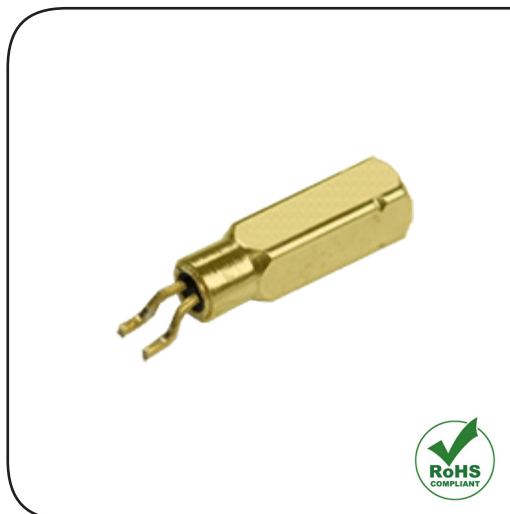


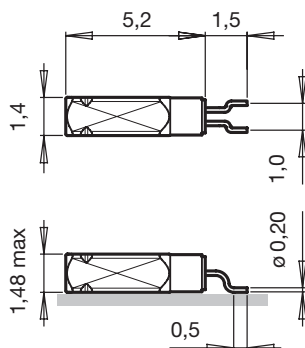
MS3V-T1R

Tuning Fork Crystal 30 kHz – 200 kHz

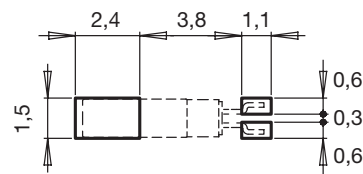


DIMENSIONS

Package:



Recommended Solder Pad:



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 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	$\Delta F/F$	5000 g, 0.3 ms, ½ sine	±5 ppm
Vibration resistance	$\Delta F/F$	20 g / 10–2000 Hz	±5 ppm

TERMINATIONS AND PROCESSING

Type	Termination	Processing
MS3V-T1R	Can: Au flashed Leads: Formed leads Au flashed	For surface mounting IPC/JEDEC J-STD-020C 260°C / 20 - 40 s
MS3V-T1N	Can: Au flashed Leads: Straight leads Au flashed	For through-hole mounting IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

ORDERING INFORMATION

MS3V-T1R		32.768 kHz	12.5 pF	±20 ppm	TA	QC
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 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	
A unique part number will be generated for each product specification, i.e.:						
20xxxx-ML02	2'000 pcs (in 16 mm tape on 7" reel)	MS3V-T1R				
20xxxx-PL09	9'000 pcs (in 16 mm tape on 13" reel)	MS3V-T1R				
20xxxx-BA01	1'000 pcs (in plastic bag)	MS3V-T1N				

All specifications subject to change without notice.