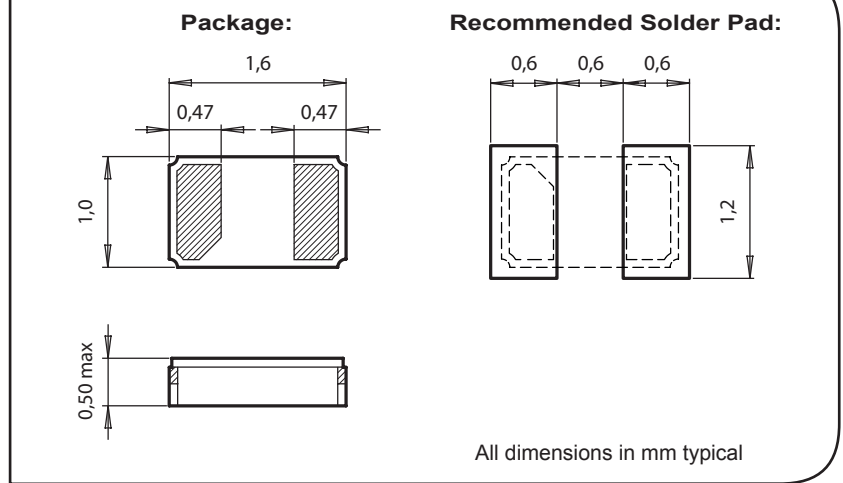


# CM9V-T1A

## Tuning Fork Crystal 32.768 kHz



### DIMENSIONS



### APPLICATIONS

IoT  
 Metering  
 Industrial  
 Health Care  
 Ultra Small Devices  
 Wearables, Portables

### DESCRIPTION

The CM9V-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 (1.6 × 1.0 × 0.5 mm).  
 Outstanding hermetic sealing with gold-tin preform.  
 High stability and low aging guaranteed by hermetic sealing.  
 Available for extended operating temperature range.  
 Lightweight (2.4 mg).  
 High shock and vibration resistant.  
 100% Pb-free, RoHS-compliant.

### ELECTRICAL CHARACTERISTICS AT 25°C

Standard Frequency	<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>	70 / 90	kΩ
Motional capacitance typ.	C <sub>1</sub>	6.3	fF
Static capacitance typ.	C <sub>0</sub>	1.4	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**

<b>Frequency</b>
32.768 kHz
Other frequencies on request

**ENVIRONMENTAL CHARACTERISTICS**

		<b>Conditions</b>	<b>Max. Dev.</b>
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**

<b>Type</b>	<b>Termination</b>	<b>Processing</b>
CM9V-T1A	For SMT mounting Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

**ORDERING INFORMATION**

<p style="text-align: center;"><b>C M 9 V - T 1 A 32.768 kHz 12.5 pF ±20 ppm TA QC</b></p> <p><b>Ceramic package</b> _____</p> <p><b>Metal lid</b> _____</p> <p><b>Package size</b> _____ 9 = 1.6 x 1.0 x 0.5 mm</p> <p><b>Tuning fork</b> _____</p> <p><b>SMT Package</b> _____</p> <p><b>Au flashed pads</b> _____</p> <p><b>Pads on both ends</b> _____</p>	<p><b>Frequency <math>F_L</math></b> _____</p> <p><b>Load capacitance <math>C_L</math></b> 4.0 pF, 6.0 pF 7.0 pF 9.0 pF 12.5 pF Other <math>C_L</math> on request</p> <p><b>Frequency tolerance</b> _____ ±20 ppm ±100 ppm Tighter freq. tolerances on request</p> <p><b>Temperature range</b> _____ <b>TA</b> = -40 to +85°C (Standard) <b>TB</b> = -40 to +125°C <b>TC</b> = -55 to +125°C</p> <p><b>Qualification</b> _____ <b>QC</b> = Commercial Grade (Standard)</p>				
<p>A unique part number will be generated for each product specification, i.e:</p> <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="padding: 2px;">20xxxx-MC01</td> <td style="padding: 2px;">1'000 pcs (in 8 mm tape on 7" reel)</td> </tr> <tr> <td style="padding: 2px;">20xxxx-MC03</td> <td style="padding: 2px;">3'000 pcs (in 8 mm tape on 7" reel)</td> </tr> </table>		20xxxx-MC01	1'000 pcs (in 8 mm tape on 7" reel)	20xxxx-MC03	3'000 pcs (in 8 mm tape on 7" reel)
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All specifications subject to change without notice.



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