

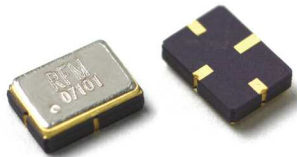
High performance wireless components integral to enabling wireless connections and communications; embedded into a wide range of products.

**6 MHz – 2.6 GHz**

**SMALL SIZE**

**LOW COST**

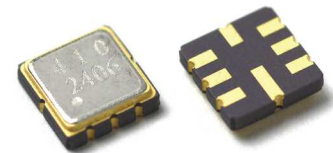
**LOW POWER CONSUMPTION**



All RFM SAW Resonators are RoHS compliant.

**SAW Resonators (pages 26-28).** Low-power SAW resonators are used as frequency control elements in transmitter and receiver LO circuits. These components are essential to the miniature radio frequency transmitters and receivers that enable a variety of wireless consumer, automotive, industrial, medical and commercial applications. RFM manufactures reliable, high performance, low-cost components in a variety of small surface-mount packages as well as the traditional TO39 "metal can" package.

**SAW Narrowband Front-End Filters (pages 29-30).** The use of narrowband SAW filters has become a necessity in a variety of wireless links. RFM SAW coupled resonators filter components are used as narrowband front-end filters for receivers to reject strong out of band signals. RFM has an extensive offering of low-cost, rugged, narrowband SAW front-end filters in a broad range of frequencies and a variety of small packages. These low-cost front-end filters exhibit excellent rejection characteristics, low insertion loss and superior temperature stability.



All RFM SAW Narrowband Front-End Filters are RoHS compliant.



All RFM SAW RF/IF Filters are RoHS compliant.

**SAW RF/IF Filters (pages 31-36).** RFM filter products includes a variety of standard and custom bandpass filters for radio frequency (RF), intermediate frequency (IF) and other applications. The operating frequencies of these filters range from 40 MHz to 2.6 GHz. These filters are available in a variety of leaded and surface-mount packages. RFM also custom designs and manufactures SAW delay lines and notch filters.

**Frequency Control (pages 37-38).** RFM Frequency Control products include a broad array of devices:

- SAW-stabilized Optical Timing Clocks and Diff-Sine Wave Clocks and Oscillators in a wide range of operating frequencies between 200 MHz and 1.8 GHz. These frequency sources exhibit very low phase noise and jitter. They have tolerances of 100 ppm basic stability, or the ability to phase lock to high-stability system clocks.
- A variety of tiny, high performance Crystal-based devices used in both time and frequency domain applications.



All RFM Frequency Control products are RoHS compliant.

RFM provides a large selection of SAW resonators in a broad range of frequencies from 300 MHz to over 1 GHz. These products are designed to be the frequency control elements in transmitters and receiver local oscillators. Their use allows reduced receiver bandwidths, which results in improved sensitivity and immunity to interference. Tighter center frequency tolerances are becoming popular especially in Europe. RFM can provide tolerances down to  $\pm 50$  kHz. These quartz-stabilized devices ensure maximum temperature performance in a variety of applications.

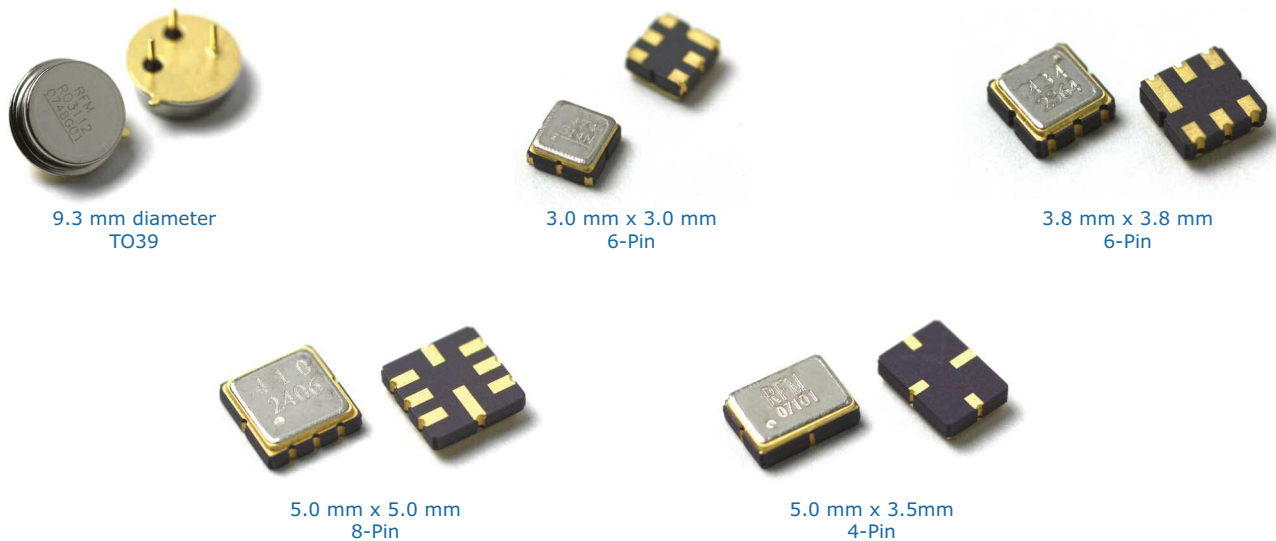
**Applications**

- Automotive keyless entry
- Tire pressure monitoring
- GPS receivers
- Wireless point-of-sale terminals
- Data link equipment
- Peripherals
- High Performance Computing
- Remote bar code data entry
- Bar code readers
- Identification tags
- Home automation
- Door and gate openers
- Personal and home security
- Automated meter reading
- Consumer sports

**Packaging and Minimum Order Quantities.** RO resonator products are packaged in both TO39 leaded packages and a variety of surface-mount packages (SMT). The TO39 packaged resonators are shipped in antistatic shipping tubes with a quantity of 50 pieces per tube.

The SMT packaged resonators are shipped in tape and reel with 500 units in 7" tape and reel, and 3,000 or 4,000 units on 13" tape and reel. Resonators are sold by the tape and reel. Contact a sales rep, distributor, or stocking rep / distributor near you to request samples or your evaluations and / or prototype designs. For package options, see RF COMPONENTS PACKAGE SELECTION GUIDE on page 39.

RFM is currently manufacturing both the TO39 and SMT versions of one-port resonators in high volumes.



9.3 mm diameter  
TO39

3.0 mm x 3.0 mm  
6-Pin

3.8 mm x 3.8 mm  
6-Pin

5.0 mm x 5.0 mm  
8-Pin

5.0 mm x 3.5mm  
4-Pin

**Port Type.** The SAW Resonator product family includes one (Single Port) and two port (Dual Port) types. The RO series is a line of true single-port devices with a lumped element model that is similar to that of a bulk crystal device. Single-port resonators are typically used in modified Colpitts oscillator configurations where the resonator is connected between the base of a transistor and ground.

| Dual-Port Resonators |             |            |                |
|----------------------|-------------|------------|----------------|
| RFM Part             | Freq. (MHz) | Lid Symbol | Case           |
| <b>RP1104</b>        | 824.25      | P1104      | 9.3mm diameter |
| <b>RP1105</b>        | 640         | P1105      | 9.3mm diameter |
| <b>RP1236-1</b>      | 312         | RP1236-1   | 9.3mm diameter |
| <b>RP1298-2</b>      | 423.22      | RP1298-2   | 9.3mm diameter |
| <b>RP1298</b>        | 423.22      | P1298      | 9.3mm diameter |
| <b>RP1308</b>        | 433.92      | P1308      | 9.3mm diameter |

See Single-Port Resonators next page.

All RFM SAW Resonators are RoHS compliant.



# SAW RESONATORS

Listed in Order by Part Number

RFM RF Components  
are Manufactured in  
ISO 9001 / TS 16949  
Certified Factories

## Single-Port Resonators in Order by Part Number

| RFM Part          | Freq (MHz) | Lid Symbol | Case           |
|-------------------|------------|------------|----------------|
| <b>RO2043</b>     | 303.875    | RO2043     | 9.3mm diameter |
| <b>RO2055</b>     | 403.966    | RO2055     | 9.3mm diameter |
| <b>RO2073</b>     | 315        | RO2073     | 9.3mm diameter |
| <b>RO2073C</b>    | 315        | 412        | 5.0 x 5.0      |
| <b>RO2073D</b>    | 315        | 442        | 3.8 x 3.8      |
| <b>RO2078</b>     | 315.05     | RO2078     | 9.3mm diameter |
| <b>RO2100</b>     | 295.05     | RO2100     | 9.3mm diameter |
| <b>RO2101</b>     | 433.92     | RO2101     | 9.3mm diameter |
| <b>RO2101C</b>    | 433.92     | 411        | 5.0 x 5.0      |
| <b>RO2101D</b>    | 433.92     | 439        | 3.8 x 3.8      |
| <b>RO2102</b>     | 423.22     | RO2102     | 9.3mm diameter |
| <b>RO2103</b>     | 418        | RO2103     | 9.3mm diameter |
| <b>RO2104</b>     | 303.825    | RO2104     | 9.3mm diameter |
| <b>RO2112C</b>    | 433.42     | 438        | 5.0 x 5.0      |
| <b>RO2112D</b>    | 433.42     | 467        | 3.8 x 3.8      |
| <b>RO2115</b>     | 417.5      | RO2115     | 9.3mm diameter |
| <b>RO2131D</b>    | 314.35     | 440        | 3.8 x 3.8      |
| <b>RO3023</b>     | 433.97     | RO3023     | 9.3mm diameter |
| <b>RO3023A-1</b>  | 433.97     | 718        | 5.0 x 3.5      |
| <b>RO3030A-1</b>  | 314.2      | 830        | 5.0 x 3.5      |
| <b>RO3053A-1</b>  | 310        | 810        | 5.0 x 3.5      |
| <b>RO3073</b>     | 315        | RO3073     | 9.3mm diameter |
| <b>RO3073A</b>    | 315        | 656        | 5.0 x 3.5      |
| <b>RO3073A-1</b>  | 315        | 742        | 5.0 x 3.5      |
| <b>RO3073A-5</b>  | 315.05     | 788        | 5.0 x 3.5      |
| <b>RO3073A-6</b>  | 315        | 789        | 5.0 x 3.5      |
| <b>RO3073A-11</b> | 315        | 907        | 5.0 x 3.5      |
| <b>RO3073A-14</b> | 315        | 915        | 5.0 x 3.5      |
| <b>RO3073C</b>    | 315        | 706        | 5.0 x 5.0      |
| <b>RO3073D</b>    | 315        | 705        | 3.8 x 3.8      |
| <b>RO3073E</b>    | 315        | 704        | 3.0 x 3.0      |
| <b>RO3073E-1</b>  | 315        | 802        | 3.0 x 3.0      |
| <b>RO3073E-11</b> | 315        | 909        | 3.0 x 3.0      |
| <b>RO3073E-14</b> | 315        | 908        | 3.0 x 3.0      |
| <b>RO3075</b>     | 345        | RO3075     | 9.3mm diameter |
| <b>RO3075A</b>    | 345        | 664        | 5.0 x 3.5      |
| <b>RO3075E</b>    | 345        | 694        | 3.0 x 3.0      |
| <b>RO3101</b>     | 433.92     | RO3101     | 9.3mm diameter |
| <b>RO3101A</b>    | 433.92     | 655        | 5.0 x 3.5      |
| <b>RO3101A-1</b>  | 433.92     | 745        | 5.0 x 3.5      |
| <b>RO3101A-11</b> | 433.92     | 904        | 5.0 x 3.5      |
| <b>RO3101A-14</b> | 433.92     | 903        | 5.0 x 3.5      |
| <b>RO3101A-21</b> | 433.92     | 807        | 5.0 x 3.5      |
| <b>RO3101C</b>    | 433.92     | 703        | 5.0 x 5.0      |
| <b>RO3101D</b>    | 433.92     | 702        | 3.8 x 3.8      |
| <b>RO3101E</b>    | 433.92     | 701        | 3.0 x 3.0      |
| <b>RO3101E-1</b>  | 433.92     | 750        | 3.0 x 3.0      |
| <b>RO3101E-11</b> | 433.92     | 894        | 3.0 x 3.0      |
| <b>RO3101E-14</b> | 433.92     | 902        | 3.0 x 3.0      |
| <b>RO3102</b>     | 423.22     | RO3102     | 9.3mm diameter |
| <b>RO3102A</b>    | 423.22     | 823        | 5.0 x 3.5      |
| <b>RO3102A-1</b>  | 423.22     | 784        | 5.0 x 3.5      |
| <b>RO3103</b>     | 418        | RO3103     | 9.3mm diameter |
| <b>RO3103A</b>    | 418        | 659        | 5.0 x 3.5      |
| <b>RO3103D</b>    | 418        | 717        | 3.8 x 3.8      |
| <b>RO3103E</b>    | 418        | 676        | 3.0 x 3.0      |
| <b>RO3104</b>     | 303.825    | RO3104     | 9.3mm diameter |
| <b>RO3104A</b>    | 303.825    | 662        | 5.0 x 3.5      |
| <b>RO3104C</b>    | 303.825    | 688        | 5.0 x 5.0      |
| <b>RO3104D</b>    | 303.825    | 689        | 3.8 x 3.8      |
| <b>RO3104E</b>    | 303.825    | 690        | 3.0 x 3.0      |
| <b>RO3112</b>     | 433.42     | RO3112     | 9.3mm diameter |
| <b>RO3112A</b>    | 433.42     | 658        | 5.0 x 3.5      |
| <b>RO3112C</b>    | 433.42     | 657        | 5.0 x 5.0      |

## Single-Port Resonators in Order by Part Number

| RFM Part         | Freq (MHz) | Lid Symbol | Case           |
|------------------|------------|------------|----------------|
| <b>RO3112D</b>   | 433.42     | 683        | 3.8 x 3.8      |
| <b>RO3112E</b>   | 433.42     | 684        | 3.0 x 3.0      |
| <b>RO3113</b>    | 314.5      | RO3113     | 9.3mm diameter |
| <b>RO3113A</b>   | 314.5      | 801        | 5.0 x 3.5      |
| <b>RO3115</b>    | 417.5      | RO3115     | 9.3mm diameter |
| <b>RO3115A</b>   | 417.5      | 833        | 5.0 x 3.5      |
| <b>RO3116</b>    | 303.325    | RO3116     | 9.3mm diameter |
| <b>RO3116A</b>   | 303.325    | 819        | 5.0 x 3.5      |
| <b>RO3118</b>    | 318        | RO3118     | 9.3mm diameter |
| <b>RO3118A</b>   | 318        | 661        | 5.0 x 3.5      |
| <b>RO3118D</b>   | 318        | 716        | 3.8 x 3.8      |
| <b>RO3118E</b>   | 318        | 687        | 3.0 x 3.0      |
| <b>RO3119A</b>   | 317.5      | 834        | 5.0 x 3.5      |
| <b>RO3120A</b>   | 403.55     | 824        | 5.0 x 3.5      |
| <b>RO3122A</b>   | 293.125    | 835        | 5.0 x 3.5      |
| <b>RO3123A</b>   | 307.3      | 831        | 5.0 x 3.5      |
| <b>RO3125</b>    | 304.3      | RO3125     | 9.3mm diameter |
| <b>RO3125A</b>   | 304.3      | 787        | 5.0 x 3.5      |
| <b>RO3125A-2</b> | 304.3      | 815        | 5.0 x 3.5      |
| <b>RO3131A</b>   | 314.35     | 849        | 5.0 x 3.5      |
| <b>RO3132A</b>   | 312        | 794        | 5.0 x 3.5      |
| <b>RO3134A</b>   | 372.5      | 836        | 5.0 x 3.5      |
| <b>RO3135A</b>   | 319.508    | 839        | 5.0 x 3.5      |
| <b>RO3136A</b>   | 432.92     | 850        | 5.0 x 3.5      |
| <b>RO3138A</b>   | 407.3      | 837        | 5.0 x 3.5      |
| <b>RO3143A</b>   | 372        | 820        | 5.0 x 3.5      |
| <b>RO3144</b>    | 916.5      | RO3144     | 9.3mm diameter |
| <b>RO3144A</b>   | 916.5      | 663        | 5.0 x 3.5      |
| <b>RO3144A-1</b> | 916.5      | 897        | 5.0 x 3.5      |
| <b>RO3144A-2</b> | 916.5      | 813        | 5.0 x 3.5      |
| <b>RO3144C</b>   | 916.5      | 691        | 5.0 x 5.0      |
| <b>RO3144D</b>   | 916.5      | 692        | 3.8 x 3.8      |
| <b>RO3144D-1</b> | 916.5      | 767        | 3.8 x 3.8      |
| <b>RO3144D-2</b> | 916.5      | 768        | 3.8 x 3.8      |
| <b>RO3144E</b>   | 916.5      | 693        | 3.0 x 3.0      |
| <b>RO3144E-1</b> | 916.5      | 769        | 3.0 x 3.0      |
| <b>RO3144E-2</b> | 916.5      | 770        | 3.0 x 3.0      |
| <b>RO3150A</b>   | 304        | 838        | 5.0 x 3.5      |
| <b>RO3156A</b>   | 868.95     | 714        | 5.0 x 3.5      |
| <b>RO3156A-1</b> | 868.95     | 923        | 5.0 x 3.5      |
| <b>RO3156A-2</b> | 868.95     | 828        | 5.0 x 3.5      |
| <b>RO3156A-3</b> | 868.95     | 808        | 5.0 x 3.5      |
| <b>RO3156D</b>   | 868.95     | 715        | 3.8 x 3.8      |
| <b>RO3156D-1</b> | 868.95     | 924        | 3.8 x 3.8      |
| <b>RO3156D-2</b> | 868.95     | 925        | 3.8 x 3.8      |
| <b>RO3156E</b>   | 868.95     | 707        | 3.0 x 3.0      |
| <b>RO3156E-1</b> | 868.95     | 708        | 3.0 x 3.0      |
| <b>RO3156E-2</b> | 868.95     | 926        | 3.0 x 3.0      |
| <b>RO3164</b>    | 868.35     | RO3164     | 9.3mm diameter |
| <b>RO3164A</b>   | 868.35     | 660        | 5.0 x 3.5      |
| <b>RO3164A-1</b> | 868.35     | 780        | 5.0 x 3.5      |
| <b>RO3164A-2</b> | 868.35     | 868        | 5.0 x 3.5      |
| <b>RO3164A-3</b> | 868.35     | 814        | 5.0 x 3.5      |
| <b>RO3164C</b>   | 868.35     | 799        | 5.0 x 5.0      |
| <b>RO3164D</b>   | 868.35     | 685        | 3.8 x 3.8      |
| <b>RO3164D-1</b> | 868.35     | 771        | 3.8 x 3.8      |
| <b>RO3164D-2</b> | 868.35     | 772        | 3.8 x 3.8      |
| <b>RO3164E</b>   | 868.35     | 686        | 3.0 x 3.0      |
| <b>RO3164E-1</b> | 868.35     | 773        | 3.0 x 3.0      |
| <b>RO3164E-2</b> | 868.35     | 774        | 3.0 x 3.0      |
| <b>RO3188A</b>   | 390        | 797        | 5.0 x 3.5      |
| <b>RO3193A</b>   | 379.3      | 832        | 5.0 x 3.5      |
| <b>RO3300E</b>   | 403.55     | 719        | 3.0 x 3.0      |

All RFM SAW Resonators are RoHS compliant.



# SAW RESONATORS

Listed in Order by Frequency

RFM RF Components  
are Manufactured in  
ISO 9001 / TS 16949  
Certified Factories

| Single-Port Resonators in Order by Frequency |            |            |                |
|--|------------|------------|----------------|
| RFM Part                                     | Freq (MHz) | Lid Symbol | Case           |
| RO3122A                                      | 293.125    | 835        | 5.0 x 3.5      |
| RO2100                                       | 295.05     | RO2100     | 9.3mm diameter |
| RO3116                                       | 303.325    | RO3116     | 9.3mm diameter |
| RO3116A                                      | 303.325    | 819        | 5.0 x 3.5      |
| RO2104                                       | 303.825    | RO2104     | 9.3mm diameter |
| RO3104                                       | 303.825    | RO3104     | 9.3mm diameter |
| RO3104A                                      | 303.825    | 662        | 5.0 x 3.5      |
| RO3104C                                      | 303.825    | 688        | 5.0 x 5.0      |
| RO3104D                                      | 303.825    | 689        | 3.8 x 3.8      |
| RO3104E                                      | 303.825    | 690        | 3.0 x 3.0      |
| RO2043                                       | 303.875    | RO2043     | 9.3mm diameter |
| RO3150A                                      | 304        | 838        | 5.0 x 3.5      |
| RO3125                                       | 304.3      | RO3125     | 9.3mm diameter |
| RO3125A                                      | 304.3      | 787        | 5.0 x 3.5      |
| RO3125A-2                                    | 304.3      | 815        | 5.0 x 3.5      |
| RO3123A                                      | 307.3      | 831        | 5.0 x 3.5      |
| RO3053A-1                                    | 310        | 810        | 5.0 x 3.5      |
| RO3132A                                      | 312        | 794        | 5.0 x 3.5      |
| RO3030A-1                                    | 314.2      | 830        | 5.0 x 3.5      |
| RO2131D                                      | 314.35     | 440        | 3.8 x 3.8      |
| RO3131A                                      | 314.35     | 849        | 5.0 x 3.5      |
| RO3113                                       | 314.5      | RO3113     | 9.3mm diameter |
| RO3113A                                      | 314.5      | 801        | 5.0 x 3.5      |
| RO2073                                       | 315        | RO2073     | 9.3mm diameter |
| RO2073C                                      | 315        | 412        | 5.0 x 5.0      |
| RO2073D                                      | 315        | 442        | 3.8 x 3.8      |
| RO3073                                       | 315        | RO3073     | 9.3mm diameter |
| RO3073A                                      | 315        | 656        | 5.0 x 3.5      |
| RO3073A-1                                    | 315        | 742        | 5.0 x 3.5      |
| RO3073A-11                                   | 315        | 907        | 5.0 x 3.5      |
| RO3073A-14                                   | 315        | 915        | 5.0 x 3.5      |
| RO3073A-6                                    | 315        | 789        | 5.0 x 3.5      |
| RO3073C                                      | 315        | 706        | 5.0 x 5.0      |
| RO3073D                                      | 315        | 705        | 3.8 x 3.8      |
| RO3073E                                      | 315        | 704        | 3.0 x 3.0      |
| RO3073E-1                                    | 315        | 802        | 3.0 x 3.0      |
| RO3073E-11                                   | 315        | 909        | 3.0 x 3.0      |
| RO3073E-14                                   | 315        | 908        | 3.0 x 3.0      |
| RO2078                                       | 315.05     | RO2078     | 9.3mm diameter |
| RO3073A-5                                    | 315.05     | 788        | 5.0 x 3.5      |
| RO3119A                                      | 317.5      | 834        | 5.0 x 3.5      |
| RO3118                                       | 318        | RO3118     | 9.3mm diameter |
| RO3118A                                      | 318        | 661        | 5.0 x 3.5      |
| RO3118D                                      | 318        | 716        | 3.8 x 3.8      |
| RO3118E                                      | 318        | 687        | 3.0 x 3.0      |
| RO3135A                                      | 319.508    | 839        | 5.0 x 3.5      |
| RO3075                                       | 345        | RO3075     | 9.3mm diameter |
| RO3075A                                      | 345        | 664        | 5.0 x 3.5      |
| RO3075E                                      | 345        | 694        | 3.0 x 3.0      |
| RO3143A                                      | 372        | 820        | 5.0 x 3.5      |
| RO3134A                                      | 372.5      | 836        | 5.0 x 3.5      |
| RO3193A                                      | 379.3      | 832        | 5.0 x 3.5      |
| RO3188A                                      | 390        | 797        | 5.0 x 3.5      |
| RO3120A                                      | 403.55     | 824        | 5.0 x 3.5      |
| RO3300E                                      | 403.55     | 719        | 3.0 x 3.0      |
| RO2055                                       | 403.966    | RO2055     | 9.3mm diameter |
| RO3138A                                      | 407.3      | 837        | 5.0 x 3.5      |
| RO2115                                       | 417.5      | RO2115     | 9.3mm diameter |
| RO3115                                       | 417.5      | RO3115     | 9.3mm diameter |
| RO3115A                                      | 417.5      | 833        | 5.0 x 3.5      |
| RO2103                                       | 418        | RO2103     | 9.3mm diameter |
| RO3103                                       | 418        | RO3103     | 9.3mm diameter |
| RO3103A                                      | 418        | 659        | 5.0 x 3.5      |
| RO3103D                                      | 418        | 717        | 3.8 x 3.8      |

| Single-Port Resonators in Order by Frequency |            |            |                |
|--|------------|------------|----------------|
| RFM Part                                     | Freq (MHz) | Lid Symbol | Case           |
| RO3103E                                      | 418        | 676        | 3.0 x 3.0      |
| RO2102                                       | 423.22     | RO2102     | 9.3mm diameter |
| RO3102                                       | 423.22     | RO3102     | 9.3mm diameter |
| RO3102A                                      | 423.22     | 823        | 5.0 x 3.5      |
| RO3102A-1                                    | 423.22     | 784        | 5.0 x 3.5      |
| RO3136A                                      | 432.92     | 850        | 5.0 x 3.5      |
| RO2112C                                      | 433.42     | 438        | 5.0 x 5.0      |
| RO2112D                                      | 433.42     | 467        | 3.8 x 3.8      |
| RO3112                                       | 433.42     | RO3112     | 9.3mm diameter |
| RO3112A                                      | 433.42     | 658        | 5.0 x 3.5      |
| RO3112C                                      | 433.42     | 657        | 5.0 x 5.0      |
| RO3112D                                      | 433.42     | 683        | 3.8 x 3.8      |
| RO3112E                                      | 433.42     | 684        | 3.0 x 3.0      |
| RO2101                                       | 433.92     | RO2101     | 9.3mm diameter |
| RO2101C                                      | 433.92     | 411        | 5.0 x 5.0      |
| RO2101D                                      | 433.92     | 439        | 3.8 x 3.8      |
| RO3101                                       | 433.92     | RO3101     | 9.3mm diameter |
| RO3101A                                      | 433.92     | 655        | 5.0 x 3.5      |
| RO3101A-1                                    | 433.92     | 745        | 5.0 x 3.5      |
| RO3101A-11                                   | 433.92     | 904        | 5.0 x 3.5      |
| RO3101A-14                                   | 433.92     | 903        | 5.0 x 3.5      |
| RO3101A-21                                   | 433.92     | 807        | 5.0 x 3.5      |
| RO3101C                                      | 433.92     | 703        | 5.0 x 5.0      |
| RO3101D                                      | 433.92     | 702        | 3.8 x 3.8      |
| RO3101E                                      | 433.92     | 701        | 3.0 x 3.0      |
| RO3101E-1                                    | 433.92     | 750        | 3.0 x 3.0      |
| RO3101E-11                                   | 433.92     | 894        | 3.0 x 3.0      |
| RO3101E-14                                   | 433.92     | 902        | 3.0 x 3.0      |
| RO3023                                       | 433.97     | RO3023     | 9.3mm diameter |
| RO3023A-1                                    | 433.97     | 718        | 5.0 x 3.5      |
| RO3164                                       | 868.35     | RO3164     | 9.3mm diameter |
| RO3164A                                      | 868.35     | 660        | 5.0 x 3.5      |
| RO3164A-1                                    | 868.35     | 780        | 5.0 x 3.5      |
| RO3164A-2                                    | 868.35     | 868        | 5.0 x 3.5      |
| RO3164A-3                                    | 868.35     | 814        | 5.0 x 3.5      |
| RO3164C                                      | 868.35     | 799        | 5.0 x 5.0      |
| RO3164D                                      | 868.35     | 685        | 3.8 x 3.8      |
| RO3164D-1                                    | 868.35     | 771        | 3.8 x 3.8      |
| RO3164D-2                                    | 868.35     | 772        | 3.8 x 3.8      |
| RO3164E                                      | 868.35     | 686        | 3.0 x 3.0      |
| RO3164E-1                                    | 868.35     | 773        | 3.0 x 3.0      |
| RO3164E-2                                    | 868.35     | 774        | 3.0 x 3.0      |
| RO3156A                                      | 868.95     | 714        | 5.0 x 3.5      |
| RO3156A-1                                    | 868.95     | 923        | 5.0 x 3.5      |
| RO3156A-2                                    | 868.95     | 828        | 5.0 x 3.5      |
| RO3156A-3                                    | 868.95     | 808        | 5.0 x 3.5      |
| RO3156D                                      | 868.95     | 715        | 3.8 x 3.8      |
| RO3156D-1                                    | 868.95     | 924        | 3.8 x 3.8      |
| RO3156D-2                                    | 868.95     | 925        | 3.8 x 3.8      |
| RO3156E                                      | 868.95     | 707        | 3.0 x 3.0      |
| RO3156E-1                                    | 868.95     | 708        | 3.0 x 3.0      |
| RO3156E-2                                    | 868.95     | 926        | 3.0 x 3.0      |
| RO3144                                       | 916.5      | RO3144     | 9.3mm diameter |
| RO3144A                                      | 916.5      | 663        | 5.0 x 3.5      |
| RO3144A-1                                    | 916.5      | 897        | 5.0 x 3.5      |
| RO3144A-2                                    | 916.5      | 813        | 5.0 x 3.5      |
| RO3144C                                      | 916.5      | 691        | 5.0 x 5.0      |
| RO3144D                                      | 916.5      | 692        | 3.8 x 3.8      |
| RO3144D-1                                    | 916.5      | 767        | 3.8 x 3.8      |
| RO3144D-2                                    | 916.5      | 768        | 3.8 x 3.8      |
| RO3144E                                      | 916.5      | 693        | 3.0 x 3.0      |
| RO3144E-1                                    | 916.5      | 769        | 3.0 x 3.0      |
| RO3144E-2                                    | 916.5      | 770        | 3.0 x 3.0      |

All RFM SAW Resonators are RoHS compliant.



RFM provides a large selection of low-loss narrowband front end filters for all major frequencies used in low-power unlicensed communications equipment from 300-1000 MHz. Coupled resonator filter technology is used in the RF series of components. These devices are used as narrowband front-end filters to reject strong out-of-band signals.

Typical bandwidths are 600-900 kHz with typical ultimate out-of-band rejection of 50 dB. Special rejection is provided at key points such as -10.7 MHz for local oscillator rejection and -21.4 MHz for the image spurious response in typical superhet receivers.

Optimum implementation of this filter technology is accomplished when the filter is matched on both input and output ports. This matching is typically a simple inductor-capacitor network. In addition to matching, careful attention to circuit board layout is also important to achieve optimum filter performance.

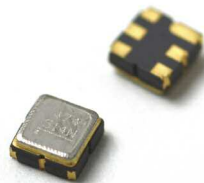
### Applications

- Automotive keyless entry
- Tire pressure monitoring
- GPS receivers
- Wireless point-of-sale terminals
- Data link equipment
- Peripherals
- Remote bar code data entry
- Bar code readers
- Identification tags
- Home automation
- Door and gate openers
- Personal and home security
- Automated meter reading
- Consumer sports

**Packages.** RFM SAW Narrowband Front-End Filters are packaged in both TO39 leaded packages and a variety of surface-mount (SMT) packages. The TO39 parts are shipped in antistatic shipping tubes and the SMT parts are shipped in tape and reel.



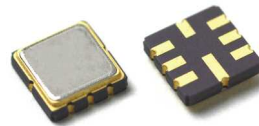
9.3 mm diameter  
TO39



3.0 mm x 3.0 mm  
6-Pin SMT Package



3.8 mm x 3.8 mm  
8-Pin SMT Package



5.0 mm x 5.0 mm  
8-pin SMT Package

| SAW Narrowband Front End Filters by Part |             |                 |            |                |
|--|-------------|-----------------|------------|----------------|
| RFM Part                                 | Freq. (MHz) | Bandwidth (kHz) | Lid Symbol | Case           |
| <b>RF1171</b>                            | 418         | 600             | RF1171     | 9.3mm diameter |
| <b>RF1172</b>                            | 433.92      | 600             | RF1172     | 9.3mm diameter |
| <b>RF1172C</b>                           | 433.92      | 700             | 409        | 5.0 x 5.0      |
| <b>RF1172D</b>                           | 433.92      | 600             | 477        | 3.8 x 3.8      |
| <b>RF1211</b>                            | 315         | 700             | RF1211     | 9.3mm diameter |
| <b>RF1211C</b>                           | 315         | 900             | 410        | 5.0 x 5.0      |
| <b>RF1211D</b>                           | 315         | 600             | 476        | 3.8 x 3.8      |
| <b>RF1238</b>                            | 318         | 700             | RF1238     | 9.3mm diameter |
| <b>RF1284</b>                            | 319.5       | 600             | RF1284     | 9.3mm diameter |
| <b>RF1295C</b>                           | 451.35      | 1000            | 482        | 5.0 x 5.0      |
| <b>RF1301</b>                            | 499.25      | 30              | RF1301     | 9.3mm diameter |
| <b>RF1302</b>                            | 439.25      | 30              | RF1302     | 9.3mm diameter |
| <b>RF1353C</b>                           | 345         | 430             | 446        | 5.0 x 5.0      |
| <b>RF1353D</b>                           | 345         | 430             | 444        | 3.8 x 3.8      |
| <b>RF1391C</b>                           | 433.42      | 600             | 415        | 5.0 x 5.0      |
| <b>RF1396C</b>                           | 434.42      | 700             | 427        | 5.0 x 5.0      |
| <b>RF1400D</b>                           | 433.92      | 1150            | 490        | 3.8 x 3.8      |
| <b>RF1401D</b>                           | 433.92      | 1000            | 495        | 3.8 x 3.8      |
| <b>RF1402D</b>                           | 315         | 1000            | 496        | 3.8 x 3.8      |
| <b>RF1404C</b>                           | 433.92      | 600             | 499        | 5.0 x 5.0      |
| <b>RF1407D</b>                           | 868.6       | 1800            | 505        | 3.8 x 3.8      |
| <b>RF1408D</b>                           | 447.7       | 840             | 511        | 3.8 x 3.8      |
| <b>RF1411D</b>                           | 869.2625    | 1250            | 512        | 3.8 x 3.8      |
| <b>RF1414D</b>                           | 372.5       | 425             | 528        | 3.8 x 3.8      |
| <b>RF1417D</b>                           | 315         | 600             | 550        | 3.8 x 3.8      |
| <b>RF1419D</b>                           | 403.5       | 7500            | 560        | 3.8 x 3.8      |
| <b>RF1432C</b>                           | 319.5       | 600             | 621        | 5.0 x 5.0      |
| <b>RF1439E</b>                           | 315         | 850             | 795        | 3.0 x 3.0      |
| <b>RF3171</b>                            | 418         | 600             | RF3171     | 9.3mm diameter |
| <b>RF3171D</b>                           | 418         | 600             | 775        | 3.8 x 3.8      |
| <b>RF3181</b>                            | 916.5       | 750             | RF3181     | 9.3mm diameter |
| <b>RF3181D</b>                           | 916.5       | 750             | 671        | 3.8 x 3.8      |
| <b>RF3181E</b>                           | 916.5       | 750             | 689        | 3.0 x 3.0      |
| <b>RF3210</b>                            | 303.825     | 500             | RF3210     | 9.3mm diameter |
| <b>RF3210D</b>                           | 303.825     | 650             | 675        | 3.8 x 3.8      |
| <b>RF3319D</b>                           | 868.95      | 650             | 668        | 3.8 x 3.8      |
| <b>RF3319E</b>                           | 868.95      | 800             | 695        | 3.0 x 3.0      |
| <b>RF3336</b>                            | 868.35      | 600             | RF3336     | 9.3mm diameter |
| <b>RF3336C</b>                           | 868.35      | 600             | 673        | 5.0 x 5.0      |
| <b>RF3336D</b>                           | 868.35      | 600             | 699        | 3.8 x 3.8      |
| <b>RF3336E</b>                           | 868.35      | 600             | 700        | 3.0 x 3.0      |
| <b>RF3355C</b>                           | 390         | 440             | 736        | 5.0 x 5.0      |
| <b>RF3404</b>                            | 433.92      | 600             | RF3404     | 9.3mm diameter |
| <b>RF3404D</b>                           | 433.92      | 600             | 539        | 3.8 x 3.8      |
| <b>RF3404E</b>                           | 433.92      | 600             | 697        | 3.0 x 3.0      |
| <b>RF3414D</b>                           | 372.5       | 425             | 846        | 3.8 x 3.8      |
| <b>RF3414E</b>                           | 372.5       | 450             | 720        | 3.0 x 3.0      |
| <b>RF3417</b>                            | 315         | 700             | RF3417     | 9.3mm diameter |
| <b>RF3417D</b>                           | 315         | 600             | 550        | 3.8 x 3.8      |
| <b>RF3417E</b>                           | 315         | 600             | 696        | 3.0 x 3.0      |
| <b>RF3501E</b>                           | 866.1       | 31000           | 805        | 3.0 x 3.0      |
| <b>RF3601E</b>                           | 960         | 40000           | 818        | 3.0 x 3.0      |

All RFM SAW Narrowband Front-End Filters are RoHS compliant.

### Minimum Order Quantities.

TO-39 packaged parts are shipped in antistatic shipping tubes with a minimum quantity of 50 per tube.

The SMT packaged filters are shipped in tape and reel with 500 units in 7" tape and reel, and 3,000 units in 13" tape and reel.

Contact a sales rep, distributor, or stocking rep / distributor near you to request samples for your evaluations and / or prototype designs.



## SAW NARROWBAND FRONT-END FILTERS

Listed in Order by Frequency and Listed in Order by Bandwidth

RFM RF Components  
are Manufactured in  
ISO 9001 / TS 16949  
Certified Factories

| SAW Narrowband Front End Filters by Frequency |                 |                 |            |                |
|---|-----------------|-----------------|------------|----------------|
| RFM Part                                      | Freq. (MHz)     | Bandwidth (kHz) | Lid Symbol | Case           |
| RF3210  | <b>303.825</b>  | 500             | RF3210     | 9.3mm diameter |
| RF3210D                                       | <b>303.825</b>  | 650             | 675        | 3.8 x 3.8      |
| RF1211  | <b>315</b>      | 700             | RF1211     | 9.3mm diameter |
| RF1211C                                       | <b>315</b>      | 900             | 410        | 5.0 x 5.0      |
| RF1211D                                       | <b>315</b>      | 600             | 476        | 3.8 x 3.8      |
| RF1402D                                       | <b>315</b>      | 1000            | 496        | 3.8 x 3.8      |
| RF1417D                                       | <b>315</b>      | 600             | 550        | 3.8 x 3.8      |
| RF1439E                                       | <b>315</b>      | 850             | 795        | 3.0 x 3.0      |
| RF3417  | <b>315</b>      | 700             | RF3417     | 9.3mm diameter |
| RF3417D                                       | <b>315</b>      | 600             | 550        | 3.8 x 3.8      |
| RF3417E                                       | <b>315</b>      | 600             | 696        | 3.0 x 3.0      |
| RF1238  | <b>318</b>      | 700             | RF1238     | 9.3mm diameter |
| RF1284  | <b>319.5</b>    | 600             | RF1284     | 9.3mm diameter |
| RF1432C                                       | <b>319.5</b>    | 600             | 621        | 5.0 x 5.0      |
| RF1353C                                       | <b>345</b>      | 430             | 446        | 5.0 x 5.0      |
| RF1353D                                       | <b>345</b>      | 430             | 444        | 3.8 x 3.8      |
| RF1414D                                       | <b>372.5</b>    | 425             | 528        | 3.8 x 3.8      |
| RF3414D                                       | <b>372.5</b>    | 425             | 846        | 3.8 x 3.8      |
| RF3414E                                       | <b>372.5</b>    | 450             | 720        | 3.0 x 3.0      |
| RF3355C                                       | <b>390</b>      | 440             | 736        | 5.0 x 5.0      |
| RF1419D                                       | <b>403.5</b>    | 7500            | 560        | 3.8 x 3.8      |
| RF1171  | <b>418</b>      | 600             | RF1171     | 9.3mm diameter |
| RF3171  | <b>418</b>      | 600             | RF3171     | 9.3mm diameter |
| RF3171D                                       | <b>418</b>      | 600             | 775        | 3.8 x 3.8      |
| RF1391C                                       | <b>433.42</b>   | 600             | 415        | 5.0 x 5.0      |
| RF1172  | <b>433.92</b>   | 600             | RF1172     | 9.3mm diameter |
| RF1172C                                       | <b>433.92</b>   | 700             | 409        | 5.0 x 5.0      |
| RF1172D                                       | <b>433.92</b>   | 600             | 477        | 3.8 x 3.8      |
| RF1400D                                       | <b>433.92</b>   | 1150            | 490        | 3.8 x 3.8      |
| RF1401D                                       | <b>433.92</b>   | 1000            | 495        | 3.8 x 3.8      |
| RF1404C                                       | <b>433.92</b>   | 600             | 499        | 5.0 x 5.0      |
| RF3404  | <b>433.92</b>   | 600             | RF3404     | 9.3mm diameter |
| RF3404D                                       | <b>433.92</b>   | 600             | 539        | 3.8 x 3.8      |
| RF3404E                                       | <b>433.92</b>   | 600             | 697        | 3.0 x 3.0      |
| RF1396C                                       | <b>434.42</b>   | 700             | 427        | 5.0 x 5.0      |
| RF1302  | <b>439.25</b>   | 30              | RF1302     | 9.3mm diameter |
| RF1408D                                       | <b>447.7</b>    | 840             | 511        | 3.8 x 3.8      |
| RF1295C                                       | <b>451.35</b>   | 1000            | 482        | 5.0 x 5.0      |
| RF1301  | <b>499.25</b>   | 30              | RF1301     | 9.3mm diameter |
| RF3501E                                       | <b>866.1</b>    | 31000           | 805        | 3.0 x 3.0      |
| RF3336  | <b>868.35</b>   | 600             | RF3336     | 9.3mm diameter |
| RF3336C                                       | <b>868.35</b>   | 600             | 673        | 5.0 x 5.0      |
| RF3336D                                       | <b>868.35</b>   | 600             | 699        | 3.8 x 3.8      |
| RF3336E                                       | <b>868.35</b>   | 600             | 700        | 3.0 x 3.0      |
| RF1407D                                       | <b>868.6</b>    | 1800            | 505        | 3.8 x 3.8      |
| RF3319D                                       | <b>868.95</b>   | 650             | 668        | 3.8 x 3.8      |
| RF3319E                                       | <b>868.95</b>   | 800             | 695        | 3.0 x 3.0      |
| RF1411D                                       | <b>869.2625</b> | 1250            | 512        | 3.8 x 3.8      |
| RF3181  | <b>916.5</b>    | 750             | RF3181     | 9.3mm diameter |
| RF3181D                                       | <b>916.5</b>    | 750             | 671        | 3.8 x 3.8      |
| RF3181E                                       | <b>916.5</b>    | 750             | 689        | 3.0 x 3.0      |
| RF3601E                                       | <b>960</b>      | 40000           | 818        | 3.0 x 3.0      |

All RFM SAW Narrowband Front-End Filters are RoHS compliant.

| SAW Narrowband Front End Filters by Bandwidth |             |                 |            |                |
|---|-------------|-----------------|------------|----------------|
| RFM Part                                      | Freq. (MHz) | Bandwidth (kHz) | Lid Symbol | Case           |
| RF1301  | 499.25      | <b>30</b>       | RF1301     | 9.3mm diameter |
| RF1302  | 439.25      | <b>30</b>       | RF1302     | 9.3mm diameter |
| RF1414D                                       | 372.5       | <b>425</b>      | 528        | 3.8 x 3.8      |
| RF3414D                                       | 372.5       | <b>425</b>      | 846        | 3.8 x 3.8      |
| RF1353C                                       | 345         | <b>430</b>      | 446        | 5.0 x 5.0      |
| RF1353D                                       | 345         | <b>430</b>      | 444        | 3.8 x 3.8      |
| RF3355C                                       | 390         | <b>440</b>      | 736        | 5.0 x 5.0      |
| RF3414E                                       | 372.5       | <b>450</b>      | 720        | 3.0 x 3.0      |
| RF3210  | 303.825     | <b>500</b>      | RF3210     | 9.3mm diameter |
| RF1171  | 418         | <b>600</b>      | RF1171     | 9.3mm diameter |
| RF1172  | 433.92      | <b>600</b>      | RF1172     | 9.3mm diameter |
| RF1172D                                       | 433.92      | <b>600</b>      | 477        | 3.8 x 3.8      |
| RF1211D                                       | 315         | <b>600</b>      | 476        | 3.8 x 3.8      |
| RF1284  | 319.5       | <b>600</b>      | RF1284     | 9.3mm diameter |
| RF1391C                                       | 433.42      | <b>600</b>      | 415        | 5.0 x 5.0      |
| RF1404C                                       | 433.92      | <b>600</b>      | 499        | 5.0 x 5.0      |
| RF1417D                                       | 315         | <b>600</b>      | 550        | 3.8 x 3.8      |
| RF1432C                                       | 319.5       | <b>600</b>      | 621        | 5.0 x 5.0      |
| RF3171  | 418         | <b>600</b>      | RF3171     | 9.3mm diameter |
| RF3171D                                       | 418         | <b>600</b>      | 775        | 3.8 x 3.8      |
| RF3336  | 868.35      | <b>600</b>      | RF3336     | 9.3mm diameter |
| RF3336C                                       | 868.35      | <b>600</b>      | 673        | 5.0 x 5.0      |
| RF3336D                                       | 868.35      | <b>600</b>      | 699        | 3.8 x 3.8      |
| RF3336E                                       | 868.35      | <b>600</b>      | 700        | 3.0 x 3.0      |
| RF3404  | 433.92      | <b>600</b>      | RF3404     | 9.3mm diameter |
| RF3404D                                       | 433.92      | <b>600</b>      | 539        | 3.8 x 3.8      |
| RF3404E                                       | 433.92      | <b>600</b>      | 697        | 3.0 x 3.0      |
| RF3417D                                       | 315         | <b>600</b>      | 550        | 3.8 x 3.8      |
| RF3417E                                       | 315         | <b>600</b>      | 696        | 3.0 x 3.0      |
| RF3210D                                       | 303.825     | <b>650</b>      | 675        | 3.8 x 3.8      |
| RF3319D                                       | 868.95      | <b>650</b>      | 668        | 3.8 x 3.8      |
| RF1172C                                       | 433.92      | <b>700</b>      | 409        | 5.0 x 5.0      |
| RF1211  | 315         | <b>700</b>      | RF1211     | 9.3mm diameter |
| RF1238  | 318         | <b>700</b>      | RF1238     | 9.3mm diameter |
| RF1396C                                       | 434.42      | <b>700</b>      | 427        | 5.0 x 5.0      |
| RF3417  | 315         | <b>700</b>      | RF3417     | 9.3mm diameter |
| RF3181  | 916.5       | <b>750</b>      | RF3181     | 9.3mm diameter |
| RF3181D                                       | 916.5       | <b>750</b>      | 671        | 3.8 x 3.8      |
| RF3181E                                       | 916.5       | <b>750</b>      | 689        | 3.0 x 3.0      |
| RF3319E                                       | 868.95      | <b>800</b>      | 695        | 3.0 x 3.0      |
| RF1408D                                       | 447.7       | <b>840</b>      | 511        | 3.8 x 3.8      |
| RF1439E                                       | 315         | <b>850</b>      | 795        | 3.0 x 3.0      |
| RF1211C                                       | 315         | <b>900</b>      | 410        | 5.0 x 5.0      |
| RF1295C                                       | 451.35      | <b>1000</b>     | 482        | 5.0 x 5.0      |
| RF1401D                                       | 433.92      | <b>1000</b>     | 495        | 3.8 x 3.8      |
| RF1402D                                       | 315         | <b>1000</b>     | 496        | 3.8 x 3.8      |
| RF1400D                                       | 433.92      | <b>1150</b>     | 490        | 3.8 x 3.8      |
| RF1411D                                       | 869.2625    | <b>1250</b>     | 512        | 3.8 x 3.8      |
| RF1407D                                       | 868.6       | <b>1800</b>     | 505        | 3.8 x 3.8      |
| RF1419D                                       | 403.5       | <b>7500</b>     | 560        | 3.8 x 3.8      |
| RF3501E                                       | 866.1       | <b>31000</b>    | 805        | 3.0 x 3.0      |
| RF3601E                                       | 960         | <b>40000</b>    | 818        | 3.0 x 3.0      |

All RFM SAW Narrowband Front-End Filters are RoHS compliant.

RFM designs and manufactures bandpass filters, delay lines and notch filters for a wide range of wireless telecommunication and data communication applications. We provide filters from 40 MHz to more than 2.6 GHz in surface-mount, dual-in-line (DIP) and TO39 packages. Our filter products offer a wide range of bandwidths, low insertion loss, low amplitude and group delay ripple, small size and high out-of-band rejection.

**Custom Designed Filters.** RFM also provides custom filters for high volume applications: Satellite Digital Audio Radio (SDAR) subscriber platforms (Sirius and XM), cellular handsets, base stations, and repeaters (EDGE, WCDMA, CDMA-2000, TD-SCDMA, GSM900, DCS1800, PCS1900, CDMA, TDMA and AMPs, DECT), Global Positioning System (GPS), microwave radio, wireless local loop (WLL), wireless local area networks (WLAN), and multimedia and fiber-optic transmission equipment.

## Applications

- Wireless point-of-sale terminals
- Data link equipment
- Peripherals
- High Performance Computing (HPC)
- Remote bar code data entry
- Bar code readers
- Satellite digital audio radio (SDAR)
- Global positioning systems (GPS)
- Wireless local area network (WLAN)
- CATV Infrastructure
- Synchronous optical network (SONET)
- Automated meter reading
- Cellular Subscriber Terminals, Base Stations, and Repeater for:
  - GSM
  - TD-SCDMA
  - CDMA
  - TDMA
  - Wireless Local Loop
- Cellular Digital Packet Data (CDPD) modems

**Packages and Minimum Order Quantities.** TO39 packaged parts are shipped in antistatic shipping tubes with a minimum quantity of 50 per tube. The SMT packaged filters are shipped via tape and reel with minimum of 500 units in 7" reel, and minimum of 2,000 units in 13" reel. Contact a sales rep, distributor, or stocking rep / distributor near you to request samples for your evaluations and / or prototype designs. For package options, see RF COMPONENTS PACKAGE SELECTION GUIDE on page 39.

| SAW RF / IF Filters in Order by Part Number |           |                 |          |                      |                 |
|---|-----------|-----------------|----------|----------------------|-----------------|
| Type  | Part No.  | Frequency (MHz) | BW (MHz) | Application          | Case (mm)       |
| IF Filter                                   | PX1002    | 86.85           | 0.024    | IS-54 TDMA           | 13.3 x 6.5      |
| IF Filter                                   | PX1004    | 82.2            | 0.03     | IS-54 TDMA           | 13.3 x 6.5      |
| RF Filter                                   | RF1199    | 291.4           | 0.5      | Filter               | 9.3 mm diameter |
| RF Filter                                   | RF1301    | 499.25          | 0.06     | Narrowband RF Filter | 9.3 mm diameter |
| RF Filter                                   | RF1302    | 439.25          | 0.06     | Narrowband RF Filter | 9.3 mm diameter |
| RF Filter                                   | RF1353C   | 345             | 0.43     | Narrowband RF Filter | 5.0 x 5.0       |
| IF Filter                                   | SF1056A   | 110.592         | 1.152    | DECT                 | 13.3 x 6.5      |
| IF Filter                                   | SF1059A   | 350             | 0.8      | IF Filter            | 9.1 x 7.1       |
| IF Filter                                   | SF1081A   | 71              | 0.2      | GSM/EDGE             | 22.1 x 8.0      |
| IF Filter                                   | SF1081A-1 | 71              | 0.2      | GSM/EDGE             | 22.1 x 8.0      |
| IF Filter                                   | SF1088A   | 170.6           | 0.18     | GSM/EDGE             | 19 x 6.5        |
| IF Filter                                   | SF1091A   | 211             | 0.9      | GSM/EDGE             | 13.3 x 6.5      |
| IF Filter                                   | SF1092A   | 199             | 0.2      | GSM/EDGE             | 19 x 6.5        |
| IF Filter                                   | SF1111A   | 160             | 1.18     | CDMA                 | 24.6 x 9        |
| IF Filter                                   | SF1115A   | 199             | 0.2      | GSM/EDGE             | 9.1 x 7.1       |
| IF Filter                                   | SF1120B   | 298.74          | 1.5      | GPS                  | 7.0 x 5.0       |
| IF Filter                                   | SF1131B   | 266.01          | 0.5      | GPS                  | 7.0 x 5.0       |
| IF Filter                                   | SF1140B   | 75              | 4.2      | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1140B-2 | 75              | 4.2      | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1141B   | 75              | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1141B-2 | 75              | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1141B-4 | 75              | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1142B   | 315             | 4.2      | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1143B   | 315             | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1143B-1 | 315             | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1143B-2 | 315             | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1143B-4 | 315             | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                   | SF1145B   | 427.25          | 0.03     | Cable                | 7.0 x 5.0       |
| IF Filter                                   | SF1146B   | 499.25          | 0.03     | Cable                | 7.0 x 5.0       |
| IF Filter                                   | SF1174B   | 374             | 17       | WLAN                 | 5.0 x 5.0       |
| IF Filter                                   | SF1174D   | 374             | 17       | WLAN                 | 3.8 x 3.8       |
| IF Filter                                   | SF1177A   | 57.6            | 21.2     | WCDMA/TD-SCDMA       | 13.3 x 6.5      |
| IF Filter                                   | SF1179B   | 184.14          | 11       | IF Filter            | 7.0 x 5.0       |
| RF Filter                                   | SF1182B   | 836.5           | 25       | Cellular             | 3.0 x 3.0       |
| RF Filter                                   | SF1183G   | 881.5           | 25       | Cellular             | 2.5 x 2.0       |
| RF Filter                                   | SF1184B-1 | 947.5           | 25       | GSM                  | 3.0 x 3.0       |
| RF Filter                                   | SF1186B-2 | 1575.42         | 2.046    | GPS                  | 3.0 x 3.0       |
| RF Filter                                   | SF1186G   | 1575.42         | 2        | GPS                  | 2.5 x 2.0       |
| RF Filter                                   | SF1186H   | 1575.42         | 2.4      | GPS                  | 2.0 x 1.6       |
| RF Filter                                   | SF1186H-1 | 1575.42         | 2        | GPS                  | 2.0 x 1.6       |
| RF Filter                                   | SF1186H-2 | 1575.42         | 2        | GPS                  | 2.0 x 1.6       |
| RF Filter                                   | SF1186K-2 | 1575.42         | 2        | GPS                  | 1.4 x 1.1       |

| SAW RF / IF Filters in Order by Part Number |           |                 |          |                 |                 |
|---|-----------|-----------------|----------|-----------------|-----------------|
| Type  | Part No.  | Frequency (MHz) | BW (MHz) | Application     | Case (mm)       |
| RF Filter                                   | SF1186K-3 | 1575.42         | 2        | GPS             | 1.4 x 1.1       |
| RF Filter                                   | SF1188C   | 465             | 4        | Wireless Access | 5.0 x 5.0       |
| IF Filter                                   | SF1189B-1 | 280             | 18.5     | Wireless Access | 5.0 x 5.0       |
| RF Filter                                   | SF1192B   | 1842.5          | 75       | DCS             | 3.0 x 3.0       |
| IF Filter                                   | SF1197B   | 248.6           | 5        | IF Filter       | 7.0 x 5.0       |
| IF Filter                                   | SF1200B   | 96              | 20       | TD-SCDMA        | 7.0 x 5.0       |
| RF Filter                                   | SF1201D   | 455             | 5        | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1202D   | 465             | 5        | CDMA450         | 3.8 x 3.8       |
| Duplexer                                    | SF1207C   | 836.5/881.5     | 25       | CDMA            | 5.0 x 5.0       |
| Duplexer                                    | SF1207D   | 836.5/881.5     | 25       | CDMA            | 3.8 x 3.8       |
| RF Filter                                   | SF1208H   | 2017.5          | 15       | TD-SCDMA        | 2.0 x 1.6       |
| RF Filter                                   | SF1212D   | 452.5           | 4.8      | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1213D   | 462.5           | 4.8      | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1214D   | 413.7           | 4.3      | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1215D   | 423.75          | 4.3      | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1216D   | 481.2           | 4.5      | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1217D   | 491.2           | 4.5      | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1218D   | 453.5           | 7        | CDMA450         | 3.8 x 3.8       |
| RF Filter                                   | SF1219K   | 2338.75         | 12.5     | SDARS RF        | 1.4 x 1.1       |
| RF Filter                                   | SF1220K-1 | 2326            | 14       | SDARS RF        | 1.4 x 1.1       |
| Duplexer                                    | SF1221F   | 1950/2140       | 60       | WCDMA           | 3.2 x 2.5       |
| Duplexer                                    | SF1222D   | 2110/2190       | 20       | WCDMA           | 3.8 x 3.8       |
| RF Filter                                   | SF2001E   | 1960            | 60       | PCS             | 3.0 x 3.0       |
| RF Filter                                   | SF2002B-2 | 942.5           | 35       | EGSM            | 3.0 x 3.0       |
| RF Filter                                   | SF2002E   | 942.5           | 35       | EGSM            | 3.0 x 3.0       |
| IF Filter                                   | SF2006C   | 190             | 4.8      | WCDMA           | 5.0 x 5.0       |
| RF Filter                                   | SF2008D   | 930.5           | 4        | Wireless Access | 3.8 x 3.8       |
| IF Filter                                   | SF2017D   | 1220            | 8        | Cable/DOCSIS    | 3.8 x 3.8       |
| IF Filter                                   | SF2024B   | 467.751         | 12.688   | SDARS           | 7.0 x 5.0       |
| IF Filter                                   | SF2024D   | 467.751         | 12.5     | SDARS           | 3.8 x 3.8 x 12  |
| IF Filter                                   | SF2024D-1 | 467.751         | 12.5     | SDARS           | 3.8 x 3.8 x 10  |
| IF Filter                                   | SF2024E-1 | 467.751         | 12.5     | SDARS           | 3.0 x 3.0 x 0.9 |
| IF Filter                                   | SF2024E-2 | 467.751         | 12.5     | SDARS           | 3.0 x 3.0 x 0.9 |
| IF Filter                                   | SF2025B   | 259.861         | 12.708   | SDARS           | 7.0 x 5.0       |
| IF Filter                                   | SF2026B   | 114.815         | 6.111    | SDARS           | 7.0 x 5.0       |
| IF Filter                                   | SF2027B   | 199             | 0.2      | GSM/EDGE        | 13.3 x 6.5      |
| IF Filter                                   | SF2030A   | 243.95          | 0.3      | PHS             | 11.5 x 4.0      |
| IF Filter                                   | SF2032E   | 1220            | 28       | Cable/DOCSIS    | 3.0 x 3.0       |
| IF Filter                                   | SF2033A   | 350             | 2.4      | IF Filter       | 13.3 x 6.5      |
| RF Filter                                   | SF2036E   | 1880            | 60       | DCS             | 3.0 x 3.0       |
| IF Filter                                   | SF2037B   | 76.5            | 3.8      | SDARS           | 7.0 x 5.0       |
| IF Filter                                   | SF2037B-2 | 76.5            | 3.8      | SDARS           | 7.0 x 5.0       |

All RFM SAW RF / IF Filters are RoHS compliant.

| SAW RF / IF Filters in Order by Part Number |                  |                 |          |                    |            |
|---|------------------|-----------------|----------|--------------------|------------|
| Type  | Part No.         | Frequency (MHz) | BW (MHz) | Application        | Case (mm)  |
| IF Filter                                   | <b>SF2037B-3</b> | 76.5            | 3.8      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2037C</b>   | 76              | 3.8      | SDARS              | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2038B</b>   | 76.5            | 12.5     | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2038B-2</b> | 76.5            | 12.5     | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2038B-3</b> | 76.5            | 12.5     | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2038C</b>   | 76              | 12.5     | SDARS              | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2039B</b>   | 72.54           | 3.7      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2039B-2</b> | 72.54           | 3.7      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2039B-3</b> | 72.54           | 3.7      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2040B</b>   | 80.46           | 3.7      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2040B-2</b> | 80.46           | 3.7      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2040B-3</b> | 80.46           | 3.7      | SDARS              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2042B</b>   | 456             | 12.8     | Wimax              | 5.0 x 7.0  |
| IF Filter                                   | <b>SF2042C</b>   | 456             | 12.8     | Wimax              | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2045A</b>   | 140             | 8        | IF Filter          | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2046B</b>   | 456.44          | 5.22     | Wimax              | 7.0 x 5.0  |
| RF Filter                                   | <b>SF2049E</b>   | 915             | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2049E</b>   | 915             | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2049E-1</b> | 915             | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2053E</b>   | 915             | 12.5     | ISM Band           | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2055A</b>   | 240.05          | 0.3      | PHS                | 11.5 x 4.0 |
| RF Filter                                   | <b>SF2059B-1</b> | 137.5           | 0.8      | Orbcomm            | 5.0 x 7.0  |
| IF Filter                                   | <b>SF2060B</b>   | 115.18          | 12.5     | SDARS              | 5.0 x 7.0  |
| IF Filter                                   | <b>SF2060B-1</b> | 115.18          | 12.5     | SDARS              | 5.0 x 7.0  |
| IF Filter                                   | <b>SF2062A</b>   | 229.25          | 0.3      | PHS                | 11.5 x 4.0 |
| IF Filter                                   | <b>SF2063A</b>   | 156             | 9.4      | Wibro              | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2064A</b>   | 156             | 10       | Wimax              | 13.3 x 6.5 |
| RF Filter                                   | <b>SF2065C</b>   | 743             | 6        | Wimax              | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2067B</b>   | 172.8           | 8.84     | WCDMA              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2069A</b>   | 96              | 4.68     | TD-SCDMA           | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2069A-1</b> | 96              | 4.3      | TD-SCDMA           | 19.0 x 6.5 |
| IF Filter                                   | <b>SF2069A-2</b> | 96              | 5        | TD-SCDMA           | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2072C</b>   | 360             | 30       | Wimax              | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2073B</b>   | 456             | 10       | Wimax              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2076B</b>   | 464             | 3.4      | Wimax              | 7.0 x 5.0  |
| IF Filter                                   | <b>SF2079D</b>   | 251.045         | 12.5     | SDARS              | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2079D-1</b> | 251.045         | 12.5     | SDARS              | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2081D</b>   | 1220            | 50       | Cable/DOCSIS       | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2081E</b>   | 1220            | 50       | Cable/DOCSIS       | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2085A</b>   | 96              | 35       | IF Filter          | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2086C</b>   | 240             | 30       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2087C</b>   | 267.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2088C</b>   | 297.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2089C</b>   | 327.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2090C</b>   | 357.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2091C</b>   | 385             | 30       | IF Filter          | 5.0 x 5.0  |
| RF Filter                                   | <b>SF2092E</b>   | 810             | 17       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2093E</b>   | 915             | 26       | ISM band RF Filter | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2094B</b>   | 380             | 3.4      | Wimax              | 7.0 x 5.0  |
| RF Filter                                   | <b>SF2098G</b>   | 915             | 26       | ISM band RF Filter | 2.5 x 2.0  |
| IF Filter                                   | <b>SF2109D</b>   | 305             | 8        | Wibro              | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2110D</b>   | 305             | 10       | Wimax              | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2111A</b>   | 140             | 15       | TD-SCDMA           | 13.3 x 6.5 |
| RF Filter                                   | <b>SF2120C</b>   | 149             | 2        | Orbcomm            | 5.0 x 5.0  |
| RF Filter                                   | <b>SF2124E</b>   | 2441.8          | 83.5     | ISM Band           | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2125D</b>   | 305             | 5        | Wimax              | 3.8 x 3.8  |
| RF Filter                                   | <b>SF2126E</b>   | 725             | 50       | WIMAX              | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2131B</b>   | 92.16           | 20       | TD-SCDMA           | 7.0 x 5.0  |
| RF Filter                                   | <b>SF2133E</b>   | 1747.5          | 75       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2134E</b>   | 897.5           | 15       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2135A</b>   | 96              | 1.56     | IF Filter          | 13.3 x 6.5 |
| RF Filter                                   | <b>SF2136E</b>   | 433.92          | 1.74     | ISM band RF Filter | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2137D</b>   | 869             | 2        | ISM band RF Filter | 3.8 x 3.8  |
| RF Filter                                   | <b>SF2137E</b>   | 869             | 2        | ISM band RF Filter | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2138B</b>   | 144.132         | 12.5     | SDARS              | 7.0 x 5.0  |

| SAW RF / IF Filters in Order by Part Number |                  |                 |          |                    |            |
|---|------------------|-----------------|----------|--------------------|------------|
| Type  | Part No.         | Frequency (MHz) | BW (MHz) | Application        | Case (mm)  |
| IF Filter                                   | <b>SF2139D</b>   | 177             | 20       | CDMA2000           | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2140A</b>   | 140             | 18.4     | WCDMA/TD-SCDMA IF  | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2140A-1</b> | 140             | 18.4     | WCDMA/D-SCDMA IF   | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2141B</b>   | 210.38          | 0.6      | CDMA               | 7.0 X 5.0  |
| RF Filter                                   | <b>SF2142G</b>   | 867.5           | 25       | RF Filter          | 2.5 x 2.0  |
| Duplexer                                    | <b>SF2143A</b>   | 72.54/80.46     | 3.7      | SDARS              | 11.4 x 5.3 |
| Duplexer                                    | <b>SF2143B</b>   | 72.54/80.46     | 3.7      | SDARS              | 7.0 x 5.0  |
| RF Filter                                   | <b>SF2145B</b>   | 895             | 15.5     | RF Filter          | 7.0 x 5.0  |
| RF Filter                                   | <b>SF2146D</b>   | 415             | 25       | RF Filter          | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2147D</b>   | 157             | 20       | CDMA2000           | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2148B</b>   | 138.24          | 20       | LTE/TD-SCDMA       | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2149A</b>   | 46.08           | 5        | TD-SCDMA           | 13.3 x 6.5 |
| RF Filter                                   | <b>SF2150E</b>   | 915             | 10       | ISM band RF Filter | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2151B</b>   | 211.2           | 18.84    | LTE/WCDMA          | 5.0 x 7.0  |
| IF Filter                                   | <b>SF2155B</b>   | 153.6           | 20       | IF Filter          | 5.0 x 7.0  |
| RF Filter                                   | <b>SF2156B</b>   | 611             | 7        | RF Filter          | 5.0 x 7.0  |
| IF Filter                                   | <b>SF2157A</b>   | 156             | 20       | IF Filter          | 13.3 x 6.5 |
| RF Filter                                   | <b>SF2158E</b>   | 2535            | 70       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2159E</b>   | 974             | 40       | DirectTV IF        | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2160E</b>   | 2330            | 60       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2161E</b>   | 2650            | 70       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2162E</b>   | 1178.12         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2163E</b>   | 1076.06         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2164E</b>   | 1484.3          | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2165E</b>   | 1586.36         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2166E</b>   | 1280.18         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2167E</b>   | 1382.24         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2168E</b>   | 1688.42         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2169E</b>   | 1790.48         | 40       | DirectTV IF        | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2170D</b>   | 165             | 20       | CDMA2000           | 3.8 x 3.8  |
| RF Filter                                   | <b>SF2171E</b>   | 719             | 5        | MediaFlo           | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2172C</b>   | 280             | 15       | IF Filter          | 5.0 x 5.0  |
| RF Filter                                   | <b>SF2173E</b>   | 2350            | 100      | LTE RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2176E</b>   | 433.92          | 1.6      | ISM RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2177E</b>   | 1472            | 40       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2178A</b>   | 168             | 20       | Wimax              | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2179C</b>   | 495             | 4        | IF Filter          | 5.0 x 5.0  |
| IF Filter                                   | <b>SF2180D</b>   | 700             | 3.8      | IF Filter          | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2181D</b>   | 140             | 22       | IF Filter          | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2182D</b>   | 140             | 40       | IF Filter          | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2183E</b>   | 400             | 0.25     | IF Filter          | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2184E</b>   | 953             | 3        | RF Filter          | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2185A</b>   | 70              | 9        | IF Filter          | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2185A-1</b> | 70              | 9.1      | IF Filter          | 13.3 x 6.5 |
| RF Filter                                   | <b>SF2186E</b>   | 1268.52         | 20.46    | Beidou/Compass     | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2187</b>    | 190             | 60       | Sat Receiver       | 7.0 x 5.0  |
| RF Filter                                   | <b>SF2188C</b>   | 340             | 6        | SCDMA              | 5.0 x 5.0  |
| RF Filter                                   | <b>SF2188D</b>   | 340             | 8        | SCDMA              | 3.8 x 3.8  |
| IF Filter                                   | <b>SF2189A</b>   | 140             | 30       | IF Filter          | 13.3 x 6.5 |
| IF Filter                                   | <b>SF2190B</b>   | 138             | 60       | Sat Receiver       | 5.0 x 7.0  |
| RF Filter                                   | <b>SF2191E</b>   | 1621            | 10       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2192D</b>   | 495             | 0.89     | IF Filter          | 3.8 x 3.8  |
| RF Filter                                   | <b>SF2193E</b>   | 1228            | 20       | GPS RF             | 3.0 x 3.0  |
| IF Filter                                   | <b>SF2194E</b>   | 1220            | 0.5      | Wimax IF           | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2195E</b>   | 842.5           | 5        | RF Filter          | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2196E</b>   | 315             | 0.6      | ISM RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2197E</b>   | 847             | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2198E</b>   | 806             | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2199E</b>   | 787             | 22       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2200E</b>   | 707             | 18       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2201E</b>   | 916.45          | 4        | ISM RF             | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2202E</b>   | 2017.5          | 15       | TD-SCDMA B Band RF | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2203E</b>   | 834             | 30       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2204E</b>   | 1900            | 40       | TD-SCDMA A Band RF | 3.0 x 3.0  |
| RF Filter                                   | <b>SF2205E</b>   | 879             | 30       | BTS RF             | 3.0 x 3.0  |

All RFM SAW RF / IF Filters are RoHS compliant.



| SAW RF / IF Filters in Order by Frequency |           |                 |          |                   |            |
|---|-----------|-----------------|----------|-------------------|------------|
| Type                                      | Part No.  | Frequency (MHz) | BW (MHz) | Application       | Case mmxmm |
| IF Filter                                 | SF2149A   | <b>46.08</b>    | 5        | TD-SCDMA          | 13.3 x 6.5 |
| IF Filter                                 | SF1177A   | <b>57.6</b>     | 21.2     | WCDMA/TD-SCDMA    | 13.3 x 6.5 |
| IF Filter                                 | SF2185A   | <b>70</b>       | 9        | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF2185A-1 | <b>70</b>       | 9.1      | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF1081A   | <b>71</b>       | 0.2      | GSM/EDGE          | 22.1 x 8.0 |
| IF Filter                                 | SF1081A-1 | <b>71</b>       | 0.2      | GSM/EDGE          | 22.1 x 8.0 |
| IF Filter                                 | SF2039B   | <b>72.54</b>    | 3.7      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2039B-2 | <b>72.54</b>    | 3.7      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2039B-3 | <b>72.54</b>    | 3.7      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF1140B   | <b>75</b>       | 4.2      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF1140B-2 | <b>75</b>       | 4.2      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF1141B   | <b>75</b>       | 12.7     | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF1141B-2 | <b>75</b>       | 12.7     | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF1141B-4 | <b>75</b>       | 12.7     | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2037C   | <b>76</b>       | 3.8      | SDARS             | 5.0 x 5.0  |
| IF Filter                                 | SF2038C   | <b>76</b>       | 12.5     | SDARS             | 5.0 x 5.0  |
| IF Filter                                 | SF2037B   | <b>76.5</b>     | 3.8      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2037B-2 | <b>76.5</b>     | 3.8      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2037B-3 | <b>76.5</b>     | 3.8      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2038B   | <b>76.5</b>     | 12.5     | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2038B-2 | <b>76.5</b>     | 12.5     | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2038B-3 | <b>76.5</b>     | 12.5     | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2040B   | <b>80.46</b>    | 3.7      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2040B-2 | <b>80.46</b>    | 3.7      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2040B-3 | <b>80.46</b>    | 3.7      | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | PX1004    | <b>82.2</b>     | 0.03     | IS-54 TDMA        | 13.3 x 6.5 |
| IF Filter                                 | PX1002    | <b>86.85</b>    | 0.024    | IS-54 TDMA        | 13.3 x 6.5 |
| IF Filter                                 | SF2131B   | <b>92.16</b>    | 20       | TD-SCDMA          | 7.0 x 5.0  |
| IF Filter                                 | SF1200B   | <b>96</b>       | 20       | TD-SCDMA          | 7.0 x 5.0  |
| IF Filter                                 | SF2069A   | <b>96</b>       | 4.68     | TD-SCDMA          | 13.3 x 6.5 |
| IF Filter                                 | SF2069A-1 | <b>96</b>       | 4.3      | TD-SCDMA          | 19.0 x 6.5 |
| IF Filter                                 | SF2069A-2 | <b>96</b>       | 5        | TD-SCDMA          | 13.3 x 6.5 |
| IF Filter                                 | SF2085A   | <b>96</b>       | 35       | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF2135A   | <b>96</b>       | 1.56     | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF1056A   | <b>110.592</b>  | 1.152    | DECT              | 13.3 x 6.5 |
| IF Filter                                 | SF2026B   | <b>114.815</b>  | 6.111    | SDARS             | 7.0 x 5.0  |
| IF Filter                                 | SF2060B   | <b>115.18</b>   | 12.5     | SDARS             | 5.0 x 7.0  |
| IF Filter                                 | SF2060B-1 | <b>115.18</b>   | 12.5     | SDARS             | 5.0 x 7.0  |
| RF Filter                                 | SF2059B-1 | <b>137.5</b>    | 0.8      | Orbcomm           | 5.0 x 7.0  |
| IF Filter                                 | SF2190B   | <b>138</b>      | 60       | Sat Receiver      | 5.0 x 7.0  |
| IF Filter                                 | SF2148B   | <b>138.24</b>   | 20       | LTE/TD-SCDMA      | 5.0 x 5.0  |
| IF Filter                                 | SF2045A   | <b>140</b>      | 8        | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF2111A   | <b>140</b>      | 15       | TD-SCDMA          | 13.3 x 6.5 |
| IF Filter                                 | SF2140A   | <b>140</b>      | 18.4     | WCDMA/TD-SCDMA IF | 13.3 x 6.5 |
| IF Filter                                 | SF2140A-1 | <b>140</b>      | 18.4     | WCDMA/D-SCDMA IF  | 13.3 x 6.5 |
| IF Filter                                 | SF2181D   | <b>140</b>      | 22       | IF Filter         | 3.8 x 3.8  |
| IF Filter                                 | SF2182D   | <b>140</b>      | 40       | IF Filter         | 3.8 x 3.8  |
| IF Filter                                 | SF2189A   | <b>140</b>      | 30       | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF2138B   | <b>144.132</b>  | 12.5     | SDARS             | 7.0 x 5.0  |
| RF Filter                                 | SF2120C   | <b>149</b>      | 2        | Orbcomm           | 5.0 x 5.0  |
| IF Filter                                 | SF2155B   | <b>153.6</b>    | 20       | IF Filter         | 5.0 x 7.0  |
| IF Filter                                 | SF2063A   | <b>156</b>      | 9.4      | Wibro             | 13.3 x 6.5 |
| IF Filter                                 | SF2064A   | <b>156</b>      | 10       | Wimax             | 13.3 x 6.5 |
| IF Filter                                 | SF2157A   | <b>156</b>      | 20       | IF Filter         | 13.3 x 6.5 |
| IF Filter                                 | SF2147D   | <b>157</b>      | 20       | CDMA2000          | 3.8 x 3.8  |
| IF Filter                                 | SF1111A   | <b>160</b>      | 1.18     | CDMA              | 24.6 x 9.0 |
| IF Filter                                 | SF2170D   | <b>165</b>      | 20       | CDMA2000          | 3.8 x 3.8  |
| IF Filter                                 | SF2178A   | <b>168</b>      | 20       | Wimax             | 13.3 x 6.5 |
| IF Filter                                 | SF1088A   | <b>170.6</b>    | 0.18     | GSM/EDGE          | 19 x 6.5   |
| IF Filter                                 | SF2067B   | <b>172.8</b>    | 8.84     | WCDMA             | 7.0 x 5.0  |
| IF Filter                                 | SF2139D   | <b>177</b>      | 20       | CDMA2000          | 3.8 x 3.8  |
| IF Filter                                 | SF1179B   | <b>184.14</b>   | 11       | IF Filter         | 7.0 x 5.0  |
| IF Filter                                 | SF2006C   | <b>190</b>      | 4.8      | WCDMA             | 5.0 x 5.0  |
| IF Filter                                 | SF2187    | <b>190</b>      | 60       | Sat Receiver      | 7.0 x 5.0  |
| IF Filter                                 | SF1092A   | <b>199</b>      | 0.2      | GSM/EDGE          | 19 x 6.5   |
| IF Filter                                 | SF1115A   | <b>199</b>      | 0.2      | GSM/EDGE          | 9.1 x 7.1  |
| IF Filter                                 | SF2027B   | <b>199</b>      | 0.2      | GSM/EDGE          | 13.3 x 6.5 |
| IF Filter                                 | SF2141B   | <b>210.38</b>   | 0.6      | CDMA              | 7.0 x 5.0  |
| IF Filter                                 | SF1091A   | <b>211</b>      | 0.9      | GSM/EDGE          | 13.3 x 6.5 |

All RFM SAW RF / IF Filters are RoHS compliant.

| SAW RF / IF Filters in Order by Frequency |           |                 |          |                      |                 |
|---|-----------|-----------------|----------|----------------------|-----------------|
| Type                                      | Part No.  | Frequency (MHz) | BW (MHz) | Application          | Case mmxmm      |
| IF Filter                                 | SF2151B   | <b>211.2</b>    | 18.84    | LTE/WCDMA            | 5.0 x 7.0       |
| IF Filter                                 | SF2062A   | <b>229.25</b>   | 0.3      | PHS                  | 11.5 x 4.0      |
| IF Filter                                 | SF2086C   | <b>240</b>      | 30       | IF Filter            | 5.0 x 5.0       |
| IF Filter                                 | SF2055A   | <b>240.05</b>   | 0.3      | PHS                  | 11.5 x 4.0      |
| IF Filter                                 | SF2030A   | <b>243.95</b>   | 0.3      | PHS                  | 11.5 x 4.0      |
| IF Filter                                 | SF1197B   | <b>248.6</b>    | 5        | IF Filter            | 7.0 x 5.0       |
| IF Filter                                 | SF2079D   | <b>251.045</b>  | 12.5     | SDARS                | 3.8 x 3.8       |
| IF Filter                                 | SF2079D-1 | <b>251.045</b>  | 12.5     | SDARS                | 3.8 x 3.8       |
| IF Filter                                 | SF2025B   | <b>259.861</b>  | 12.708   | SDARS                | 7.0 x 5.0       |
| IF Filter                                 | SF1131B   | <b>266.01</b>   | 0.5      | GPS                  | 7.0 x 5.0       |
| IF Filter                                 | SF2087C   | <b>267.5</b>    | 35       | IF Filter            | 5.0 x 5.0       |
| IF Filter                                 | SF1189B-1 | <b>280</b>      | 18.5     | Wireless Access      | 5.0 x 5.0       |
| IF Filter                                 | SF2172C   | <b>280</b>      | 15       | IF Filter            | 5.0 x 5.0       |
| RF Filter                                 | RF1199    | <b>291.4</b>    | 0.5      | Filter               | 9.3 mm diameter |
| IF Filter                                 | SF2088C   | <b>297.5</b>    | 35       | IF Filter            | 5.0 x 5.0       |
| IF Filter                                 | SF1120B   | <b>298.74</b>   | 1.5      | GPS                  | 7.0 x 5.0       |
| IF Filter                                 | SF2109D   | <b>305</b>      | 8        | Wibro                | 3.8 x 3.8       |
| IF Filter                                 | SF2110D   | <b>305</b>      | 10       | Wimax                | 3.8 x 3.8       |
| IF Filter                                 | SF2125D   | <b>305</b>      | 5        | Wimax                | 3.8 x 3.8       |
| IF Filter                                 | SF1142B   | <b>315</b>      | 4.2      | SDARS                | 7.0 x 5.0       |
| IF Filter                                 | SF1143B   | <b>315</b>      | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                 | SF1143B-1 | <b>315</b>      | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                 | SF1143B-2 | <b>315</b>      | 12.7     | SDARS                | 7.0 x 5.0       |
| IF Filter                                 | SF1143B-4 | <b>315</b>      | 12.7     | SDARS                | 7.0 x 5.0       |
| RF Filter                                 | SF2196E   | <b>315</b>      | 0.6      | ISM RF               | 3.0 x 3.0       |
| IF Filter                                 | SF2089C   | <b>327.5</b>    | 35       | IF Filter            | 5.0 x 5.0       |
| RF Filter                                 | SF2188C   | <b>340</b>      | 6        | SCDMA                | 5.0 x 5.0       |
| RF Filter                                 | SF2188D   | <b>340</b>      | 8        | SCDMA                | 3.8 x 3.8       |
| RF Filter                                 | RF1353C   | <b>345</b>      | 0.43     | Narrowband RF Filter | 5.0 x 5.0       |
| IF Filter                                 | SF1059A   | <b>350</b>      | 0.8      | IF Filter            | 9.1 x 7.1       |
| IF Filter                                 | SF2033A   | <b>350</b>      | 2.4      | IF Filter            | 13.3 x 6.5      |
| IF Filter                                 | SF2090C   | <b>357.5</b>    | 35       | IF Filter            | 5.0 x 5.0       |
| IF Filter                                 | SF2072C   | <b>360</b>      | 30       | Wimax                | 5.0 x 5.0       |
| IF Filter                                 | SF1174B   | <b>374</b>      | 17       | WLAN                 | 5.0 x 5.0       |
| IF Filter                                 | SF1174D   | <b>374</b>      | 17       | WLAN                 | 3.8 x 3.8       |
| IF Filter                                 | SF2094B   | <b>380</b>      | 3.4      | Wimax                | 7.0 x 5.0       |
| IF Filter                                 | SF2091C   | <b>385</b>      | 30       | IF Filter            | 5.0 x 5.0       |
| IF Filter                                 | SF2183E   | <b>400</b>      | 0.25     | IF Filter            | 3.0 x 3.0       |
| RF Filter                                 | SF1214D   | <b>413.7</b>    | 4.3      | CDMA450              | 3.8 x 3.8       |
| RF Filter                                 | SF2146D   | <b>415</b>      | 25       | RF Filter            | 3.8 x 3.8       |
| RF Filter                                 | SF1215D   | <b>423.75</b>   | 4.3      | CDMA450              | 3.8 x 3.8       |
| IF Filter                                 | SF1145B   | <b>427.25</b>   | 0.03     | Cable                | 7.0 x 5.0       |
| RF Filter                                 | SF2136E   | <b>433.92</b>   | 1.74     | ISM band RF Filter   | 3.0 x 3.0       |
| RF Filter                                 | SF2176E   | <b>433.92</b>   | 1.6      | ISM RF               | 3.0 x 3.0       |
| RF Filter                                 | RF1302    | <b>439.25</b>   | 0.06     | Narrowband RF Filter | 9.3 mm diameter |
| RF Filter                                 | SF1212D   | <b>452.5</b>    | 4.8      | CDMA450              | 3.8 x 3.8       |
| RF Filter                                 | SF1218D   | <b>453.5</b>    | 7        | CDMA450              | 3.8 x 3.8       |
| RF Filter                                 | SF1201D   | <b>455</b>      | 5        | CDMA450              | 3.8 x 3.8       |
| IF Filter                                 | SF2042B   | <b>456</b>      | 12.8     | Wimax                | 5.0 x 7.0       |
| IF Filter                                 | SF2042C   | <b>456</b>      | 12.8     | Wimax                | 5.0 x 5.0       |
| IF Filter                                 | SF2073B   | <b>456</b>      | 10       | Wimax                | 7.0 x 5.0       |
| IF Filter                                 | SF2046B   | <b>456.44</b>   | 5.22     | Wimax                | 7.0 x 5.0       |
| RF Filter                                 | SF2131D   | <b>462.5</b>    | 4.8      | CDMA450              | 3.8 x 3.8       |
| IF Filter                                 | SF2076B   | <b>464</b>      | 3.4      | Wimax                | 7.0 x 5.0       |
| RF Filter                                 | SF1188C   | <b>465</b>      | 4        | Wireless Access      | 5.0 x 5.0       |
| RF Filter                                 | SF1202D   | <b>465</b>      | 5        | CDMA450              | 3.8 x 3.8       |
| IF Filter                                 | SF2024B   | <b>467.751</b>  | 12.688   | SDARS                | 7.0 x 5.0       |
| IF Filter                                 | SF2024D   | <b>467.751</b>  | 12.5     | SDARS                | 3.8 x 3.8 x 1.2 |
| IF Filter                                 | SF2024D-1 | <b>467.751</b>  | 12.5     | SDARS                | 3.8 x 3.8 x 1.0 |
| IF Filter                                 | SF2024E-1 | <b>467.751</b>  | 12.5     | SDARS                | 3.0 x 3.0 x 0.9 |
| IF Filter                                 | SF2024E-2 | <b>467.751</b>  | 12.5     | SDARS                | 3.0 x 3.0 x 0.9 |
| RF Filter                                 | SF1216D   | <b>481.2</b>    | 4.5      | CDMA450              | 3.8 x 3.8       |
| RF Filter                                 | SF1217D   | <b>491.2</b>    | 4.5      | CDMA450              | 3.8 x 3.8       |
| IF Filter                                 | SF2179C   | <b>495</b>      | 4        | IF Filter            | 5.0 x 5.0       |
| IF Filter                                 | SF2192D   | <b>495</b>      | 0.89     | IF Filter            | 3.8 x 3.8       |
| RF Filter                                 | RF1301    | <b>499.25</b>   | 0.06     | Narrowband RF Filter | 9.3 mm diameter |
| IF Filter                                 | SF1146B   | <b>499.25</b>   | 0.03     | Cable                | 7.0 x 5.0       |
| RF Filter                                 | SF2156B   | <b>611</b>      | 7        | RF Filter            | 5.0 x 7.0       |
| IF Filter                                 | SF2180D   | <b>700</b>      | 3.8      | IF Filter            | 3.8 x 3.8       |



## SAW RF / IF FILTERS

Listed in Order by Frequency

RFM RF Components  
are Manufactured in  
ISO 9001 / TS 16949  
Certified Factories

| SAW RF / IF Filters in Order by Frequency |           |                 |          |                    |            |
|---|-----------|-----------------|----------|--------------------|------------|
| Type                                      | Part No.  | Frequency (MHz) | BW (MHz) | Application        | Case mmxmm |
| RF Filter                                 | SF2200E   | <b>707</b>      | 18       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2171E   | <b>719</b>      | 5        | MediaFlo           | 3.0 x 3.0  |
| RF Filter                                 | SF2126E   | <b>725</b>      | 50       | WIMAX              | 3.0 x 3.0  |
| RF Filter                                 | SF2065C   | <b>743</b>      | 6        | Wimax              | 5.0 x 5.0  |
| RF Filter                                 | SF2199E   | <b>787</b>      | 22       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2198E   | <b>806</b>      | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2092E   | <b>810</b>      | 17       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF2203E   | <b>834</b>      | 30       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF1182B   | <b>836.5</b>    | 25       | Cellular           | 3.0 x 3.0  |
| RF Filter                                 | SF2195E   | <b>842.5</b>    | 5        | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF2197E   | <b>847</b>      | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2142G   | <b>867.5</b>    | 25       | RF Filter          | 2.5 x 2.0  |
| RF Filter                                 | SF2137D   | <b>869</b>      | 2        | ISM band RF Filter | 3.8 x 3.8  |
| RF Filter                                 | SF2137E   | <b>869</b>      | 2        | ISM band RF Filter | 3.0 x 3.0  |
| RF Filter                                 | SF2205E   | <b>879</b>      | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF1183G   | <b>881.5</b>    | 25       | Cellular           | 2.5 x 2.0  |
| RF Filter                                 | SF2145B   | <b>895</b>      | 15.5     | RF Filter          | 7.0 x 5.0  |
| RF Filter                                 | SF2134E   | <b>897.5</b>    | 15       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF2049E   | <b>915</b>      | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2049E   | <b>915</b>      | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2049E-1 | <b>915</b>      | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2053E   | <b>915</b>      | 12.5     | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2093E   | <b>915</b>      | 26       | ISM band RF Filter | 3.0 x 3.0  |
| RF Filter                                 | SF2098G   | <b>915</b>      | 26       | ISM band RF Filter | 2.5 x 2.0  |
| RF Filter                                 | SF2150E   | <b>915</b>      | 10       | ISM band RF Filter | 3.0 x 3.0  |
| RF Filter                                 | SF2201E   | <b>916.45</b>   | 4        | ISM RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2008D   | <b>930.5</b>    | 4        | Wireless Access    | 3.8 x 3.8  |
| RF Filter                                 | SF2002B-2 | <b>942.5</b>    | 35       | EGSM               | 3.0 x 3.0  |
| RF Filter                                 | SF2002E   | <b>942.5</b>    | 35       | EGSM               | 3.0 x 3.0  |
| RF Filter                                 | SF1184B-1 | <b>947.5</b>    | 25       | GSM                | 3.0 x 3.0  |
| RF Filter                                 | SF2184E   | <b>953</b>      | 3        | RF Filter          | 3.0 x 3.0  |
| IF Filter                                 | SF2159E   | <b>974</b>      | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2163E   | <b>1076.06</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2162E   | <b>1178.12</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2017D   | <b>1220</b>     | 8        | Cable/DOCSIS       | 3.8 x 3.8  |
| IF Filter                                 | SF2032E   | <b>1220</b>     | 28       | Cable/DOCSIS       | 3.0 x 3.0  |
| IF Filter                                 | SF2081D   | <b>1220</b>     | 50       | Cable/DOCSIS       | 3.8 x 3.8  |
| IF Filter                                 | SF2081E   | <b>1220</b>     | 50       | Cable/DOCSIS       | 3.0 x 3.0  |
| IF Filter                                 | SF2194E   | <b>1220</b>     | 0.5      | Wimax IF           | 3.0 x 3.0  |
| RF Filter                                 | SF2193E   | <b>1228</b>     | 20       | GPS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2186E   | <b>1268.52</b>  | 20.46    | Beidou/Compass     | 3.0 x 3.0  |
| IF Filter                                 | SF2166E   | <b>1280.18</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2167E   | <b>1382.24</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| RF Filter                                 | SF2177E   | <b>1472</b>     | 40       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                 | SF2164E   | <b>1484.3</b>   | 40       | DirecTV IF         | 3.0 x 3.0  |
| RF Filter                                 | SF1186B-2 | <b>1575.42</b>  | 2.046    | GPS                | 3.0 x 3.0  |
| RF Filter                                 | SF1186G   | <b>1575.42</b>  | 2        | GPS                | 2.5 x 2.0  |
| RF Filter                                 | SF1186H   | <b>1575.42</b>  | 2.4      | GPS                | 2.0 x 1.6  |
| RF Filter                                 | SF1186H-1 | <b>1575.42</b>  | 2        | GPS                | 2.0 x 1.6  |
| RF Filter                                 | SF1186H-2 | <b>1575.42</b>  | 2        | GPS                | 2.0 x 1.6  |
| RF Filter                                 | SF1186K-2 | <b>1575.42</b>  | 2        | GPS                | 1.4 x 1.1  |
| RF Filter                                 | SF1186K-3 | <b>1575.42</b>  | 2        | GPS                | 1.4 x 1.1  |
| IF Filter                                 | SF2165E   | <b>1586.36</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| RF Filter                                 | SF2191E   | <b>1621</b>     | 10       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                 | SF2168E   | <b>1688.42</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| RF Filter                                 | SF2133E   | <b>1747.5</b>   | 75       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                 | SF2169E   | <b>1790.48</b>  | 40       | DirecTV IF         | 3.0 x 3.0  |
| RF Filter                                 | SF1192B   | <b>1842.5</b>   | 75       | DCS                | 3.0 x 3.0  |
| RF Filter                                 | SF2036E   | <b>1880</b>     | 60       | DCS                | 3.0 x 3.0  |
| RF Filter                                 | SF2204E   | <b>1900</b>     | 40       | TD-SCDMA Band RF   | 3.0 x 3.0  |
| RF Filter                                 | SF2001E   | <b>1960</b>     | 60       | PCS                | 3.0 x 3.0  |
| RF Filter                                 | SF1208H   | <b>2017.5</b>   | 15       | TD-SCDMA           | 2.0 x 1.6  |
| RF Filter                                 | SF2202E   | <b>2017.5</b>   | 15       | TD-SCDMAB Band RF  | 3.0 x 3.0  |
| RF Filter                                 | SF1220K-1 | <b>2326</b>     | 14       | SDARS RF           | 1.4 x 1.1  |
| RF Filter                                 | SF2160E   | <b>2330</b>     | 60       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF1219K   | <b>2338.75</b>  | 12.5     | SDARS RF           | 1.4 x 1.1  |
| RF Filter                                 | SF2173E   | <b>2350</b>     | 100      | LTE RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2124E   | <b>2441.8</b>   | 83.5     | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2158E   | <b>2535</b>     | 70       | RF Filter          | 3.0 x 3.0  |

| SAW RF / IF Filters in Order by Frequency |          |                    |          |             |            |
|---|----------|--------------------|----------|-------------|------------|
| Type                                      | Part No. | Frequency (MHz)    | BW (MHz) | Application | Case mmxmm |
| RF Filter                                 | SF2161E  | <b>2650</b>        | 70       | RF Filter   | 3.0 x 3.0  |
| Duplexer                                  | SF2143A  | <b>72.54/80.46</b> | 3.7      | SDARS       | 11.4 x 5.3 |
| Duplexer                                  | SF2143B  | <b>72.54/80.46</b> | 3.7      | SDARS       | 7.0 x 5.0  |
| Duplexer                                  | SF1207C  | <b>836.5/881.5</b> | 25       | CDMA        | 5.0 x 5.0  |
| Duplexer                                  | SF1207D  | <b>836.5/881.5</b> | 25       | CDMA        | 3.8 x 3.8  |
| Duplexer                                  | SF1221F  | <b>1950/2140</b>   | 60       | WCDMA       | 3.2 x 2.5  |
| Duplexer                                  | SF1222D  | <b>2110/2190</b>   | 20       | WCDMA       | 3.8 x 3.8  |

For package options, see RF COMPONENTS PACKAGE SELECTION GUIDE on page 39.

All RFM SAW RF / IF Filters are RoHS compliant.

| SAW RF / IF Filters in Order by Bandwidth |           |                 |          |                      |            |
|---|-----------|-----------------|----------|----------------------|------------|
| Type                                      | Part No.  | Frequency (MHz) | BW (MHz) | Application          | Case (mm)  |
| IF Filter                                 | PX1002    | 86.85           | 0.024    | IS-54 TDMA           | 13.3 x 6.5 |
| IF Filter                                 | PX1004    | 82.2            | 0.03     | IS-54 TDMA           | 13.3 x 6.5 |
| IF Filter                                 | SF1145B   | 427.25          | 0.03     | Cable                | 7.0 x 5.0  |
| IF Filter                                 | SF1146B   | 499.25          | 0.03     | Cable                | 7.0 x 5.0  |
| RF Filter                                 | RF1301    | 499.25          | 0.06     | Narrowband RF Filter | TO39-3     |
| RF Filter                                 | RF1302    | 439.25          | 0.06     | Narrowband RF Filter | TO39-3     |
| IF Filter                                 | SF1088A   | 170.6           | 0.18     | GSM/EDGE             | 19 x 6.5   |
| IF Filter                                 | SF1081A   | 71              | 0.2      | GSM/EDGE             | 22.1 x 8.0 |
| IF Filter                                 | SF1081A-1 | 71              | 0.2      | GSM/EDGE             | 22.1 x 8.0 |
| IF Filter                                 | SF1092A   | 199             | 0.2      | GSM/EDGE             | 19 x 6.5   |
| IF Filter                                 | SF1115A   | 199             | 0.2      | GSM/EDGE             | 9.1 x 7.1  |
| IF Filter                                 | SF2027B   | 199             | 0.2      | GSM/EDGE             | 13.3 x 6.5 |
| IF Filter                                 | SF2183E   | 400             | 0.25     | IF Filter            | 3.0 x 3.0  |
| IF Filter                                 | SF2030A   | 243.95          | 0.3      | PHS                  | 11.5 x 4.0 |
| IF Filter                                 | SF2055A   | 240.05          | 0.3      | PHS                  | 11.5 x 4.0 |
| IF Filter                                 | SF2062A   | 229.25          | 0.3      | PHS                  | 11.5 x 4.0 |
| RF Filter                                 | RF1353C   | 345             | 0.43     | Narrowband RF Filter | 5.0 x 5.0  |
| RF Filter                                 | RF1199    | 291.4           | 0.5      | Filter               | TO39-3     |
| IF Filter                                 | SF1131B   | 266.01          | 0.5      | GPS                  | 7.0 x 5.0  |
| IF Filter                                 | SF2194E   | 1220            | 0.5      | Wimax IF             | 3.0 x 3.0  |
| IF Filter                                 | SF2141B   | 210.38          | 0.6      | CDMA                 | 7.0 X 5.0  |
| RF Filter                                 | SF2196E   | 315             | 0.6      | ISM RF               | 3.0 x 3.0  |
| IF Filter                                 | SF1059A   | 350             | 0.8      | IF Filter            | 9.1 x 7.1  |
| RF Filter                                 | SF2059B-1 | 137.5           | 0.8      | Orbcomm              | 5.0 x 7.0  |
| IF Filter                                 | SF2192D   | 495             | 0.89     | IF Filter            | 3.8 x 3.8  |
| IF Filter                                 | SF1091A   | 211             | 0.9      | GSM/EDGE             | 13.3 x 6.5 |
| IF Filter                                 | SF1056A   | 110.592         | 1.152    | DECT                 | 13.3 x 6.5 |
| IF Filter                                 | SF1111A   | 160             | 1.18     | CDMA                 | 24.6 x 9   |
| IF Filter                                 | SF1120B   | 298.74          | 1.5      | GPS                  | 7.0 x 5.0  |
| IF Filter                                 | SF2135A   | 96              | 1.56     | IF Filter            | 13.3 x 6.5 |
| RF Filter                                 | SF2176E   | 433.92          | 1.6      | ISM RF               | 3.0 x 3.0  |
| RF Filter                                 | SF2136E   | 433.92          | 1.74     | ISM band RF Filter   | 3.0 x 3.0  |
| RF Filter                                 | SF1186G   | 1575.42         | 2        | GPS                  | 2.5 x 2.0  |
| RF Filter                                 | SF1186H-1 | 1575.42         | 2        | GPS                  | 2.0 x 1.6  |
| RF Filter                                 | SF1186H-2 | 1575.42         | 2        | GPS                  | 2.0 x 1.6  |
| RF Filter                                 | SF1186K-2 | 1575.42         | 2        | GPS                  | 1.4 x 1.1  |
| RF Filter                                 | SF1186K-3 | 1575.42         | 2        | GPS                  | 1.4 x 1.1  |
| RF Filter                                 | SF2120C   | 149             | 2        | Orbcomm              | 5.0 x 5.0  |
| RF Filter                                 | SF2137D   | 869             | 2        | ISM band RF Filter   | 3.8 x 3.8  |
| RF Filter                                 | SF2137E   | 869             | 2        | ISM band RF Filter   | 3.0 x 3.0  |
| RF Filter                                 | SF1186B-2 | 1575.42         | 2.046    | GPS                  | 3.0 x 3.0  |
| RF Filter                                 | SF1186H   | 1575.42         | 2.4      | GPS                  | 2.0 x 1.6  |
| IF Filter                                 | SF2033A   | 350             | 2.4      | IF Filter            | 13.3 x 6.5 |
| RF Filter                                 | SF2184E   | 953             | 3        | RF Filter            | 3.0 x 3.0  |
| IF Filter                                 | SF2076B   | 464             | 3.4      | Wimax                | 7.0 x 5.0  |
| IF Filter                                 | SF2094B   | 380             | 3.4      | Wimax                | 7.0 x 5.0  |
| IF Filter                                 | SF2039B   | 72.54           | 3.7      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2039B-2 | 72.54           | 3.7      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2039B-3 | 72.54           | 3.7      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2040B   | 80.46           | 3.7      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2040B-2 | 80.46           | 3.7      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2040B-3 | 80.46           | 3.7      | SDARS                | 7.0 x 5.0  |
| Duplexer                                  | SF2143A   | 72.54/80.46     | 3.7      | SDARS                | 11.4 x 5.3 |
| Duplexer                                  | SF2143B   | 72.54/80.46     | 3.7      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2037B   | 76.5            | 3.8      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2037B-2 | 76.5            | 3.8      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2037B-3 | 76.5            | 3.8      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF2037C   | 76              | 3.8      | SDARS                | 5.0 x 5.0  |
| IF Filter                                 | SF2180D   | 700             | 3.8      | IF Filter            | 3.8 x 3.8  |
| RF Filter                                 | SF1188C   | 465             | 4        | Wireless Access      | 5.0 x 5.0  |
| RF Filter                                 | SF2008D   | 930.5           | 4        | Wireless Access      | 3.8 x 3.8  |
| IF Filter                                 | SF2179C   | 495             | 4        | IF Filter            | 5.0 x 5.0  |
| RF Filter                                 | SF2201E   | 916.45          | 4        | ISM RF               | 3.0 x 3.0  |
| IF Filter                                 | SF1140B   | 75              | 4.2      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF1140B-2 | 75              | 4.2      | SDARS                | 7.0 x 5.0  |
| IF Filter                                 | SF1142B   | 315             | 4.2      | SDARS                | 7.0 x 5.0  |
| RF Filter                                 | SF1214D   | 413.7           | 4.3      | CDMA450              | 3.8 x 3.8  |
| RF Filter                                 | SF1215D   | 423.75          | 4.3      | CDMA450              | 3.8 x 3.8  |
| IF Filter                                 | SF2069A-1 | 96              | 4.3      | TD-SCDMA             | 19.0 x 6.5 |

| SAW RF / IF Filters in Order by Bandwidth |           |                 |          |                    |             |
|---|-----------|-----------------|----------|--------------------|-------------|
| Type                                      | Part No.  | Frequency (MHz) | BW (MHz) | Application        | Case (mm)   |
| RF Filter                                 | SF1216D   | 481.2           | 4.5      | CDMA450            | 3.8 x 3.8   |
| RF Filter                                 | SF1217D   | 491.2           | 4.5      | CDMA450            | 3.8 x 3.8   |
| IF Filter                                 | SF2069A   | 96              | 4.68     | TD-SCDMA           | 13.3 x 6.5  |
| RF Filter                                 | SF1212D   | 452.5           | 4.8      | CDMA450            | 3.8 x 3.8   |
| RF Filter                                 | SF1213D   | 462.5           | 4.8      | CDMA450            | 3.8 x 3.8   |
| IF Filter                                 | SF2006C   | 190             | 4.8      | WCDMA              | 5.0 x 5.0   |
| IF Filter                                 | SF1197B   | 248.6           | 5        | IF Filter          | 7.0 x 5.0   |
| RF Filter                                 | SF1201D   | 455             | 5        | CDMA450            | 3.8 x 3.8   |
| RF Filter                                 | SF1202D   | 465             | 5        | CDMA450            | 3.8 x 3.8   |
| IF Filter                                 | SF2069A-2 | 96              | 5        | TD-SCDMA           | 13.3 x 6.5  |
| IF Filter                                 | SF2125D   | 305             | 5        | Wimax              | 3.8 x 3.8   |
| IF Filter                                 | SF2149A   | 46.08           | 5        | TD-SCDMA           | 13.3 x 6.5  |
| RF Filter                                 | SF2171E   | 719             | 5        | MediaFlo           | 3.0 x 3.0   |
| RF Filter                                 | SF2195E   | 842.5           | 5        | RF Filter          | 3.0 x 3.0   |
| IF Filter                                 | SF2046B   | 456.44          | 5.22     | Wimax              | 7.0 x 5.0   |
| RF Filter                                 | SF2065C   | 743             | 6        | Wimax              | 5.0 x 5.0   |
| RF Filter                                 | SF2188C   | 340             | 6        | SCDMA              | 5.0 x 5.0   |
| IF Filter                                 | SF2026B   | 114.815         | 6.111    | SDARS              | 7.0 x 5.0   |
| RF Filter                                 | SF1218D   | 453.5           | 7        | CDMA450            | 3.8 x 3.8   |
| RF Filter                                 | SF2156B   | 611             | 7        | RF Filter          | 5.0 x 7.0   |
| IF Filter                                 | SF2017D   | 1220            | 8        | Cable/DOCSIS       | 3.8 x 3.8   |
| IF Filter                                 | SF2045A   | 140             | 8        | IF Filter          | 13.3 x 6.5  |
| IF Filter                                 | SF2109D   | 305             | 8        | Wibro              | 3.8 x 3.8   |
| RF Filter                                 | SF2188D   | 340             | 8        | SCDMA              | 3.8 x 3.8   |
| IF Filter                                 | SF2067B   | 172.8           | 8.84     | WCDMA              | 7.0 x 5.0   |
| IF Filter                                 | SF2185A   | 70              | 9        | IF Filter          | 13.3 x 6.5  |
| IF Filter                                 | SF2185A-1 | 70              | 9.1      | IF Filter          | 13.3 x 6.5  |
| IF Filter                                 | SF2063A   | 156             | 9.4      | Wibro              | 13.3 x 6.5  |
| IF Filter                                 | SF2064A   | 156             | 10       | Wimax              | 13.3 x 6.5  |
| IF Filter                                 | SF2073B   | 456             | 10       | Wimax              | 7.0 x 5.0   |
| IF Filter                                 | SF2110D   | 305             | 10       | Wimax              | 3.8 x 3.8   |
| RF Filter                                 | SF2150E   | 915             | 10       | ISM band RF Filter | 3.0 x 3.0   |
| RF Filter                                 | SF2191E   | 1621            | 10       | RF Filter          | 3.0 x 3.0   |
| IF Filter                                 | SF1179B   | 184.14          | 11       | IF Filter          | 7.0 x 5.0   |
| RF Filter                                 | SF1219K   | 2338.75         | 12.5     | SDARS RF           | 1.4 x 1.1   |
| IF Filter                                 | SF2024D   | 467.751         | 12.5     | SDARS              | 3.8x3.8x1.2 |
| IF Filter                                 | SF2024D-1 | 467.751         | 12.5     | SDARS              | 3.8x3.8x1.0 |
| IF Filter                                 | SF2024E-1 | 467.751         | 12.5     | SDARS              | 30x30x0.9   |
| IF Filter                                 | SF2024E-2 | 467.751         | 12.5     | SDARS              | 30x30x0.9   |
| IF Filter                                 | SF2038B   | 76.5            | 12.5     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF2038B-2 | 76.5            | 12.5     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF2038B-3 | 76.5            | 12.5     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF2038C   | 76              | 12.5     | SDARS              | 5.0 x 5.0   |
| RF Filter                                 | SF2053E   | 915             | 12.5     | ISM Band           | 3.0 x 3.0   |
| IF Filter                                 | SF2060B   | 115.18          | 12.5     | SDARS              | 5.0 x 7.0   |
| IF Filter                                 | SF2060B-1 | 115.18          | 12.5     | SDARS              | 5.0 x 7.0   |
| IF Filter                                 | SF2079D   | 251.045         | 12.5     | SDARS              | 3.8 x 3.8   |
| IF Filter                                 | SF2079D-1 | 251.045         | 12.5     | SDARS              | 3.8 x 3.8   |
| IF Filter                                 | SF2138B   | 144.132         | 12.5     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF2024B   | 467.751         | 12.688   | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1141B   | 75              | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1141B-2 | 75              | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1141B-4 | 75              | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1143B   | 315             | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1143B-1 | 315             | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1143B-2 | 315             | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF1143B-4 | 315             | 12.7     | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF2025B   | 259.861         | 12.708   | SDARS              | 7.0 x 5.0   |
| IF Filter                                 | SF2042B   | 456             | 12.8     | Wimax              | 5.0 x 7.0   |
| IF Filter                                 | SF2042C   | 456             | 12.8     | Wimax              | 5.0 x 5.0   |
| RF Filter                                 | SF1220K-1 | 2326            | 14       | SDARS RF           | 1.4 x 1.1   |
| RF Filter                                 | SF1208H   | 2017.5          | 15       | TD-SCDMA           | 2.0 x 1.6   |
| IF Filter                                 | SF2111A   | 140             | 15       | TD-SCDMA           | 13.3 x 6.5  |
| RF Filter                                 | SF2134E   | 897.5           | 15       | RF Filter          | 3.0 x 3.0   |
| IF Filter                                 | SF2172C   | 280             | 15       | IF Filter          | 5.0 x 5.0   |
| RF Filter                                 | SF2202E   | 2017.5          | 15       | TD-SCDMA B Band RF | 3.0 x 3.0   |
| RF Filter                                 | SF2145B   | 895             | 15.5     | RF Filter          | 7.0 x 5.0   |
| IF Filter                                 | SF1174B   | 374             | 17       | WLAN               | 5.0 x 5.0   |
| IF Filter                                 | SF1174D   | 374             | 17       | WLAN               | 3.8 x 3.8   |

All RFM SAW RF / IF Filters are RoHS compliant.

| SAW RF / IF Filters in Order by Bandwidth |           |                 |          |                    |            |
|---|-----------|-----------------|----------|--------------------|------------|
| Type                                      | Part No.  | Frequency (MHz) | BW (MHz) | Application        | Case (mm)  |
| RF Filter                                 | SF2092E   | 810             | 17       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF2200E   | 707             | 18       | BTS RF             | 3.0 x 3.0  |
| IF Filter                                 | SF2140A   | 140             | 18.4     | WCDMA/TD-SCDMA IF  | 13.3 x 6.5 |
| IF Filter                                 | SF2140A-1 | 140             | 18.4     | WCDMA/D-SCDMA IF   | 13.3 x 6.5 |
| IF Filter                                 | SF1189B-1 | 280             | 18.5     | Wireless Access    | 5.0 x 5.0  |
| IF Filter                                 | SF2151B   | 211.2           | 18.84    | LTE/WCDMA          | 5.0 x 7.0  |
| IF Filter                                 | SF1200B   | 96              | 20       | TD-SCDMA           | 7.0 x 5.0  |
| Duplexer                                  | SF1222D   | 2110/2190       | 20       | WCDMA              | 3.8 x 3.8  |
| IF Filter                                 | SF2131B   | 92.16           | 20       | TD-SCDMA           | 7.0 x 5.0  |
| IF Filter                                 | SF2139D   | 177             | 20       | CDMA2000           | 3.8 x 3.8  |
| IF Filter                                 | SF2147D   | 157             | 20       | CDMA2000           | 3.8 x 3.8  |
| IF Filter                                 | SF2148B   | 138.24          | 20       | LTE/TD-SCDMA       | 5.0 x 5.0  |
| IF Filter                                 | SF2155B   | 153.6           | 20       | IF Filter          | 5.0 x 7.0  |
| IF Filter                                 | SF2157A   | 156             | 20       | IF Filter          | 13.3 x 6.5 |
| IF Filter                                 | SF2170D   | 165             | 20       | CDMA2000           | 3.8 x 3.8  |
| IF Filter                                 | SF2178A   | 168             | 20       | Wimax              | 13.3 x 6.5 |
| RF Filter                                 | SF2193E   | 1228            | 20       | GPS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2186E   | 1268.52         | 20.46    | Beidou/Compass     | 3.0 x 3.0  |
| IF Filter                                 | SF1177A   | 57.6            | 21.2     | WCDMA/TD-SCDMA     | 13.3 x 6.5 |
| IF Filter                                 | SF2181D   | 140             | 22       | IF Filter          | 3.8 x 3.8  |
| RF Filter                                 | SF2199E   | 787             | 22       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF1182B   | 836.5           | 25       | Cellular           | 3.0 x 3.0  |
| RF Filter                                 | SF1183G   | 881.5           | 25       | Cellular           | 2.5 x 2.0  |
| RF Filter                                 | SF1184B-1 | 947.5           | 25       | GSM                | 3.0 x 3.0  |
| Duplexer                                  | SF1207C   | 836.5/881.5     | 25       | CDMA               | 5.0 x 5.0  |
| Duplexer                                  | SF1207D   | 836.5/881.5     | 25       | CDMA               | 3.8 x 3.8  |
| RF Filter                                 | SF2142G   | 867.5           | 25       | RF Filter          | 2.5 x 2.0  |
| RF Filter                                 | SF2146D   | 415             | 25       | RF Filter          | 3.8 x 3.8  |
| RF Filter                                 | SF2049E   | 915             | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2049E   | 915             | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2049E-1 | 915             | 26       | ISM Band           | 3.0 x 3.0  |
| RF Filter                                 | SF2093E   | 915             | 26       | ISM band RF Filter | 3.0 x 3.0  |
| RF Filter                                 | SF2098G   | 915             | 26       | ISM band RF Filter | 2.5 x 2.0  |
| IF Filter                                 | SF2032E   | 1220            | 28       | Cable/DOCSIS       | 3.0 x 3.0  |
| IF Filter                                 | SF2072C   | 360             | 30       | Wimax              | 5.0 x 5.0  |
| IF Filter                                 | SF2086C   | 240             | 30       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                 | SF2091C   | 385             | 30       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                 | SF2189A   | 140             | 30       | IF Filter          | 13.3 x 6.5 |
| RF Filter                                 | SF2197E   | 847             | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2198E   | 806             | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2203E   | 834             | 30       | RF Filter          | 3.0 x 3.0  |
| RF Filter                                 | SF2205E   | 879             | 30       | BTS RF             | 3.0 x 3.0  |
| RF Filter                                 | SF2002B-2 | 942.5           | 35       | EGSM               | 3.0 x 3.0  |
| RF Filter                                 | SF2002E   | 942.5           | 35       | EGSM               | 3.0 x 3.0  |
| IF Filter                                 | SF2085A   | 96              | 35       | IF Filter          | 13.3 x 6.5 |
| IF Filter                                 | SF2087C   | 267.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                 | SF2088C   | 297.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                 | SF2089C   | 327.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                 | SF2090C   | 357.5           | 35       | IF Filter          | 5.0 x 5.0  |
| IF Filter                                 | SF2159E   | 974             | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2162E   | 1178.12         | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2163E   | 1076.06         | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2164E   | 1484.3          | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2165E   | 1586.36         | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2166E   | 1280.18         | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2167E   | 1382.24         | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2168E   | 1688.42         | 40       | DirecTV IF         | 3.0 x 3.0  |
| IF Filter                                 | SF2169E   | 1790.48         | 40       | DirecTV IF         | 3.0 x 3.0  |
| RF Filter                                 | SF2177E   | 1472            | 40       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                 | SF2182D   | 140             | 40       | IF Filter          | 3.8 x 3.8  |
| RF Filter                                 | SF2204E   | 1900            | 40       | TD-SCDMA Band RF   | 3.0 x 3.0  |
| IF Filter                                 | SF2081D   | 1220            | 50       | Cable/DOCSIS       | 3.8 x 3.8  |
| IF Filter                                 | SF2081E   | 1220            | 50       | Cable/DOCSIS       | 3.0 x 3.0  |
| RF Filter                                 | SF2126E   | 725             | 50       | WIMAX              | 3.0 x 3.0  |
| Duplexer                                  | SF1221F   | 1950/2140       | 60       | WCDMA              | 3.2 x 2.5  |
| RF Filter                                 | SF2001E   | 1960            | 60       | PCS                | 3.0 x 3.0  |
| RF Filter                                 | SF2036E   | 1880            | 60       | DCS                | 3.0 x 3.0  |
| RF Filter                                 | SF2160E   | 2330            | 60       | RF Filter          | 3.0 x 3.0  |
| IF Filter                                 | SF2190B   | 138             | 60       | Sat Receiver       | 5.0 x 7.0  |

| SAW RF / IF Filters in Order by Bandwidth |          |                 |          |              |           |
|---|----------|-----------------|----------|--------------|-----------|
| Type                                      | Part No. | Frequency (MHz) | BW (MHz) | Application  | Case (mm) |
| RF Filter                                 | SF2158E  | 2535            | 70       | RF Filter    | 3.0 x 3.0 |
| RF Filter                                 | SF2161E  | 2650            | 70       | RF Filter    | 3.0 x 3.0 |
| RF Filter                                 | SF1192B  | 1842.5          | 75       | DCS          | 3.0 x 3.0 |
| RF Filter                                 | SF2133E  | 1747.5          | 75       | RF Filter    | 3.0 x 3.0 |
| RF Filter                                 | SF2124E  | 2441.8          | 83.5     | ISM Band     | 3.0 x 3.0 |
| RF Filter                                 | SF2173E  | 2350            | 100      | LTE RF       | 3.0 x 3.0 |
| IF Filter                                 | SF2187   | 190             | 60       | Sat Receiver | 7.0 x 5.0 |

For package options, see RF COMPONENTS PACKAGE SELECTION GUIDE on page 39.



RFM retains a long history of providing stable, SAW based frequency control products for computer timing, communications, test instrumentation and military applications. In addition, RFM manufactures optical timing products based on our patented "Diff Sine" technology to meet the increasing demand for bandwidth in communication systems. These products have been specifically developed for applications such as dense wave division multiplexing (DWDM) equipment where timing integrity and elimination of system noise in circuits are critical.

The OP4005B and OP4005B-1 are both 622.08 MHz differential clocks with near perfect symmetry and extremely low jitter with or without noise on the power planes. The OP4006B is a 666.5 MHz Clock for forward error correction timing. RFM's "Diff Sine" architecture is the basis of each of these high performance optical products.

The OPB series along with the SCB series Clocks are also used for timing on ultra high speed A to D converter applications and other digital radio applications.

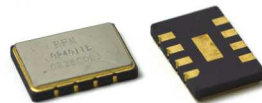
### Applications

- Digital communication systems
- High performance analog and digital radios
- Air Traffic Control (ATC) and Traffic Collision Avoidance Systems (TCAS)
- IFF interrogators & transponders, instruments
- Point-to-point microwave communications systems
- GPS systems

**Packages and Minimum Order Quantities.** Frequency Control products are packaged in dual-in-line package (DIP) and surface mount (SMC) packages. The DIP packaged parts are shipped in antistatic box with a minimum quantity of 30. The SMC packaged parts are shipped via tape and reel with minimum quantity of 500 for a 7" reel.



DIP16-8 Case  
25.02 mm x 12.83 mm x 6.35 mm



SMC-8 Case  
14 mm x 9 mm

| Voltage Controlled Oscillators |             |   |         |
|--------------------------------|-------------|---|---------|
| Part No.                       | Freq. (MHz) | Tol/Spec                                      | Case    |
| HO4001-1                       | 1000        | +/- 0.15 MHz, 0~5 Vdc, Low Phase Noise        | DIP16-8 |
| HO4002-1                       | 400         | +/- 0.04 MHz, 0~10 Vdc, Low Phase Noise       | DIP16-8 |
| HO4050B-1                      | 622.08      | +/- 100 ppm, 1 ps RMS Jitter, Low Phase Noise | SMC-08  |
| HO1080-3                       | 1030        | +/- 200 KHz (-55 °C to 105 °C )               | DIP16-8 |
| HO1081-3                       | 1090        | +/- 250 KHz (-55 °C to 105 °C )               | DIP16-8 |

| VCISO Timing Clock for Optical Networking |             |  |        |
|---|-------------|--|--------|
| Part No.                                  | Freq. (MHz) | Tol/Spec                                       | Case   |
| OP4004B                                   | 625         | +/-100 ppm, 2ps RMS Jitter, Low Phase Noise    | SMC-8  |
| OP4005B                                   | 622.08      | +/-100 ppm, 0.1ps RMS Jitter, Low Phase Noise  | SMC-8  |
| OP4005B-1                                 | 622.08      | +/-100 ppm, 0.1ps RMS Jitter, Low Phase Noise  | SMC-8A |
| OP4006B                                   | 666.51      | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4006B-1                                 | 666.51      | +/-100 ppm, 1ps RMS Jitter, Low Phase Noise    | SMC-8A |
| OP4007B                                   | 669.128     | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4008B                                   | 669.327     | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4009B                                   | 672.163     | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4010B                                   | 663.552     | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4011B                                   | 719.734     | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4012B                                   | 644.53125   | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4013B                                   | 693.48342   | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4014B                                   | 627.329     | +/-100 ppm, <1 ps RMS Jitter, Low Phase Noise  | SMC-8  |
| OP4015B                                   | 780.881     | +/-100 ppm, 0.2 ps RMS Jitter, Low Phase Noise | SMC-8  |
| OP4017B                                   | 777.6       | +/-100 ppm, 1 ps RMS Jitter, Low Phase Noise   | SMC-8  |
| OP4017B-1                                 | 777.6       | +/-100 ppm, 2 ps RMS Jitter, Low Phase Noise   | SMC-8A |
| OP4018B-1                                 | 718.864     | +/-50 ppm, 0.5 ps RMS Jitter, Low Phase Noise  | SMC-8A |

| Diff Sine Wave Clock |             |                        |        |
|----------------------|-------------|------------------------|--------|
| Part No.             | Freq. (MHz) | Tol/Spec               | Case   |
| SC3011B-1            | 600         | Tol = 250 ppm, Vcc=3.3 | SMC-8  |
| SC3015B              | 550         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3017B              | 400         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3019B              | 500         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3035B-1            | 800         | Tol = 250 ppm, Vcc=3.3 | SMC-8  |
| SC3035B-2            | 800         | Tol = 250 ppm, Vcc=3.3 | SMC-8  |
| SC3037B              | 350         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3038B              | 532         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3040B              | 400         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3041B              | 300         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3042B              | 624         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3044B              | 251         | Tol = 300 ppm, Vcc=3.3 | SMC-8  |
| SC3045B              | 621.6       | Tol = 250 ppm, Vcc=3.3 | SMC-8  |
| SC3046B-5            | 933.12      | Tol = 70 ppm, Vcc=3.3  | SMC-8B |
| SC3048B              | 444         | Tol = 200 ppm, Vcc=3.3 | SMC-8  |
| SC3049B              | 700         | Tol = 250 ppm, Vcc=3.3 | SMC-8  |
| SC3053B              | 750         | Tol = 250 ppm, Vcc=3.3 | SMC-8  |
| SC3056B              | 667         | Tol = 250 ppm, Vcc=3.3 | SMC-8B |

All RFM SAW-Based Frequency Control Products are RoHS compliant.

RFM offers a variety of crystal based products. These products are small, high performance devices used in both time and frequency domain applications. RFM's Crystal Base Products include multiple series of surface mount devices: XTL, XTC, XVT, XO, and XFL series. These are surface mount devices based on crystal technology and used in most wireless and digital applications:

- **XTL:** Crystals
- **XTC:** TCXO (Temperature Compensated Crystal Oscillators)
- **XVT:** VCTCXO (Voltage Controlled Temperature Compensated Crystal Oscillators)
- **XFL:** Crystal Filters
- **XO:** Crystal Oscillators

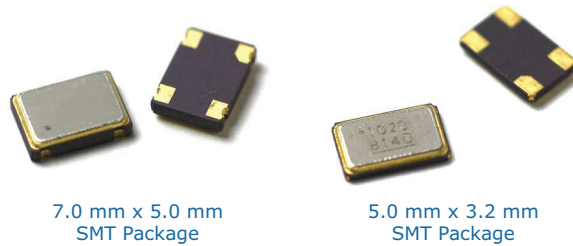
### Applications

- AMR (Automated Meter Reading)
- SDARS
- Cellular BTS and Repeater
- Cable Modem and Digital Set-Top Box
- RFID reader
- WiMax
- GPS
- Cellular Phone

**Packages and Minimum Order Quantities.** Crystal-based products are packaged in surface mount packages (SMT) in a variety of sizes:

- 1.6 mm x 1.2 mm
- 2.0 mm x 1.6 mm
- 2.5 mm x 2.0 mm
- 3.2 mm x 2.5 mm
- 3.2 mm x 2.6 mm
- 3.2 mm x 2.7 mm
- 3.2 mm x 2.8 mm
- 5.0 mm x 3.2 mm
- 7.0 mm x 5.0 mm

They are shipped in tape and reel with minimum quantity of 500 in 7" reel, and minimum quantity of 2,000 in 13" reel.



| Crystal Filter in Order by Part Number |             |                                      |           |
|--|-------------|--------------------------------------|-----------|
| Part No.                               | Freq. (MHz) | Tol/Spec                             | Case (mm) |
| <b>XFL8001</b>                         | 76.8        | 4 kHz BW, -3 dB IL, -30 °C to +80 °C | 5.0 x 3.2 |

| Crystal Oscillators in Order by Part Number |             |                                     |           |
|---|-------------|-------------------------------------|-----------|
| Part No.                                    | Freq. (MHz) | Tol/Spec                            | Case (mm) |
| <b>XO3001</b>                               | 125         | 3.3 V, +/- 50 ppm, -40 °C to +85 °C | 7.0 x 5.0 |
| <b>XO3001-1</b>                             | 125         | 3.3 V, +/- 80 ppm, -40 °C to +85 °C | 7.0 x 5.0 |
| <b>XO3002</b>                               | 20.48       | 3.3 V, +/- 40 ppm, -40 °C to +85 °C | 7.0 x 5.0 |
| <b>XO3003</b>                               | 25.6        | 3.3 V, +/- 40 ppm, -40 °C to +85 °C | 7.0 x 5.0 |

| Temperature Compensated Crystal Oscillator |             |   |           |
|--|-------------|---|-----------|
| Part No.                                   | Freq. (MHz) | Tol/Spec                                  | Case (mm) |
| <b>XTC7001</b>                             | 18.414      | 3.0 V, +/-2 ppm, -40 °C to +85 °C         | 5.0 x 3.2 |
| <b>XTC7002</b>                             | 30          | 2.8 V, +/-2 ppm, -30 °C to +85 °C         | 3.2 x 2.5 |
| <b>XTC7003</b>                             | 12.8        | 3.0 V, +/-1 ppm, -30 °C to +85 °C         | 5.0 x 3.2 |
| <b>XTC7003P</b>                            | 12.8        | 3.0 V, +/-1 ppm, -30 °C to +70 °C         | 3.2 x 2.5 |
| <b>XTC7004</b>                             | 16.367667   | 2.85 V, +/-0.5 ppm, -30 °C to +85 °C      | 3.2 x 2.5 |
| <b>XTC7005</b>                             | 16.369      | 2.85 V, +/-0.5 ppm, -30 °C to +85 °C      | 3.2 x 2.5 |
| <b>XTC7006</b>                             | 26          | 3.0 V, +/-0.5 ppm, -30 °C to +80 °C       | 3.2 x 2.5 |
| <b>XTC7007</b>                             | 13          | up to 3.6 V, +/-2.0 ppm, -30 °C to +80 °C | 3.2 x 2.5 |
| <b>XTC7008</b>                             | 40          | 2.8 V, +/-2.5 ppm, -30 °C to +85 °C       | 3.2 x 2.5 |
| <b>XTC7009</b>                             | 16.368      | 2.85 V, +/-0.5 ppm, -30 °C to +85 °C      | 3.2 x 2.5 |

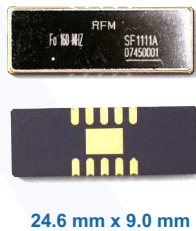
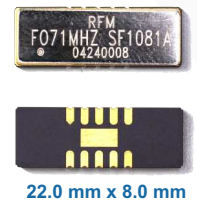
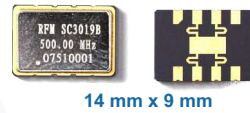
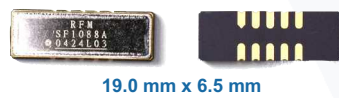
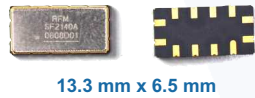
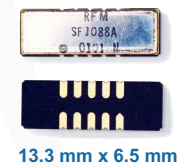
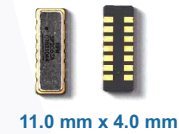
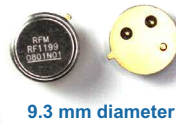
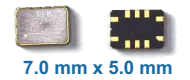
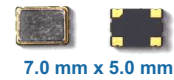
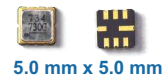
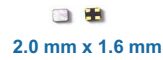
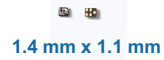
| Voltage Controlled Temperature Compensated Crystal Oscillator |             |                                    |           |
|---|-------------|------------------------------------|-----------|
| Part No.  | Freq. (MHz) | Tol/Spec                           | Case (mm) |
| <b>XVT9001</b>  | 19.2        | 2.8V, +/-2.5 ppm, -20 °C to +70 °C | 3.2 x 2.5 |
| <b>XVT9002</b>  | 26          | 2.8V, +/-2.5 ppm, -20 °C to +75 °C | 3.2 x 2.5 |
| <b>XVT9003</b>  | 19.2        | 2.8V, +/-2.5 ppm, -30 °C to +80 °C | 3.2 x 2.5 |
| <b>XVT9004</b>  | 30          | 2.8V, +/-2.5ppm, -30 °C to +80 °C  | 3.2 x 2.6 |
| <b>XVT9005</b>  | 32          | 2.8V, +/-2.0ppm, -30 °C to +85 °C  | 3.2 x 2.7 |
| <b>XVT9006</b>  | 40          | 2.8V, +/-2.0ppm, -30 °C to +85 °C  | 3.2 x 2.8 |
| <b>XVT9007</b>  | 19.6608     | 2.8V, +/-2.0ppm, -30 °C to +85 °C  | 3.2 x 2.8 |
| <b>XVT9008</b>  | 30          | 3.3V, +/-2.5ppm, -30 °C to +75 °C  | 3.2 x 2.5 |
| <b>XVT9009</b>  | 20          | 3.3V, +/-0.5ppm, -40 °C to +85 °C  | 7.0 x 5.0 |

| Crystal Resonator in Order by Frequency |                 |                                       |           |
|---|-----------------|---------------------------------------|-----------|
| Part No.                                | Freq. (MHz)     | Tol/Spec                              | Case (mm) |
| XTL1009                                 | <b>8</b>        | 12 pF, +/-30 ppm, -40 °C to +85 °C    | 5.0 x 3.2 |
| XTL1005                                 | <b>9.84375</b>  | 3 pF, +/-50 ppm, -40 °C to +125 °C    | 5.0 x 3.2 |
| XTL1001                                 | <b>9.84375</b>  | 10 pF, +/-30 ppm, -40 °C to +125 °C   | 5.0 x 3.2 |
| XTL1002                                 | <b>10</b>       | 12 pF, +/-20 ppm, -20 °C to +70 °C    | 5.0 x 3.2 |
| XTL1010                                 | <b>12</b>       | 12 pF, +/-30 ppm, -10 °C to +60 °C    | 5.0 x 3.2 |
| XTL1020                                 | <b>12.8</b>     | 15 pF, +/- 20 ppm, -40 °C to +85 °C   | 5.0 x 3.2 |
| XTL1006                                 | <b>13.56</b>    | 3 pF, +/-50 ppm, -40 °C to +125 °C    | 5.0 x 3.2 |
| XTL1026                                 | <b>13.56</b>    | 12 pF, +/- 30 ppm, -20 °C to +70 °C   | 5.0 x 3.2 |
| XTL1003-1                               | <b>13.56</b>    | 13.5 pF, +/- 20 ppm, -20 °C to +70 °C | 5.0 x 3.2 |
| XTL1004                                 | <b>13.56</b>    | 20 pF, +/-10 ppm, -20 °C to +70 °C    | 5.0 x 3.2 |
| XTL1003                                 | <b>13.56</b>    | 20 pF, +/- 50 ppm, -40 °C to +125 °C  | 5.0 x 3.2 |
| XTL1021                                 | <b>16</b>       | 12 pF, +/- 10 ppm, -40 °C to +85 °C   | 5.0 x 3.2 |
| XTL1022                                 | <b>24</b>       | 10 pF, +/- 10 ppm, -40 °C to +85 °C   | 2.5 x 2.0 |
| XTL1012                                 | <b>24.265</b>   | 12 pF, +/-15 ppm, -40 °C to +85 °C    | 2.5 x 2.0 |
| XTL1018                                 | <b>24.265</b>   | 12 pF, +/-30 ppm, -40 °C to +85 °C    | 2.0 x 1.6 |
| XTL1023                                 | <b>26</b>       | 9 pF, +/-10 ppm, -40 °C to +85 °C     | 2.0 x 1.6 |
| XTL1011                                 | <b>26</b>       | 9 pF, +/-30 ppm, -20 °C to +75 °C     | 3.2 x 2.5 |
| XTL1013                                 | <b>26</b>       | 10.3 pF, +/-10 ppm, -20 °C to +75 °C  | 3.2 x 2.5 |
| XTL1008                                 | <b>26</b>       | 16 pF, +/-10 ppm, -20 °C to +70 °C    | 3.2 x 2.5 |
| XTL1027                                 | <b>26.43875</b> | 12 pF, +/-20 ppm, -20 °C to +80 °C    | 5.0 x 3.2 |
| XTL1025                                 | <b>27.13438</b> | 12 pF, +/-30 ppm, -20 °C to +70 °C    | 5.0 x 3.2 |
| XTL1028N                                | <b>30</b>       | 12 pF, +/-20 ppm, -40 °C to +85 °C    | 5.0 x 3.2 |
| XTL1017                                 | <b>30</b>       | 20 pF, +/-15 ppm, -40 °C to +105 °C   | 3.2 x 2.5 |
| XTL1024                                 | <b>40</b>       | 8 pF, +/-10 ppm, -20 °C to +75 °C     | 1.6 x 1.2 |
| XTL1014                                 | <b>48.53</b>    | 8 pF, +/-30 ppm, -40 °C to +85 °C     | 2.5 x 2.0 |
| XTL1015                                 | <b>48.53</b>    | 10 pF, +/-30 ppm, -40 °C to +85 °C    | 2.5 x 2.0 |
| XTL1016                                 | <b>48.53</b>    | 12 pF, +/-30 ppm, -40 °C to +85 °C    | 2.5 x 2.0 |
| XTL1019                                 | <b>48.53</b>    | 12 pF, +/-30 ppm, -40 °C to +85 °C    | 2.0 x 1.6 |

All RFM Crystal-Based Products are RoHS compliant.

**RFM SAW Filters, SAW based Frequency Control devices, and Crystal Products come in the following package styles.**

Packages shown below are near actual size.



## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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