



- **Low Insertion Loss**
- **Excellent Selectivity**
- **Hermetic 13.3 X 6.5 mm Surface-mount Case**
- **Single-ended Input and Output**
- **Complies with Directive 2002/95/EC (RoHS)**

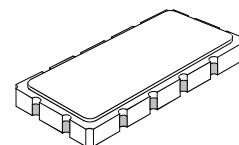


#### Absolute Maximum Ratings

| Rating                                                       | Value          | Units |
|--------------------------------------------------------------|----------------|-------|
| Maximum Incident Power in Passband                           | +10            | dBm   |
| Maximum DC Voltage Between any 2 Terminals                   | 30             | VDC   |
| Storage Temperature Range                                    | -40 to +85     | °C    |
| Suitable for Lead-free Soldering - Maximum Soldering Profile | 260°C for 30 s |       |

**PX1004-1**

**82.2 MHz  
SAW Filter**



**SM13365-12**

#### Electrical Characteristics

| Characteristic                                                  | Sym             | Notes   | Min   | Typ | Max | Units             |
|-----------------------------------------------------------------|-----------------|---------|-------|-----|-----|-------------------|
| Nominal Center Frequency                                        | $f_c$           | 1       | 82.20 |     |     | MHz               |
| Passband Insertion Loss at $f_c$                                | IL              | 1, 2    |       | 3.0 | 5.5 | dB                |
| 3 dB Passband                                                   | BW <sub>3</sub> |         | ±25   | ±42 |     | kHz               |
| Amplitude Ripple over $f_c$ ±15 kHz                             |                 |         |       |     | 1.0 | dB <sub>p-p</sub> |
| Group Delay Variation over $f_c$ ±17 kHz                        | GDV             |         |       |     | 6.0 | µs <sub>p-p</sub> |
| Third-Order Intermod. for -20 dBm tones at $f_c$ ±100 & 200 kHz |                 |         |       |     | -95 | dBm               |
| Rejection $f_c$ ±100 kHz                                        |                 | 1, 2, 3 | 11    | 16  |     | dB                |
| $f_c$ -1500 kHz to $f_c$ -1600 kHz                              |                 |         | 65    |     |     |                   |
| Ultimate                                                        |                 |         |       | 65  |     |                   |
| Operating Temperature Range                                     | T <sub>A</sub>  | 1       | -20   |     | +70 | °C                |

|                                                 |                                            |
|-------------------------------------------------|--------------------------------------------|
| Impedance Matching to 50 Ω unbalanced           | External L-C                               |
| Case Style                                      | SM13365-12 13.3 X 6.5 mm Nominal Footprint |
| Lid Symbolization (YY=year, WW=week) See note 4 | RFM PX1004-1 YYWW                          |

#### Electrical Connections

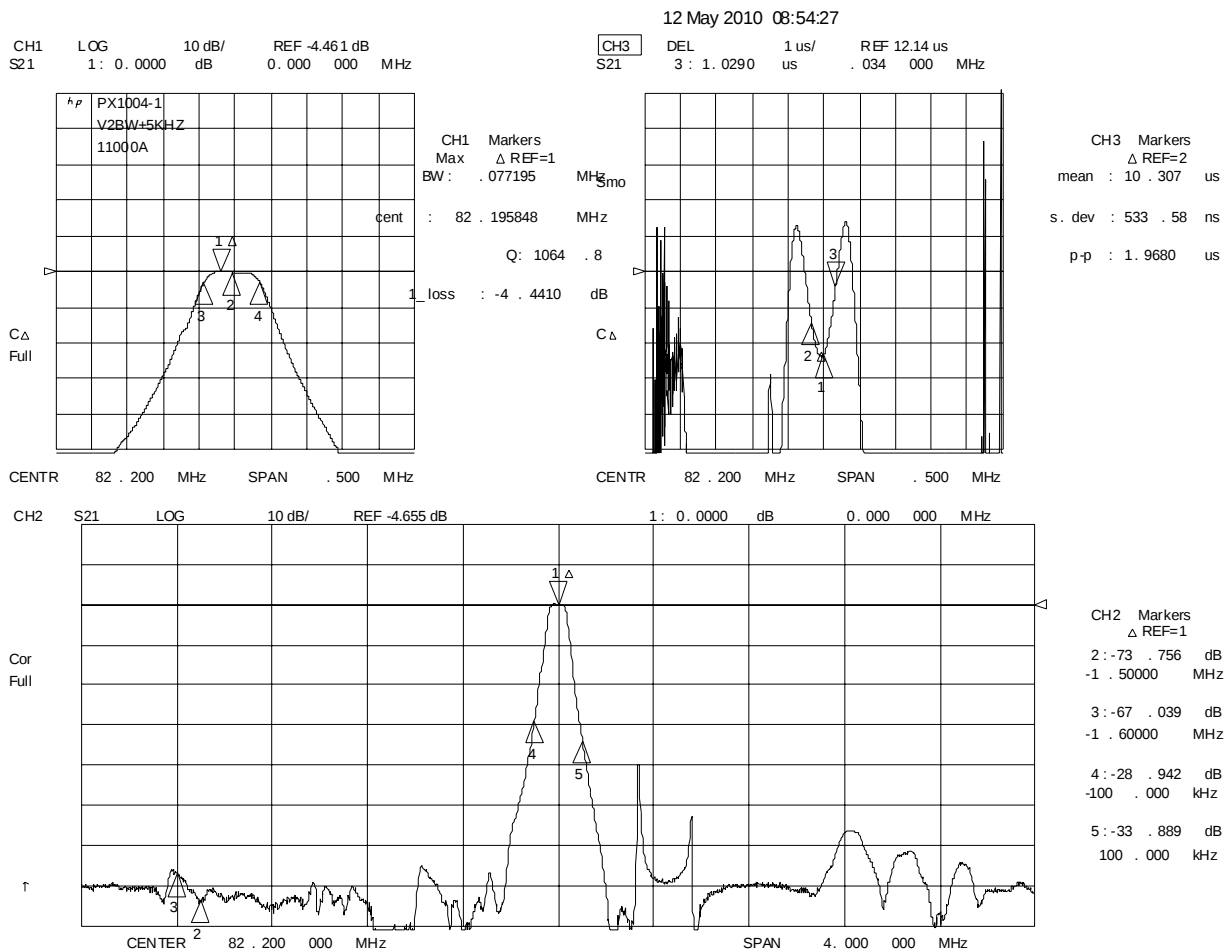
| Connection        | Terminals  |
|-------------------|------------|
| Port 1 Hot        | 2          |
| Port 1 Gnd Return | 3          |
| Port 2 Hot        | 8          |
| Port 2 Gnd Return | 9          |
| Case Ground       | All Others |

#### Notes:

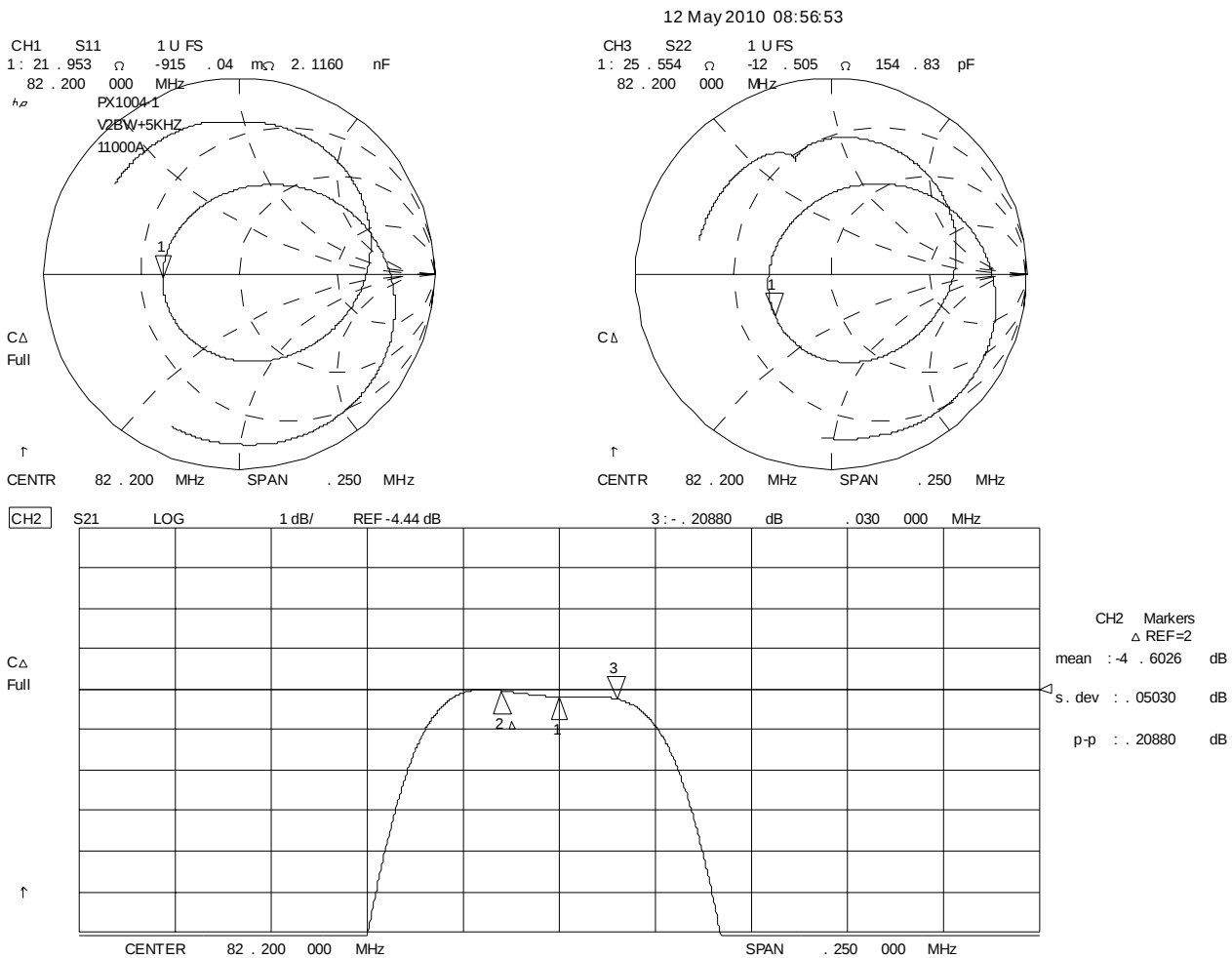
1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency,  $f_c$ .
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. "LRIP" or "L" after the part number indicates "low rate initial production" and "ENG" or "E" indicates "engineering prototypes."
5. The design, manufacturing process, and specifications of this filter are subject to change.
6. Either Port 1 or Port 2 may be used for either input or output in the design. However, impedances and impedance matching may vary between Port 1 and Port 2, so that the filter must always be installed in one direction per the circuit design.
7. US and international patents may apply.
8. RFM, stylized RFM logo, and RF Monolithics, Inc. are registered trademarks of RF Monolithics, Inc.
9. Electrostatic Sensitive Device. Observe precautions for handling.



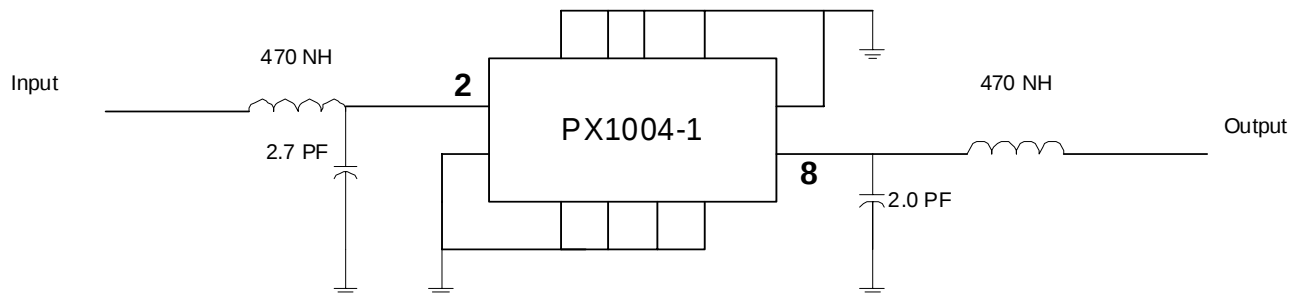
## Amplitude and Group Delay Plots



## Input/Output Impedance and Passband Amplitude Plots

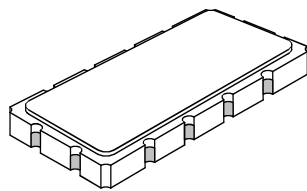


## Filter Test Circuit



SM13365-12 Ceramic 12-Terminal Surface-Mount Case

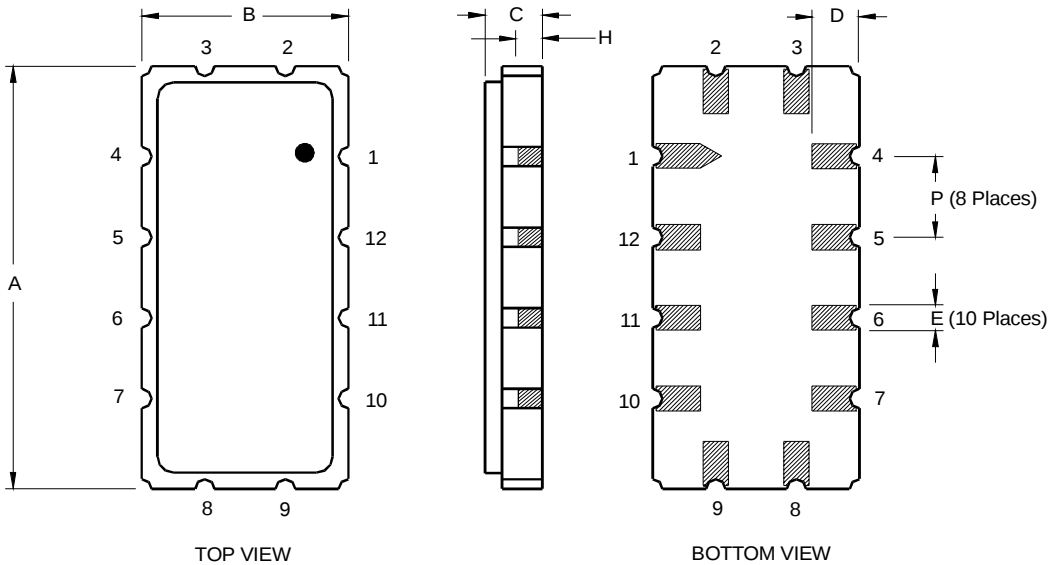
13.3 x 6.5 mm Nominal Footprint



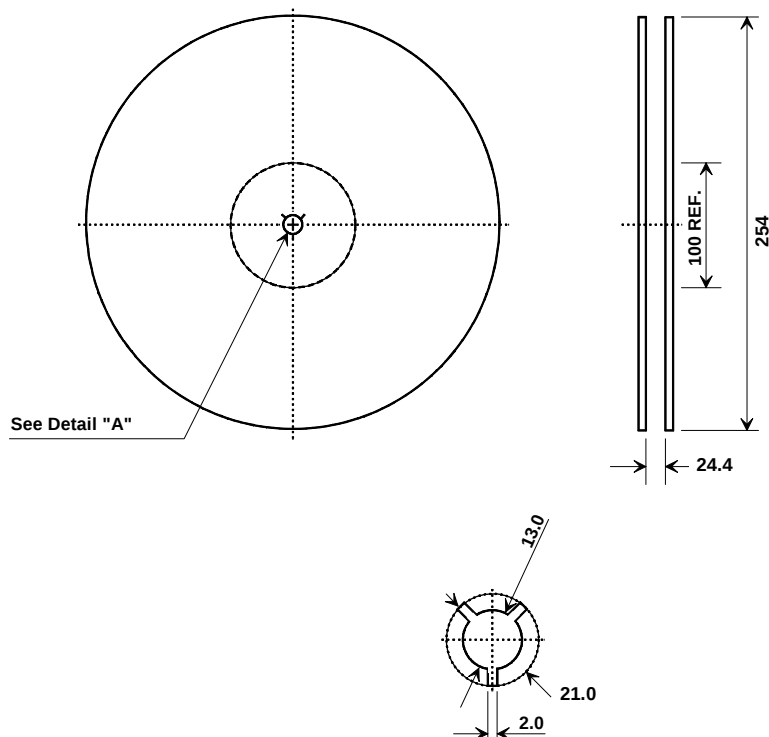
| Case Dimensions |       |       |       |        |       |       |
|-----------------|-------|-------|-------|--------|-------|-------|
| Dimension       | mm    |       |       | Inches |       |       |
|                 | Min   | Nom   | Max   | Min    | Nom   | Max   |
| A               | 13.08 | 13.31 | 13.60 | 0.515  | 0.524 | 0.535 |
| B               | 6.27  | 6.50  | 6.80  | 0.247  | 0.256 | 0.268 |
| C               |       | 1.91  | 2.00  |        | 0.075 | 0.079 |
| D               |       | 1.50  |       |        | 0.059 |       |
| E               |       | 0.79  |       |        | 0.031 |       |
| H               |       | 1.0   |       |        | 0.039 |       |
| P               |       | 2.54  |       |        | 0.100 |       |

| Materials          |                                                          |
|--------------------|----------------------------------------------------------|
| Solder Pad Plating | 0.3 to 1.0 $\mu$ m Gold over 1.27 to 8.89 $\mu$ m Nickel |
| Lid Plating        | 2.0 to 3.0 $\mu$ m Nickel                                |
| Body               | Al <sub>2</sub> O <sub>3</sub> Ceramic                   |
| Pb Free            |                                                          |

| Electrical Connections |        |                  |
|------------------------|--------|------------------|
| Connection             |        | Terminals        |
| Port 1                 | Input  | 2                |
|                        | Return | 3                |
| Port 2                 | Output | 8                |
|                        | Return | 9                |
| Ground                 |        | All others       |
| Single-ended Operation |        | Return is ground |



## Tape and Reel Specifications



| Quantity Per Reel |
|-------------------|
| 1000              |

## COMPONENT ORIENTATION and DIMENSIONS

| Carrier Tape Dimensions |         |
|-------------------------|---------|
| Ao                      | 7.0 mm  |
| Bo                      | 13.8 mm |
| Ko                      | 2.0 mm  |
| Pitch                   | 12.0 mm |
| W                       | 24.0 mm |

