



actual size

# Quartz Crystal · MTF32

Tuning Fork Crystal · 3.0 x 8.0 mm

- 3 x 8 mm cylinder type
- 32.768 kHz standard



Pb free: pins and pads

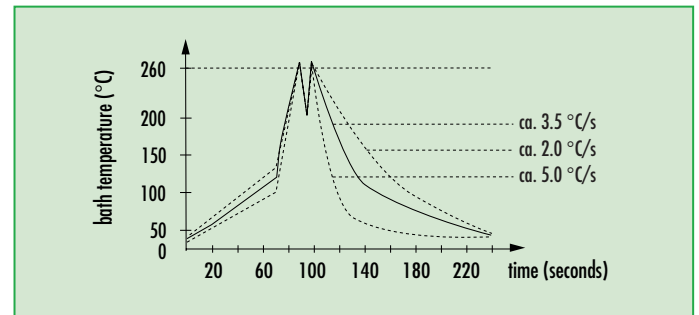
## General Data

type	MTF32
frequency	32.768 kHz (15.0 ~ 150.0 kHz on request)
frequency tolerance at 25 °C ± 5 °C	± 10 ppm / ± 20 ppm
load capacitance C <sub>L</sub>	10 pF / 12.5 pF (6 pF ~ 12.5 pF)
temperature constant	-0.04 · 10 <sup>-6</sup> / °C <sup>2</sup> max. -0.034 · 10 <sup>-6</sup> / °C <sup>2</sup> typical
frequency temperature characteristic	f (ppm) = -0.04 ( 25 °C - T ) <sup>2</sup> T = requested temperature
operating temperature range	-20 °C ~ +70 °C / -40 °C ~ +85 °C
shunt capacitance C <sub>0</sub>	1.7 pF typical
series resistance max. ( ESR )	30.0 kΩ
storage temperature	-40 °C ~ +90 °C
drive level max.	1 μW
aging first year	< ± 5 ppm

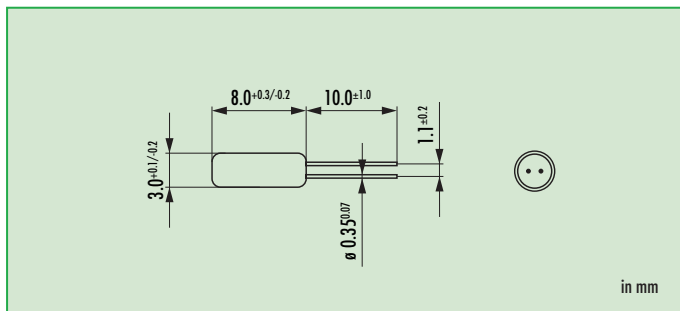
## Frequency Stability vs. Temperature

		- 80 ppm	- 160 ppm	
-20 °C ~ +70 °C	STD.	●		
-40 °C ~ +85 °C	T1		●	
● standard				

## Wave Soldering Profile



## Dimensions



## Marking

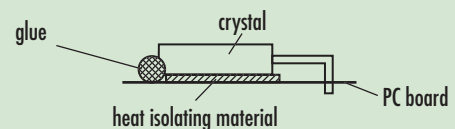
Date code ( month / year )

date code:  
A ~ M: Jan.- Dec.  
5: 2005  
6: 2006  
7: 2007

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F
July	Aug.	Sept.	Oct.	Nov.	Dec.
G	H	J	K	L	M

## Mounting

**Mounting:** if the crystal should be mounted vertically to your board (see picture), do not directly solder the metal can. The crystal may be overheated by the direct heat flow. Please use glue (hot-melt adhesive) or mechanical clamping to fasten the metal can.



## Order Information

Q	frequency	type	load capacitance	stability at 25 °C	option
Quartz	0.032768 MHz	MTF32	6 pF ~ 12.5 pF 10.0 pF Std. 12.5 pF Std.	20 ± 20 ppm 10 ± 10 ppm	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C
Example: Q 0.032768-MTF32-12.5-30 (Suffix LF = RoHS compliant / Pb free pads)					



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All specifications are subject to change without notice