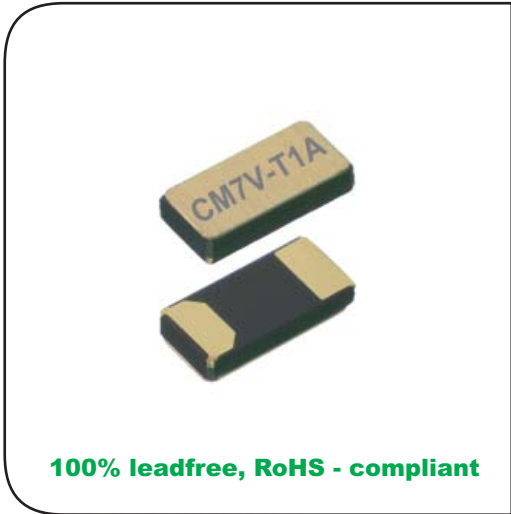
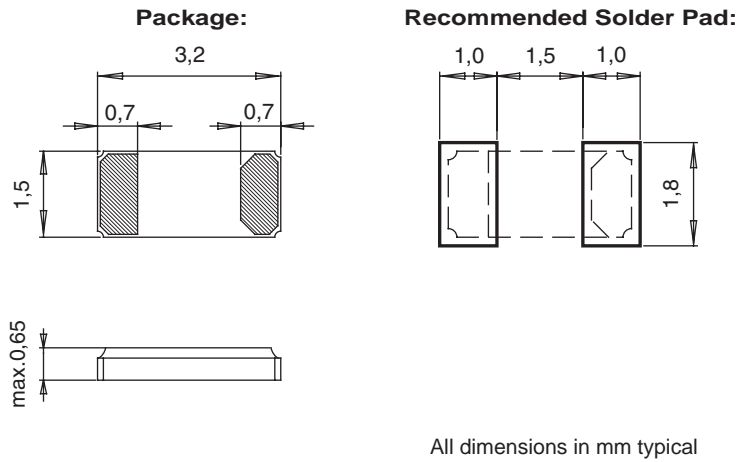


CM7V-T1A

Tuning Fork Crystal 32.768 kHz



DIMENSIONS



Miniature SMT ceramic package with metal lid
Low package height 0.65 mm max.
SMD-package in Tape and Reel
Ind. and Ext. temperature ranges
AEC-Q200 automotive compliant
High stability, Low aging
Low power consumption
High shock and vibration resistance

DESCRIPTION:

This SMD ceramic package with metal lid has been specially designed for miniature industrial, telecom and portable applications. This part is available for extended operating temperature range and is compliant with the AEC-Q200 quality standards for automotive 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 1'000 crystals
 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	³⁾ $\Delta F/F$	+/-20	ppm
		+/-100	ppm
Series resistance typ./max.	R_S	50 / 70	k Ω
Motional capacitance typ.	C_1	3.7	fF
Static capacitance typ.	C_0	1.2	pF
Drive level max.	P	1.0	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	$\Delta F/F_0$	$-0.035 \text{ ppm}/^\circ\text{C}^2 (T - T_0)^2 \pm 10\%$	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	
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
CM7V-T1A	For SMD mounting Au plated pads	Reflow soldering 260°C / 20 s max.

**PRODUCT DESCRIPTION AND
ORDERING INFORMATION:**

CM7V-T1A 32.768kHz 12.5pF +/-20ppm TA QC

Frequency F₀ _____

C_L Load Capacitance
7.0 pF
9.0 pF
12.5 pF

Frequency tolerance
+/- 20 ppm
+/- 100 ppm

Temperature Range
TA = -40 to 85°C (Standard)
TB = -40 to +125°C
TC = -55 to +125°C

Optional:
if not defined,
'Standard' will apply

Qualification
QC = Commercial (Standard)
QA = Automotive AEC-Q200

A unique part number will be generated for each product specification, i.e:

20xxxx-MG01	1'000 pcs	(in 12mm tape on 7" reel)
20xxxx-MG03	3'000 pcs	(in 12mm tape on 7" reel)
20xxxx-PG14	14'000 pcs	(in 12mm tape on 13" reel)

Please contact us.

All specifications subject to change without notice.



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