

# Quartz Crystal Ceramic SMD

**FY**



5.0 x 3.2mm Ceramic SMD

## Product Features

- Rugged AT-cut Crystal Construction
- Miniature 5.0 x 3.2mm Ceramic Package
- Available on Tape & Reel; 12mm Tape, 1000 Units per Reel
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- An automotive-compliant part is available under separate datasheet (The DIODES™ FYQ)

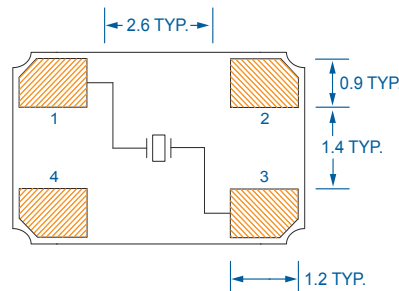
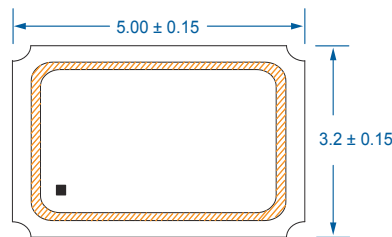
## Product Description

The DIODES™ 4-pad FY Series seam seal devices incorporate a sub-miniature AT-cut crystal resonator housed in a standard 5.0 x 3.2mm ceramic package. These compact crystal are ideal for surface mounting in densely populated PCB applications.

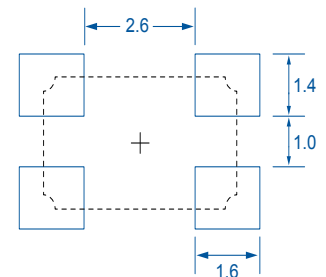
## Application(s)

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

## Package: (Dimensions are in mm)



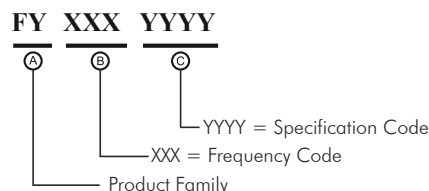
## Recommended Land Pattern:



## Pin Functions:

Pin	Function
1	Crystal
2	GND
3	Crystal
4	GND

## Part Ordering Information:



## Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

## Frequency Range:

- 8.0000 MHz to 59.9999 MHz (Fundamental)
- 60.0000 MHz to 125.0000 MHz (3rd Overtone)

## Characteristics at 25°C ±3°C:

- Frequency Calibration Tolerance: ±10ppm to ±50ppm
- Load Capacitance: 8 to 32pF or Series Resonance
- Effective Series Resistance (ESR):
  - Fundamental:
    - 8.0000MHz to 11.9999MHz: 100Ω max
    - 12.0000MHz to 15.9999MHz: 60Ω max
    - 16.0000MHz to 31.9999MHz: 50Ω max
    - 32.0000MHz to 59.9999MHz: 40Ω max
  - 3 Overtone:
    - 60.0000MHz to 79.9999MHz: 100Ω max
    - 80.0000MHz to 99.9999MHz: 80Ω max
    - 100.0000MHz to 125.0000MHz: 60Ω max
- Drive Level: 10μW typ. 100μW max
- Shunt Capacitance: 5pF Max.

## Temperature Range:

- Operating: -20 to +70°C; -40 to +85°C
- Storage: -55 to +125°C

## Temperature Stability:

- ±10ppm to ±50ppm (-20 to +70°C )
- ±15ppm to ±50ppm (-40 to +85°C)

## Aging at 25°C, First Year:

- ±3ppm Max

## Reflow Temperature:

- 260°C Max, 10 seconds max

For the latest product information visit: <https://www.diodes.com/part/FY/>

For soldering reflow profile and reliability test ratings go to: <https://www.diodes.com/assets/sre/reflow.pdf>

For tape and reel information go to: [https://www.diodes.com/assets/sre/tr\\_5032.pdf](https://www.diodes.com/assets/sre/tr_5032.pdf)

## IMPORTANT NOTICE

1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARD TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.
4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.
5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (<https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/>) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.
9. This Notice may be periodically updated with the most recent version available at <https://www.diodes.com/about/company/terms-and-conditions/important-notice>

DIODES is a trademark of Diodes Incorporated in the United States and other countries.

The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.

© 2022 Diodes Incorporated. All Rights Reserved.

[www.diodes.com](http://www.diodes.com)