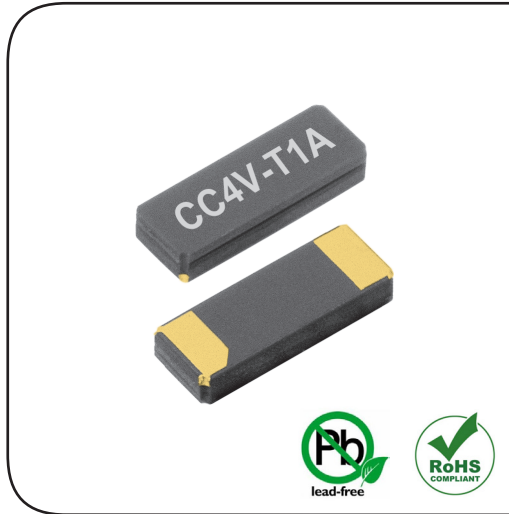
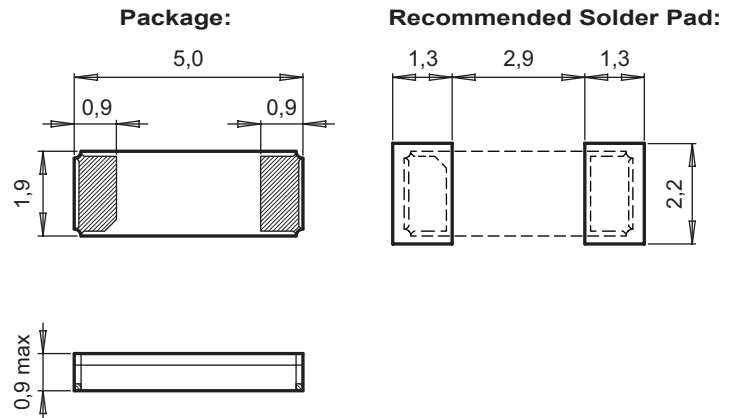


CC4V-T1A

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_L	30–200	201–560	1'000	kHz
Load capacitance ¹⁾	C_L	6.0	9.0	7.0	pF
		7.0			
		9.0			
		10.0			
		12.5			
Frequency tolerance ²⁾	$\Delta F/F$	±20	±100	±100	ppm
	$\Delta F/F$	±100	±250	±500	ppm
Drive level max.	P	1.0			μW
Insulation resistance min.	R_i	500			MΩ
Aging first year max.	$\Delta F/F_0$	±3			ppm

Standard Frequencies ³⁾	F_L	32.768	200.000	1'000	kHz
Series resistance typ./max.	R_S	50 / 65	3.2 / 5.0	0.5 / 1.0	kΩ
Motional capacitance typ.	C_1	2.1	2.1	2.1	fF
Static capacitance typ.	C_0	1.2	1.3	1.0	pF
Turnover temperature	T_0	25 ±5	30 ±5	32 ±5	°C
Frequency vs. temperature	$\Delta F/F_0$	-0.035 ppm/°C ² (T - T ₀) ² ±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	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
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 ±20 ppm TA QC	
Ceramic package	Frequency F_L
Ceramic lid	Load capacitance C_L 6.0 pF, 7.0 pF 9.0 pF 10.0 pF 12.5 pF Other C_L on request
Package size 4 = 5.0 x 1.9 x 0.9 mm	Frequency tolerance ±20 ppm, ±100 ppm ±250 ppm, ±500 ppm Tighter freq. tolerances on request
Tuning fork	Temperature range TA = -40 to +85°C (Standard) TB = -40 to +125°C TC = -55 to +125°C
SMT Package	Qualification QC = Commercial Grade (Standard) QA = Automotive Grade AEC-Q200 QM = Medical Grade
Pads 1 = Au flashed pads 2 = SnPb plated pads	
Pads on both ends	

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.



Micro Crystal AG
Muehlestrasse 14
CH-2540 Grenchen
Switzerland

Phone +41 32 655 82 82
Fax +41 32 655 82 83
sales@microcrystal.com
www.microcrystal.com