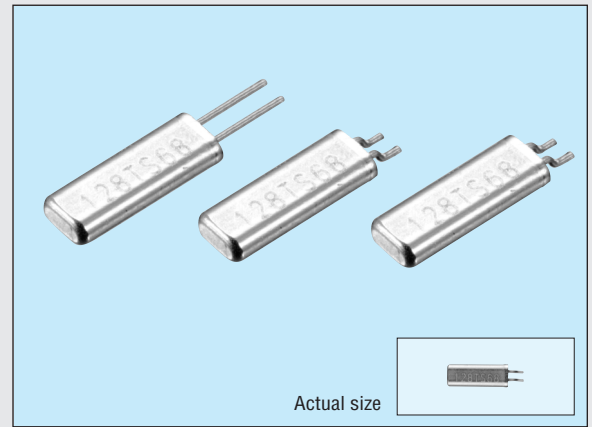


THIN CYLINDER HIGH-STABILITY CRYSTAL UNIT

SA-315H/315HZ

- Thin cylinder of 1.55 mm thickness featuring high stability.
- Small and thin with small mounting area and light weight.
- High heat resistance allows reflow soldering.
- Excellent shock resistance and environmental capability.
- Embossed tape usable for SMD.(SA-315HZ)
- Most suitable for small communications devices.



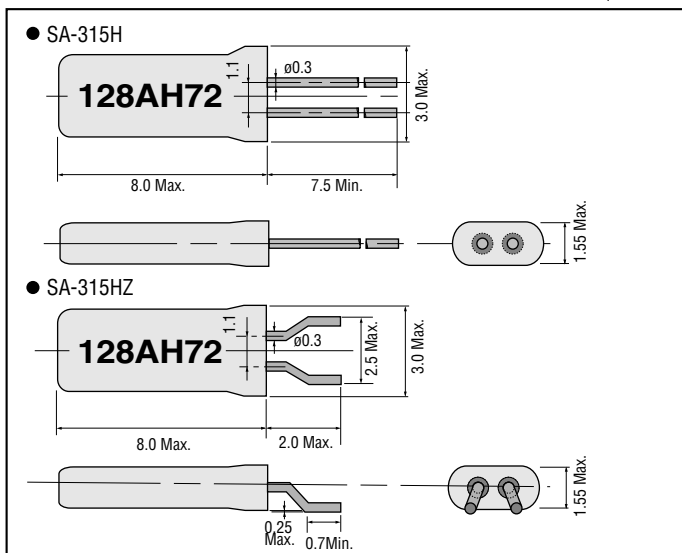
Specifications (characteristics)

Item	Symbol	Specifications	Remarks	
Nominal frequency range	f	10.000 MHz to 27.000 MHz	Fundamental mode	
Temperature range	Storage temperature	T _{STG}	-55 °C to +125 °C	
	Operating temperature	T _{OPR}	-40 °C to +85 °C	Specified equivalent series resistance must be satisfied.
	Operable temperature	T _{USE}	As per below table	Specified equivalent series resistance and frequency-temperature characteristics must be satisfied.
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 (reflow)	T _{SOL}	+240 °C Max. within 10 s and under +200 °C within 40 s		
Frequency tolerance (standard)	Δf/f	±10 × 10 ⁻⁶	D _L =100 μW at Ta=+25 °C ±3 °C and specified load capacity.	
Frequency temperature characteristics		As per below table		
Load capacitance	C _L	10 pF to ∞	Please specify	
Series resistance	R ₁	As per below table	Operable temperature range, DL=100 μW	
Shunt capacitance	C ₀	3.0 pF Max.		
Insulation resistance	IR	500 MΩ Min.		
Aging	fa	±1 × 10 ⁻⁶ / year Max.	Ta =+25 °C ±1 °C, 100 μW	
Shock resistance	S.R.	±1 × 10 ⁶ Max.	Three drops on a hard wooden board from 750 mm or excitation test with 29400 m/s ² x 0.3 ms x 1/2 sine wave x 3 directions	

Measured values for frequency tolerance and temperature characteristics need to be brought into mutual correlation prior to the start of production. Please check the soldering condition of plug case department before use.

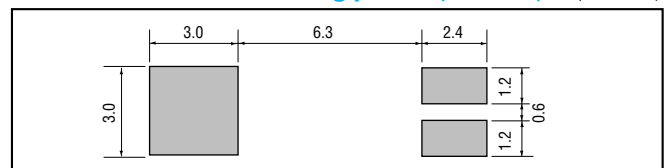
External dimensions

(Unit: mm)



Recommended soldering pattern(SA-315HZ)

(Unit: mm)



Frequency temperature characteristics

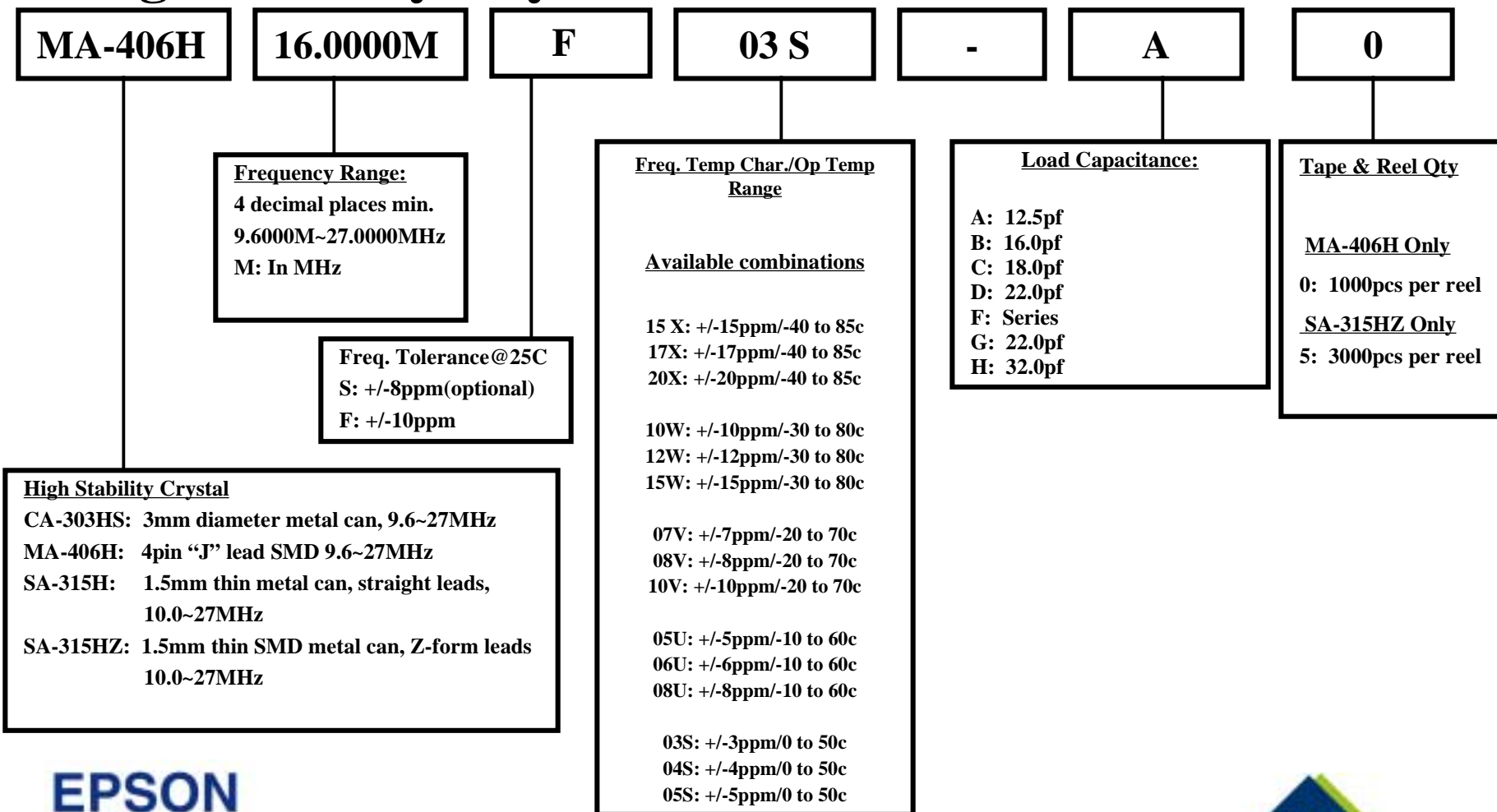
Operating temperature range	Frequency tolerance
0 °C to +50 °C	± 3 × 10 ⁻⁶ Min.
-10 °C to +60 °C	± 5 × 10 ⁻⁶ Min.
-20 °C to +70 °C	± 7 × 10 ⁻⁶ Min.
-30 °C to +80 °C	±10 × 10 ⁻⁶ Min.
-40 °C to +85 °C	±15 × 10 ⁻⁶ Min.

Series resistance

Frequency (MHz)	Series resistance (R ₁)
10.0 ≤ f < 12.0	40 Ω Max.
12.0 ≤ f ≤ 27.0	30 Ω Max.

Part Numbering System

High Stability Crystals



EPSON

EPSON ELECTRONICS AMERICA, INC.

