

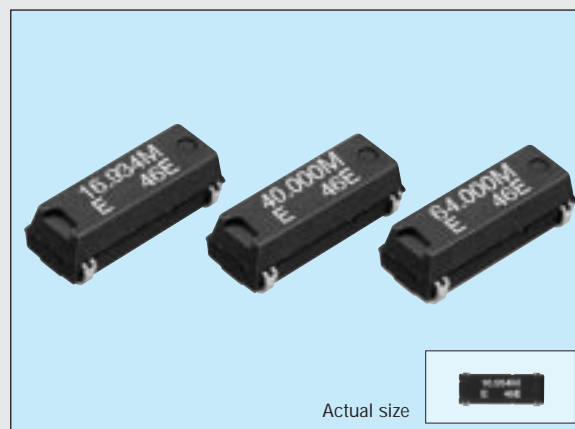
SMD HIGH-FREQUENCY CRYSTAL UNIT

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.



Actual size

■ 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
	Operating temperature	T _{OPR}	-20 °C to +70 °C
Drive level	Maximum drive level	GL	2 mW
	Recommended drive level	DL	10 µW to 100 µW
Frequency tolerance (standard)	Δf/f	±50 x 10 ⁻⁶	Ta=+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	fa	±5 x 10 ⁻⁶ / year	Ta=+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.

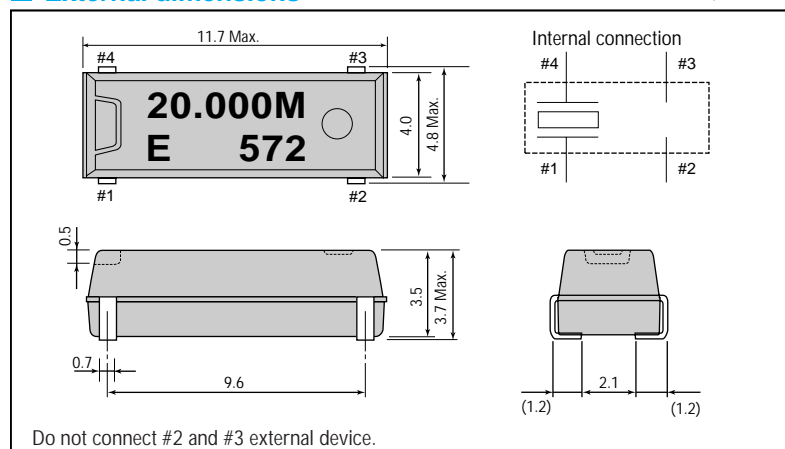
Metal may be exposed on the top of this product. This won't affect any quality, reliability or electrical spec.

■ 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)

