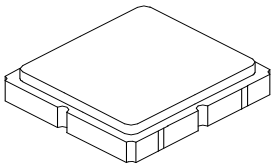
RFM products are now Murata products.

# RF2040E

## 915.0 MHz SAW Filter

- ***Designed for 902.0 - 928.0 MHz Applications***
- ***Optimized for use with the TRC103 Transceiver***
- ***Balanced 150 ohm IC Interface***
- ***Complies with Directive 2002/95/EC (RoHS)***



**SM3030-8**

### Absolute Maximum Ratings

| Rating | Value | Units |
|---|---|---|
| Input Power Level | +15 | dBm |
| DC Voltage | ±5 | V |
| Operating Temperature Range | -40 to +85 | °C |
| Storage Temperature Range in Tape and Reel | -40 to +85 | °C |
| Soldering Temperature (10 seconds / 5 cycles maximum) | 260 | °C |

### Electrical Characteristics

| Characteristic | Sym | Notes | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| Center Frequency | $f_C$ | | | 915.0 | | MHz |
| 1 dB Bandwidth | $BW_1$ | | | 31 | | MHz |
| Maximum Insertion Loss, 902.0 to 928.0 MHz | $IL_{MAX}$ | | | 2.0 | 3.0 | dB |
| Amplitude Ripple, p-p, 902.0 to 928.0 MHz | | | | 0.7 | 1.0 | |
| Rejection Referenced to Insertion Loss at 915.0 MHz: | | | | | | |
| 710 to 810 MHz | | | 37 | 40 | | |
| 810 to 860 MHz | | | 37 | 40 | | |
| 1010 to 1060 MHz | | | 37 | 40 | | |
| 1060 to 1110 MHz | | | 43 | 45 | | |
| 1110 to 1210 MHz | | | 45 | 48 | | |
| Source Impedance | $Z_S$ | | | 50 | | Ω |
| Load Impedance | $Z_L$ | | | 130 | | Ω |

| | | |
|---|---|---|
| Case Style | | SM3030-8 3.0 x 3.0 mm Nominal Footprint |
| Lid Symbolization (Y=year, WW=week, S=shift) dot=pin 1 indicator | | 804, YWWS |
| Standard Reel Quantity | Reel Size 7 Inch | 1000 Pieces/Reel |
| | Reel Size 13 Inch | 3000 Pieces/Reel |

### Electrical Connections

| Connection | Terminals |
|---|---|
| Single-ended Port | 6 |
| Balanced Port | 1, 3 |
| Case Ground | 4, 5, 7, 8 |
| No Connection | 2 |

**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

**NOTES:**

1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency, fc.
3. Rejection is measured as attenuation below the minimum IL point in the passband. Rejection in final user application is dependent on PCB layout and external impedance matching design. See Application Note No. 42 for details.
4. The design, manufacturing process, and specifications of this filter are subject to change.
5. US and international patents may apply.
6. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.

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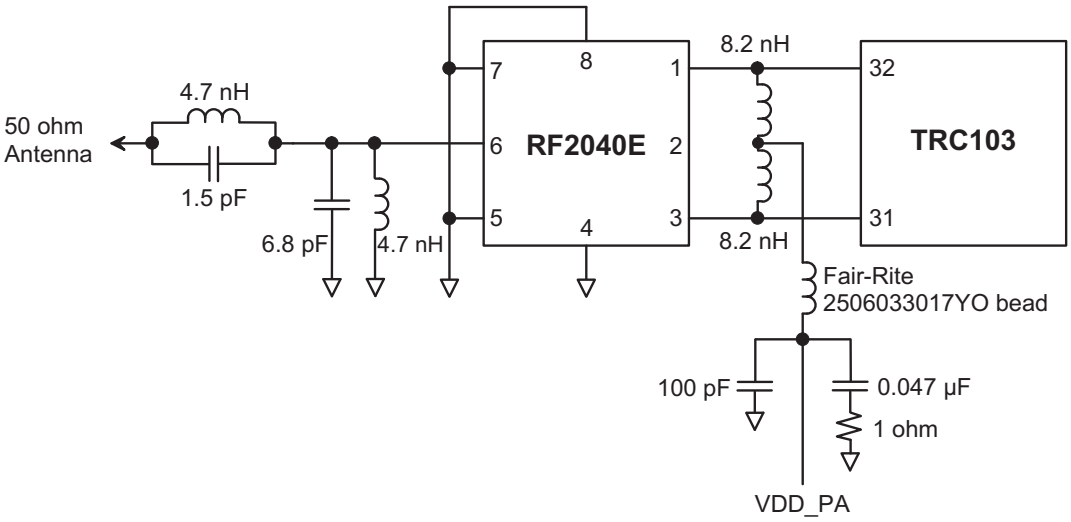
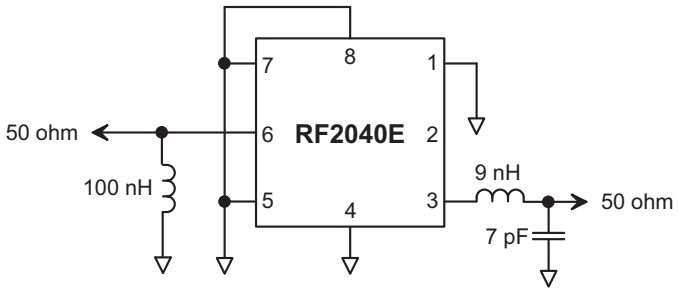
## RF2040E-TRC103 Application Circuit




## RF2040E 50 Ohm Tuning Network

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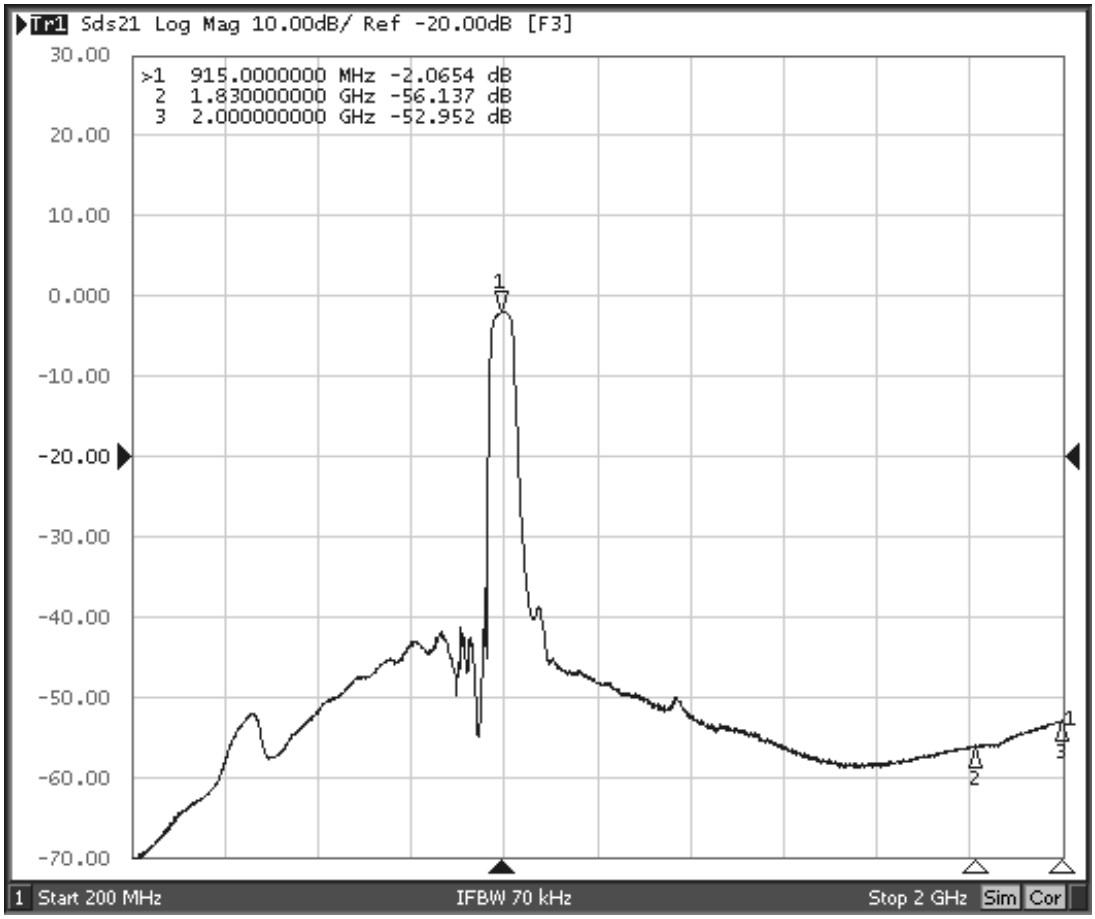
## RF2040E Broadband Response, 200 to 2000 MHz

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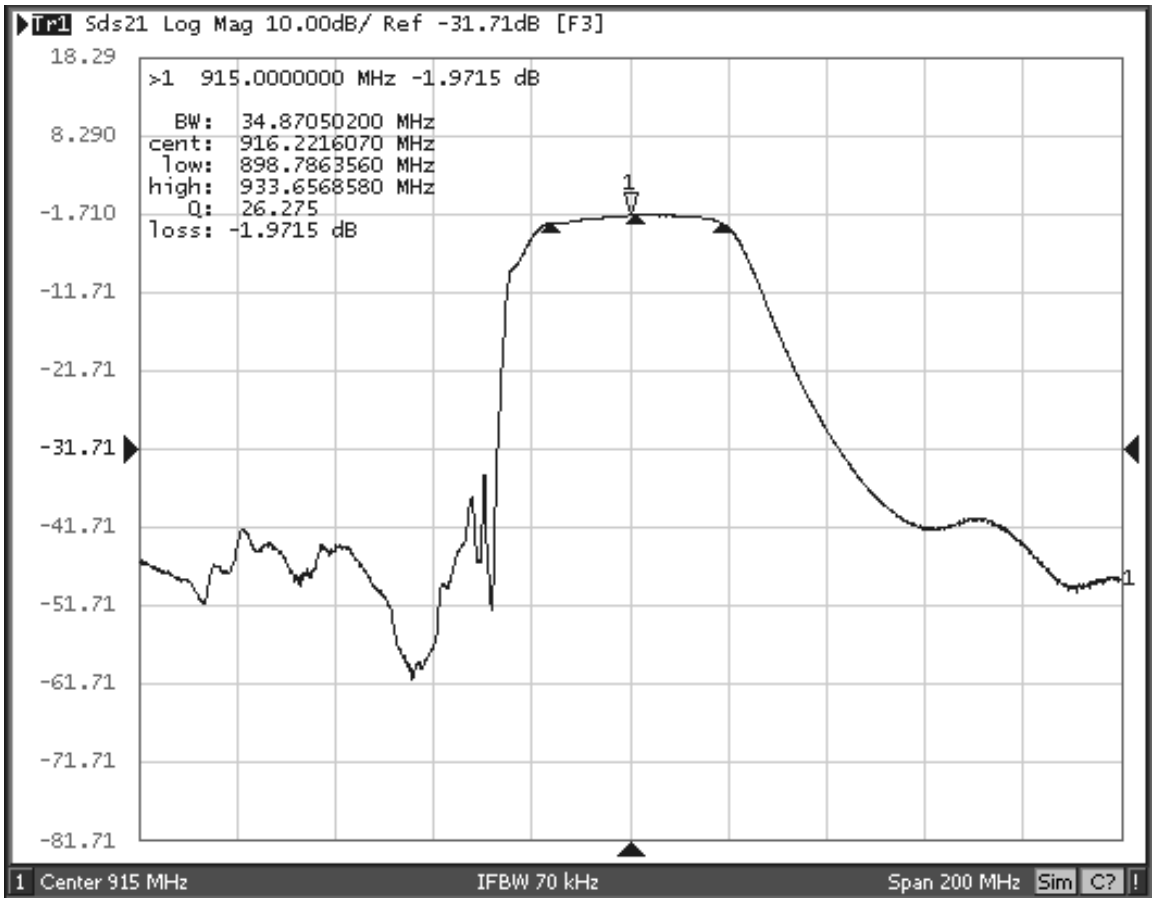
## RF2040E Response, 815.0 to 1015.0 MHz

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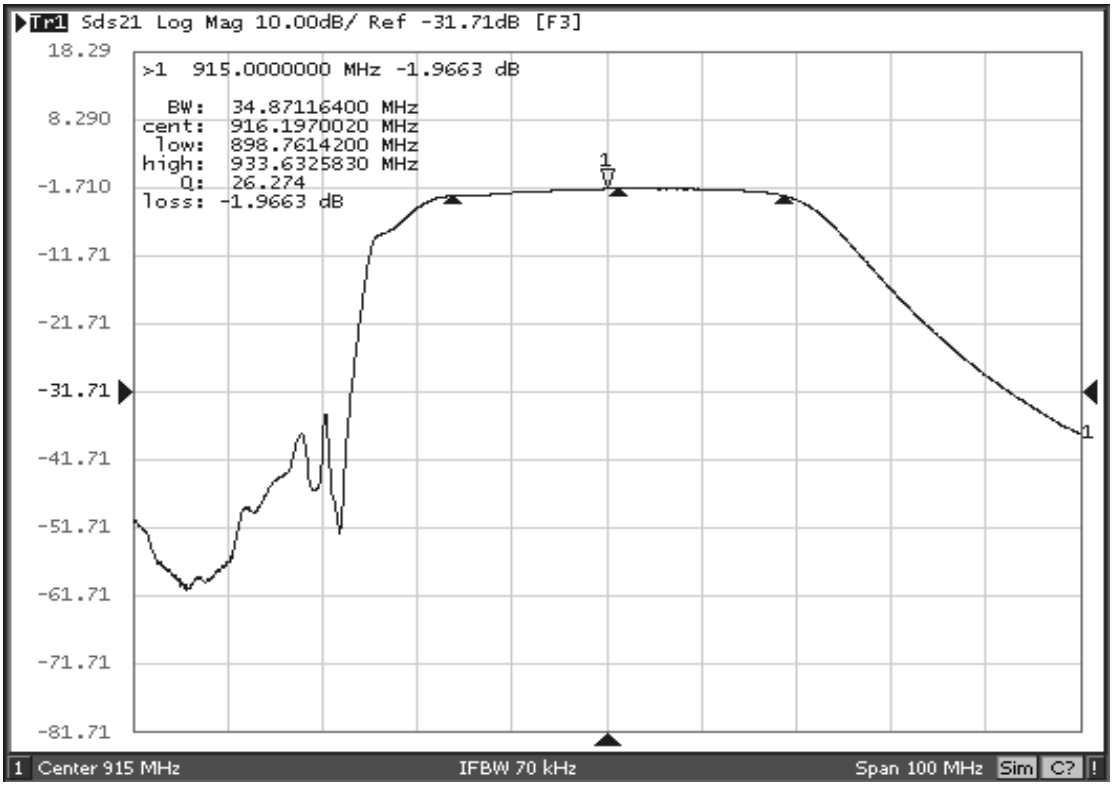
## RF2040E Response, 865.0 to 965.0 MHz

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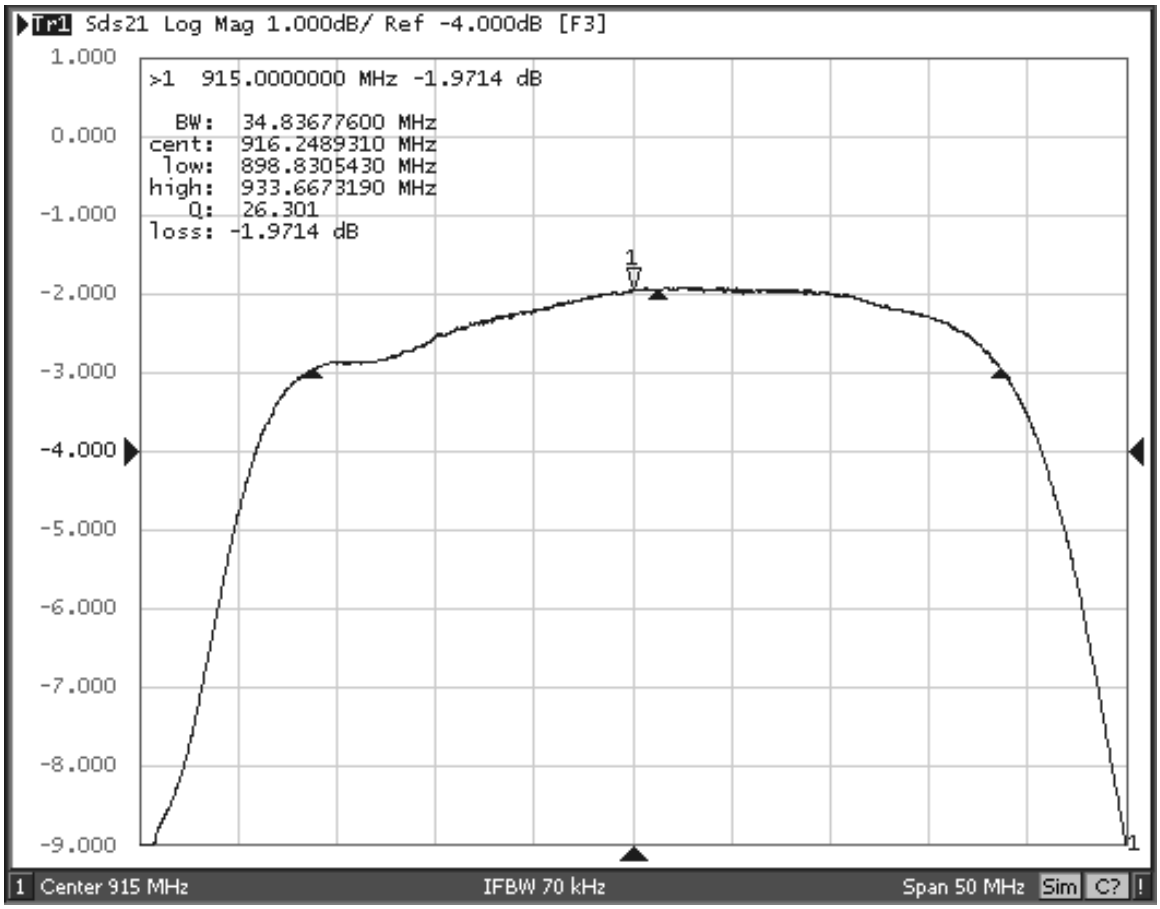
## RF2040E Passband Response

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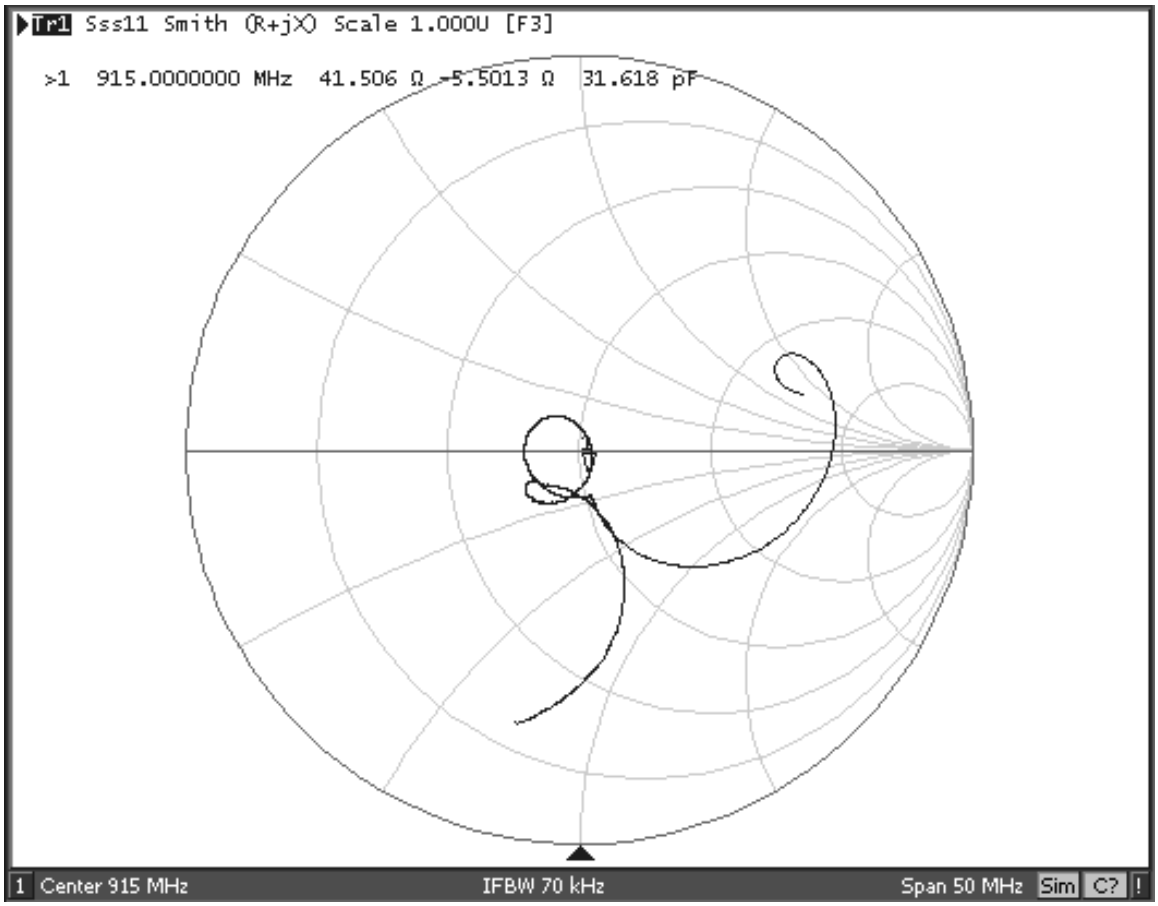
## RF2040E Input Impedance Plot

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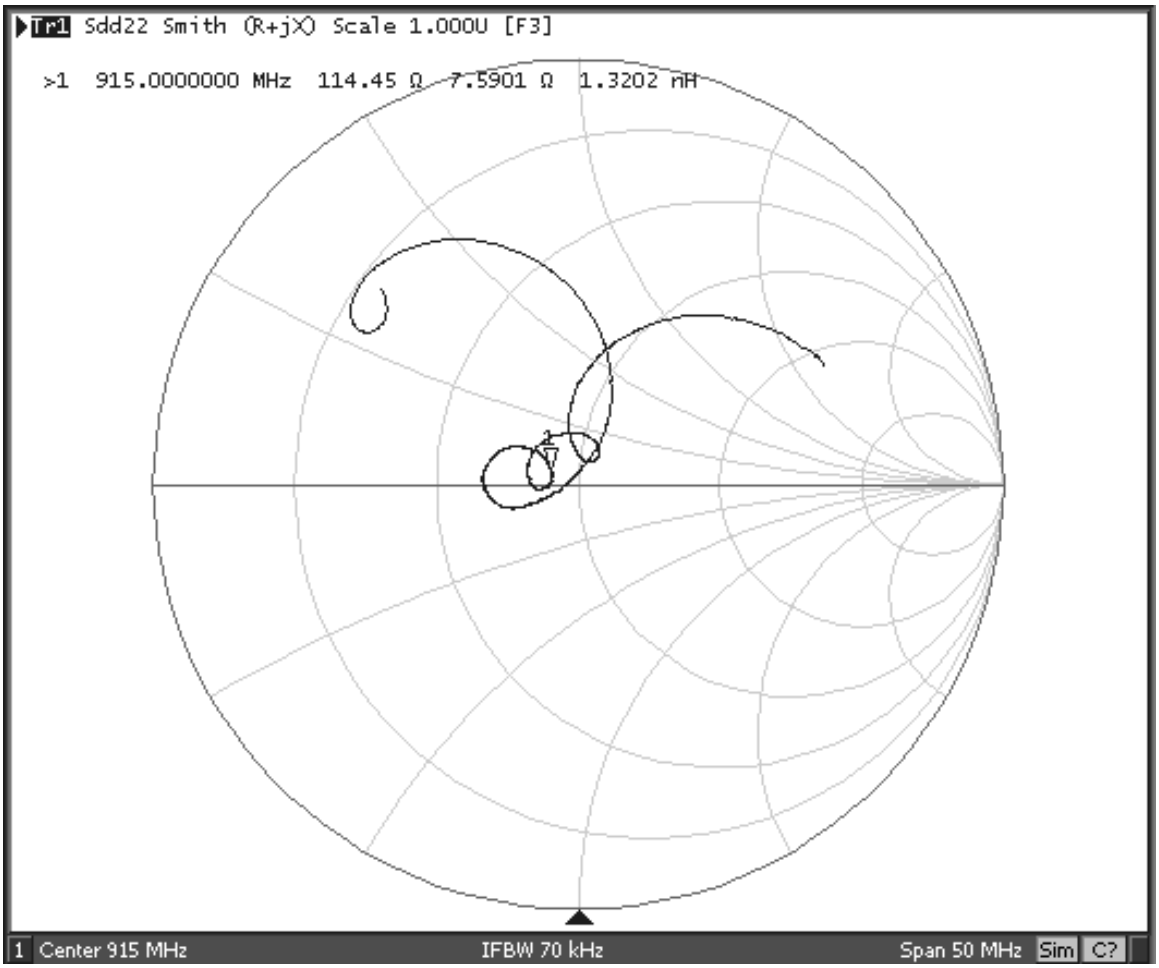
## RF2040E Balanced Output Impedance Plot

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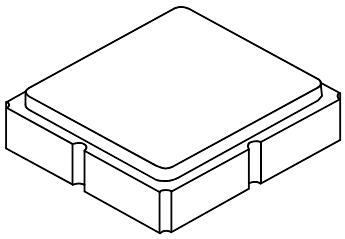
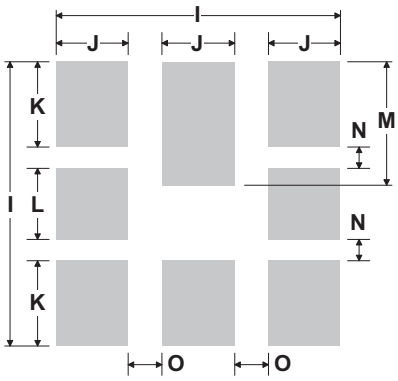
# 8-Terminal Ceramic Surface-Mount Case
# 3.0 X 3.0 mm Nominal Footprint






**PCB Footprint Top View**

**Case and PCB Footprint Dimensions**

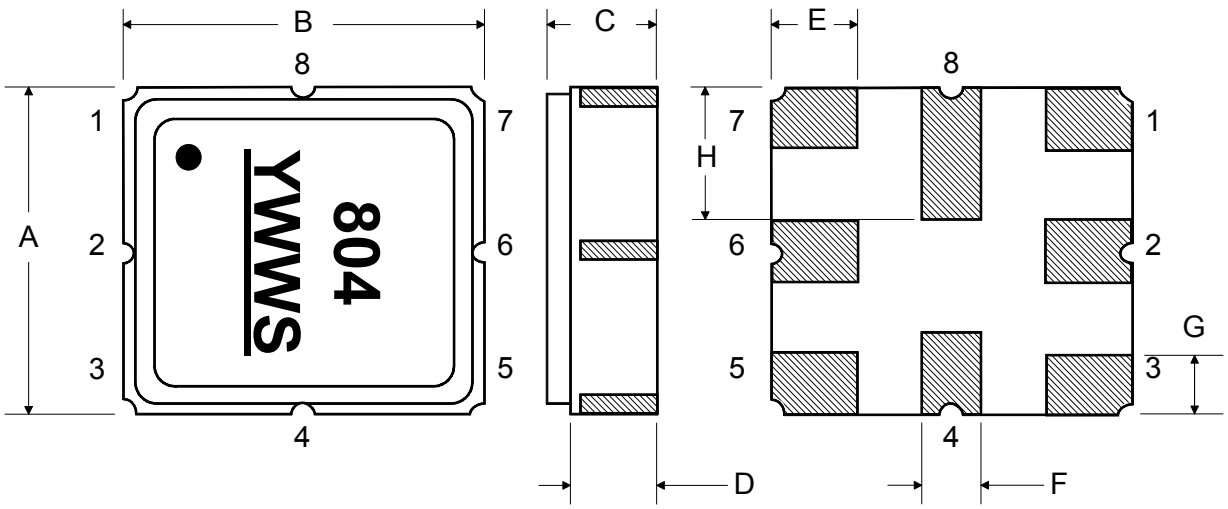
| Dimension | mm | | | Inches | | |
|---|---|---|---|---|---|---|
| | Min | Nom | Max | Min | Nom | Max |
| A | 2.87 | 3.0 | 3.13 | 0.113 | 0.118 | 0.123 |
| B | 2.87 | 3.0 | 3.13 | 0.113 | 0.118 | 0.123 |
| C | 1.14 | 1.27 | 1.40 | 0.045 | 0.050 | 0.055 |
| D | 0.79 | 0.92 | 1.05 | 0.031 | 0.036 | 0.041 |
| E | 0.62 | 0.75 | 0.88 | 0.024 | 0.029 | 0.034 |
| F | 0.47 | 0.60 | 0.73 | 0.018 | 0.024 | 0.029 |
| G | 0.47 | 0.60 | 0.73 | 0.018 | 0.024 | 0.029 |
| H | 1.07 | 1.20 | 1.33 | 0.042 | 0.047 | 0.052 |
| I | | 3.19 | | | 0.126 | |
| J | | 0.81 | | | 0.032 | |
| K | | 0.96 | | | 0.038 | |
| L | | 0.81 | | | 0.032 | |
| M | | 1.39 | | | 0.055 | |
| N | | 0.23 | | | 0.009 | |
| O | | 0.38 | | | 0.015 | |

**Case Materials**

| Materials | |
|---|---|
| Solder Pad Plating | 0.3 to 1.0 µm Gold over 1.27 to 8.89 µm Nickel |
| Lid Plating | 2.0 to 3.0 µm Nickel |
| Body | $Al_2O_3$ Ceramic |
| Pb Free | |

TOP VIEW

BOTTOM VIEW

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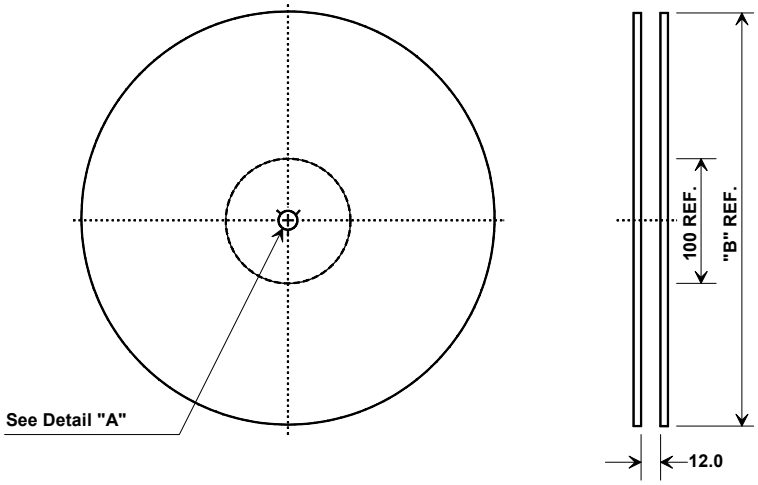
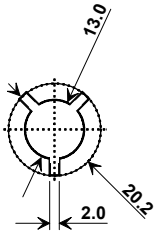
## Tape and Reel Specifications

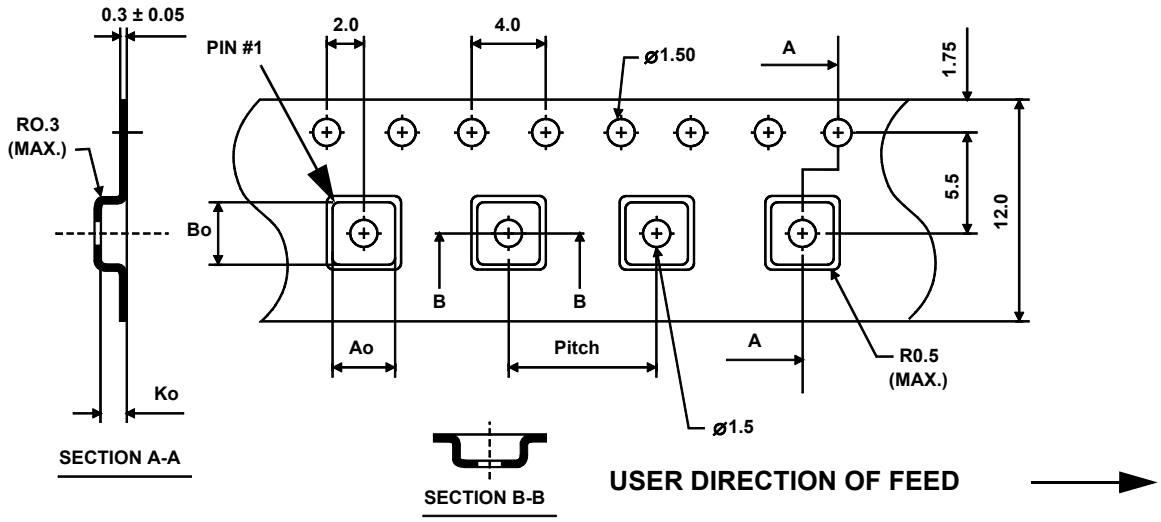



| "B " Nominal Size | | Quantity Per Reel |
|---|---|---|
| Inches | millimeters | |
| 7 | 178 | 1000 |
| 13 | 330 | 3000 |




| Carrier Tape Dimensions | |
|---|---|
| Ao | 3.35 mm |
| Bo | 3.35 mm |
| Ko | 1.4 mm |
| Pitch | 8.0 mm |
| W | 12.0 mm |

### COMPONENT ORIENTATION and DIMENSIONS

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