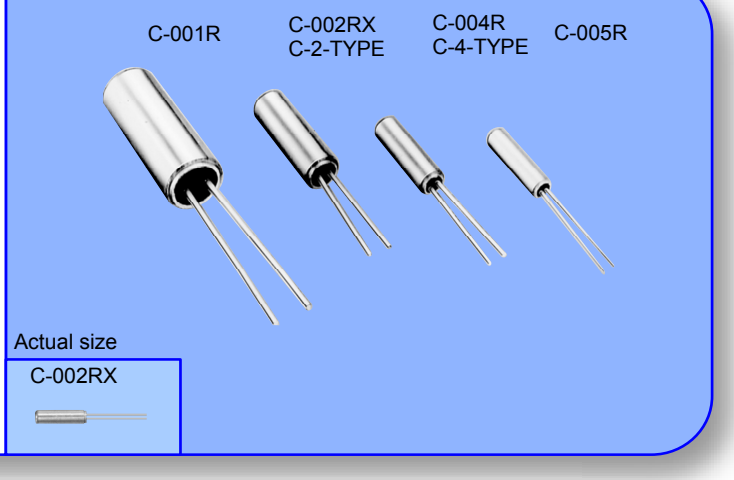
kHz RANGE CRYSTAL UNIT
CYLINDER

C - TYPE
C - 2 - TYPE / C - 4 - TYPE

- Frequency range : 32.768 kHz (20 kHz to 307.2 kHz)
- Thickness : ϕ1.2 mm to ϕ3.1 mm
- Overtone order : Fundamental / Overtone(192 kHz,307.2 kHz)
- Applications : Clock and Microcomputer
- Lead(Pb)-free : Lead free completely



Specifications for C-TYPE (characteristics)

Item		Symbol	C-001R	C-002RX	C-004R	C-005R	Remarks
Nominal frequency range		f	32.768 kHz				
Temperature range	Storage temperature	T_stg	-20 °C to +70 °C				Stored as bare product after unpacking
	Operating temperature	T_use	-10 °C to +60 °C				
Level of drive		DL	1.0 μW Max.				
Frequency tolerance (standard)		f_tol	±20 ×10^{-6}				+25 °C, DL=0.1 μW
Turnover temperature		Ti	+25 °C ±5 °C				
Parabolic coefficient		B	-0.04 × 10^{-6} / °C^2 Max.				
Load capacitance		CL	6 pF to ∞				Please specify
Motional resistance (ESR)		R1	35 kΩ Max. (18 kΩ Typ.)	50 kΩ Max. (30 kΩ Typ.)		50 kΩ Max. (37 kΩ Typ.)	
Motional capacitance		C1	2.1 fF Typ.	2.0 fF		1.9 fF Typ.	
Shunt capacitance		C0	0.9 pF Typ.	0.85 pF		0.75 pF Typ.	
Frequency aging		f_age	±3 × 10^{-6} / year Max.				+25 °C, First year

Specifications for C-2-TYPE C-4-TYPE (characteristics)

Item		Symbol	Specifications		Remarks
			C-2-TYPE	C-4-TYPE	
Nominal frequency range		f	20 kHz to 165 kHz, 307.2 kHz	32 kHz to 120 kHz, 192 kHz	Overtone (192 kHz,307.2 kHz)
Temperature range	Storage temperature	T_stg	-20 °C to +70 °C		Stored as bare product after unpacking
	Operating temperature	T_use	-10 °C to +60 °C		
Level of drive		DL	1.0 μW Max.		
Frequency tolerance (standard)		f_tol	±20 × 10^{-6},±50 × 10^{-6},±100 × 10^{-6} (307.2 kHz:±100 × 10^{-6})	±50 × 10^{-6}, ±100 × 10^{-6}	+25 °C, DL=0.1 μW
Turnover temperature		Ti	+25 °C ±5 °C		
Parabolic coefficient		B	-0.04 × 10^{-6} / °C^2 Max.		
Load capacitance		CL	6 pF to ∞		Please specify
Motional resistance (ESR)		R1	55 kΩ to 6 kΩ	55 kΩ to 10 kΩ	As per below table
Motional capacitance		C1	4.0 fF to 0.6 fF		
Shunt capacitance		C0	2.0 pF to 0.6 pF		
Frequency aging		f_age	±5 × 10^{-6} / year Max.		+25 °C, First year

Motional resistance C-2- TYPE

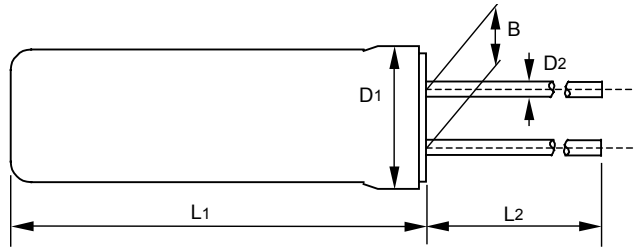
Frequency	20 kHz≤ f<31.2 kHz	31.2 kHz≤f<40 kHz	40 kHz≤f<90 kHz	90 kHz≤f<130 kHz	130 kHz≤f≤165 kHz	307.2 kHz
Motional resistance	55 kΩ Max.	35 kΩ Max.	20 kΩ Max.	12 kΩ Max.	10 kΩ Max.	6 kΩ Max.

Motional resistance C-4- TYPE

Frequency	32 kHz≤ f<38 kHz	38 kHz≤f<50 kHz	50 kHz≤f<74 kHz	74 kHz≤f≤100 kHz	100 kHz<f≤120 kHz	192 kHz
Motional resistance	50 kΩ Max.	30 kΩ Max.	25 kΩ Max.	22 kΩ Max.	15 kΩ Max.	10 kΩ Max.

External dimensions

(Unit:mm)



Model	L1	L2	D1	D2	B
C-001R	8.0 Max.	9.0 Min.	ϕ 3.1 Max.	ϕ 0.3	1.1
C-002RX C-2-TYPE	6.0 Max.	4.0 Min.	ϕ 2.0 Max.	ϕ 0.2	0.7
C-004R C-4-TYPE	5.0 Max.	4.0 Min.	ϕ 1.5 Max.	ϕ 0.18	0.5
C-005R	4.6 Max.	4.0 Min.	ϕ 1.2 Max.	ϕ 0.15	0.3

160 kHz to 165 kHz,307.2 kHz:D1= ø 2.2 Max.