

MHz RANGE CRYSTAL UNIT



Product Number (please contact us)  
 MA-406 : Q22MA4062xxxx00  
 MA-505 : Q22MA5052xxxx00  
 MA-506 : Q22MA5062xxxx00

MA-406  
 MA-505 / MA-506

- Frequency range : 4 MHz to 64 MHz
- Thickness : 11.7 × 4.8 × 3.7 mm ...MA-406  
 13.46 × 5.08 × 4.6 mm ...MA-505 / 506
- Overtone order : Fundamental  
 3rd overtone (30 MHz to 64 MHz)
- Applications : For Clock of integrated circuit



Actual size



Specifications (characteristics)

| Item  | Symbol         | Specifications                         | Conditions / Remarks  |
|---|----------------|--|---|
| Nominal frequency range                                 | f_nom          | 4.000 MHz to 29.999 MHz                | Fundamental *1  |
|   |                | 30.000 MHz to 64.000 MHz               | 3rd overtone *2   |
| Storage temperature                                     | T_stg          | -55 °C to +125 °C                      | Storage as single product.  |
| Operating temperature                                   | T_use          | -20 °C to +70 °C                       | Please contact us on availability of -40 °C to +85 °C                 |
| Level of drive  | DL             | 10 μW to 100 μW                        |   |
| Frequency tolerance (standard)                          | f_tol          | ±50 × 10 <sup>-6</sup>                 | +25 °C  |
| Frequency versus temperature characteristics (standard) | f_tem          | Under 5.5 MHz : ±50 × 10 <sup>-6</sup> | -20 °C to +70 °C  |
|   |                | Over 5.5 MHz : ±30 × 10 <sup>-6</sup>  | Please contact us for requirements not listed in this specifications. |
| Load capacitance  | CL             | Fundamental: 10 pF to ∞                | Please specify  |
|   |                | Overtone: 5 pF to ∞                    |   |
| Motional resistance (ESR)                               | R <sub>1</sub> | As per table below                     | -20 °C to +70 °C, DL=100 μW   |
| Shunt capacitance                                       | C <sub>0</sub> | 5 pF Max.                              |   |
| Frequency aging   | f_age          | ±5 × 10 <sup>-6</sup> / year Max.      | +25 °C, First year  |

\*1 4.0 MHz ≤ f\_nom < 5.5 MHz : See "Available frequencies from 4.0 MHz to less than 5.5 MHz". 8.0 MHz < f\_nom < 8.2 MHz: Unavailable.  
 \*2 26.000 MHz ≤ f\_nom < 30.000 MHz : please contact us for inquiries for 3rd overtone mode.

Available frequencies from 4.0 MHz to less than 5.5 MHz (MHz)

|       |       |       |       |          |          |       |       |        |
|-------|-------|-------|-------|----------|----------|-------|-------|--------|
| 4.000 | 4.032 | 4.096 | 4.190 | 4.194304 | 4.433619 | 4.500 | 4.800 | 4.9152 |
|-------|-------|-------|-------|----------|----------|-------|-------|--------|

Motional resistance (ESR)

| Frequency (MHz)     | 4 ≤ f_nom < 5.5 | 5.5 ≤ f_nom < 6 | 6 ≤ f_nom < 10 | 10 ≤ f_nom < 12 | 12 ≤ f_nom < 16 | 16 ≤ f_nom < 30 | 30 ≤ f_nom ≤ 36 | 36 < f_nom ≤ 64 |
|---------------------|-----------------|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Motional resistance | 150 Ω Max.      | 100 Ω Max.      | 80 Ω Max.      | 60 Ω Max.       | 50 Ω Max.       | 40 Ω Max.       | 100 Ω Max.      | 80 Ω Max.       |
| Overtone order      | Fundamental     |                 |                |                 |                 |                 | 3rd overtone    |                 |

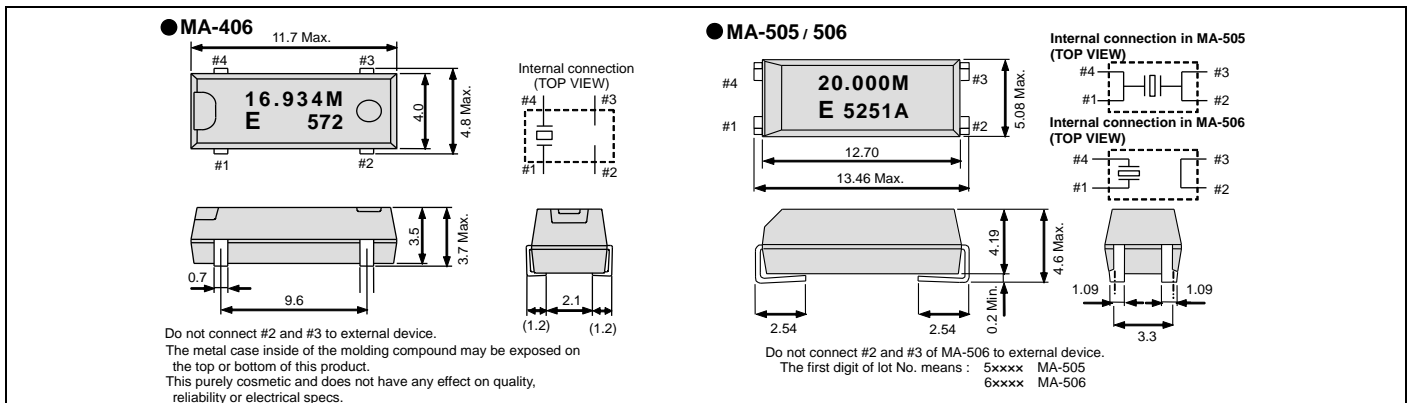
Product name MA-406 24.000000MHz 12.0 +10.0-10.0  
 (Standard form) ① ② ③ ④

①Model ②Frequency ③Load capacitance(pF) ④Frequency tolerance(x 10<sup>-6</sup>, +25 °C)

In addition to the above mentioned specification item, please specify frequency temperature characteristics and operating temperature range in case of inquiry.

External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)

