MHz RANGE CRYSTAL UNIT

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

RoHS Compliant

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

Actual size

MA-406	MA-505 / 506
	

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^{-6}	+25 °C
Frequency versus temperature characteristics (standard)	f_tem	Under 5.5 MHz :±50 × 10^{-6}	-20 °C to +70 °C
		Over 5.5 MHz :±30 × 10^{-6}	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_1	As per table below	-20 °C to +70 °C, DL=100 μW
Shunt capacitance	C_0	5 pF Max.	
Frequency aging	f_age	±5 × 10^{-6} / 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 (Standard form)

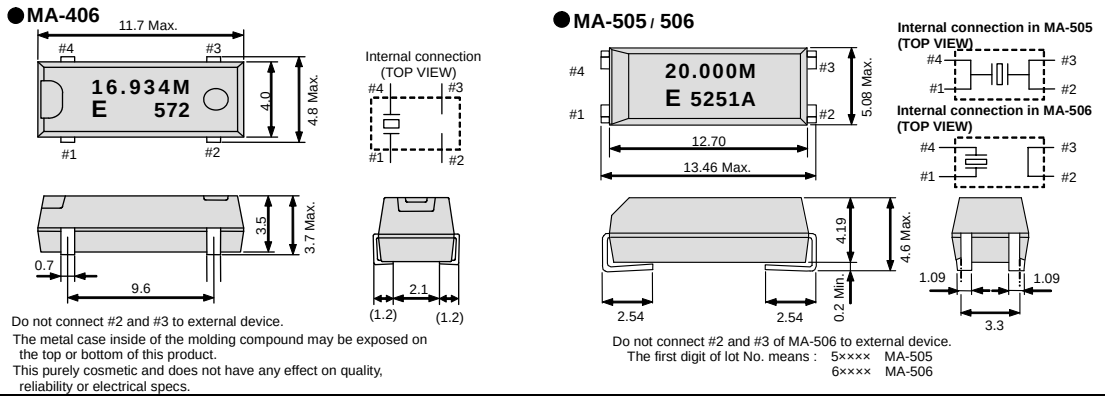
MA-406 ① 24.000000MHz ② 12.0 ③ +10.0-10.0 ④

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

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

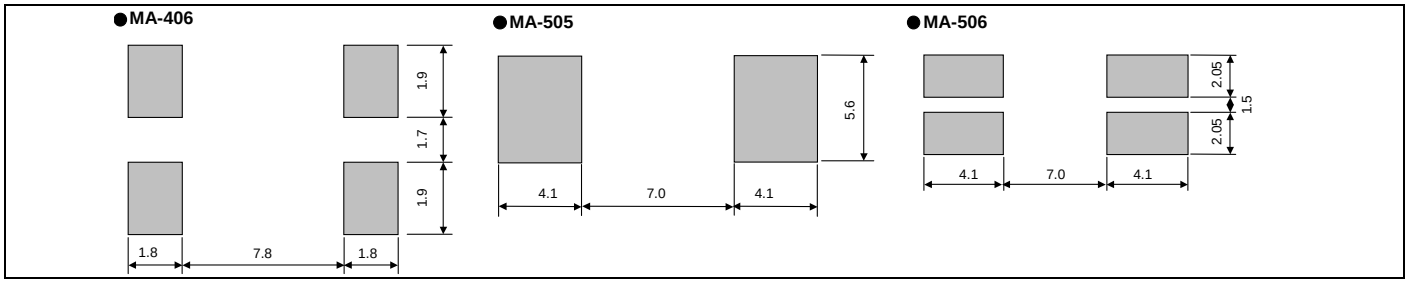
External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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►Explanation of the mark that are using it for the catalog

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RoHS Compliant	►Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
For Automotive	►Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
Automotive Safety	►Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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