

**kHz RANGE CRYSTAL UNIT
CYLINDER**

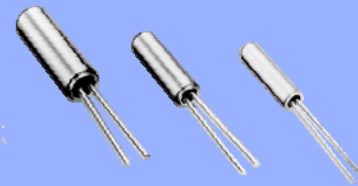
**C - TYPE
C - 2 - TYPE / C - 4 - TYPE**

- Frequency range : 32.768 kHz (20 kHz~120 kHz)
- Thickness : ϕ 1.2 mm ~ ϕ 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~+70 °C			Storage as single product.
Operating temperature	T_use	-10 °C~+60 °C			
Level of drive	DL	1.0 μ W Max.			
Frequency tolerance (standard)	f_tol	$\pm 20 \times 10^{-6}$			+25 °C, DL=0.1 μ 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 ~ ∞			Please specify
Motional resistance (ESR)	R1	50, 60 k Ω Max. (30 k Ω Typ.)	50 k Ω Max. (30 k Ω Typ.)	50 k Ω Max. (37 k Ω Typ.)	
Motional capacitance	C1	2.0 fF	2.0 fF	1.9 fF Typ.	
Shunt capacitance	C0	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	Specifications		Conditions / Remarks
		C-2-TYPE	C-4-TYPE	
Nominal frequency range	f_nom	20 kHz~120 kHz	32 kHz~120 kHz	
Storage temperature	T_stg	-20 °C~+70 °C		Storage as single product.
Operating temperature	T_use	-10 °C~+60 °C		
Level of drive	DL	1.0 μ 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 μ 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 ~ ∞		Please specify
Motional resistance (ESR)	R1	As per table below		
Motional capacitance	C1	4.0 fF ~ 0.6 fF		
Shunt capacitance	C0	2.0 pF ~ 0.6 pF		
Frequency aging	f_age	$\pm 5 \times 10^{-6} / \text{year}$ Max.		+25 °C, First year

Motional resistance C-2-TYPE

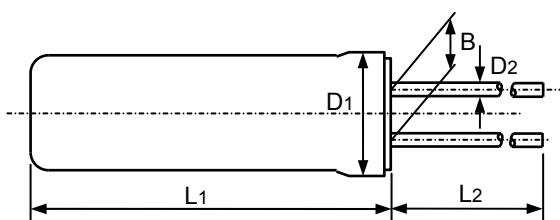
Frequency	20 kHz \leq f_nom < 31.2 kHz	31.2 kHz \leq f_nom < 40 kHz	40 kHz \leq f_nom < 90 kHz	90 kHz \leq f_nom \leq 120 kHz
Motional resistance	55 k Ω Max.	35 k Ω Max.	20 k Ω Max.	12 k Ω Max.

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 Ω Max.	30 k Ω Max.	25 k Ω Max.	22 k Ω Max.	15 k Ω Max.

External dimentions

(Unit:mm)



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

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.




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In order provide high quality and reliable products and services than meet customer needs,

Seiko Epson made early efforts towards obtaining ISO9000 series certification and has acquired ISO9001 for all business establishments in Japan and abroad. We have also acquired ISO/TS 16949 certification that is requested strongly by major automotive manufacturers as standard.

ISO/TS16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

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	<p>► Pb free.</p>
	<p>► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)</p>
	<p>► The products have been designed for high reliability applications such as Automotive.</p>

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