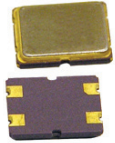


# Miniature Quartz Crystal Ceramic SMD

FP



## Product Description

The FP 4-pad Series incorporate a sub-miniature AT-cut strip crystal resonator housed in a 5x7 mm ceramic package. These compact crystals are ideal for surface mounting in densely-populated PCB applications.

## Product Features

- Rugged AT-cut crystal construction
- Extremely compact SMD package
- Available on tape & reel; 16mm tape, 1000pcs per reel
- FP: Lead-free and RoHS / Green compliant

## Typical Applications

- Ideally suited for disc drives, PCMCIA, PCs and hand-held products

## Frequency Range:

- 6.0000 MHz to 56.0000 MHz (Fundamental)
- 30.0000+ MHz to 56.0000 MHz (3rd Overtone)

## Temperature Range:

- Operating: -20 to +70°C, -40 to +85°C
- Storage: -40 to +85°C

## Temperature Stability Tolerance:

- $\pm 10$ ,  $\pm 20$ ,  $\pm 30$ ,  $\pm 50$ ppm, -20 to +70°C
- $\pm 30$ ,  $\pm 50$ ppm, -40 to +85°C
- Others available

## Characteristics at 25°C $\pm 2^\circ\text{C}$ :

- Frequency Calibration Tolerance:  $\pm 10$ ,  $\pm 20$ ,  $\pm 30$
- Load Capacitance: 8 to 32pF or Series Resonant
- Effective Series Resistance:
- Fundamental: 20 to 110 $\Omega$  depending on frequency
- 3rd Overtone: 50 to 80 $\Omega$  depending on frequency
- Drive Level: 10 $\mu\text{W}$  correlation, 500 $\mu\text{W}$  max
- Shunt Capacitance: 7pF max

## Mechanical:

- Shock:  $\pm 5$ ppm max after 3 drops from 75cm onto a hard wooden board
- Solderability: JESD22-B102-D Method 2 (Preconditioning E)
- Vibration:  $\pm 5$ ppm max sine vibration 10~55Hz, sweep period 1-2 minutes, amplitude 1.5mm, 3 mutually perpendicular planes each 1 hour
- Solvent Resistance: MIL-STD-202, Method 215
- Resistance to Soldering Heat: J-STD-020C Table 5-2 Pb-free devices (3 cycles max)

## Environmental:

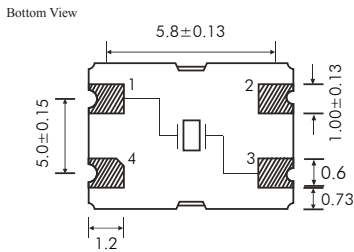
- Gross Test Leak: MIL-STD-883, Method 1014, Condition C
- Fine Test Leak: MIL-STD-883, Method 1014, Condition A2
- Thermal Shock: MIL-STD-883, Method 1011, Condition A
- Moisture Resistance: MIL-STD-883, Method 1004

## Reflow Temperature:

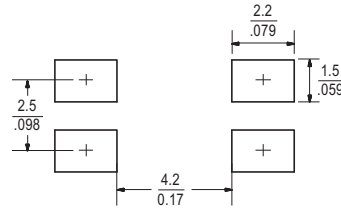
- 260°C Max, 10 sec max

## Package Mechanicals

### Package Details



### Recommended Land Patterns

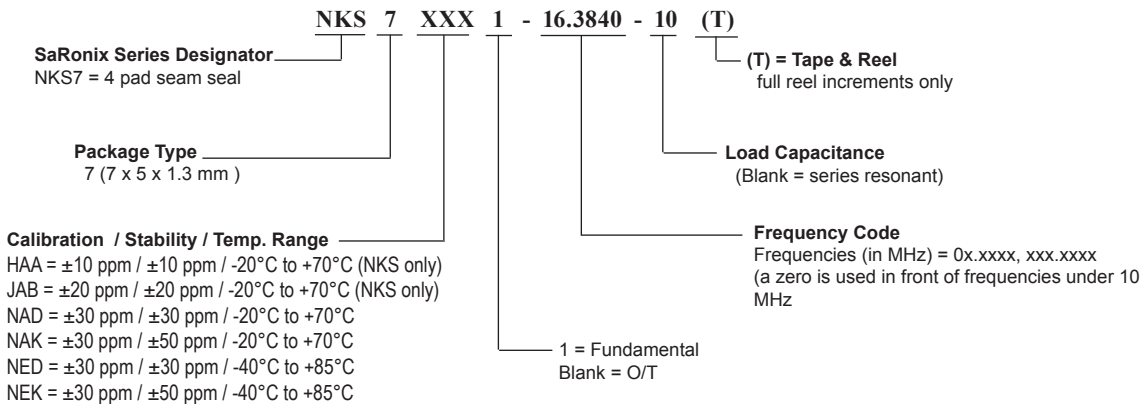


## New Part Number Example

**FP**   **163**   **0001**   A = Product Family  
 Ⓐ   Ⓑ   Ⓒ   B = Frequency Code  
 C = Specification Code

Note: After July 1, 2007, a SaRonix - eCera part number following the above format will be assigned upon confirmation of exact customer requirements.

## Legacy Ordering Information



### Part Number Example:

Spec: Freq 8.1234MHz, ±30ppm calib, ±30ppm stab, -20 to +70°C, 16pF, T&R = NKS7NAD1-08.1234-16(T)