

## MHz RANGE CRYSTAL UNIT SMD

# MA-406 MA-505 / MA-506

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



Actual size

MA-406

MA-505 / 506



### Specifications (characteristics)

| Item  | Symbol                | Specifications                         | Remarks  |   |
|---|-----------------------|--|--|---|
| Nominal frequency range                                 | f                     | 4.000 MHz to 29.999 MHz                | Fundamental *1   |   |
|   |                       | 30.000 MHz to 64.000 MHz               | 3rd overtone *2  |   |
| Temperature range                                       | Storage temperature   | T_stg                                  | -55 °C to +125 °C  | Store as bare product after unpacking                 |
|   | 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>  | For the out of standard specifications, please contact us for inquires |   |
| Load capacitance  | CL                    | Fundamental: 10 pF to ∞                |  |   |
|   |                       | Overtone: 5 pF to ∞                    | Please specify   |   |
| Motional resistance (ESR)                               | R <sub>1</sub>        | As per below table                     | -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 < 5.5 MHz : See "Available frequencies from 4.0 MHz to less than 5.5 MHz". 8.0 MHz < f < 8.2 MHz: Unavailable.

\*2 26.000 MHz ≤ f < 30.000 MHz : please contact us for inquiries for 3rd overtone mode.

### Available frequency from 4.0 MHz to less than 5.5 MHz (MHz)

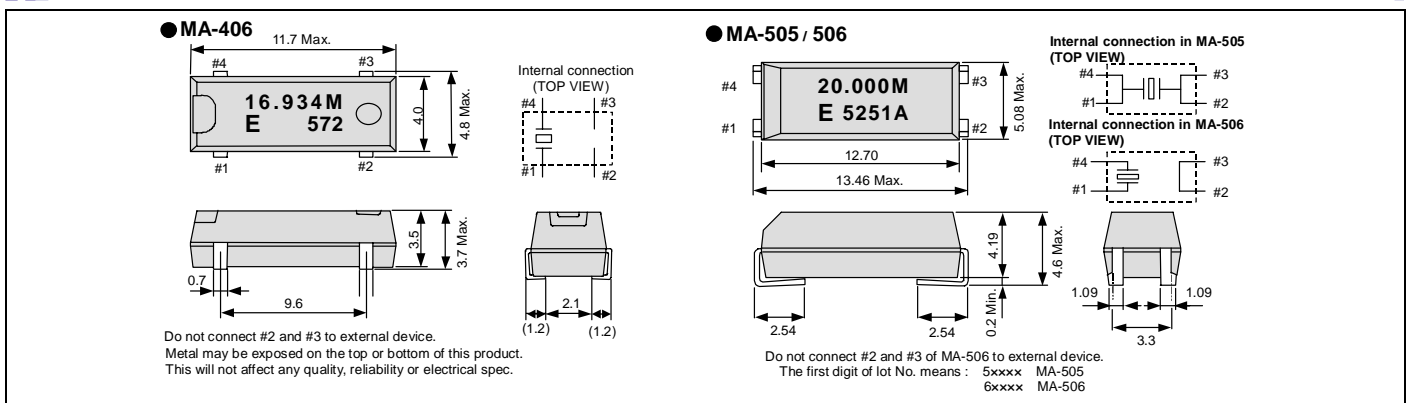
|       |       |       |       |          |          |       |       |        |
|-------|-------|-------|-------|----------|----------|-------|-------|--------|
| 4.000 | 4.032 | 4.096 | 4.190 | 4.194304 | 4.433619 | 4.500 | 4.800 | 4.9152 |
|-------|-------|-------|-------|----------|----------|-------|-------|--------|

### Motional resistance (ESR)

| Frequency (MHz)     | 4.0 ≤ f < 5.5 | 5.5 ≤ f < 6.0 | 6.0 ≤ f < 10.0 | 10.0 ≤ f < 12.0 | 12.0 ≤ f < 16.0 | 16.0 ≤ f < 30.0 | 30.0 ≤ f ≤ 36.0 | 36.0 < f ≤ 64.0 |
|---------------------|---------------|---------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 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    |                 |

### External dimensions

(Unit:mm)



### Footprint (Recommended)

(Unit:mm)

