



## kHz RANGE CRYSTAL UNIT

## MC - 146 / MC - 156

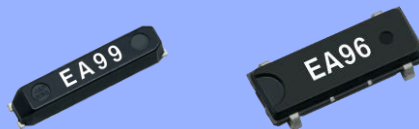
- Frequency range : 32.768 kHz (32 kHz to 100 kHz)
- External dimension : 7.0 × 1.5 × 1.4 mm ...MC-146  
7.1 × 3.3 × 1.5 mm ...MC-156
- Overtone order : Fundamental
- Applications : Small communications devices



Product Number (please contact us)

MC-146 : Q1xMC1462xxxx00

MC-156 : Q1xMC1562xxxx00



Actual size

MC-146

MC-156

## Specifications (characteristics)

| Item                           | Symbol | Specifications                                    |                                                    | Conditions / Remarks                           |
|--------------------------------|--------|---------------------------------------------------|----------------------------------------------------|------------------------------------------------|
| Nominal frequency range        | f_nom  | 32.768 kHz                                        | 32 kHz to 100 kHz                                  | Please contact us about available frequencies. |
| Storage temperature            | T_stg  | -55 °C to +125 °C                                 |                                                    | Storage as single product.                     |
| Operating temperature          | T_use  | -40 °C to +85 °C                                  |                                                    |                                                |
| Level of drive                 | DL     | 1.0 µW Max.                                       |                                                    | Operating Drive level 0.5 µW Max.              |
| Frequency tolerance (standard) | f_tol  | $\pm 20 \times 10^{-6}$ , $\pm 50 \times 10^{-6}$ | $\pm 50 \times 10^{-6}$ , $\pm 100 \times 10^{-6}$ | +25 °C, DL=0.1 µW                              |
| Turnover temperature           | Ti     | +25 °C $\pm$ 5 °C                                 |                                                    |                                                |
| Parabolic coefficient          | B      | $-0.04 \times 10^{-6} / ^\circ\text{C}^2$ Max.    |                                                    |                                                |
| Load capacitance               | CL     | 7 pF, 9 pF, 12.5 pF                               |                                                    | Please specify                                 |
| Motional resistance (ESR)      | R1     | 65 kΩ Max.                                        | 65 kΩ to 25 kΩ                                     |                                                |
| Motional capacitance           | C1     | 1.9 fF Typ.                                       | 2.5 fF to 0.6 fF                                   |                                                |
| Shunt capacitance              | C0     | 0.8 pF Typ.                                       | 1.2 pF to 0.5 pF                                   |                                                |
| Frequency aging                | f_age  | $\pm 3 \times 10^{-6} / \text{year}$ Max.         | $\pm 5 \times 10^{-6} / \text{year}$ Max.          | +25 °C, First year                             |

Product name MC-146 32.768000kHz 12.5 +20.0-20.0

(Standard form)

①

②

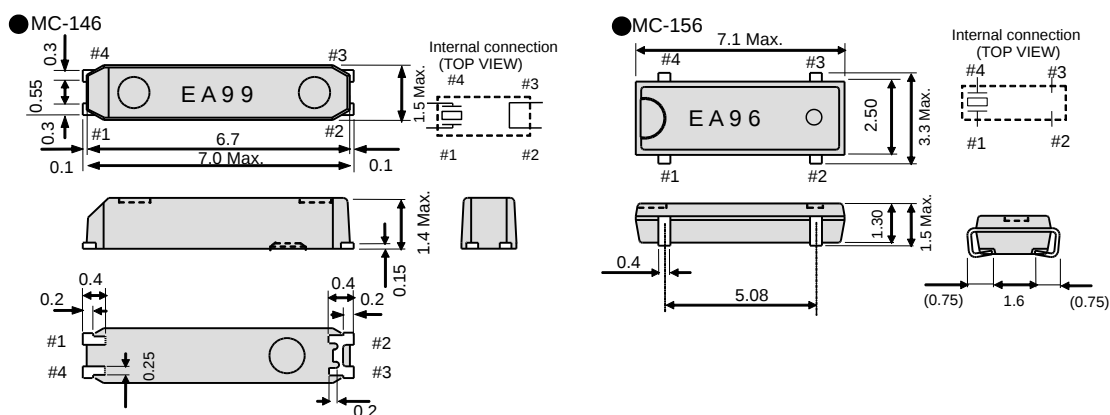
③

④

①Model ②Frequency ③Load capacitance(pF) ④Frequency tolerance( $\times 10^{-6}$ , +25 °C)

## External dimensions

(Unit:mm)

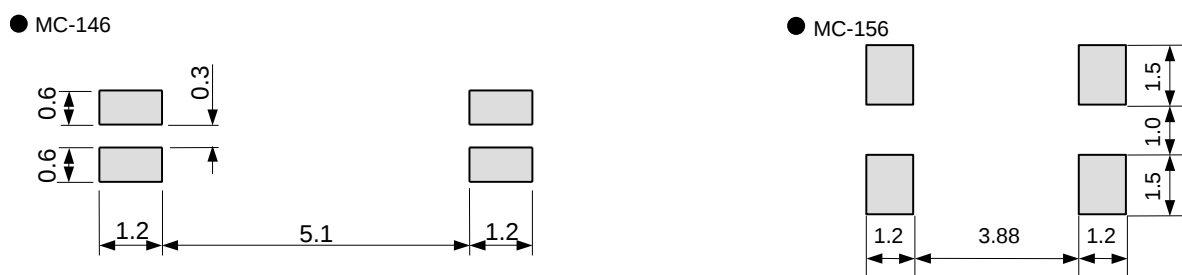


Do not connect #2 and #3 to external device.

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.

## Footprint (Recommended)

(Unit:mm)



# AMEYA360

## Components Supply Platform

Authorized Distribution Brand :



Website :

Welcome to visit [www.ameya360.com](http://www.ameya360.com)

Contact Us :

➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd  
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email [amall@ameya360.com](mailto:amall@ameya360.com)

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email [service@ameya360.com](mailto:service@ameya360.com)

➤ Partnership :

Tel +86 (21) 64016692-8333

Email [mkt@ameya360.com](mailto:mkt@ameya360.com)