

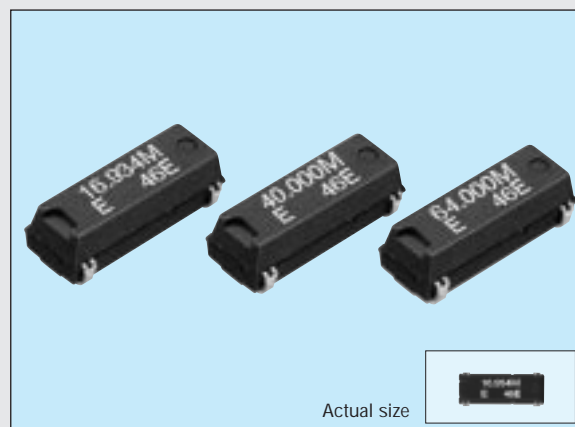
SMD HIGH-FREQUENCY CRYSTAL UNIT

MA-406

Products number

Q22MA406xxxxx00

- High-density mounting-type SMD.
- Excellent heat-resistance and environment capability.
- Cover a wide frequency range, from 4 MHz to 64 MHz.



Specifications (characteristics)

Item	Symbol	Specifications	Remarks	
Nominal frequency	f	4.000 MHz to 29.999 MHz *1	Fundamental mode	
		30.000 MHz to 64.000 MHz *2	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	Only crystal oscillation is guaranteed
	Recommended drive level	DL	10 μW to 100 μW	
Frequency tolerance (standard)	Δf/f	±50 x 10 ⁻⁶	T _a =+25 °C±3 °C	
Frequency temperature characteristics (standard)		Under 5.5 MHz: ±50 x 10 ⁻⁶	-20 °C to +70 °C	
		Over 5.5 MHz: ±30 x 10 ⁻⁶		
Load capacitance	C _L	Fundamental: 10 pF to ∞	Please specify	
		Over tone: 5 pF to ∞		
Series resistance	R ₁	As per table below	-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	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.

4.0 MHz ≤ f < 5.5 MHz : See "Available frequencies form 4.0 MHz to less than 5.5 MHz" on page 22.

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

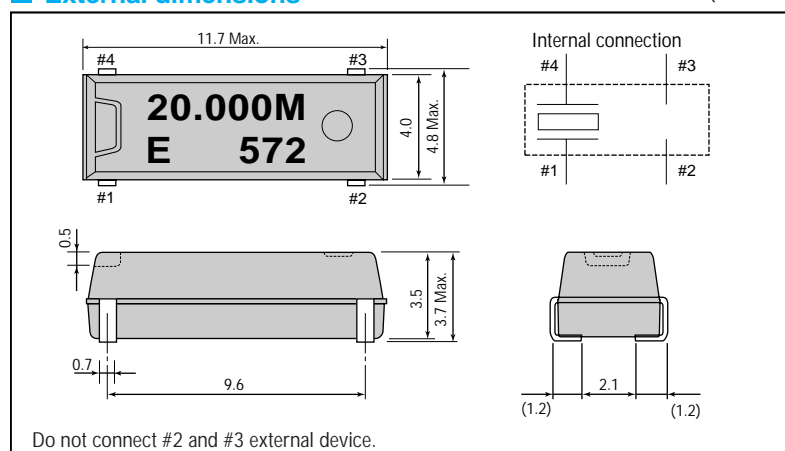
Metal may be exposed on the top of this product. This won't affect any quality, reliability or electrical spec.

Series resistance

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)

