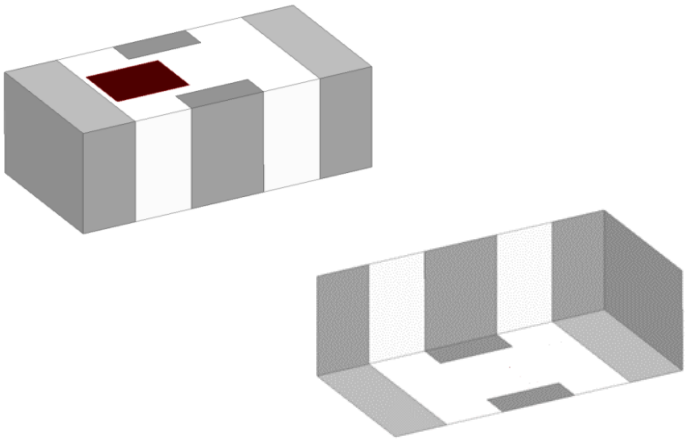
# 2.4 GHz Filter, Impedance-matched Filter for Nordic Semiconductor nRF52 Series QFN Chipsets

- 2400 - 2500 MHz passband
- Designed for Nordic Semiconductor chipsets:
  - nRF52832-QFAA
  - nRF52832-QFAB
  - nRF52810-QFAA
  - nRF52810-QCAA
  - nRF52811-QFAA
  - nRF52811-QCAA
- For 2.4GHz applications such as WiFi, Bluetooth, Zigbee, etc.
- EIA 0402 SMD (1.0mm x 0.5mm x 0.4mm)



## General Specifications[1]

| | | | | |
|---|---|---|---|---|
| Impedance, Transceiver Side (Ω) | 2400 - 2500 MHz | | Impedance match for:<br><br>nRF52832-QFAA<br>nRF52832-QFAB<br>nRF52810-QFAA<br>nRF52810-QCAA<br>nRF52811-QFAA<br>nRF52811-QCAA | |
| Impedance, Antenna Side (Ω) | 2400 - 2500 MHz | | 50 | |
| Insertion Loss (dB) | 2400 - 2500 MHz | | | 0.8 Max. |
| Return Loss (dB) | 2400 - 2500 MHz | | 10 Min. | |
| Attenuation (dB) | 4800 - 5000 MHz | 23 Typ. | 20 Min. | |
| | 7200 - 7500 MHz | 12 Typ. | 18 Min. | |

## Maximum Ratings

| | |
|---|---|
| Power Capacity (W) | 2 Max. (CW) |
| Operating Temperature (°C) | -40 to +85 |
| Recommended Storage Conditions Post-installation (°C) | -40 to +85 |
| Recommended Storage Conditions and Period for Unused T&R Product | 45% - 75% RH<br>+5 to +35 °C<br>18 Months Max. |

[1] Typical value represents average measurement at 25°C. Min./Max. values represent measurements over specified operating temperature.

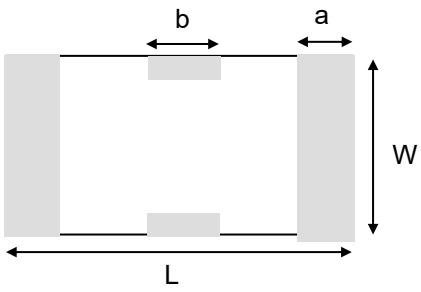


**johansontechnology.com**
4001 Calle Tecate • Camarillo, CA 93012, USA • +1.805.389.1166

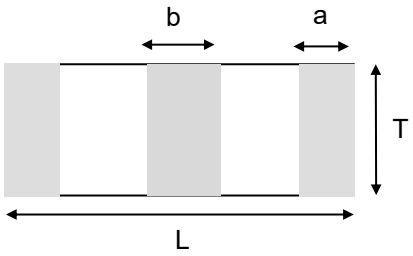
## Mechanical Dimensions

| | Inches | | | Millimeters | | |
|---|---|---|---|---|---|---|
| **L** | 0.039 | ± | 0.002 | 1.00 | ± | 0.05 |
| **W** | 0.020 | ± | 0.002 | 0.50 | ± | 0.05 |
| **T** | 0.016 | | Max. | 0.40 | | Max. |
| **a** | 0.008 | ± | 0.004 | 0.20 | ± | 0.1 |
| **b** | 0.008 | ± | 0.004 | 0.20 | ± | 0.1 |

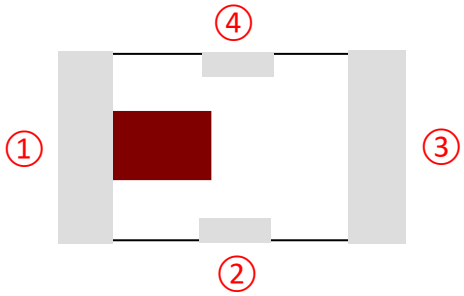
Bottom view




Side view




Top view




## Terminal Configuration[2]

| Pin Number | Function |
|---|---|
| **1** | IN (To RFIC) |
| **2** | GND |
| **3** | OUT (To Antenna) |
| **4** | GND |

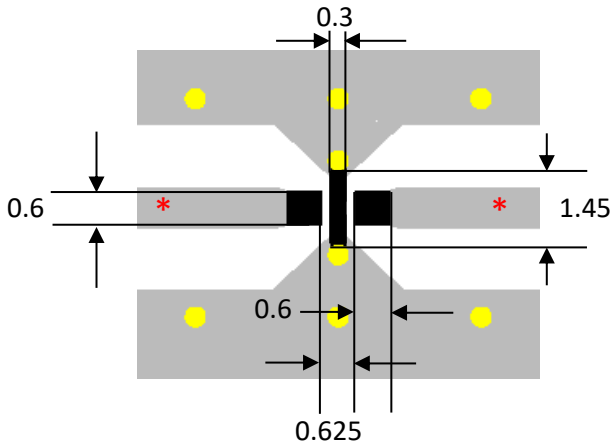
[2] The termination type is Nickel Tin. Go to: https://www.johansontechnology.com/ipcsoldering-profile for Typical Soldering Profile.



**johansontechnology.com**
4001 Calle Tecate • Camarillo, CA 93012, USA • +1.805.389.1166

## Recommended PCB Layout

Note: Mount device with colored mark facing up.




Units in mm

Solder Resist

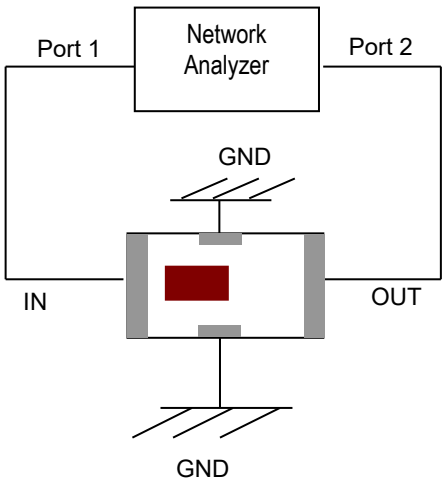
Land

Through-hole ($\phi$0.35)

* Transmission line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

If you'd like the CAD PCB layout or have any questions,
contact our application engineers at https://www.johansontechnology.com/ask-a-question

## Measuring Diagram




Port 1: Filter IN (marking side)

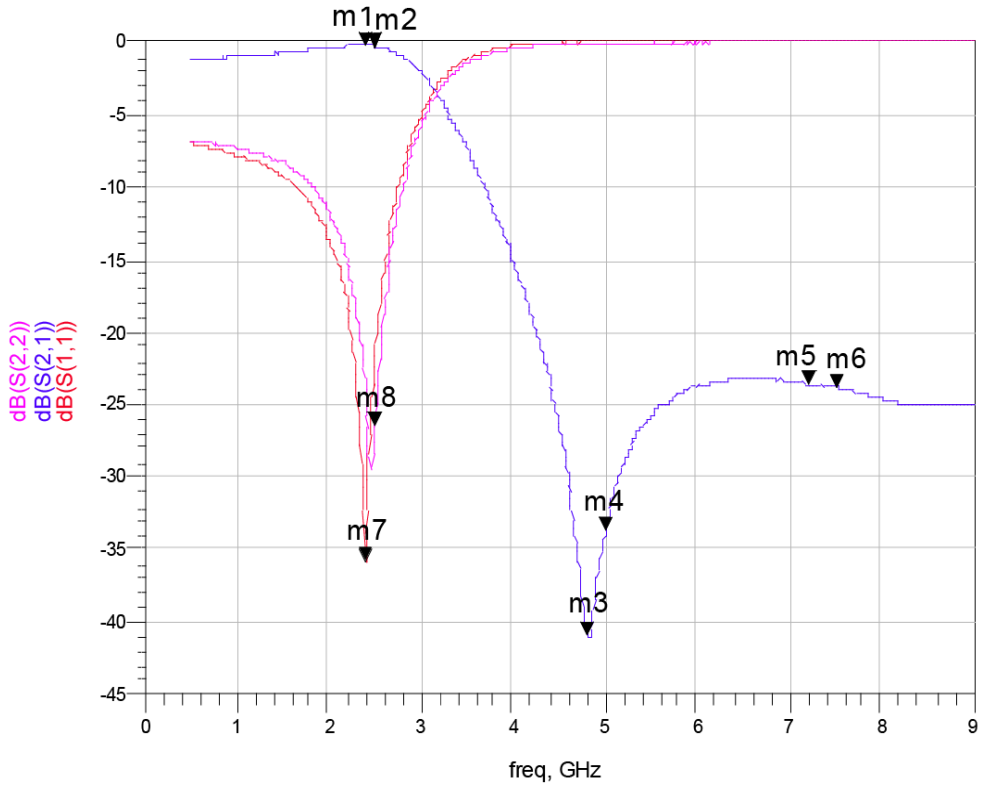
Port 2: Filter OUT



johansontechnology.com
4001 Calle Tecate • Camarillo, CA 93012, USA • +1.805.389.1166

## RF Measurement (T = 25°C)

**Insertion Loss, Return Loss, Attenuation**




| | |
|---|---|
| m1<br>freq=2.400GHz<br>dB(S(2,1))-=0.224 | m3<br>freq=4.800GHz<br>dB(S(2,1))-=40.825 |
| m2<br>freq=2.500GHz<br>dB(S(2,1))-=0.276 | m4<br>freq=5.000GHz<br>dB(S(2,1))-=33.724 |
| m7<br>freq=2.400GHz<br>dB(S(1,1))-=35.825 | m5<br>freq=7.200GHz<br>dB(S(2,1))-=23.504 |
| m8<br>freq=2.500GHz<br>dB(S(1,1))-=26.511 | m6<br>freq=7.500GHz<br>dB(S(2,1))-=23.871 |

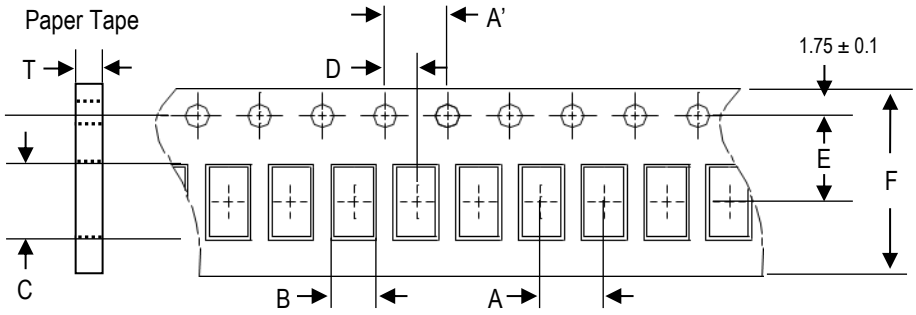
S-parameter and layout file available upon request. Please contact us at https://www.johansontechnology.com/ask-a-question.



**johansontechnology.com**
4001 Calle Tecate • Camarillo, CA 93012, USA • +1.805.389.1166

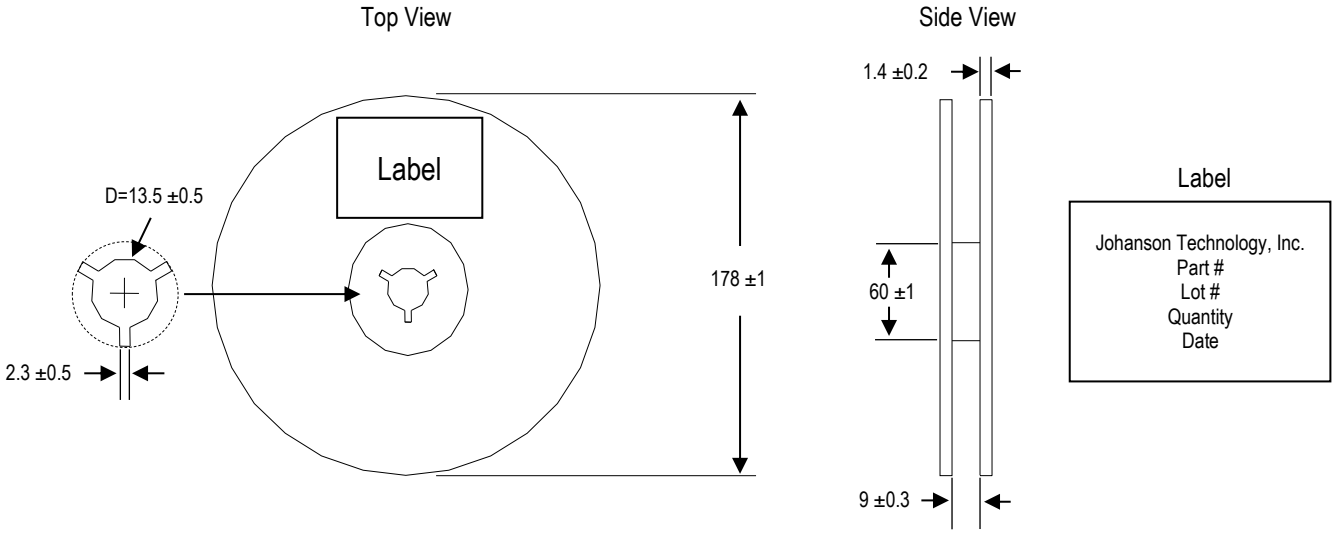
## Tape and Reel Specification (Units in mm)

### Tape Dimensions

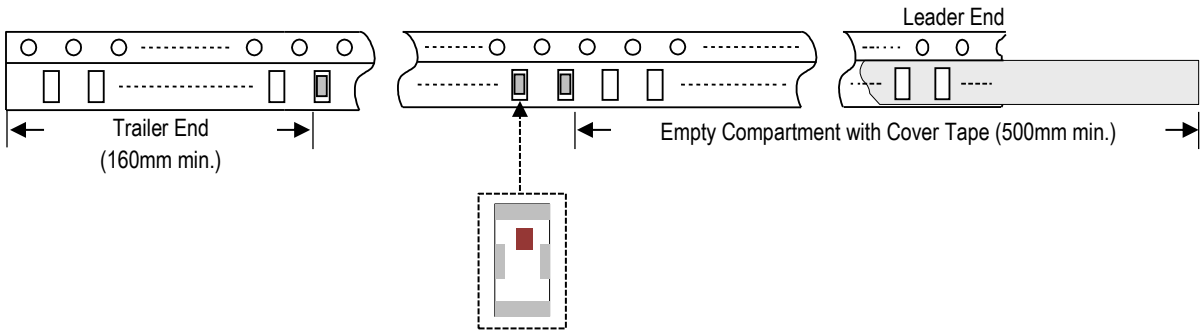



| A | A' | B | C | D | E | F | T | Quantity/reel | Tape material |
|---|---|---|---|---|---|---|---|---|---|
| 2.0 ±0.05 | 4.0±0.1 | 0.62 ±0.03 | 1.12 ±0.03 | 2.0 ±0.05 | 3.5 ±0.05 | 8.0 ±0.1 | 0.45 ±0.03 | 10,000 pcs. | Paper |

### Reel Dimensions




### Leader and Trailer Dimensions






**johansontechnology.com**
4001 Calle Tecate • Camarillo, CA 93012, USA • +1.805.389.1166

## Orderable Part Number

| Packaging Style | Part Number | Termination |
|---|---|---|
| Bulk (loose pcs.) | 2450FM07A0029001B | Nickel Tin |
| T & R (7" Reel Paper Tape) | 2450FM07A0029001T (Qty: 10,000 pcs/reel) | |

## Important Links

2450FM07A0029001T Product Page

More Nordic Semiconductor Reference Designs

2.4GHz Antennas

Antenna Tuning, Optimization, and Validation Services

Soldering Information

MSL Information

Packaging Information

Recommended Storage Condition and Max Shelf Life

RoHS Compliance





**johansontechnology.com**
4001 Calle Tecate • Camarillo, CA 93012, USA • +1.805.389.1166