

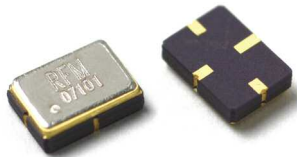
High performance wireless components integral to enabling wireless connections and communications; embedded into a wide range of products.

**6 MHz – 2.6 GHz**

**SMALL SIZE**

**LOW COST**

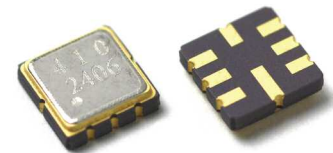
**LOW POWER CONSUMPTION**



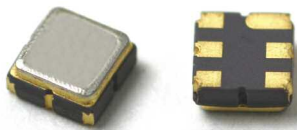
All RFM SAW Resonators are RoHS compliant.

**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.

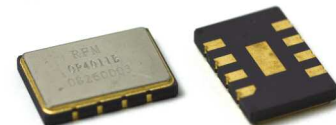


All RFM SAW RF/IF Filters are RoHS compliant.

**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.

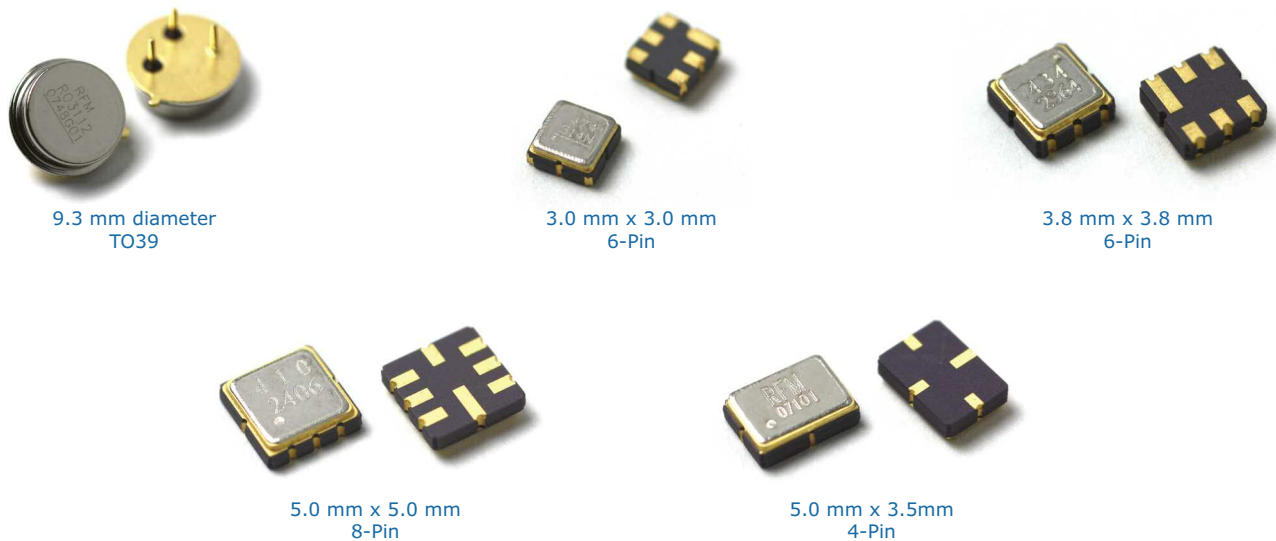
**Applications**

- 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.

### 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.

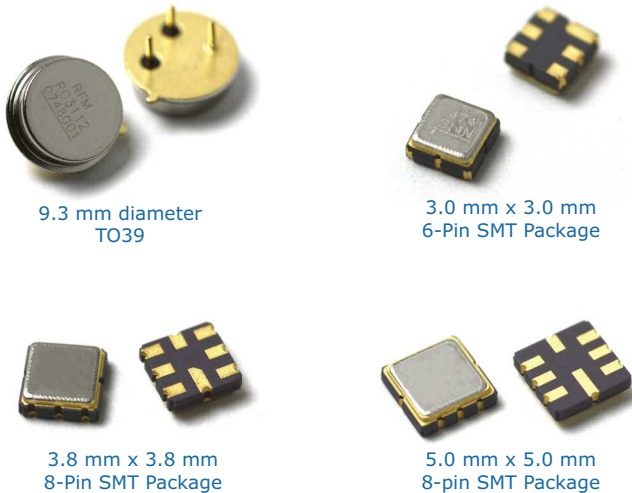
Typical bandwidths are 600-900 kHz with typical ultimate out-of-band rejection of 50 dB. Special rejection is provided at key points such as -10.7 MHz for local oscillator rejection and -21.4 MHz for the image spurious response in typical superhet receivers.

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

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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.

All RFM SAW RF / IF Filters are RoHS compliant.

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.

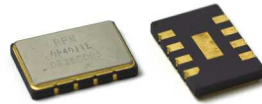
### Applications

- 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

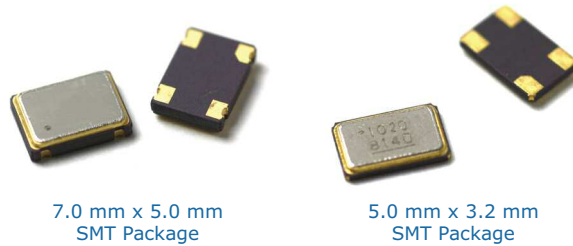
### Applications

- 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.

