



actual size

# Quartz Crystal JTX310

- SMD Tuning Fork Crystal • 3.2 x 1.5 mm
- 32.768 kHz
- optional extra shock proof versions available
- package height 0.9 mm max.



RoHS compliant



Pb free



REACH compliant



Conflict mineral free

## GENERAL DATA

TYPE	JTX310
frequency	32.768 kHz
frequency tolerance at 25 °C ± 5 °C	± 10 ppm / ± 20 ppm / ± 30 ppm
load capacitance $C_L$	12.5 pF / 9 pF / 7 pF / 6 pF std. (lower CL ask if available)
temperature constant ( $T_C$ )	$T_C = -0.04 \text{ ppm} / ^\circ\text{C}^2 \text{ max.}$ $T_C = -0.034 \text{ ppm} / ^\circ\text{C}^2 \text{ typical}$
frequency temperature characteristic	$\Delta f = T_C \cdot (T_A - T_{TP})^2 \text{ in [ppm]}$ $T_A = \text{actual ambient temperature}$ $T_{TP} = 25 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$ $T_{TP} = \text{turning point temperature}$
operating temperature range	refer to frequency stability table
shunt capacitance $C_o$	1.15 pF typical
series resistance max. (ESR)	70 kΩ for STD. & T1 & opt. for T2 & T3 80 kΩ for T2 and T3 60 kΩ and 50 kΩ opt. for T1
storage temperature	-55 °C ~ +125 °C
drive level max.	0.5 μW
aging first year	< ± 3 ppm

## TABLE 1: FREQUENCY STABILITY VS. TEMPERATURE

frequency stability		-80 ppm	-160 ppm	-250 ppm	-400 ppm
-20 °C ~ +70 °C	STD.	●			
-40 °C ~ +85 °C	T1		●		
-40 °C ~ +105 °C	T2			○	
-40 °C ~ +125 °C	T3				○

● standard ○ available

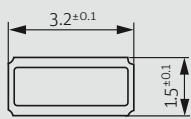
## MARKING

company code  
date code / production code

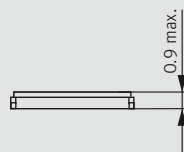
## MECHANICAL ENDURANCE OPTIONS

HMR (high mechanical reliability): 3000 g, half sine pulse, 0.3 ms

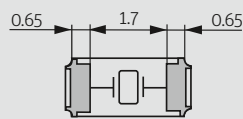
## DIMENSIONS



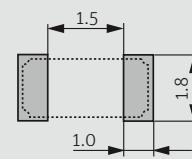
top view



side view



bottom view



pad layout

in mm

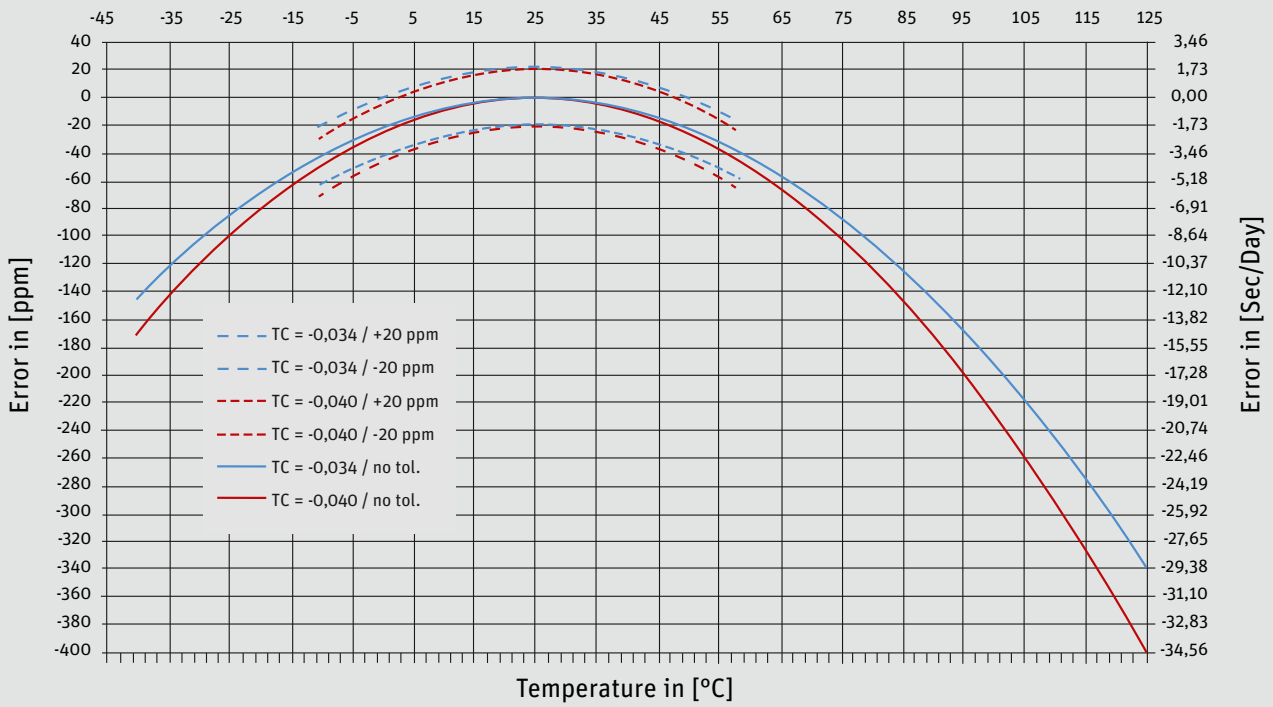
## ORDER INFORMATION

Q	frequency	type	load capacitance	tolerance at 25 °C	option 1	option 2	option 3
Quartz	0.032768 MHz	JTX310	12.5 pF std. 6 pF ~ 9 pF (on request)	10 = ±10 ppm 20 = ±20 ppm 30 = ±30 ppm	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C	HMR = high mechanical reliability	none = 70kΩ for T1 80kΩ for T2 & T3 70K = 70kΩ opt. for T2 & T3 60K = 60kΩ opt. for T1 50K = 50kΩ opt. for T1

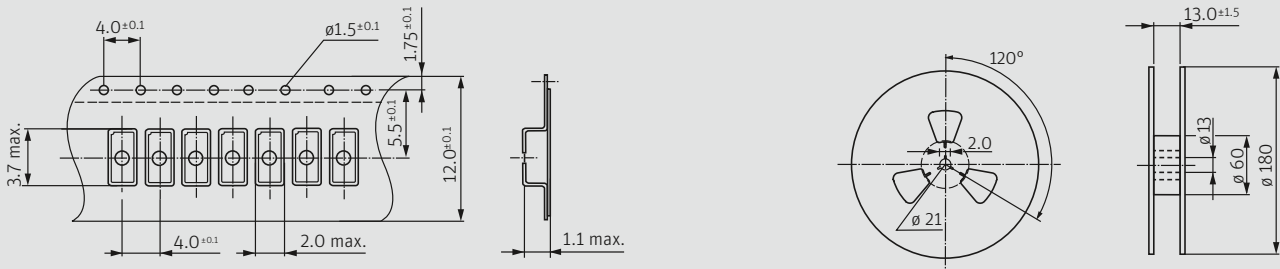
**Example: Q 0.032768-JTX310-12.5-20-T1-HMR-60 K-LF** (Suffix LF = RoHS compliant / Pb free)

# Quartz Crystal JTX310

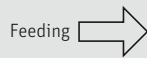
## FREQUENCY ERROR VS. TEMPERATURE IN PPM OR SECONDS PER DAY



## TAPING SPECIFICATION

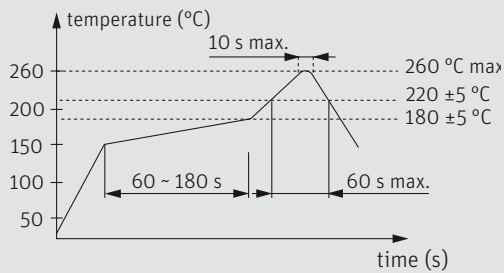


3000 pcs per reel (standard)  
1000 pcs per reel (on request)



in mm

## REFLOW SOLDERING PROFILE



note: parts are also suitable for soldering systems with lead (Pb) content