

RF1191

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RFM

224.7 MHz

SAW Filter

*Ideal Front-End Filter for 224.7 MHz Wireless Receivers**Low-Loss, Coupled-Resonator Quartz Design**Simple External Impedance Matching**Rugged TO39 Hermetic Package*

The RF1191 is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 224.7 MHz receivers. Receiver designs using this filter include superhet with 10.7 MHz or 500 kHz IF, direct conversion, and superregen. Typical applications of these receivers are wireless remote-control and security devices operating in France under PTT Specification ST/PAA/TPA/AGH/1542.



TO39-3 Case

This coupled-resonator filter (CRF) uses selective null placement to provide suppression, typically greater than 40 dB, of the LO and image spurious responses of superhet receivers with 10.7 MHz IF. RFM's advanced SAW design and fabrication technology is utilized to achieve high performance and very low loss with simple external impedance matching (not included). Quartz construction provides excellent frequency stability over a wide temperature range.

Electrical Characteristics

Characteristic		Sym	Notes	Minimum	Typical	Maximum	Units
Center Frequency at 25°C	Absolute Frequency	f_C	2, 3, 4,	224.62		224.78	MHz
	Tolerance from 224.7 MHz	Δf_C	5, 6			± 80	kHz
Insertion Loss		IL	2, 4, 7		2.3	5.0	dB
3 dB Bandwidth		BW ₃	2, 3, 4, 7	500	680	800	kHz
Rejection	at $f_C - 21.4$ MHz (Image)		2	40	50		dB
	at $f_C - 10.7$ MHz (LO)			15	30		
	Ultimate				80		
Temperature	Operating Case Temperature	T_C	4, 7, 8	-35		+85	°C
	Turnover Temperature	T_O		15	25	35	°C
	Turnover Frequency	f_O			f_C		MHz
	Frequency Temperature Coefficient	FTC			0.032		ppm/°C ²
Frequency Aging	Absolute Value during the First Year	fA	1		<±10		ppm/yr
External Impedance	Series Inductance	L	2, 7	12 turns 28 AWG on Toroid			
	Shunt Capacitance	C	2, 7	6		50	pF
Lot Symbolization (in addition to Lot and to Date Codes)		RFM RF1191					



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

- Frequency aging is the change in f_C with time and is specified at +65°C or less. Aging may exceed the specification for prolonged temperatures above +65°C. Typically, aging is greatest the first year after manufacture, decreasing significantly in subsequent years.
- Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture, which is connected to a 50Ω test system with VSWR ≤ 1.2:1. The test fixture's L and C are adjusted for minimum insertion loss at the filter center frequency, f_C . Note that insertion loss, bandwidth, and passband shape are dependent on the impedance matching component values and quality. The optimum impedance matching component values are dependent on circuit parasitic losses.
- The frequency f_C is defined as the midpoint between the 3dB frequencies.
- Unless noted otherwise, specifications apply over the entire specified operating temperature range.
- One or more of the following United States patents apply: 4,454,488; 4,616,197, and others pending.
- All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
- The design, manufacturing process, and specifications of this device are subject to change without notice.
- The turnover temperature, T_O , is the temperature of maximum (or turnover) frequency, f_O . The nominal center frequency at any case temperature, T_C , may be calculated from: $f = f_O [1 - FTC (T_O - T_C) / 2]$.



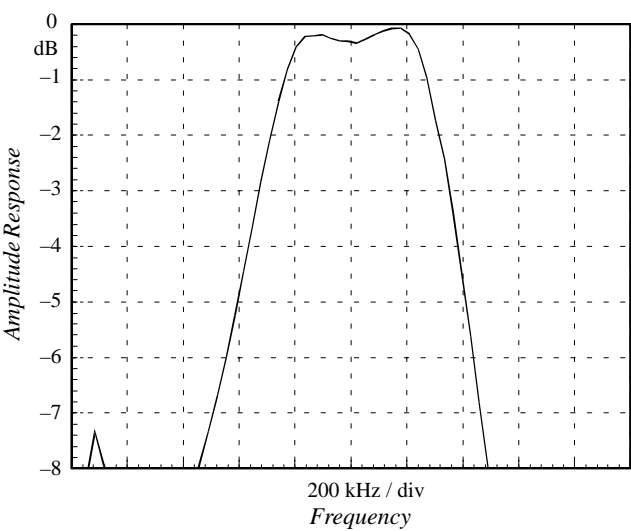
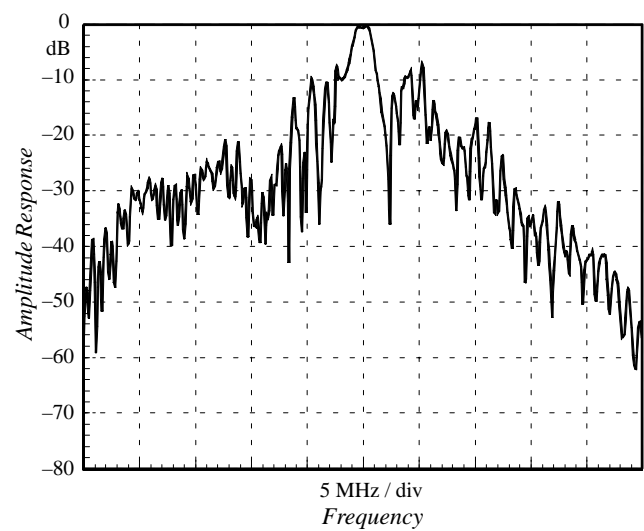
224.7 MHz SAW Filter

Absolute Maximum Ratings

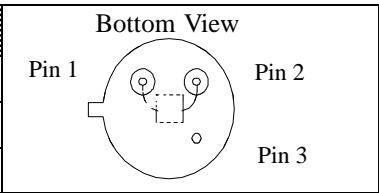
Rating	Value	Units
Incident RF Power	+13	dBm
DC Voltage Between Any Two Pins (Observe ESD Precautions)	±30	VDC
Case Temperaure ¹	-40 to +85	°C

Typical Filter Response

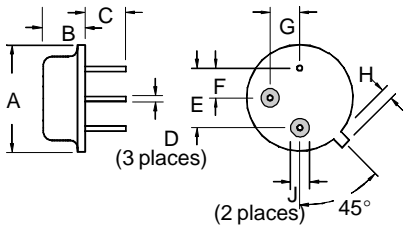
Typical filter responses are shown below. The actual reponse is dependent on external impedance matching and circuit layout. Illustrated frequencies and minimum rejection for LO and IMAGE are shown only for superhet receivers with 10.7 MHz IF.



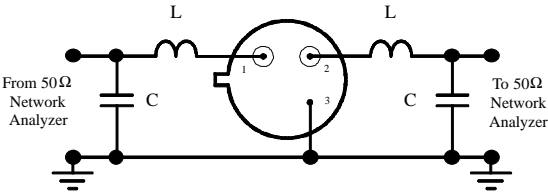
Electrical Connections

Pin	Connection	
1	Input or Output	
2	Output or Input	
3	Case Ground	

Case Design



Typical Test Circuit



Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A		9.30		0.366
B		3.18		0.125
C	2.50	3.50	0.098	0.138
D	0.46 Nominal		0.018 Nominal	
E	5.08 Nominal		0.200 Nominal	
F	2.54 Nominal		0.100 Nominal	
G	2.54 Nominal		0.100 Nominal	
H		1.02		0.040
J	1.40		0.055	