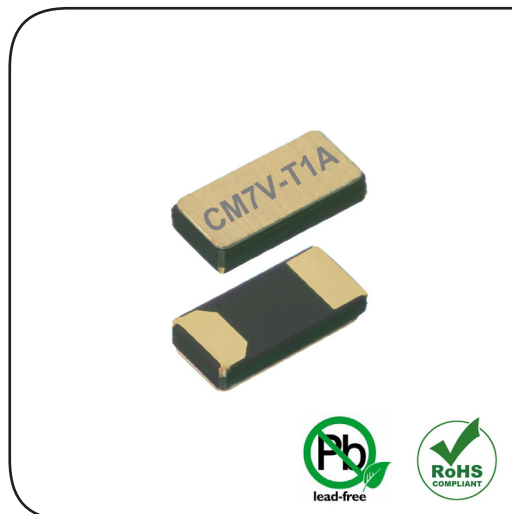
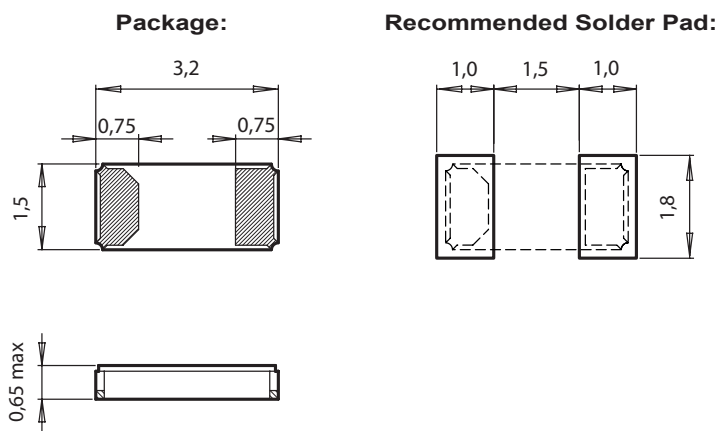


# CM7V-T1A Low ESR

## Tuning Fork Crystal 32.768 kHz



### DIMENSIONS



All dimensions in mm typical

### 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 k $\Omega$  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> $F_L$	32.768	kHz
Load capacitance	<sup>2)</sup> $C_L$	6.0 / 7.0 / 9.0 / 12.5	pF
Frequency tolerance	$\Delta F/F$	$\pm 20$	ppm
	$\Delta F/F$	$\pm 100$	ppm
Series resistance typ./max.	$R_S$	40 / 50	k $\Omega$
Motional capacitance typ.	$C_1$	4.7	fF
Static capacitance typ.	$C_0$	1.3	pF
Drive level max.	P	1.0	$\mu$ W
Insulation resistance min.	$R_i$	500	M $\Omega$
Aging first year max.	$\Delta F/F$	$\pm 3$	ppm
Turnover temperature	$T_0$	25 $\pm$ 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 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, 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 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	
<b>Ceramic package</b> <b>Metal lid</b> <b>Package size</b> 7 = 3.2 x 1.5 x 0.65 mm <b>Tuning fork</b> <b>SMT Package</b> <b>Au flashed pads</b> <b>Pads on both ends</b> <b>Special feature</b> Low ESR = 50 kΩ max.	<b>Frequency <math>F_L</math></b> <b>Load capacitance <math>C_L</math></b> 6.0 pF 7.0 pF 9.0 pF 12.5 pF Other $C_L$ on request <b>Frequency tolerance</b> ±20 ppm ±100 ppm Tighter freq. tolerances on request <b>Temperature range</b> TA = -40 to +85°C (Standard) TB = -40 to +125°C TC = -55 to +125°C <b>Qualification</b> QC = Commercial Grade (Standard) QA = Automotive Grade AEC-Q200
A unique part number will be generated for each product specification, i.e:	
20xxx-MG01	1'000 pcs (in 12 mm tape on 7" reel)
20xxx-MG03	3'000 pcs (in 12 mm tape on 7" reel)
20xxx-PG14	14'000 pcs (in 12 mm tape on 13" reel)

All specifications subject to change without notice.



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