

**KHz RANGE CRYSTAL UNIT**

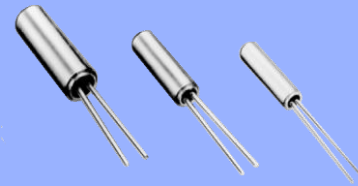
**C - TYPE  
C - 2 TYPE / C - 4 TYPE**

- Frequency range : 32.768 kHz (20 kHz~120 kHz)
- Thickness :  $\phi$  1.2 mm ~  $\phi$  2.0 mm Max.
- Overtone order : Fundamental
- Applications : Clock and Microcomputer



Product Number (please contact us)

- C-002RX : Q11C02RX1xxxx00
- C-004R : Q11C004R1xxxx00
- C-005R : Q11C005R1xxxx00
- C-2 TYPE : Q12C20001xxxx00
- C-4 TYPE : Q12C40001xxxx00



Actual size

C-002RX

C-002RX  
C-2 TYPE

C-004R  
C-4 TYPE

C-005R

**Specifications for C-TYPE (characteristics)**

Item	Symbol	C-002RX	C-004R	C-005R	Conditions / Remarks
Nominal frequency range	f_nom	32.768 kHz			
Storage temperature	T_stg	-20 °C to +70 °C			Storage as single product.
Operating temperature	T_use	-10 °C to +60 °C			
Level of drive	DL	1.0 $\mu$ W Max.			
Frequency tolerance (standard)	f_tol	$\pm 20 \times 10^{-6}$			+25 °C, DL=0.1 $\mu$ W
Turnover temperature	Ti	+25 °C $\pm$ 5 °C			
Parabolic coefficient	B	$-0.04 \times 10^{-6} / ^\circ\text{C}^2$ Max.			
Load capacitance	CL	6 pF to $\infty$			Please specify
Motional resistance (ESR)	R <sub>1</sub>	50, 60 k $\Omega$ Max. (30 k $\Omega$ Typ.)	50 k $\Omega$ Max. (30 k $\Omega$ Typ.)	50 k $\Omega$ Max. (37 k $\Omega$ Typ.)	
Motional capacitance	C <sub>1</sub>	2.0 fF	2.0 fF	1.9 fF Typ.	
Shunt capacitance	C <sub>0</sub>	0.85 pF	0.85 pF	0.75 pF Typ.	
Frequency aging	f_age	$\pm 3 \times 10^{-6} / \text{year}$ Max.			+25 °C, First year

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

Item	Symbol	C-2 TYPE	C-4 TYPE	Conditions / Remarks
Nominal frequency range	f_nom	20 kHz to 120 kHz	32 kHz to 120 kHz	Please contact us about available frequencies.
Storage temperature	T_stg	-20 °C to +70 °C		Storage as single product.
Operating temperature	T_use	-10 °C to +60 °C		
Level of drive	DL	1.0 $\mu$ W Max.		
Frequency tolerance (standard)	f_tol	$\pm 20 \times 10^{-6}, \pm 50 \times 10^{-6}, \pm 100 \times 10^{-6}$	$\pm 50 \times 10^{-6}, \pm 100 \times 10^{-6}$	+25 °C, DL=0.1 $\mu$ W
Turnover temperature	Ti	+25 °C $\pm$ 5 °C		
Parabolic coefficient	B	$-0.04 \times 10^{-6} / ^\circ\text{C}^2$ Max.		
Load capacitance	CL	6 pF to $\infty$		Please specify
Motional resistance (ESR)	R <sub>1</sub>	As per table below		
Motional capacitance	C <sub>1</sub>	4.0 fF to 0.6 fF		
Shunt capacitance	C <sub>0</sub>	2.0 pF to 0.6 pF		
Frequency aging	f_age	$\pm 5 \times 10^{-6} / \text{year}$ Max.		+25 °C, First year

**Motional resistance C-2 TYPE**

Frequency	20 kHz $\leq$ f_nom < 31.2 kHz	31.2 kHz $\leq$ f_nom < 40 kHz	40 kHz $\leq$ f_nom < 90 kHz	90 kHz $\leq$ f_nom $\leq$ 120 kHz
Motional resistance	55 k $\Omega$ Max.	35 k $\Omega$ Max.	20 k $\Omega$ Max.	12 k $\Omega$ Max.

**Motional resistance C-4 TYPE**

Frequency	32 kHz $\leq$ f_nom < 38 kHz	38 kHz $\leq$ f_nom < 60 kHz	60 kHz $\leq$ f_nom < 74 kHz	74 kHz $\leq$ f_nom $\leq$ 100 kHz	100 kHz < f_nom $\leq$ 120 kHz
Motional resistance	55 k $\Omega$ Max.	30 k $\Omega$ Max.	25 k $\Omega$ Max.	22 k $\Omega$ Max.	15 k $\Omega$ Max.

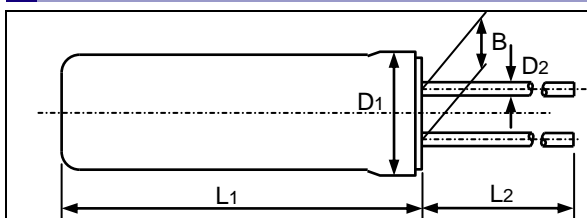
Product name C-002RX 32.768000kHz 12.5 +20.0-20.0

(Standard form)

- ① Model ② Frequency ③ Load capacitance(pF) ④ Frequency tolerance( $\times 10^{-6}$ , +25 °C)

**External dimensions**

(Unit:mm)



Model	L <sub>1</sub>	L <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	B
C-002RX C-2 TYPE	6.0 Max.	4.0 Min.	$\phi$ 2.0 Max.	$\phi$ 0.2	0.7
C-004R C-4 TYPE	5.0 Max.	4.0 Min.	$\phi$ 1.5 Max.	$\phi$ 0.18	0.5
C-005R	4.6 Max.	4.0 Min.	$\phi$ 1.2 Max.	$\phi$ 0.15	0.3