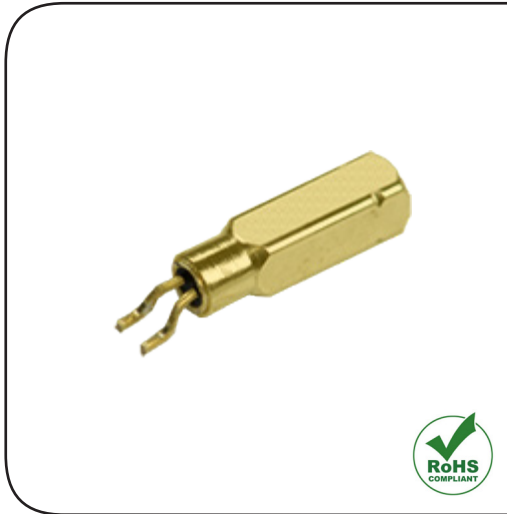
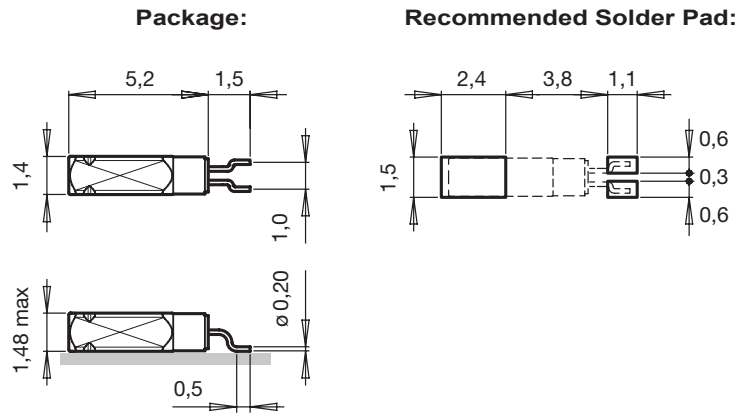


# MS3V-T1R

Tuning Fork Crystal 30 kHz – 200 kHz



## DIMENSIONS



All dimensions in mm typical

## APPLICATIONS

IoT  
Metering  
Wearables  
Health Care  
Mobile Phones  
Consumer Electronics

## DESCRIPTION

The MS3V-T1R is a low frequency surface mount technology Quartz Crystal Unit that incorporates a tuning fork Quartz Crystal Resonator. It operates under vacuum in a hermetically sealed square-bodied metal can package.

*MS3V-T1R is compatible with other suppliers' same footprint crystals.*

## FEATURES

High stability is guaranteed by hermetic sealing.  
High shock and vibration resistant.  
Small, proven surface mount technology package for reflow soldering.  
Excellent lead coplanarity for surface mounting.  
RoHS-compliant.

## 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	<sup>3)</sup>	$\Delta F/F$	±20	ppm
		$\Delta F/F$	±100	ppm
Series resistance typ./max.		$R_S$	50 / 65	kΩ
Motional capacitance typ.		$C_1$	2.25	fF
Static capacitance typ.		$C_0$	0.9	pF
Drive level max.		P	1.0	μW
Insulation resistance min.		$R_i$	500	MΩ
Aging first year max.		$\Delta F/F$	±3	ppm
Turnover temperature		$T_0$	25 ±5	°C
Frequency vs. temperature		$\Delta F/F_0$	$-0.035 \text{ ppm}/^\circ\text{C} \cdot (T - T_0)^2 \pm 10\%$	ppm

1) Other frequencies on request.

2) Other load capacitances on request.

3) Tighter and wider frequency tolerances on request.

## STANDARD FREQUENCIES

Frequencies		
32.768 kHz	60.000 kHz	76.800 kHz
Other frequencies on request		

## ENVIRONMENTAL CHARACTERISTICS

		Conditions	Max. Dev.
Storage temperature range		-55 to +85°C	
TA Operating temperature range		-40 to +85°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
MS3V-T1R	Can: Au flashed <sup>1)</sup> Leads: Formed leads Au flashed	For surface mounting IPC/JEDEC J-STD-020C 260°C / 20 - 40 s
MS3V-T1N	Can: Au flashed <sup>1)</sup> Leads: Straight leads Au flashed	For through-hole mounting IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

1) Pd plated can on request.

## ORDERING INFORMATION

M S 3 V - T 1 R 32.768 kHz 12.5 pF ±20 ppm TA QC Au		
<b>Square metal package</b> MS3V = 1.4 x 1.4 x 5.2 mm	<b>Frequency <math>F_L</math></b>	
<b>SMT Package</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>Au flashed leads</b>	<b>Frequency tolerance</b> ±20 ppm ±100 ppm Tighter and wider freq. tolerances on request	
<b>Package lead form</b> R = SMD spacing 1.0 mm N = Straight leads	<b>Temperature range</b> TA = -40 to +85°C	
	<b>Qualification</b> QC = Commercial Grade	
	<b>Au flashed can</b>	

A unique part number will be generated for each product specification, i.e:		
20xxx-ML02	2'000 pcs (in 16 mm tape on 7" reel)	MS3V-T1R
20xxx-PL09	9'000 pcs (in 16 mm tape on 13" reel)	MS3V-T1R
20xxx-BA01	1'000 pcs (in plastic bag)	MS3V-T1N

All specifications subject to change without notice.



Micro Crystal AG  
Muehlestrasse 14  
CH-2540 Grenchen  
Switzerland

Phone +41 32 655 82 82  
Fax +41 32 655 82 83  
sales@microcrystal.com  
www.microcrystal.com

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