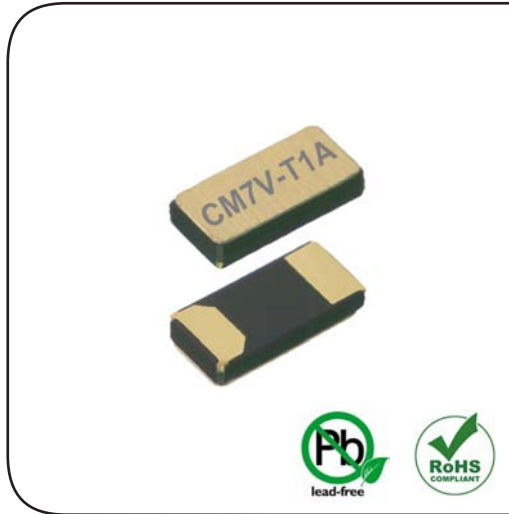
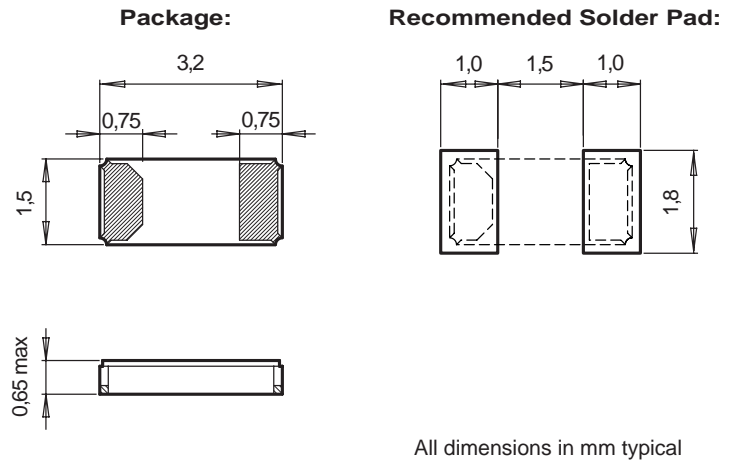


# CM7V-T1A Low ESR

## Tuning Fork Crystal 32.768 kHz



### DIMENSIONS



### APPLICATIONS

IoT  
 Metering  
 Industrial  
 Automotive  
 Health Care  
 Wearables, Portables

### DESCRIPTION

The CM7V-T1A Low ESR 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

Maximum ESR value of 50 kΩ for low power designs.  
 Outstanding hermetic sealing with gold-tin preform.  
 High stability and low aging guaranteed by hermetic sealing.  
 Available for extended operating temperature range.  
 Small size, low profile, lightweight (10.3 mg).  
 High shock and vibration resistant.  
 100% Pb-free, RoHS-compliant.  
 Automotive qualification according to AEC-Q200 available.

### 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>	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>	40 / 50	kΩ
Motional capacitance typ.	C <sub>1</sub>	4.7	fF
Static capacitance typ.	C <sub>0</sub>	1.3	pF
Drive level max.	P	1.0	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>
CM7V-T1A Low ESR	For SMT mounting Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

**ORDERING INFORMATION**

**C M 7 V - T 1 A Low ESR 32.768 kHz 12.5 pF ±20 ppm TA QC**

<p><b>Ceramic package</b></p> <p><b>Metal lid</b></p> <p><b>Package size</b> 7 = 3.2 x 1.5 x 0.65 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>Special feature</b> Low ESR = 50 kΩ max.</p>	<p><b>Frequency <math>F_L</math></b></p> <p><b>Load capacitance <math>C_L</math></b> 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) <b>QA</b> = Automotive Grade AEC-Q200</p>
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A unique part number will be generated for each product specification, i.e:	
20xxxx-MG01	1'000 pcs (in 12 mm tape on 7" reel)
20xxxx-MG03	3'000 pcs (in 12 mm tape on 7" reel)
20xxxx-PG14	14'000 pcs (in 12 mm tape on 13" reel)

All specifications subject to change without notice.

