

Product name

MC-146 32.768000 kHz 8.0 +20.0-20.0

Product Number / Ordering code

Q13MC14620022xx

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

Complies with EU RoHS

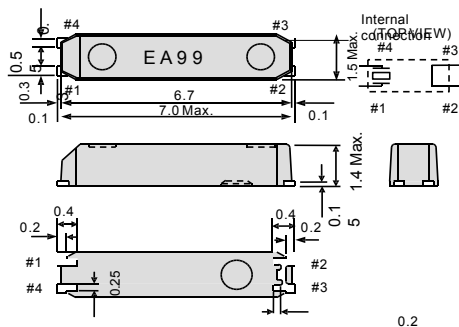
directive Reference weight Typ.

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.Specificatoins(characteristics)

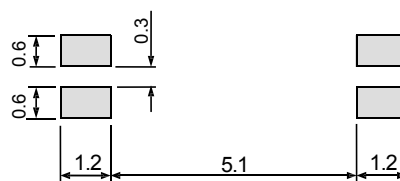
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|---------------------------|--------|-------|--------|-------|-------------------------------------|----------------------|
| Nominal frequency | f_nom | - | 32.768 | - | kHz | |
| Operating temperature | T_use | -40 | - | 85 | °C | |
| Level of drive | DL | - | - | 1.0 | μW | |
| Frequency tolerance | f_tol | -20.0 | - | +20.0 | x 10 ⁻⁶ | +25°C DL=0.1μW |
| Turnover temperature | Ti | 20 | 25 | 30 | °C | |
| Parabolic coefficient | B | - | - | -0.04 | x 10 ⁻⁶ /°C ² | |
| Load capacitance | CL | - | 8.0 | - | pF | |
| Motional resistance (ESR) | R1 | - | 45 | 65 | k Ω | |
| Motional capacitance | C1 | - | 1.9 | - | fF | |
| Shunt capacitance | C0 | - | 0.8 | - | pF | |
| Motional inductance | L1 | - | 11.7 | - | kH | |
| Frequency aging | f_age | -3 | - | 3 | x10 ⁻⁶ /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(Recommend (Unit: mm)

d)

**5.Packing information**

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

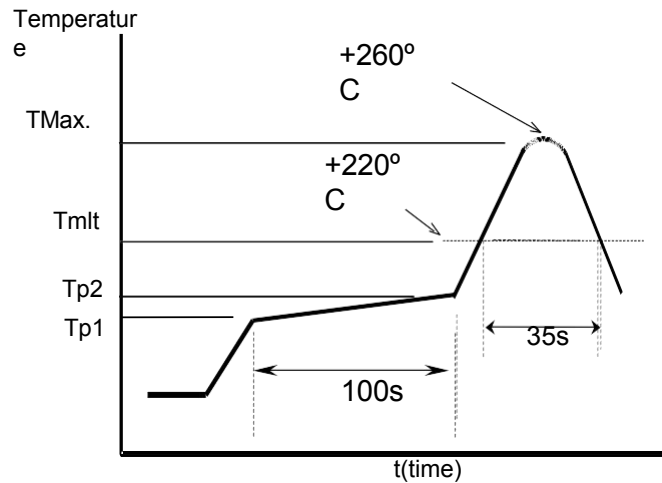
The recommended code is "0X"

Q13MC14620022xx

| 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 | 0X | 9000pcs / Reel |

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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