

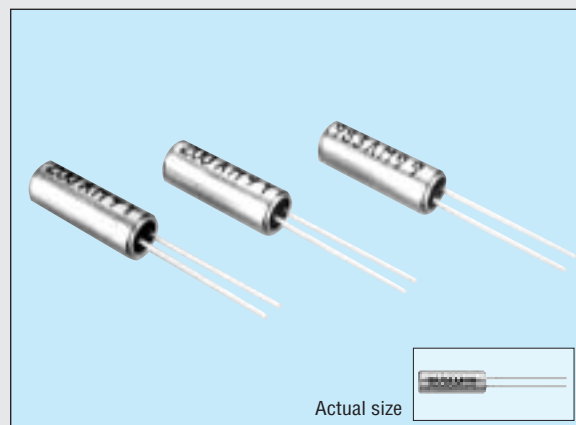
## CYLINDER HIGH-FREQUENCY CRYSTAL UNIT

## CA-301

Product number (please refer to page 1)

Q21CA301xx xx x 00

- Compact design with case as small as 3 mm in diameter while still maintaining excellent characteristics of AT-cut.
- High-stability assured with tight vacuum sealing.
- Capable of covering a frequency range from 4 MHz to 64 MHz.



## Specifications (characteristics)

Item	Symbol	Specifications	Remarks
Nominal frequency range	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 <sub>STG</sub>	-40 °C to +85 °C
	Operating temperature	T <sub>OPR</sub>	-20 °C to +70 °C
			Stored as bare product after unpacking The operating temperature range is -10 °C to +60 °C for 5.5 MHz and below
Drive level	Maximum drive level	GL	2 mW Max.
	Recommended level	DL	10 μW to 100 μW
			Only crystal oscillation is guaranteed
Frequency tolerance (standard)	Δf/f	±30 × 10 <sup>-6</sup> (Under 5.5 MHz: ±50 × 10 <sup>-6</sup> , ±100 × 10 <sup>-6</sup> )	T <sub>a</sub> =+25 °C
Frequency temperature characteristics (standard)			Under 5.5 MHz: ±50 × 10 <sup>-6</sup>
			Over 5.5 MHz: ±30 × 10 <sup>-6</sup>
			-10 °C to +60 °C
			-20 °C to +70 °C
Load capacitance	C <sub>L</sub>	Fundamental: 10 pF to ∞. Over tone: 5 pF to ∞	Please specify
Series resistance	R <sub>1</sub>	As per below table	-20 °C to +70 °C, DL=100 μW
Shunt capacitance	C <sub>0</sub>	5 pF Max.	
Insulation resistance	IR	500 MΩ Min.	
Aging	f <sub>a</sub>	±5 × 10 <sup>-6</sup> /year Max.	T <sub>a</sub> =+25 °C±3 °C, first year
Shock resistance	S.R.	±10 × 10 <sup>-6</sup> Max.	Three drops on a hard board from 750 mm height or excitation test with 29400 m/s <sup>2</sup> × 0.3 ms × 1/2 sine wave × 3 directions

\*1 8.0 MHz &lt; f &lt; 8.2 MHz: Unavailable. 4.0 MHz ≦ f &lt; 5.5 MHz : As per below table.

\*2 26.000 MHz ≦ f &lt; 30.000 MHz : please contact us for inquiries for 3rd overtone mode.

## Series resistance

Frequency (MHz)	Series resistance (Ω)	mode
4.0 ≦ f < 5.5	150 Ω Max.	Fundamental
5.5 ≦ f < 6.0	100 Ω Max.	
6.0 ≦ f < 10.0	80 Ω Max.	
10.0 ≦ f < 12.0	60 Ω Max.	
12.0 ≦ f < 16.0	50 Ω Max.	
16.0 ≦ f < 30.0	40 Ω Max.	
26.0 ≦ f < 36.0	100 Ω Max.	3rd overtone
36.0 ≦ f ≦ 64.0	80 Ω Max.	

## Available frequencies from 4.0 MHz to less than 5.5 MHz

Frequency (MHz)	Frequency (MHz)
4.000 MHz	4.433619 MHz
4.032 MHz	4.500 MHz
4.096 MHz	4.800 MHz
4.190 MHz	4.842673 MHz
4.194304 MHz	4.9152 MHz

## External dimensions

(Unit: mm)

