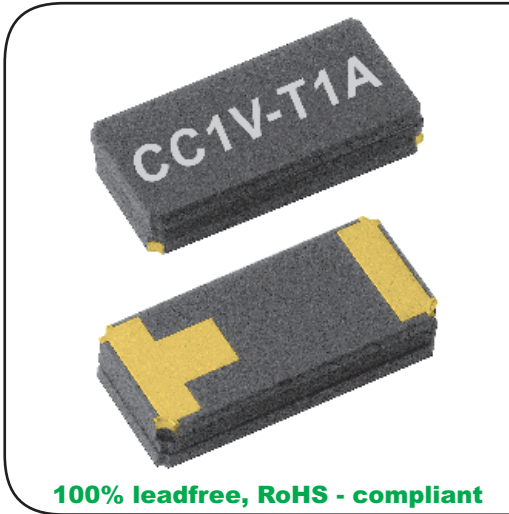
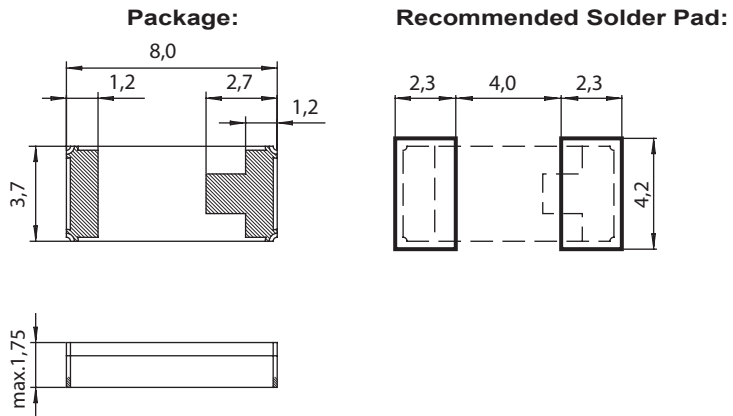


# CC1V-T1A

Tuning Fork Crystal 10 kHz – 2.1 MHz



## DIMENSIONS



All dimensions in mm typical

Small SMT ceramic package  
 Package height 1.75 mm  
 SMD-package in Tape and Reel  
 Ind. and Ext. temperature ranges  
 High stability  
 Low aging  
 Low power consumption  
 High shock and vibration resistance

## DESCRIPTION:

In the range between 10 and 200 kHz, the tuning fork resonators vibrate in the fundamental mode. From 201 to 560 kHz, an overtone mode is used. The frequency range from 561 kHz to 2.1 MHz is covered with length extensional resonators.

The crystals are supplied in special trays (100 crystals per tray).

For pick-and-place equipment, the parts are available in 16 mm tape:

7" (178 mm) reel with 1'000 crystals

13" (330 mm) reel with 4'000 crystals

## ELECTRICAL CHARACTERISTICS AT 25°C:

Frequency Range	F <sub>L</sub>	10–200	201–560	561–2'100	kHz
Load capacitance <sup>1)</sup>	C <sub>L</sub>	7.0 9.0 12.5	4.0	10.0	pF
Frequency tolerance <sup>2)</sup>	ΔF/F	+/-20	+/-100	+/-100	ppm
	ΔF/F	+/-100	+/-250	+/-500	ppm
Drive level max.	P	1.0			μW
Insulation resistance min.	R <sub>i</sub>	500			MΩ
Aging first year max.	ΔF/F	+/-3			ppm

Frequency Example <sup>3)</sup>	F <sub>L</sub>	32.768	307.200	1'000	kHz
Series resistance typ./max.	R <sub>S</sub>	37 / 60	1.4 / 3.5	0.6 / 1.2	kΩ
Motional capacitance typ.	C <sub>1</sub>	2.1	1.7	1.4	fF
Static capacitance typ.	C <sub>0</sub>	1.6	1.6	1.2	pF
Turnover temperature	T <sub>0</sub>	25 +/-5	22 +/-5	39 +/-5	°C
Frequency vs. temperature	ΔF/F <sub>0</sub>	-0.035 ppm/°C <sup>2</sup> (T - T <sub>0</sub> ) <sup>2</sup> +/-10%			ppm

1) Other load capacitances on request.

2) Tighter and wider frequency tolerances on request.

3) Values for other frequencies consult factory.

**STANDARD FREQUENCIES:**

Frequency kHz				Frequency MHz	
31.200	32.768	38.400	40.000	1.0000	1.2288
40.960	51.200	307.200	455.000	1.8432	2.0000
Other frequencies between 10 kHz and 2.1 MHz on request					

**ENVIRONMENTAL CHARACTERISTICS:**

		Conditions	Max. Dev.
Storage temp. range		-55 to +125°C	
TA Operating temperature range		-40 to +85°C	
TB Extended oper. temp. range		-40 to +125°C	
TC Extended oper. temp. range		-55 to +125°C	
Shock resistance	ΔF/F	5000 g, 0.3 ms, ½ sine	+/-5 ppm
Vibration resistance	ΔF/F	20 g / 10–2000 Hz	+/-5 ppm

**TERMINATIONS AND PROCESSING:**

Type	Termination	Processing
CC1V-T1A	For SMD mounting Au plated pads	Reflow soldering 260°C / 20 s max.

**PRODUCT DESCRIPTION AND ORDERING INFORMATION:**

**CC1V-T1A**    32.768kHz    12.5pF    +/-20ppm    T1

Frequency  $F_0$     \_\_\_\_\_

$C_L$  Load Capacitance  
7.0 pF  
9.0 pF  
12.5 pF    \_\_\_\_\_

Frequency tolerance  
+/- 20 ppm  
+/- 100 ppm    \_\_\_\_\_

**Optional:**    Temperature Range  
if blank = Standard    T1 = -40 to 85°C (Standard)  
T2 = -40 to +125°C  
T3 = -55 to +125°C

A unique part number will be generated for each product specification, i.e:  
20xxxx-ML01    1'000 pcs (in 16mm tape on 7" reel)  
20xxxx-PL04    4'000 pcs (in 16mm tape on 13" reel)  
Please contact us.

All specifications subject to change without notice.



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