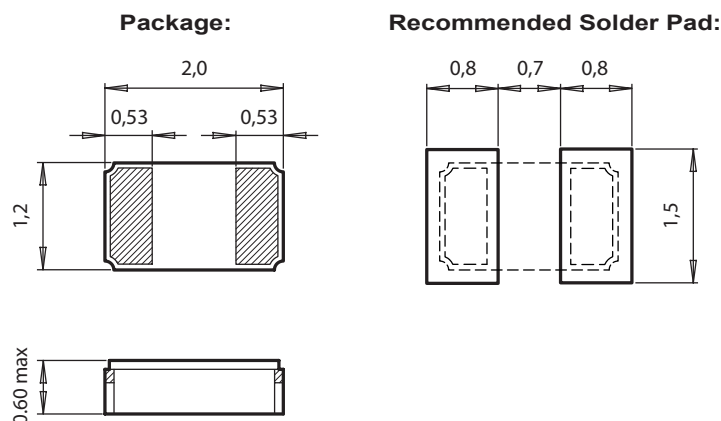


# CM8V-T1A

## Tuning Fork Crystal 32.768 kHz



### DIMENSIONS



All dimensions in mm typical

### APPLICATIONS

IoT  
Metering  
Industrial  
Automotive  
Health Care  
Wearables, Portables

### DESCRIPTION

The CM8V-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 metal lid.

### FEATURES

Ultra small size, low profile, lightweight (4.6 mg).  
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

Standard Frequencies 32.768 kHz / 100.000 kHz <sup>1)</sup>	F <sub>L</sub>	32.768	kHz
Load capacitance <sup>2)</sup>	C <sub>L</sub>	4.0 / 6.0 / 7.0 / 9.0 / 12.5	pF
Frequency tolerance <sup>3)</sup>	ΔF/F	±20	ppm
	ΔF/F	±100	ppm
Series resistance typ./max.	R <sub>S</sub>	55 / 70	kΩ
Motional capacitance typ.	C <sub>1</sub>	4.7	fF
Static capacitance typ.	C <sub>0</sub>	1.2	pF
Drive level max.	P	0.5	μW
Insulation resistance min.	R <sub>i</sub>	500	MΩ
Aging first year max.	ΔF/F	±3	ppm
Turnover temperature	T <sub>0</sub>	25 ±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 frequencies on request.  
2) Other load capacitances on request.  
3) Tighter frequency tolerances on request.

## STANDARD FREQUENCIES

Frequencies
32.768 kHz / 100.000 kHz
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	±5 ppm
Vibration resistance	$\Delta F/F$	20 g / 10–2000 Hz	±5 ppm

## TERMINATIONS AND PROCESSING

Type	Termination	Processing
CM8V-T1A	Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

## ORDERING INFORMATION

<b>CM8V-T1A</b>		<b>32.768 kHz</b>	<b>12.5 pF</b>	<b>±20 ppm</b>	<b>TA</b>	<b>QC</b>
<b>Ceramic package</b>		<b>Frequency <math>F_L</math></b>				
<b>Metal lid</b>		<b>Load capacitance <math>C_L</math></b>				
<b>Package size</b>		4.0 pF, 6.0 pF				
<b>8 = 2.0 x 1.2 x 0.60 mm</b>		7.0 pF				
<b>Tuning fork</b>		9.0 pF				
<b>SMT Package</b>		12.5 pF				
<b>Au flashed pads</b>		Other $C_L$ on request				
<b>Pads on both ends</b>		<b>Frequency tolerance</b>				
		±20 ppm				
		±100 ppm				
		Tighter freq. tolerances on request				
		<b>Temperature range</b>				
		TA = -40 to +85°C (Standard)				
		TB = -40 to +125°C				
		TC = -55 to +125°C				
		<b>Qualification</b>				
		QC = Commercial Grade (Standard)				
		QA = Automotive Grade AEC-Q200				
A unique part number will be generated for each product specification, i.e:						
20xxxx-MC01	1'000 pcs (in 8 mm tape on 7" reel)					
20xxxx-MC03	3'000 pcs (in 8 mm tape on 7" reel)					

All specifications subject to change without notice.



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