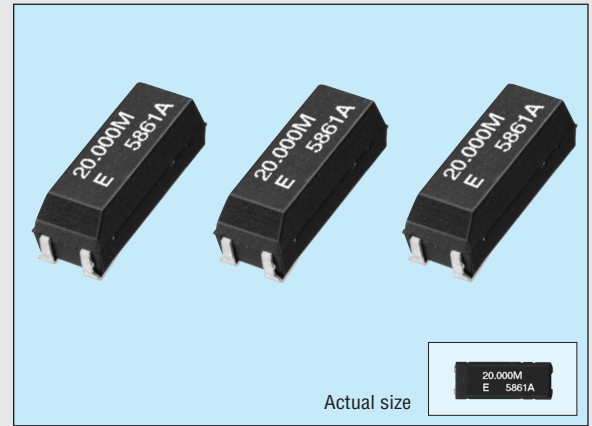


SMD HIGH-FREQUENCY CRYSTAL UNIT

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 29.999 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	2 mW Max.	Only crystal oscillation is guaranteed
	Recommended drive level	DL	10 μW to 100 μW	
Soldering condition	T _{SO} L	Twice at under +260 °C within 10 s or under +230 °C within 3 min.		
Frequency tolerance (standard)	Δf/f	±50 x 10 ⁻⁶	T _a =+25 °C±3 °C, DL=100 μW	
Frequency temperature characteristics (standard)		Under 5.5 MHz: ±50 x 10 ⁻⁶	-20 °C to +70 °C, DL=100 μW	
		Over 5.5 MHz: ±30 x 10 ⁻⁶		
Load capacitance	C _L	Fundamental: 10 pF to ∞. Over tone: 5 pF to ∞	Please specify	
Series resistance	R ₁	As per below table	-20 °C to +70 °C, DL=100 μW	
Shunt capacitance	C ₀	5 pF Max.		
Insulation resistance	IR	500 MΩ Min.		
Aging	f _a	±5 x 10 ⁻⁶ /year Max.	T _a =+25 °C±3 °C, first year	
Shock resistance	S. R.	±10 x 10 ⁻⁶ Max.	Three drops on a hard board from 750 mm or excitation test with 29400 m/s ² x 0.3 ms x 1/2 sine wave x 3 directions	

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

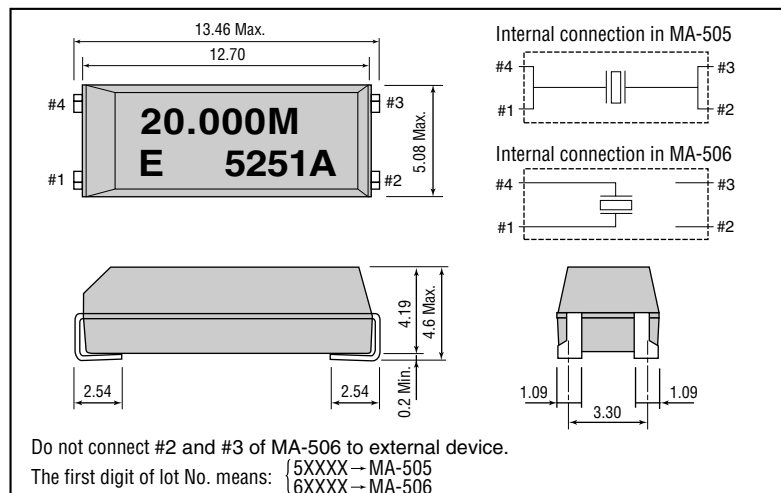
For frequencies below 5.5 MHz, see "Available frequencies from 4.0 MHz to less than 5.5 MHz" on page 21.

26.000 MHz ≤ f : 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	

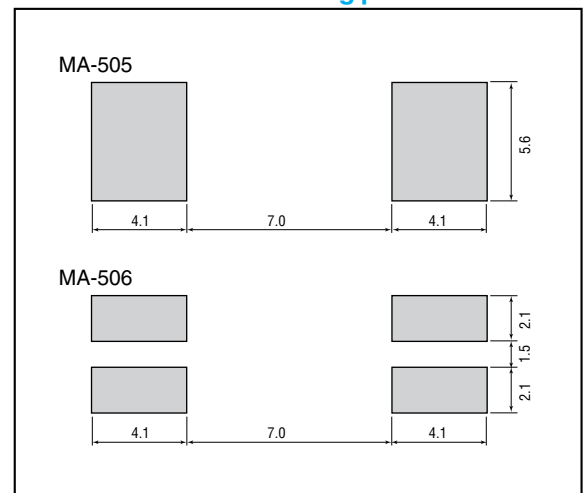
External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)



Part Numbering System

Standard Crystals (AT Strip Crystal)

MA-406

25.0000M

-

C

0

Crystal Package Type:

MA-505: 4pin "J" lead SMD, 4.57mm Height
MA-506: 4pin "J" Lead SMD, 4.57mm Height
MA-406: 4pin "J" Lead SMD, 3.65mm Height

Frequency Range:

M: In MHz to 4 Decimal Places

4.000, 4.032, 4.096, 4.194304, 4.433619, 4.500, 4.800,
4.842673, 4.9152MHz

5.500 ~ 64.000MHz

Except 8.0001 ~ 8.1999MHz

26.000 ~ 29.999MHz : If not specified, 3rd O/T will
be delivered.

Frequency Tolerance@25C

B or Blank: +/-50ppm(Std)

Load Capacitance:

B: 16.0pf
C: 18.0pf
D: 22.0pf
F: Series
G: 20.0pf
H: 32.0pf
K: 10.0pf
W: 12.0pf
AB: 30.0pf
AD: 50.0pf

Packaging

Tape and Reel

0: 1000pcs per reel

NOTE:

If requiring a load capacitance other than the above
listed, please contact your EEA representative for
assistance.

EPSON

EPSON ELECTRONICS AMERICA, INC.

