



RF1238B

318.0 MHz SAW Filter



SM8558-8 Case

- **Ideal Front-End Filter for European Wireless Receivers**
- **Low-Loss, Coupled-Resonator Quartz Design**
- **Simple External Impedance Matching**
- **Surface-Mount Ceramic Case with 52 mm² Footprint**

The RF1238B is a low-loss, compact, and economical surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in 318.0 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 the USA under FCC Part 15, in Canada under DOC RSS210, and in Australia.

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). Our new patent pending solder seal process utilizes a Faraday shield lid, which improves out of band rejection.

Electrical Characteristics

Characteristic	Sym	Notes	Minimum	Typical	Maximum	Units
Nominal Frequency	f_c	2, 4, 5, 6		318.00		MHz
Insertion Loss	IL	3, 4, 7		5.0	8.5	dB
3 dB Passband	BW_3	2, 3, 4, 7				kHz
3 dB Rejectband	BW_3	2, 3, 4, 7		± 135		kHz
Rejection	at $f_c - 21.4$ MHz (Image)	4	40	50		dB
	at $f_c - 10.7$ MHz (LO)		15	30		
	Ultimate			80		
Temperature	Operating Case Temp.	T_C	-40		+85	$^{\circ}\text{C}$
	Turnover Temperature	T_O	15	25	40	$^{\circ}\text{C}$
	Turnover Frequency	f_O		f_c		MHz
	Freq. Temp. Coefficient	FTC		0.032		ppm/ $^{\circ}\text{C}^2$
Frequency Aging	Absolute Value during the First Year	fA	3	< ± 10		ppm/yr
External Impedance	Series Inductance	L		47		nH
	Shunt Capacitance	C		5-18		pF
Lid Symbolization (in addition to Lot and/or Date Codes)			RF1238B			



CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

1. Typical demonstration circuit shown is for SM8558-8 solder seal filters.
2. Passband and reject bands are specified in reference to f_c .
3. All characteristics are specified over the operating temperature range and typical aging is 10 years.
4. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture. Note that insertions loss, bandwidth, and passband shape are dependent on the impedance matching component values and quality. Demonstration circuits are available for confirmation of device performance.
5. One or more of the following U.S. Patents apply: 4,454,488; 4,616,197; and others pending.
6. All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
7. The design, manufacturing process, and specifications of this device are subject to change without notice.
8. The turnover temperature, T_O , is the temperature of maximum (or turnover) frequency, f_O . The nominal frequency at any case temperature, T_C , outside the operating temperature range may be calculated from: $f = f_O [1 - FTC (T_O - T_C)^2]$.

Absolute Maximum Ratings

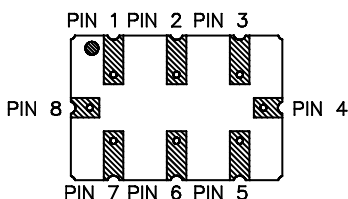
Rating	Value	Units
Incident RF Power	+13	dBm
DC Voltage between any 2 pins (Observe ESD Precautions)	±30	VDC
Case Temperature ¹	-40 to +85	°C

Typical Filter Response

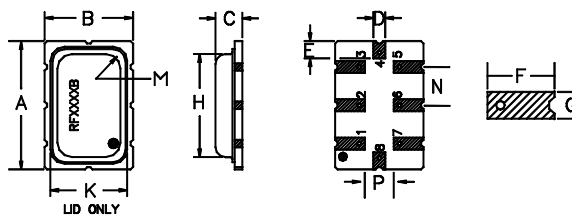
Typical filter responses are shown below. The actual response is dependent on external impedance matching and circuit layout. Illustrated frequencies and minimum rejection for LO and IMAGE are shown only for superhet receivers with 10.7 MHz IF.

Electrical Connections

Pin	Connection
1	Input
2	Ground
3	Output Return
4	Case Ground
5	Output
	Ground
7	Input Return
8	Case Ground



Case Design



Dimensions	Millimeters		Inches	
	Min	Max	Min	Max
A		8.71		0.343
B		6.04		0.238
C		2.03		0.080
D	0.79 Nominal		0.031 Nominal	
E	1.14 Nominal		0.045 Nominal	
F	1.98 Nominal		0.078 Nominal	
G	0.79 Nominal		0.031 Nominal	
H		6.91		0.040
K		4.24		0.167
M		0.81		0.032
N	2.54 Nominal		0.100 Nominal	
P	1.91 Nominal		0.075 Nominal	

Typical Test Circuit

