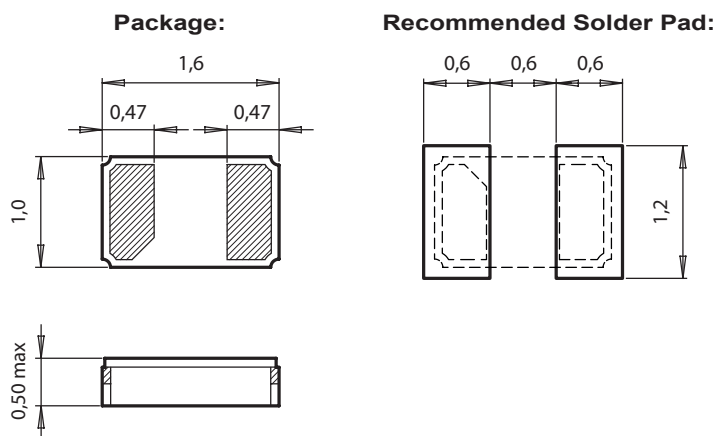


CM9V-T1A

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	¹⁾ F _L	32.768	kHz
Load capacitance	²⁾ C _L	4.0 / 6.0 / 7.0 / 9.0 / 12.5	pF
Frequency tolerance	³⁾ ΔF/F	±20	ppm
	ΔF/F	±100	ppm
Series resistance typ./max.	R _S	70 / 90	kΩ
Motional capacitance typ.	C ₁	6.3	fF
Static capacitance typ.	C ₀	1.4	pF
Drive level max.	P	0.5	μW
Insulation resistance min.	R _i	500	MΩ
Aging first year max.	ΔF/F	±3	ppm
Turnover temperature	T ₀	25 ±5	°C
Frequency vs. temperature	ΔF/F ₀	-0.035 ppm/°C ² (T - T ₀) ² ±10%	ppm

- 1) Other frequencies on request.
2) Other load capacitances on request.
3) Tighter frequency tolerances on request.

STANDARD FREQUENCIES

Frequency
32.768 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, ½ sine	±5 ppm
Vibration resistance	$\Delta F/F$	20 g / 10–2000 Hz	±5 ppm

TERMINATIONS AND PROCESSING

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

ORDERING INFORMATION

C M 9 V - T 1 A		32.768 kHz	12.5 pF	±20 ppm	TA	QC
Ceramic package		Frequency F_L				
Metal lid		Load capacitance C_L				
Package size		4.0 pF, 6.0 pF				
9 = 1.6 x 1.0 x 0.5 mm		7.0 pF				
Tuning fork		9.0 pF				
SMT Package		12.5 pF				
Au flashed pads		Other C_L on request				
Pads on both ends		Frequency tolerance				
		±20 ppm				
		±100 ppm				
		Tighter freq. tolerances on request				
		Temperature range				
		TA = −40 to +85°C (Standard)				
		TB = −40 to +125°C				
		TC = −55 to +125°C				
		Qualification				
		QC = Commercial Grade (Standard)				
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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