Product Description
The 4-pad FL series seam seal devices incorporate a sub-miniature AT-cut crystal resonator housed in a standard 3.2 x 2.5mm ceramic package. These compact crystals are ideal for surface mounting in densely populated or small form-factor PCB applications.

Product Features
- Rugged AT-cut crystal construction
- Miniature 3.2 x 2.5mm ceramic package
- Available on tape & reel; 8mm tape, 3000 units per reel
- Pb-free and RoHS/Green compliant

Typical Applications
- GSM, CDMA, GPRS
- PCMCIA Cards
- Portable / hand-held PCs
- Notebook PC
- HDD
- GPS
- Bluetooth
- Wireless LAN
- UWB
- ZigBee
- Digital Tuner

Package: (Scale: none; dimensions are in mm)

Pin Functions:

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Xtal</td>
</tr>
<tr>
<td>2</td>
<td>Case</td>
</tr>
<tr>
<td>3</td>
<td>Xtal</td>
</tr>
<tr>
<td>4</td>
<td>Case</td>
</tr>
</tbody>
</table>

Part Ordering Information:

**FL XXX YYYY**

A: Product Family
B: XXX = Frequency Code
C: YYYY = Specification Code

Following the above format, Saranix-eCera part numbers will be assigned upon confirmation of exact customer requirements.
Miniature Quartz Crystal Ceramic SMD FL

FL Series Quartz Crystal
Legacy NKS3 Series | 3.2 x 2.5mm

Frequency Range:
- 8 MHz to 66.0000 MHz (Fundamental)

Characteristics at 25°C ±2°C:
- Frequency Calibration Tolerance: ±10ppm, ±20ppm, or ±30ppm
- Load Capacitance: 8 to 32pF or Series Resonance
- Effective Series Resistance (ESR):
  - 500Ω max (8 to 11.9 MHz)
  - 80Ω max (12 to 19.9 MHz)
  - 60Ω max (20 to 29.9 MHz)
  - 40Ω max (30 to 66 MHz)
- Drive Level: 10µW typ. (100µW max)
- Shunt Capacitance: 5pF Max

Temperature Range:
- Operating: –20 to +70°C or –40 to +85°C or –40 to +125°C
- Storage: –55 to +125°C

Temperature Stability:
- ±10ppm, ±20ppm, ±30ppm, or ±50ppm (–20 to +70°C)
- ±30ppm, ±50ppm (–40 to +85°C)
- ±50ppm, ±70ppm (–40 to 125°C)

Aging at 25°C, First Year:
- ±3ppm Max

Reflow Temperature:
- 260°C Max, 10 seconds Max

Legacy Ordering Information - For Reference Only:

<table>
<thead>
<tr>
<th>Package Type</th>
<th>Calibration / Stability / Temp Range</th>
<th>Mode</th>
<th>Part Number Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 (3.2 x 2.5 mm typ)</td>
<td>HAA = ±10 ppm / ±10 ppm / -20°C to +70°C</td>
<td>1 = Fundamental</td>
<td>Spec: Freq 18.1234MHz, ±30ppm calib, ±30ppm stab, -20 to +70°C, 16pF, T&amp;R = NKS3NAD1.18.1234-16(T)</td>
</tr>
<tr>
<td></td>
<td>JAB = ±20 ppm / ±20 ppm / -20°C to +70°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NAD = ±30 ppm / ±30 ppm / -20°C to +70°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NAK = ±30 ppm / ±50 ppm / -20°C to +70°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NED = ±30 ppm / ±30 ppm / -40°C to +85°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NEK = ±30 ppm / ±50 ppm / -40°C to +85°C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mechanical
- Shock: JESD22-B104 Condition B
- Solderability: J-STD-002
- Terminal Strength: MIL-STD-883 Method 2004
- Vibration: JESD22-B103
- Solvent Resistance: JESD22-B107
- Resistance to Soldering Heat: J-STD-020C Table 5-2 Pb-free devices (3 cycles max)

Environmental
- Gross Test Leak: JESD22-A109, Condition C
- Fine Test Leak: JESD22-A109, Condition A1
- Moisture Resistance: JESD22-A113
- Insulation Resistance: 500 MΩ min (100 VDC)