

MTF series

HOORAY

tuning fork quartz crystal

features

- low drive level
- surface mount version

type	MTF32	MMTF32	SM26F
standard frequency	32.768 kHz	32.768 kHz	32.768 kHz
frequency range on request	15.0 kHz ~ 150 kHz	28.0 kHz ~ 80.0 kHz	30.0 kHz ~ 80.0 kHz
frequency tolerance at 25 ° C	± 10 ppm ± 20 ppm	± 10 ppm ± 20 ppm	± 20 ppm
frequency temp. characteristic ^{*)}	$f \text{ (ppm)} = -0.036 (25 \text{ }^{\circ}\text{C} - T)^2$	$f \text{ (ppm)} = -0.036 (25 \text{ }^{\circ}\text{C} - T)^2$	$f \text{ (ppm)} = -0.036 (25 \text{ }^{\circ}\text{C} - T)^2$
parabolic curvature constant	-0.036 ± 0.006 ppm/°C ²	-0.036 ± 0.006 ppm/°C ²	-0.036 ± 0.006 ppm/°C ²
standard operating temperature ^{**)}	-20 °C ~ +70 °C	-20 °C ~ +70 °C	-20 °C ~ +70 °C
storage temperature	-40 °C ~ +90 °C	-40 °C ~ +90 °C	-40 °C ~ +90 °C
load capacitance C_L	10 pF / 12.5 pF	10 pF / 12.5 pF	12.5 pF
shunt capacitance C_0	1.3 pF typical (2 pF max.)	1.1 pF typical (1.8 pF max.)	1.1 pF typical (1.8 pF max.)
capacitance ratio	530 typ.	470 typ.	470 typ.
series resistance R_s max.	30 kΩ	30 kΩ	50 kΩ
drive level max.	1 μW	1 μW	1 μW
aging	< ± 5 ppm	< ± 5 ppm	< ± 5 ppm

^{*)} T = requested temperature

^{**) operating temperature -40 °C ~ +85 °C on request}

order information example:

Q - 0.032768 - MTF32 - 12.5 - 20

1. 2. 3. 4. 5.

1. quartz: Q
2. frequency: 0.032768 MHz
3. type: MTF32
4. load capacitance: 12.5 pF
5. frequency stability at 25 °C: ± 20 ppm

marking: MTF32 / MMTF32 / SM26F: date code

month: N - Z

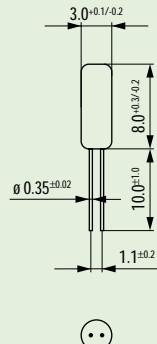
date code: month

example: N = 2002 January

Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
N	P	Q	R	S	T	U	V	W	X	Y	Z

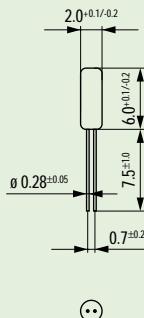
MTF series

MTF32
dimensions



in mm

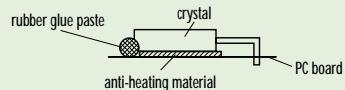
MMTF32
dimensions



in mm

tuning fork crystal - handling note for through hole type

- 1. mounting:**
- if the crystal is mounted on board directly (orientation: lay down or fixed by metal parts, the body of the crystal will be heated up)
 - recommended mounting:



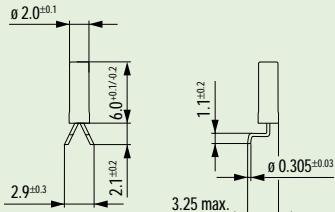
- 2. soldering:**
- pre-heating +130 °C ~ + 150 °C for 1 to 3 minutes
 - soldering +230 °C ~ + 250 °C for 5 seconds maximum

- 3. cleaning:**
- ultrasonic cleaning with organic solvents
 - ultrasonic frequency should not be equal to the resonance frequency of the crystal

- 4. handling:**
- handle the crystal carefully, it cannot stand heavy shock

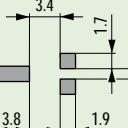
- 5. testing:**
- if you test the whole board automatically do not apply pulse to the crystal oscillator circuit, especially high pulse level can break the crystal blank

SM26F dimensions type A (1000 pcs per reel)

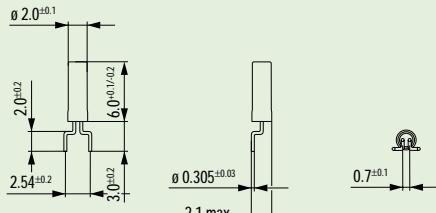


in mm

pad layout



SM26F dimensions type B (1000 pcs per reel)



in mm

pad layout

