

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

MA-406

MA-505 / 506



Specifications (characteristics)

Item	Symbol	Specifications	Conditions / Remarks
Nominal frequency range	f <sub>nom</sub>	4.000 MHz to 29.999 MHz	Fundamental *1
		30.000 MHz to 64.000 MHz	3rd overtone *2
Storage temperature	T <sub>stg</sub>	-55 °C to +125 °C	Storage as single product.
Operating temperature	T <sub>use</sub>	-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 <sub>tol</sub>	±50 × 10 <sup>-6</sup>	+25 °C
Frequency versus temperature characteristics (standard)	f <sub>tem</sub>	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 ∞	
		Overtone: 5 pF to ∞	Please specify
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 <sub>age</sub>	±5 × 10 <sup>-6</sup> / year Max.	+25 °C, First year

\*1 4.0 MHz ≤ f<sub>nom</sub> < 5.5 MHz : See "Available frequencies from 4.0 MHz to less than 5.5 MHz". 8.0 MHz < f<sub>nom</sub> < 8.2 MHz: Unavailable.

\*2 26.000 MHz ≤ f<sub>nom</sub> < 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
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Motional resistance (ESR)

Frequency (MHz)	4 ≤ f <sub>nom</sub> < 5.5	5.5 ≤ f <sub>nom</sub> < 6	6 ≤ f <sub>nom</sub> < 10	10 ≤ f <sub>nom</sub> < 12	12 ≤ f <sub>nom</sub> < 16	16 ≤ f <sub>nom</sub> < 30	30 ≤ f <sub>nom</sub> ≤ 36	36 < f <sub>nom</sub> ≤ 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

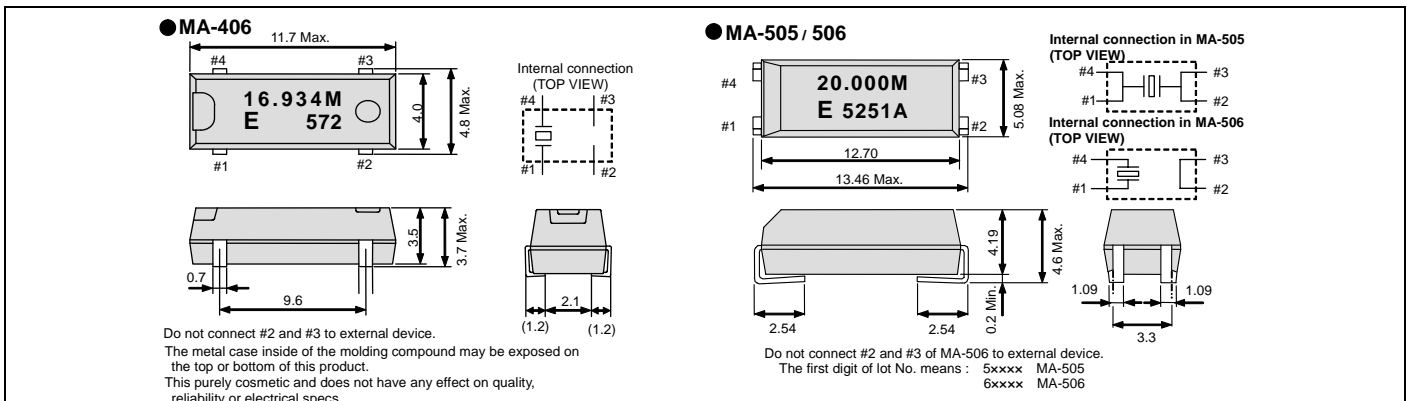
(Standard form)

① Model ② Frequency ③ Load capacitance(pF) ④ Frequency 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.

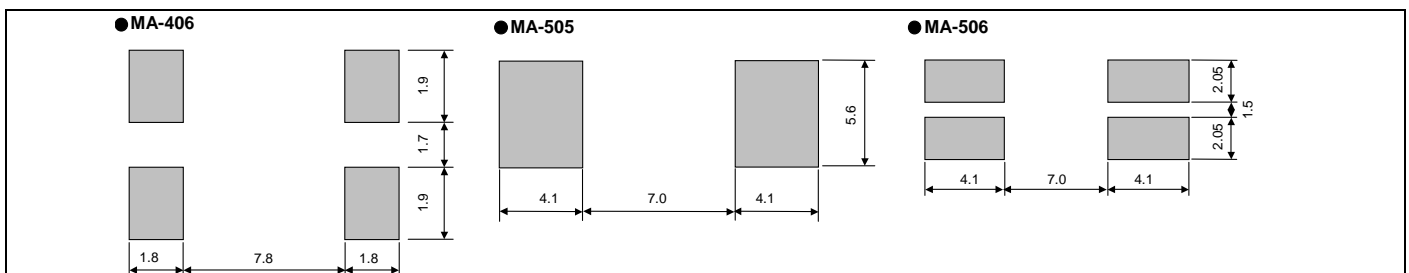
External dimensions

(Unit:mm)



Footprint (Recommended)

(Unit:mm)



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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.

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	► Pb free.
	► 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.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc.)

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- Изготовление тестовой платы монтаж и пусконаладочные работы.



Тел: +7 (812) 336 43 04 (многоканальный)  
Email: [org@lifeelectronics.ru](mailto:org@lifeelectronics.ru)