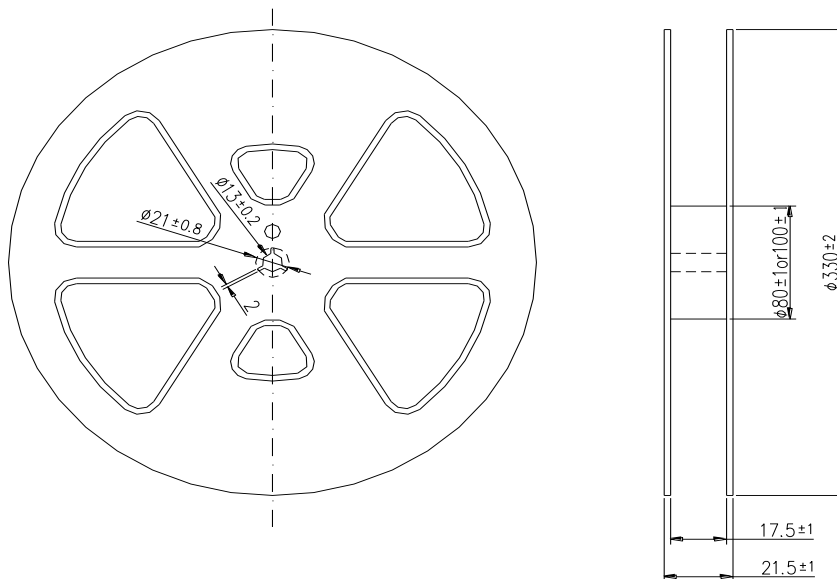
Unit: mm



(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

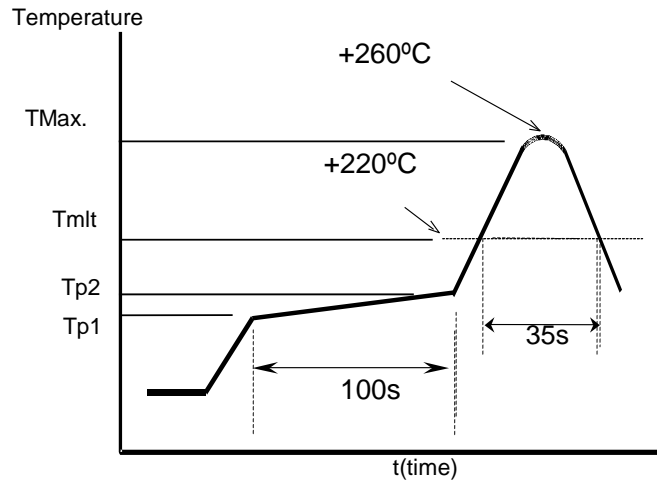
TMax. = + 260 °C

Point of measuring

In case of Solder ability

Terminal.

In case of Resistance to soldering heat  
Surface.

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