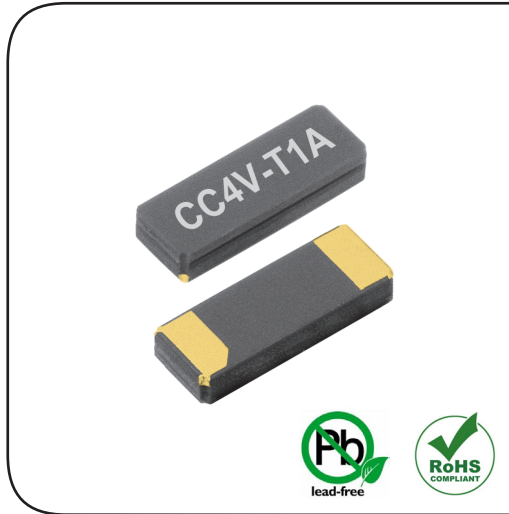
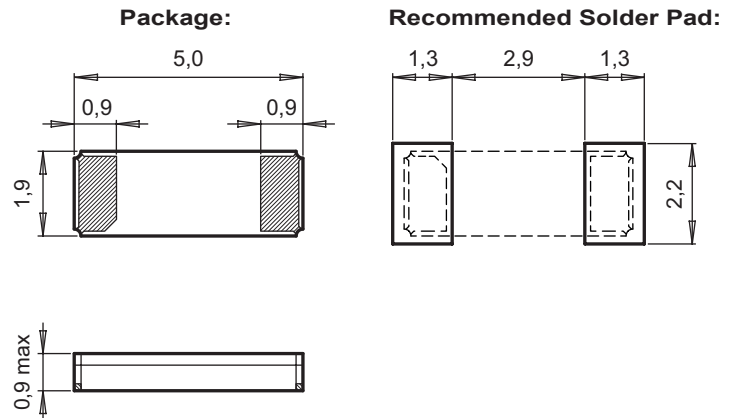


# CC4V-T1A

Tuning Fork Crystal 30 kHz – 1.0 MHz



## DIMENSIONS



All dimensions in mm typical

## APPLICATIONS

Metering  
Industrial  
Automotive  
Health Care  
Medical Implantable  
Harsh Environments

## DESCRIPTION

The CC4V-T1A is a low frequency SMT Quartz Crystal Unit that incorporates a tuning fork Quartz Crystal Resonator. It operates under vacuum in a hermetically sealed ceramic package with ceramic lid.

## FEATURES

Mature product for harsh environments.  
Outstanding hermetic sealing with gold-tin preform.  
High stability and low aging guaranteed by hermetic sealing.  
Available for extended operating temperature range.  
High shock and vibration resistant.  
100% Pb-free, RoHS-compliant.  
Automotive qualification according to AEC-Q200 available.

## ELECTRICAL CHARACTERISTICS AT 25°C

Frequency Range	F <sub>L</sub>	30–200	201–560	1'000	kHz
Load capacitance <sup>1)</sup>	C <sub>L</sub>	6.0	9.0	7.0	pF
		7.0			
		9.0			
		10.0			
		12.5			
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

Standard Frequencies <sup>3)</sup>	F <sub>L</sub>	32.768	200.000	1'000	kHz
Series resistance typ./max.	R <sub>S</sub>	50 / 65	3.2 / 5.0	0.5 / 1.0	kΩ
Motional capacitance typ.	C <sub>1</sub>	2.1	2.1	2.1	fF
Static capacitance typ.	C <sub>0</sub>	1.2	1.3	1.0	pF
Turnover temperature	T <sub>0</sub>	25 ±5	30 ±5	32 ±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 frequency tolerances on request.  
3) Other standard frequencies, see below.

## STANDARD FREQUENCIES

Frequencies			
32.768 kHz	38.400 kHz	40.000 kHz	100.000 kHz
128.000 kHz	153.600 kHz	200.000 kHz	1.0000 MHz
Other frequencies 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	$\Delta F/F$	5000 g, 0.3 ms, 1/2 sine	$\pm 5$ ppm
Vibration resistance	$\Delta F/F$	20 g / 10–2000 Hz	$\pm 5$ ppm

## TERMINATIONS AND PROCESSING

Type	Termination	Processing
CC4V-T1A	For SMT mounting Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s
CC4V-T2A	SnPb plated pads available on request	

## ORDERING INFORMATION

C C 4 V - T 1 A 32.768 kHz 12.5 pF $\pm 20$ ppm TA QC	
<b>Ceramic package</b>	<b>Frequency <math>F_L</math></b>
<b>Ceramic lid</b>	<b>Load capacitance <math>C_L</math></b> 6.0 pF, 7.0 pF 9.0 pF 10.0 pF 12.5 pF Other $C_L$ on request
<b>Package size</b> 4 = 5.0 x 1.9 x 0.9 mm	<b>Frequency tolerance</b> $\pm 20$ ppm, $\pm 100$ ppm $\pm 250$ ppm, $\pm 500$ ppm Tighter freq. tolerances on request
<b>Tuning fork</b>	<b>Temperature range</b> TA = -40 to +85°C (Standard) TB = -40 to +125°C TC = -55 to +125°C
<b>SMT Package</b>	<b>Qualification</b> QC = Commercial Grade (Standard) QA = Automotive Grade AEC-Q200 QM = Medical Grade
<b>Pads</b> 1 = Au flashed pads 2 = SnPb plated pads	
<b>Pads on both ends</b>	

A unique part number will be generated for each product specification, i.e:	
20xxxx-MG02	2'000 pcs (in 12 mm tape on 7" reel)
20xxxx-PG10	10'000 pcs (in 12 mm tape on 13" reel)

All specifications subject to change without notice.



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