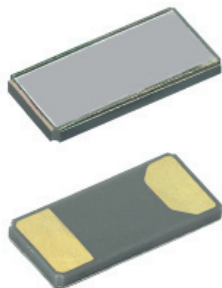


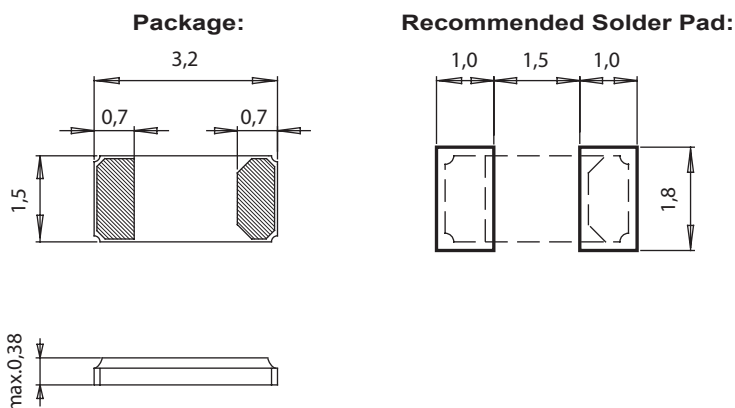
CM7V-T1A 0.4

Tuning Fork Crystal 32.768 kHz



100% leadfree, RoHS - compliant

DIMENSIONS



All dimensions in mm typical

Lowest profile SMT ceramic pack.
Ultra low profile: 0.38 mm height
SMD-package in Tape and Reel
Ind. and Ext. temperature ranges
High stability
Low aging
Low power consumption
High shock and vibration resistance

DESCRIPTION:

This SMD ceramic package has been specially designed for ultra low profile telecom and smart-card applications. A special crystal manufacturing process is used to achieve improved electrical characteristics and a miniaturized blank size.

For pick-and-place equipment, the parts are available in 12 mm tape:

- 7" (178 mm) reel with 3'000 crystals
- 13" (330 mm) reel with 14'000 crystals

ELECTRICAL CHARACTERISTICS AT 25°C:

Nominal Frequency	¹⁾ F_L	32.768	kHz
Load capacitance	²⁾ C_L	7.0 / 9.0 / 12.5	pF
Frequency tolerance	$\Delta F/F$	+/-20	ppm
	$\Delta F/F$	+/-100	ppm
Series resistance typ./max.	R_s	55 / 80	k Ω
Motional capacitance typ.	C_1	4.4	fF
Static capacitance typ.	C_0	1.6	pF
Drive level max.	P	0.5	μ W
Insulation resistance min.	R_i	500	M Ω
Aging first year max.	$\Delta F/F$	+/-3	ppm
Turnover temperature	T_0	25 +/-5	°C
Frequency vs. temperature	$\Delta F/F_0$	$-0.035 \text{ ppm}/^\circ\text{C}^2 (T - T_0)^2 \text{ +/-} 10\%$	ppm

1) Other frequencies on request.

2) Other load capacitances on request.

3) Tighter and wider frequency tolerances on request.

STANDARD FREQUENCIES:

Frequency kHz
32.768
Other frequencies on request

ENVIRONMENTAL
CHARACTERISTICS:

		Conditions	Max. Dev.
Storage temp. range		−55 to +125°C	
Industrial operating temp. range		−40 to +85°C	
Extended operating 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
CM7V-T1A 0.4	For SMD mounting Au flashed pads	Reflow soldering 260°C / 20 s max.

PART NUMBER/
ORDERING INFORMATION
EXAMPLE:

<u>Crystal package</u>	<u>Package lid</u>	<u>Package size</u>	<u>Blank</u>	C	M	7	V	-	T	1	A	0.4	32.768 kHz	9.0 pF	+/-20 ppm	Frequency tolerance
C = Crystal in ceramic package																
																Load capacitance C _L
																Frequency F _L
																Thickness max. 0.38 mm
																<u>Package pad form</u>
																A = Pads on both ends
																<u>Pad plating</u>
																1 = Au flashed pads
																<u>Package type</u>
																T = For SMD mounting

All specifications subject to change without notice. 10.09



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