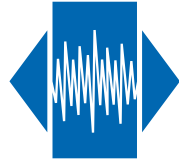


# SMX-415

**Ceramic packaged  
SMD Watch Crystal**

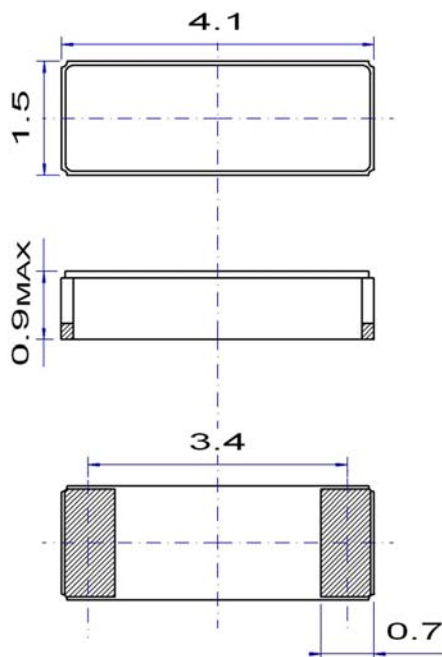
**QuartzCom**  
the communications company



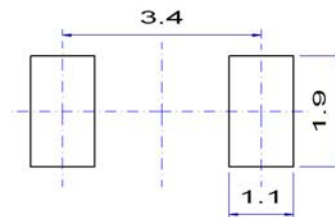
## Features

- Applications: telecommunications, audio, automotive, medical
- Ultra low profile ceramic package
- Reliable, low cost crystal
- Reflow soldering @ 260 °C

Parameter	Specification	
<b>Nominal frequency</b>	<b>32.768 kHz</b>	
Frequency tolerance	±20 ppm	@ +25 °C
Frequency stability vs. temperature	±100 ppm ±150 ppm	over -20 ~ +70 °C over -40 ~ +85 °C
Aging	±3 ppm	1 <sup>st</sup> year
Load capacitance	parallel resonance (CL = 8 ~ 12.5 pF)	
Series resistance	70 kΩ	Max.
Motional capacitance	2.5 fF	Typ.
Shunt capacitance	1.4 pF	Typ.
Drive level	0.1 μW Typical	< 0.5 μW
Turnover temperature	+25 °C	±5 °C
Temperature coefficient	-0.035 x (T-T0) <sup>2</sup> ppm/°C <sup>2</sup>	
Operating temperature range	-20 ~ +70 °C -40 ~ +85 °C	commercial application industrial application
Storage temperature range	-55 ~ +125 °C	
Packaging unit	tape & reel	1'000 or 3'000 pieces
Customer specifications on request		

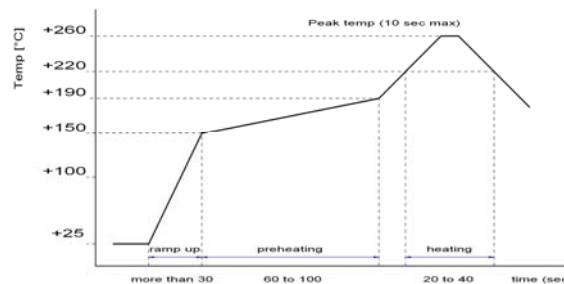


Example for soldering pattern



**Do not design any conductive path between the pattern**

Example for IR reflow soldering temperature



**2002/95/EC RoHS compliant**

QuartzCom AG  
sales@quartzcom.com  
[www.quartzcom.com](http://www.quartzcom.com)

QuartzCom Asia  
sales-asia@quartzcom.com

QuartzCom USA  
sales-usa@quartzcom.com

ISO 9001  
BUREAU VERITAS  
Certification



03 May, 10