



actual size

# Automotive SMD Crystal JTX310

- SMD Tuning Fork Crystal, 3.2 x 1.5 mm
- all versions are AEC-Q200 qualified
- optional extra shock proof version 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 <sub>L</sub>	6 pF / 7 pF / 9 pF / 12.5 pF std. (lower CL ask if available)
temperature constant (T <sub>C</sub> )	T <sub>C</sub> = -0.04 ppm / °C <sup>2</sup> max. T <sub>C</sub> = -0.034 ppm / °C <sup>2</sup> typical
frequency temperature characteristic	$\Delta f = T_C \cdot (T_A - T_{TP})^2$ in [ppm] T <sub>A</sub> = actual ambient temperature T <sub>TP</sub> = 25 °C ± 5 °C T <sub>TP</sub> = turning point temperature
operating temperature range	refer to frequency stability table
shunt capacitance C <sub>0</sub>	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

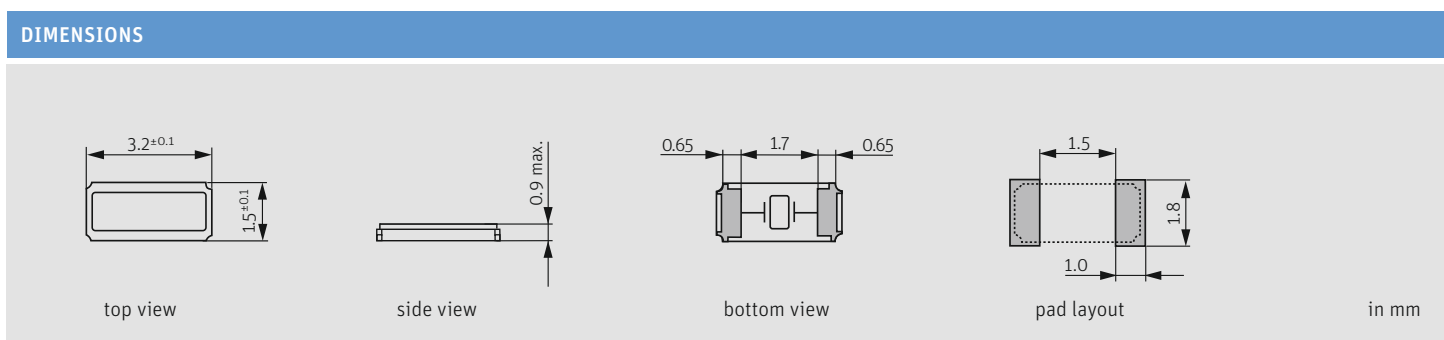
TABLE 1: FREQUENCY STABILITY VS. TEMPERATURE					
frequency stability		-80 ppm	-160 ppm	-250 ppm	-400 ppm
-20 °C ~ +70 °C	STD.	●			
-40 °C ~ +85 °C	T1		●		
-40 °C ~ +105 °C	T2			○	
-40 °C ~ +125 °C	T3				○

● standard ○ available

MARKING
company code
date code / production code

MECHANICAL ENDURANCE OPTIONS
AEC (according to AEC-Q200): 100 g, half sine pulse, 6.0 ms
HMR (high mechanical reliability): 3000 g, half sine pulse, 0.3 ms

note: all versions are AEC-Q200 qualified

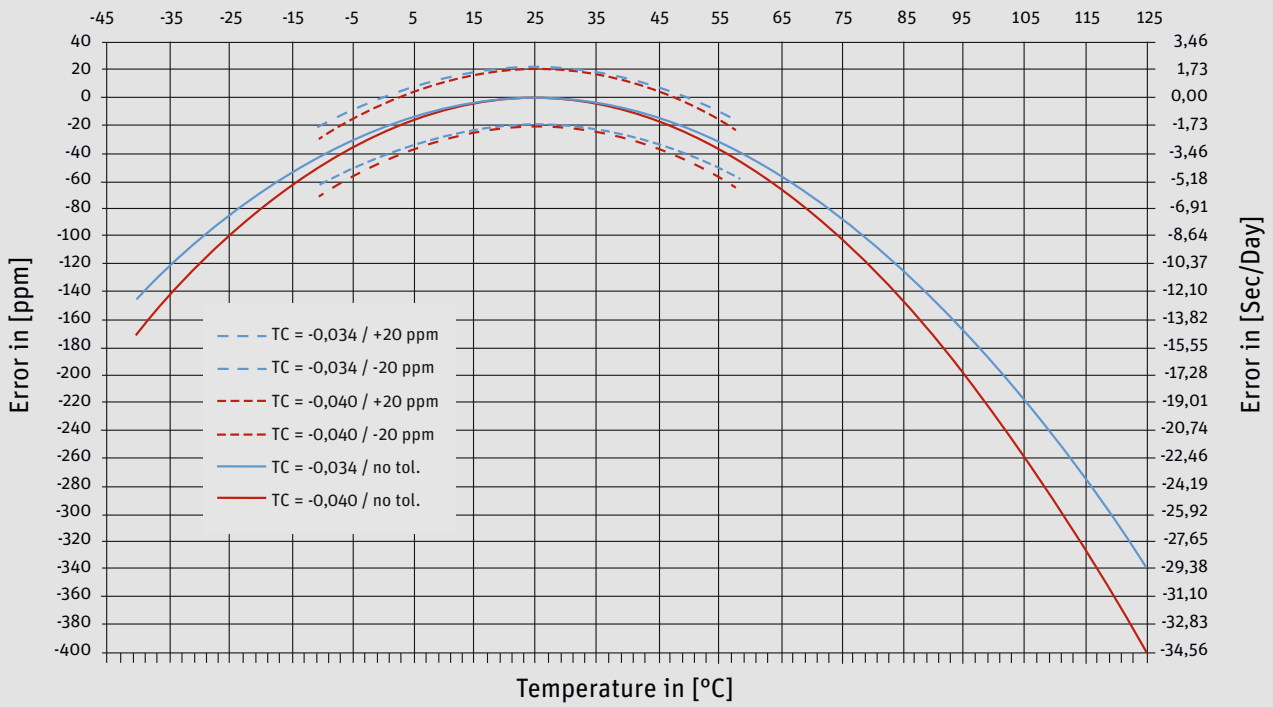


ORDER INFORMATION							
Q	frequency	type	load capacitance	tolerance at 25 °C	option 1	option 2	option 3
Quartz	0.032768 MHz	JTX310	12.5 pF std. 6 pF / 7 pF / 9 pF on request	10 = ±10 ppm 20 = ±20 ppm 30 = ±30 ppm	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C	AEC = AEC-Q200 qualified HMR = high mech. 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

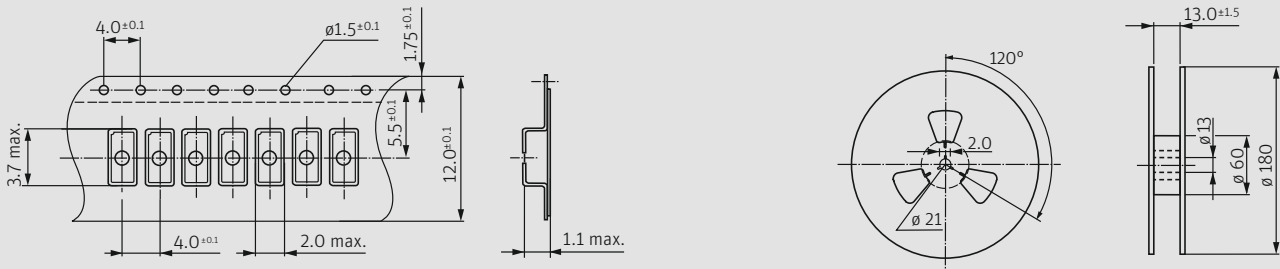
**Example: Q 0.032768-JTX310-12.5-20-T1-AEC-60K-LF** (Suffix LF = RoHS compliant / Pb free)

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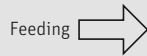
## FREQUENCY ERROR VS. TEMPERATURE IN PPM OR SECONDS PER DAY



## TAPING SPECIFICATION

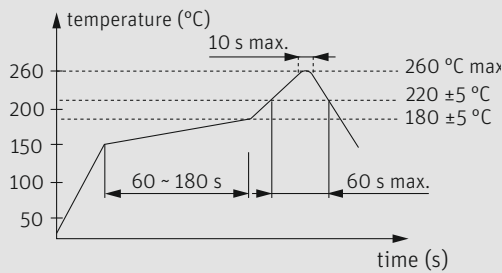


3000 pcs per reel (standard)  
1000 pcs per reel (on request)



in mm

## REFLOW SOLDERING PROFILE



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