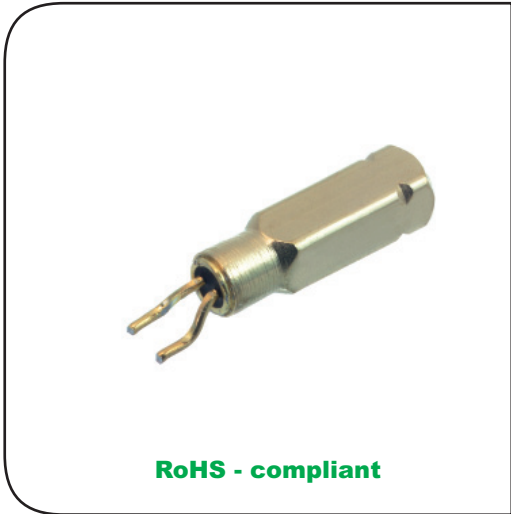
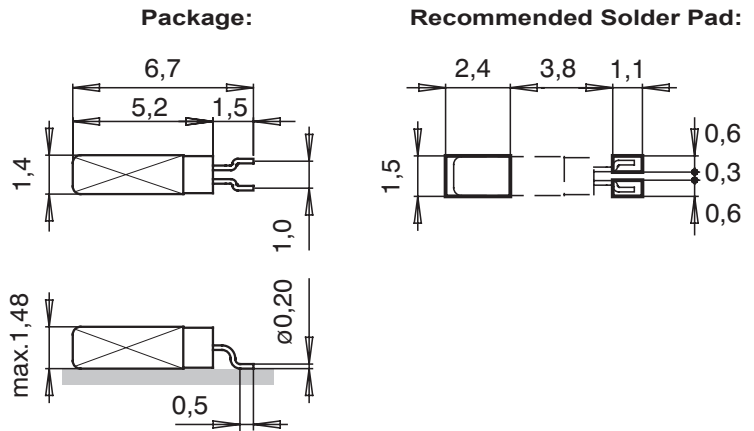


# MS3V-T1R

Tuning Fork Crystal 30 kHz – 200 kHz



## DIMENSIONS



All dimensions in mm typical

**Miniature SMT package**  
**Package height 1.48 mm max.**  
**Compatible solder pad layout with plastic molded crystal packages**  
**Industrial temperature range**  
**Very price competitive**  
**Low aging**  
**Low power consumption**  
**High shock and vibration resistance**

## DESCRIPTION:

The MS3V-T1R is a miniature square-bodied 1.4 x 6.7 x 1.4 mm metal 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 MS3V-T1R 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:

7" (178 mm) reel with 2'000 crystals

13" (330 mm) reel with 9'000 crystals

## ELECTRICAL CHARACTERISTICS AT 25°C:

Frequency Range	$F_L$	30–200	kHz
Load capacitance <sup>1)</sup>	$C_L$	7.0 / 9.0 / 12.5	pF
Frequency tolerance <sup>2)</sup>	$\Delta F/F$	+/-20	ppm
	$\Delta F/F$	+/-100	ppm
Drive level max.	P	1.0	$\mu W$
Insulation resistance min.	$R_i$	500	M $\Omega$
Aging first year max.	$\Delta F/F$	+/-3	ppm

Frequency Example <sup>3)</sup>	$F_L$	32.768	75.000	76.800	kHz
Series resistance typ./max.	$R_s$	50 / 65	19 / 30	18 / 30	k $\Omega$
Motional capacitance typ.	$C_1$	2.1	1.45	1.35	fF
Static capacitance typ.	$C_0$	0.9	0.9	0.9	pF
Turnover temperature	$T_0$	25 +/-5	22 +/-5	22 +/-5	$^{\circ}C$
Frequency vs. temperature	$\Delta F/F_0$	$-0.035 \text{ ppm}/^{\circ}C^2 (T - T_0)^2$ +/-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.

