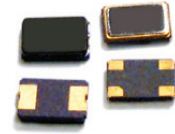


# Miniature Quartz Crystal Ceramic SMD

**F9 FY**


Actual Size



## Product Description

The 2-pad F9 and the 4-pad FY Series devices incorporate a sub-miniature AT-cut crystal resonator housed in a standard 5x3.2mm ceramic package. These compact crystals are ideal for surface mounting in densely populated PCB applications.

## Product Features

- Rugged AT-cut crystal construction
- Miniature 5x3.2mm ceramic package
- Available on tape & reel; 12mm tape, 1000/reel
- FY: Pb-free and RoHS/Green compliant
- F9: RoHS compliant\*\*  
(\*\* per #5, Annex of Directive 2002/05/EC)

## Typical Applications

- HDD
- PCMCIA Cards
- Portable / hand-held PCs
- Notebook PC
- GPS
- Bluetooth
- Wireless LAN
- Portable Multimedia Devices
- USB Dongle

## Common Frequencies (MHz):

12.0000	19.4400	27.0000
13.5000	20.0000	32.7680
14.3181	24.0000	33.0000
14.7456	24.5760	40.0000
16.0000	25.0000	44.0000
18.4320	26.0000	48.0000

## Frequency Range:

- 12.0000 MHz to 50.0000 MHz (Fundamental)

## Temperature Range:

- Operating: -20 to +70°C; -40 to +85°C (as specified)
- Storage: -40 to +85°C

## Temperature Stability (as specified):

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

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

- Frequency Calibration Tolerance:  $\pm 10$ ppm,  $\pm 20$ ppm,  $\pm 30$ ppm
- Load Capacitance: 10 to 32pF or Series Resonance
- Effective Series Resistance:
  - 70 $\Omega$  max (12 to 12.9 MHz)
  - 60 $\Omega$  max (13 to 15.9 MHz)
  - 50 $\Omega$  max (16 to 31.9 MHz)
  - 40 $\Omega$  max (32 to 50 MHz)
- Drive Level: 10 $\mu\text{W}$  typ. (100 $\mu\text{W}$  max)
- Shunt Capacitance: 5pF Max.

## Aging at 25°C, First Year:

- $\pm 3$ ppm Typ.,  $\pm 5$ ppm Max.

## Mechanical:

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

## Environmental:

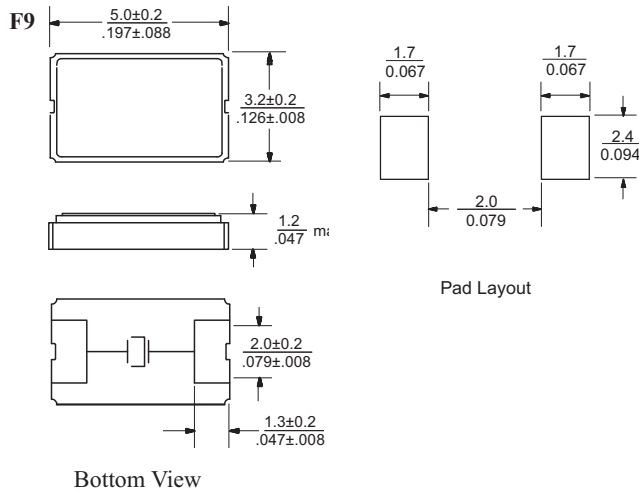
- Gross Test Leak: JESD22-A109 (Condition C)
- Fine Test Leak: JESD22-A109 (Condition A1)
- Moisture Resistance: JESD22-A113

## Reflow Temperature:

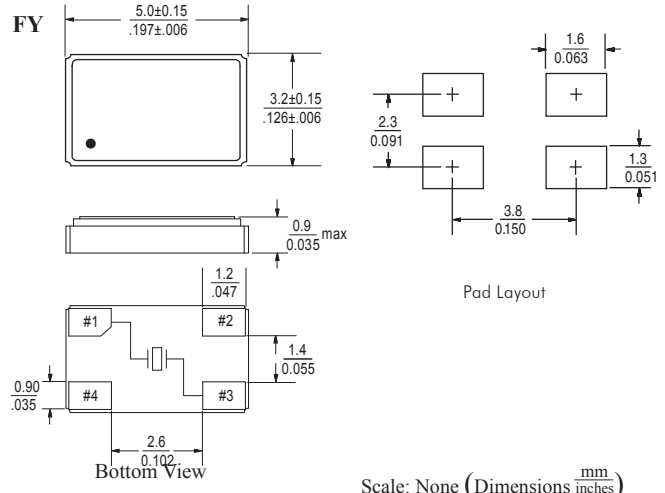
- 260°C Max (10 seconds max)

## Mechanical Drawings: 5 x 3.2 Ceramic

### Package Details & Recommended Land Patterns



### Recommended Land Pattern



Scale: None (Dimensions  $\frac{\text{mm}}{\text{inches}}$ )

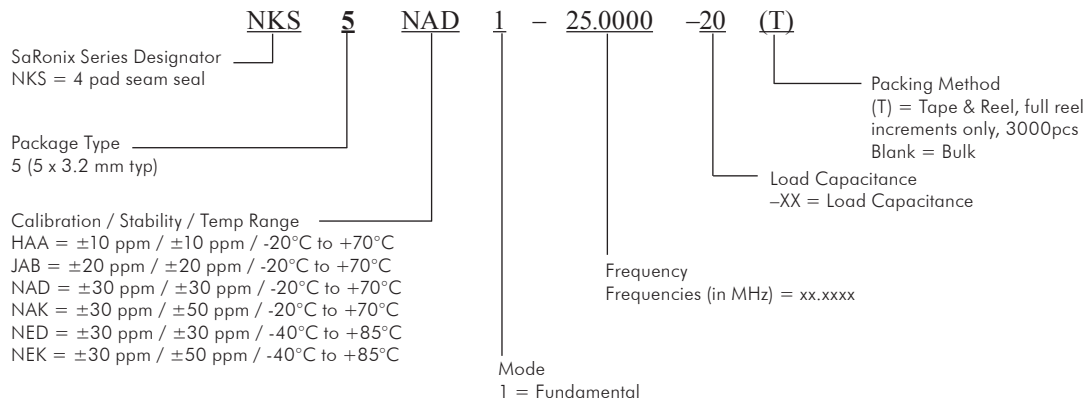
## New Part Number Example

**F9**   **250**   **0001**   A = Product Family  
 Ⓐ   Ⓑ   Ⓒ   B = Frequency Code  
 C = Specification Code

**FY**   **250**   **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 18.1234MHz,  $\pm 30$ ppm calib,  $\pm 30$ ppm stab, -20 to +70°C, 16pF, T&R = NKS5NAD1-18.1234-16(T)