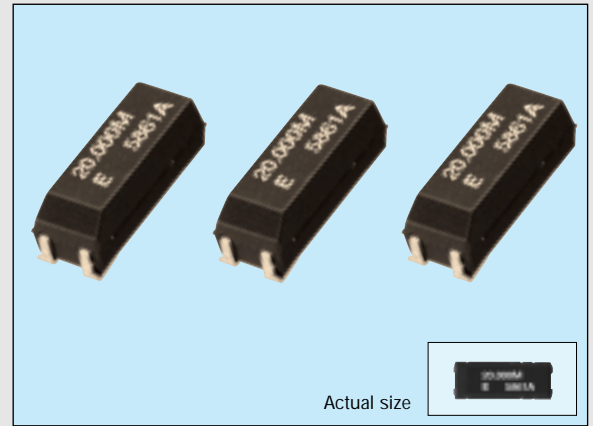


SMD HIGH-FREQUENCY CRYSTAL UNIT

MA-505/MA-506

- High-density mounting-type SMD.
- Excellent heat-resistance and environment capability.
- Capable of covering a wide range of frequency range from 4.0 MHz to 64 MHz.



Specifications (characteristics)

Item	Symbol	Specifications	Remarks	
Nominal frequency range	f	4.000 MHz to 30.000 MHz *1	Fundamental mode	
		26.000 MHz to 64.000 MHz	3rd overtone mode	
Temperature range	Storage temperature	T _{STG}	-55°C to +125°C	Stored as bare product after unpacking
	Operating temperature	T _{OPR}	-20°C to +70°C	Please contact us on availability of -40°C to +85°C
Drive level	Maximum drive level	GL	2mW max.	Only crystal oscillation is guaranteed
	Recommended drive level	DL	10µW to 100µW	
Soldering condition	T _{SOL}	Twice at under 260°C within 10 sec. or under 230°C within 3 min.		
Frequency tolerance (standard)	Δf/f	±50ppm	T _a =25°C±3°C, DL=100µW	
Frequency temperature characteristics (standard)	Under 5.5 MHz: ±50ppm		-20°C to +70°C, DL=100µW	
	Over 5.5 MHz: ±30ppm			
Load capacitance	C _L	Fundamental: 10pF to ∞. Over tone: 5pF to ∞	Please specify	
Series resistance	R ₁	As per below table	-20°C to +70°C, DL=100µW	
Shunt capacitance	C ₀	5pF max.		
Insulation resistance	IR	500 MΩ min.		
Aging	fa	±5ppm/year max.	T _a =25°C±3°C, first year	
Shock resistance	S. R.	±10ppm max.	Three drops on a hard board from 75 cm or excitation test with 3000G x 0.3ms x 1/2 sine wave x 3 directions	

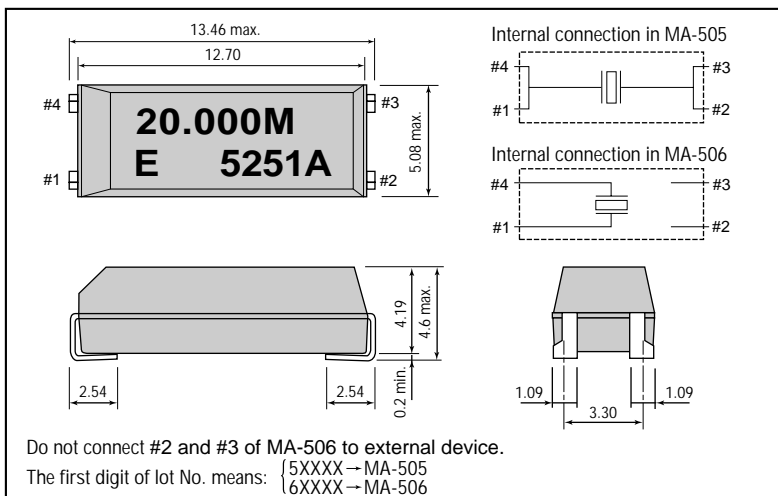
*1 8.0 MHz < f < 8.2 MHz: Unavailable.

For frequencies below 5.5 MHz, see "Available frequencies from 4.0 MHz to less than 5.5 MHz" on page 21.
26.000 MHz to 30.000 MHz: If not specified, 3rd overtone will be delivered.

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	26.0 ≤ f ≤ 36.0	36.0 < f ≤ 64.0
Series resistance (Ω)	150 Ω max.	100 Ω max.	80 Ω max.	60 Ω max.	50 Ω max.	40 Ω max.	100 Ω max.	80 Ω max.
Oscillation mode	Fundamental mode						3rd overtone mode	

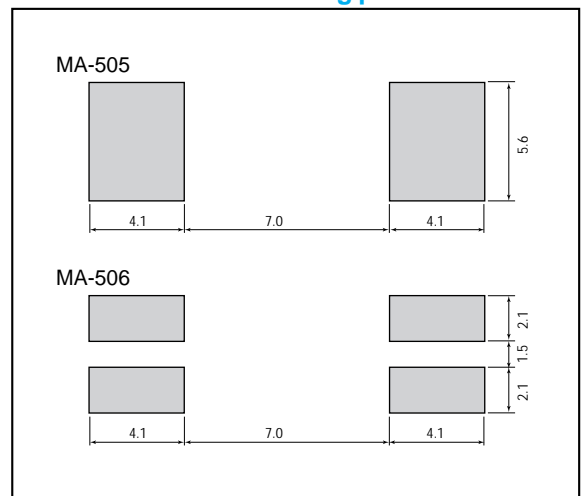
External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)



THE CRYSTALMASTER



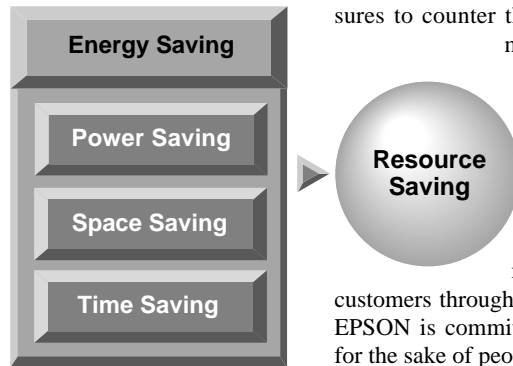
ENERGY SAVING EPSON

EPSON offers effective savings to its customers through a wide range of electronic devices, such as semiconductors, liquid crystal display (LCD) modules, and crystal devices. These savings are achieved through a sophisticated melding of three different efficiency technologies.

Power saving technology provides low power consumption at low voltages.

Space saving technology provides further reductions in product size and weight through super-precise processing and high-density assembly technology.

Time saving technology shortens the time required for design and development on the customer side and shortens delivery times.



Our concept of Energy Saving technology conserves resources by blending the essence of these three efficiency technologies. The essence of these technologies is represented in each of the products that we provide to our customers.

In the industrial sector, leading priorities include measures to counter the greenhouse effect by reducing CO₂, measures to preserve the global environment, and the development of energy-efficient products. Environmental problems are of global concern, and although the contribution of energy-saving technology developed by EPSON may appear insignificant, we seek to contribute to the development of energy-saving products by our customers through the utilization of our electronic devices. EPSON is committed to the conservation of energy, both for the sake of people and of the planet on which we live.



SEIKO EPSON CORP. QUARTZ DEVICE DIVISION acquired ISO9001 and ISO14001 certification by B.V.Q.I. (Bureau Veritas Quality International) .

ISO9001 in October, 1992.

ISO14001 in November, 1997.

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