

## Type XD 32.768kHz tuning fork crystal

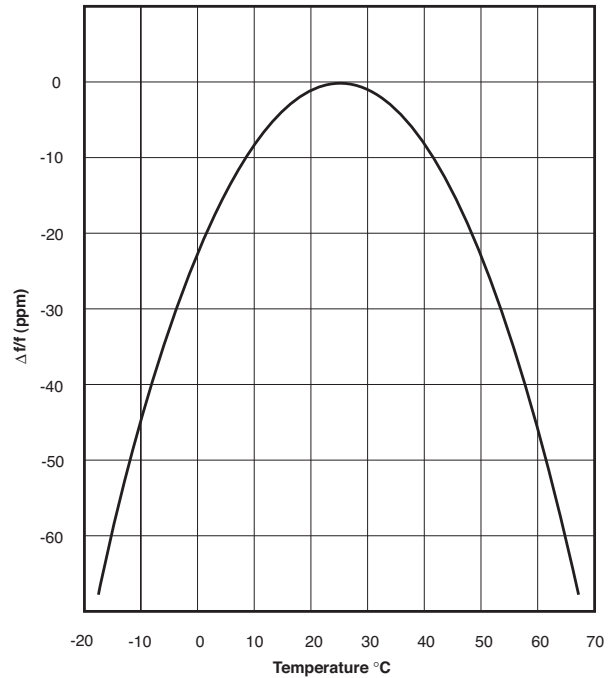
- ultra low profile ceramic package
- XD21 (2.0 x 1.2)mm, height 0.6mm
- XD31 (3.2 x 1.5)mm, height 0.9mm
- XD41 (4.2 x 1.5)mm, height 0.9mm
- vacuum seal
- tape and reel 3000 pieces
- RoHS compliant

Lightweight miniature, ultra thin smd tuning fork crystals produced at the ubiquitous frequency of 32.768kHz and vacuum sealed in ceramic packages.

Modern standard enclosures for volume applications combining small size and good tolerance over an extended temperature range.

3000 piece tape and reel packaging for automated assembly. Ideally suited for portable and mobile telecommunication devices.

### Frequency/temperature characteristics:



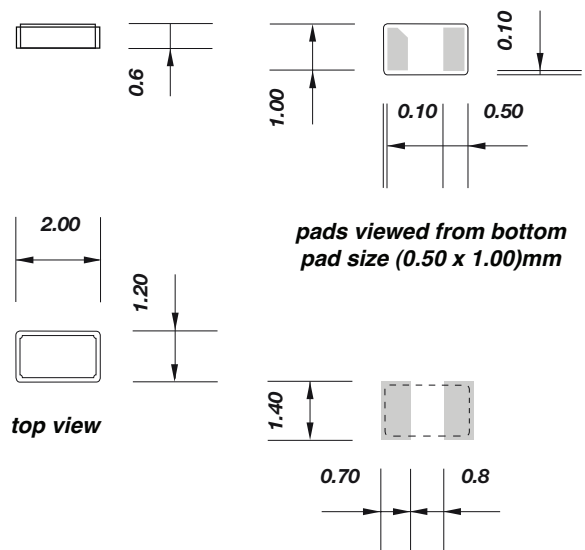
Frequency/temperature characteristics

### Specification data:

<b>Environment</b>	high vacuum
<b>Quartz orientation</b>	flexure mode
<b>Frequency</b>	32.768kHz
<b>Adjustment tolerance</b>	±20ppm at +25°C as standard
<b>Temperature coefficient</b>	-0.04ppm/Deg C <sup>2</sup>
<b>Operating temperature</b>	(-40 +85)°C
<b>Storage temperature</b>	(-40 +85)°C
<b>Load</b>	12.5pF as standard,
<b>ESR</b>	XD21: 90kΩ max. XD31: 70kΩ max. XD41: 70kΩ max.
<b>Motional capacitance C<sub>0</sub></b>	XD21: 0.7pF typical XD31: 0.95pF typical XD41: 1.10pF typical
<b>Suggested drive level</b>	XD21: (0.1 ~ 0.5)μW XD31: 1μW max. XD41: 1μW max.
<b>Ageing</b>	±3ppm typical, first year max.
<b>Q factor</b>	30,000 typical
<b>Insulation resistance</b>	500Meg. Ω min. at 100Vd.c.

### Dimensions(mm)

#### Type XD21



pads viewed from bottom  
pad size (0.50 x 1.00)mm

suggested land pattern

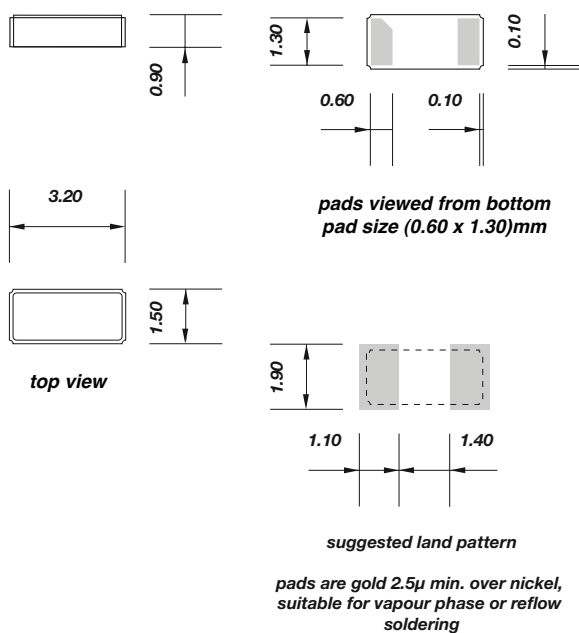
pads are gold 2.5μ min. over nickel,  
suitable for vapour phase or reflow  
soldering

**Ordering information**

<b>EXAMPLE</b>	XD21 crystal, 32.768kHz, load 12.5 pF, $\pm 20$ ppm at 25°C
<b>TFC PART NUMBER</b>	<b>XD21 32.768K M C</b>
<b>XD21</b>	crystal package: XD21 = (2.0 x 1.2)mm, height 0.6mm
<b>32.768K</b>	frequency: 32.768K = 32.768kHz
<b>M</b>	load capacitance: M = 12.5pF
<b>C</b>	frequency tolerance at +25°C: C = $\pm 20$ ppm
<b>OPTIONS</b>	
<b>package</b>	XD21: (2.0 x 1.2)mm, height 0.6mm, XD31; (3.2 x 1.5)mm, height 0.9mm, XD41; (4.2 x 1.5)mm, height 0.9mm
<b>load capacitance</b>	M; 12.5pF, B; 9pF, O; 7pF

**Dimensions(mm)**

**Type XD31**



**Dimensions(mm)**

**Type XD41**

