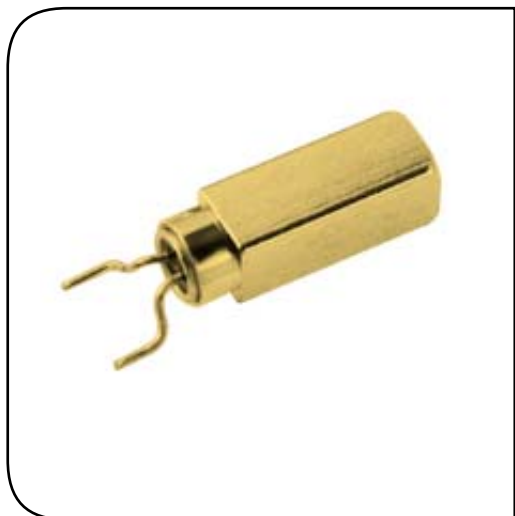
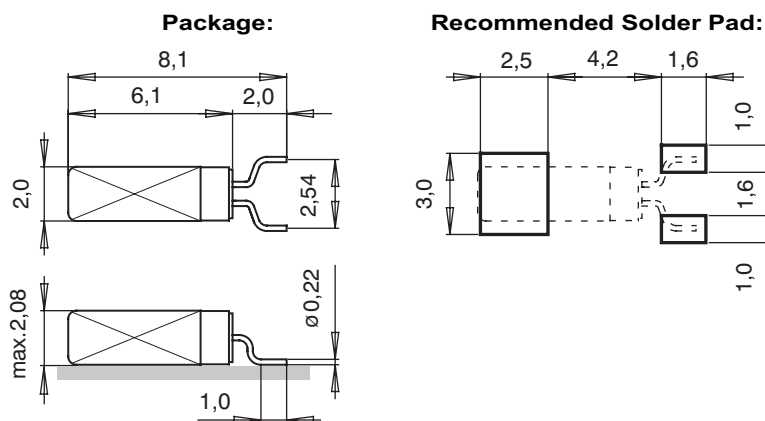


# MS1V-T1K

**Tuning Fork Crystal 30 kHz – 200 kHz**



## DIMENSIONS



All dimensions in mm typical

**Small SMD package**  
**Package height 2.08 mm max.**  
**Formed leads for SMD mounting**  
**Industrial temp. range**  
**Very price competitive**  
**High stability**  
**Low aging**  
**Low power consumption**  
**High shock and vibration resistance**

## DESCRIPTION:

The MS1V-T1K is a square-bodied 2 x 2 x 6 mm metal-can package with formed leads, intended for surface mounting and reflow soldering.

Within the package is a high-quality tuning fork quartz crystal resonator, manufactured with a precision high-volume photolithographic process and operating in the fundamental mode.

Due to highly automated, large-volume production, the MS1V-T1K is very price competitive and ideal for any consumer and industrial applications.

For pick-and-place equipment, the crystals are supplied in 16 mm tape: 13" (330 mm) reel with 8'000 crystals

## ELECTRICAL CHARACTERISTICS AT 25°C:

Frequency Range	F <sub>L</sub>	30–200	kHz
Load capacitance <sup>1)</sup>	C <sub>L</sub>	12.5	pF
Frequency tolerance <sup>2)</sup>	ΔF/F	+/-20	ppm
	ΔF/F	+/-30	ppm
	ΔF/F	+/-100	ppm
Drive level max.	P	1.0	μW
Insulation resistance min.	R <sub>i</sub>	500	MΩ
Aging first year max.	ΔF/F	+/-3	ppm

Frequency Example <sup>3)</sup>	F <sub>L</sub>	32.000	32.768	76.800	kHz
Series resistance typ./max.	R <sub>s</sub>	50 / 70	50 / 70	18 / 30	kΩ
Motional capacitance typ.	C <sub>1</sub>	2.3	2.3	1.35	fF
Static capacitance typ.	C <sub>0</sub>	0.9	0.9	0.9	pF
Quality factor min.	Q	30'000	30'000	50'000	
Turnover temperature	T <sub>0</sub>	25 +/-5	25 +/-5	22 +/-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) For standard and other load capacitances consult factory.

2) Tighter and wider frequency tolerances on request.

3) Values for other frequencies consult factory.

## STANDARD FREQUENCIES:

Frequency kHz				
32.000	32.768	38.400	40.000	60.000
75.000	76.800	77.500		
Other frequencies on request				

## ENVIRONMENTAL CHARACTERISTICS:

		Conditions	Max. Dev.
Storage temp. range		-55 to +85°C	
Operating temp. range		-40 to +85°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
MS1V-T1K	Can: Au flashed Leads: Formed leads Au flashed	For SMD mounting Reflow soldering 260°C / 20 sec. max

## PART NUMBER/ ORDERING INFORMATION EXAMPLE:

<b>M</b>	<b>S</b>	<b>1</b>	<b>V</b>	<b>-</b>	<b>T</b>	<b>1</b>	<b>K</b>	<b>32.768 kHz</b>	<b>12.5 pF</b>	<b>+/-30 ppm</b>
								Frequency	Load capacitance $C_L$	Frequency tolerance
								Frequency $F_L$		
								Package lead form		
								<b>K</b> = SMD spacing 2.54 mm (1/10")		
								Lead plating		
								<b>1</b> = Au flashed leads		
								Package type		
								<b>T</b> = For SMD mounting		

All specifications subject to change without notice.

10.03



A COMPANY OF THE **SWATCH GROUP**

### Headquarters:

Micro Crystal  
Div. of ETA SA  
Mühlestrasse 14  
CH-2540 Grenchen  
Switzerland  
Tel. +41 32 655 82 82  
Fax +41 32 655 82 83  
sales@microcrystal.ch  
www.microcrystal.ch

### North American Sales Office:

Micro Crystal  
A Div. of The Swatch Group (U.S.) Inc.  
601 Campus Drive, Suite B4  
Arlington Heights, IL 60004  
USA  
Tel. +1 847 818 9825  
Fax +1 847 818 9915  
sales@microcrystal.com  
www.microcrystal.com