

Miniature Cylindrical Quartz Crystals - Seiko Epson

C-2-Type/C-Type “Watch Crystal”



Features

- Frequency range 20kHz - 165kHz and 307.2kHz
- Popular watch crystal 32.768kHz available in either 3 x 8mm or 2 x 6mm size
- Photolithography finish allows uniform and stable performance
- Excellent shock resistance and environmental capability

Specifications/Characteristics for C-2-Type

Item	Symbol	Specifications	Remarks
Nominal frequency range	f	20.000kHz to 165.000kHz* and 307.2kHz	*Please consult us
Temperature range	Storage temperature	T _{STG}	-20°C to +70°C
	Operating temperature	T _{OPR}	-10°C to +60°C
Maximum drive level	GL	1.0μW MAX.	
Soldering condition (Lead part)	T _{SOL}	Under 280°C within 5 sec	Do not heat up the package to more than 150°C
Frequency tolerance (standard)	Δf/f	±100ppm	Ta = 25°C, DL = 1.0μW
Peak temperature (frequency)	øT	25°C TYP.	
Temperature coefficient (frequency)	a	-0.04ppm/°C ² MAX.	
Load capacitance	CL	3pF to ∞	Please specify
Series resistance	R ₁	35KΩ to 8KΩ	
Motional capacitance	C ₁	2.1fF to 0.6fF	
Shunt capacitance	C ₀	1.0pF to 0.6pF	
Insulation resistance	IR	100MΩ MIN.	
Aging	fa	±5ppm/year MAX.	Ta = 25°C ±3°C, first year
Shock resistance	S.R.	±5ppm MAX.	Drop test of 3 times on a hard board from 75cm height or excitation test with 3000G x 0.3ms x 1/2 sinewave x 3 directions.

Specifications/Characteristics for C-Type

Item	Symbol	C-001R	C-002RX	C-004R	C-005R	Remarks
Nominal frequency range	f		32.768kHz			
Temperature range	Storage temperature	T _{STG}	-20°C to +70°C			
	Operating temperature	T _{OPR}	-10°C to +60°C			
Maximum drive level	GL		1.0μW MAX.			
Soldering condition (Lead part)	T _{SOL}		Under 280°C within 5 sec			*
Frequency tolerance (standard)	Δf/f		±20ppm			Ta=25°C
Turnover temperature (frequency)	øT		25°C ±5°C.			
Temperature coefficient (frequency)	a		-0.04ppm/°C ² MAX.			
Load capacitance	CL		3pF ∞			Please specify
Series resistance	R ₁	35KΩ MAX. (18KΩ TYP.)	50KΩ MAX. (30KΩ TYP.)	50KΩ MAX. (37KΩ TYP.)		
Motional capacitance	C ₁	2.1fF TYP.	2.0fF TYP.	1.9fF TYP.		
Shunt capacitance	C ₀	0.9pF TYP.	0.8pF TYP.	0.7pF TYP.		
Insulation resistance	IR		100MΩ MIN.			
Aging	fa		±3.0ppm/year MAX.			Ta = 25°C ±3°C
Shock resistance	S.R.		±5ppm MAX.			Drop test of 3 times on a hard board from 75cm height or excitation test with 3000G x 3ms 1/2 sinewave x 3 directions.

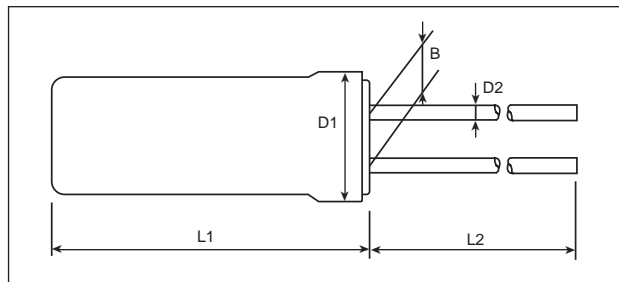
① Do not heat the package to more than 150°C.

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Dimensions – Millimetres

Model	L1	L2	D1	D2	B
C-2-Type	6.2 max.	4.0 max.	ø2.0 max	ø0.2	0.6
C-001R	8.0 max	9.0 max	ø3.1 max	ø0.3	1.1
C-002RX	6.0 max	4.0 max	ø2.0 max	ø0.2	0.6
C-004R	5.0 max	4.0 max	ø1.2 max	ø0.15	0.3



Stabilities Available - All Types

±5ppm	±10ppm	±15ppm	±20ppm
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Types Available Ex-Stock

ACT Stock Number	Package	Specification	Comment
AL00003AY	C-002RX	20/-/6pF	Equivalent to Seiko DSVT200
AL00003D	C-002RX	20/-/12.5pF	
BTB00003AL-GI	C-002RX	10/-/12.5pF	
CP00003D	C-001R	20/-/12.5pF	Stocked in volume
CP00003GZ	C-001R	15/-/12.5pF	Stocked in volume

Other Standard Frequencies Available

Frequency	Load Capacitance	Frequency	Load Capacitance
75.0000 kHz	20pF, 6.5pF, 9.0pF	32.5600 kHz	7.0pF
75.5030 kHz	10pF, 20pF	26.6667 kHz	10pF, 11pF
76.8000 kHz	11pF, 10pF, 6pF	44.734 kHz	10pF
96.0000 kHz	11pF, 6pF, 8.4pF	38.40 kHz	10pF
36.8640 kHz	13.5pF	153.6000 kHz	11pF
48.0000 kHz	15.0pF	307.2000 kHz	11pF



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