

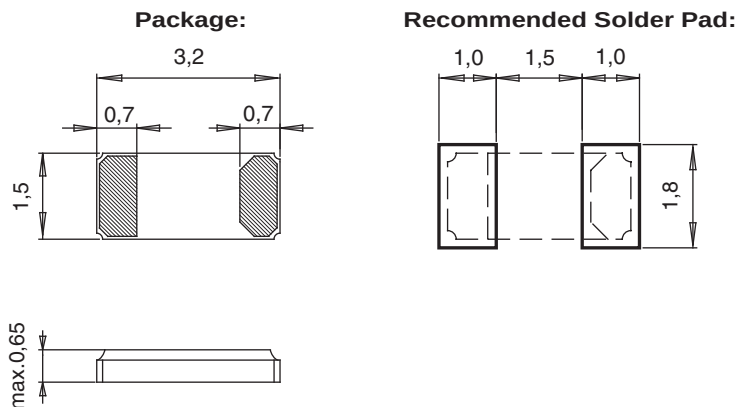
CM7V-T1A

Tuning Fork Crystal 32.768 kHz Low ESR



100% leadfree, RoHS - compliant

DIMENSIONS



All dimensions in mm typical

Optimized Low ESR design for critical oscillator-circuitries
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 specially designed for Low ESR to support critical oscillator-circuitries and 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 low ESR in combination with 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⁾	ΔF/F	+/-20	ppm
	ΔF/F	+/-100	ppm
Series resistance typ./max.	R _s	40 / 50	kΩ
Motional capacitance typ.	C ₁	4.5	fF
Static capacitance typ.	C ₀	1.2	pF
Drive level max.	P	1.0	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 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	$\Delta F/F$	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
CM7V-T1A	For SMD mounting Au plated pads	Reflow soldering 260°C / 20 s max.

**PRODUCT DESCRIPTION AND
ORDERING INFORMATION:**

CM7V-T1A _{Low ESR}		32.768kHz	12.5pF	+/-20ppm	TA	QC
<u>Frequency F_L</u>						
<u>C_L Load Capacitance</u>						
7.0 pF						
9.0 pF						
12.5 pF						
<u>Frequency tolerance</u>						
+/- 20 ppm						
+/- 100 ppm						
Optional: if not defined, ,Standard' will apply						
				<u>Temperature Range</u>		
				TA = -40 to 85°C (Standard)		
				TB = -40 to +125°C		
				TC = -55 to +125°C		
				<u>Qualification</u>		
				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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