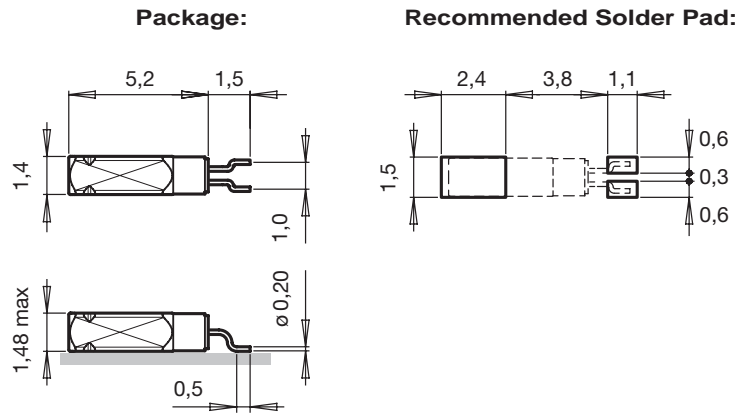


MS3V-T1R

Tuning Fork Crystal 32 kHz – 100 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.

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	¹⁾ F_L	32.768	kHz
Load capacitance	²⁾ C_L	6.0 / 7.0 / 9.0 / 12.5	pF
Frequency tolerance	³⁾ $\Delta F/F$	±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	$\Delta F/F_0$	$-0.035 \text{ ppm}/^\circ\text{C}^2 (T - T_0)^2 \pm 10\%$	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 ¹⁾ Leads: Formed leads Au flashed	For surface mounting IPC/JEDEC J-STD-020C 260°C / 20 - 40 s
MS3V-T1N	Can: Au flashed ¹⁾ 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

Square metal package
MS3V = 1.4 x 1.4 x 5.2 mm

SMT Package

Au flashed leads

Package lead form
R = SMD spacing 1.0 mm
N = Straight leads

Frequency F_L
32.768 kHz

Load capacitance C_L
6.0 pF
7.0 pF
9.0 pF
12.5 pF
Other C_L on request

Frequency tolerance
±20 ppm
±100 ppm
Tighter and wider freq. tolerances on request

Temperature range
TA = -40 to +85°C

Qualification
QC = Commercial Grade

Au flashed can

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.