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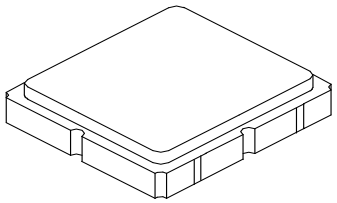
RFM products are now Murata products.

SF2176E

433.92 MHz SAW Filter

- ***Low-loss RF SAW Filter***
- ***Surface-mount 3.0 x 3.0 x 1.3 mm Package***
- ***Complies with Directive 2002/95/EC (RoHS)***
- ***Complies with AEC-Q200***



SM3030-6

Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	10	dBm
DC Voltage on any Non-ground Terminal	3	V
Operating Temperature Range	-40 to +105	°C
Storage Temperature Range in Tape and Reel	-40 to +85	°C
Usable Temperature Range	-40 to 125	°C
Solder Reflow Temperature, 10 seconds, 5 cycles maximum	260	°C

Electrical Characteristics -40 to +85°C

Characteristic	Sym	Notes	Min	Typ	Max	Units
Center Frequency	F_C			433.92		MHz
Maximum Insertion Loss, 433.12 to 434.72 MHz	IL_{MAX}			2.2	2.9	dB
Amplitude Ripple, 433.12 to 434.72 MHz				0.4	1.0	dB_{P-P}
VSWR, 433.12 to 434.72 MHz				1.6	2.0	
Attenuation Referenced to 0 dB:						
10.00 to 380.00 MHz			58	61		dB
380.00 to 423.42MHz			46	50		
443.42 to 453.42 MHz			25	30		
453.42 to 460.00 MHz			35	40		
460.00 to 700.00 MHz			50	54		
700.00 to 1000.00 MHz			42	46		
Source Impedance	Z_S			50		Ω
Load Impedance	Z_L			50		

Case Style	SM3030-6 3.0 x 3.0 mm Nominal Footprint
Lid Symbolization (Y=year, WW=week, S=shift) dot=pin 1 indicator	A09, YWWS
Standard Reel Quantity Reel Size 7 Inch	500 Pieces/Reel
Reel Size 13 Inch	3000 Pieces/Reel

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

NOTES:

1. Unless noted otherwise, all specifications apply over the operating temperature range with filter soldered to the specified demonstration board with impedance matching to 50 Ω and measured with 50 Ω network analyzer.
2. Unless noted otherwise, all frequency specifications are referenced to the nominal center frequency, fc.
3. Rejection is measured as attenuation below the minimum IL point in the passband. Rejection in final user application is dependent on PCB layout and external impedance matching design. See Application Note No. 42 for details.
4. "LRIP" or "L" after the part number indicates "low rate initial production" and "ENG" or "E" indicates "engineering prototypes."
5. The design, manufacturing process, and specifications of this filter are subject to change.
6. Either Port 1 or Port 2 may be used for either input or output in the design. However, impedances and impedance matching may vary between Port 1 and Port 2, so that the filter must always be installed in one direction per the circuit design.
7. US and international patents may apply.
8. Murata, stylized Murata logo, and Murata N.A., Inc. are registered trademarks of Murata Manufacturing Co., Ltd.

Electrical Characteristics **-40 to +105°c**

Characteristic	Sym	Notes	Min	Typ	Max	Units
Center Frequency	F_C			433.92		MHz
Maximum Insertion Loss, 433.12 to 434.72 MHz	IL_{MAX}			2.2	3.2	dB
Amplitude Ripple, 433.12 to 434.72 MHz				0.4	1.4	dB_{P-P}
VSWR, S11 S22				1.6	2.0	
Attenuation Referenced to 0 dB:						
10.00 to 380.00 MHz			58	61		dB
380.00 to 423.42MHz			46	50		
443.42 to 453.42 MHz			12	30		
453.42 to 460.00 MHz			35	40		
460.00 to 700.00 MHz			50	54		
700.00 to 1000.00 MHz			42	46		
Source Impedance	Z_S			50		Ω
Load Impedance	Z_L			50		

Case Style	SM3030-6 3.0 x 3.0 mm Nominal Footprint
Lid Symbolization (Y=year, WW=week, S=shift) dot=pin 1 indicator	A09, YWWS
Standard Reel Quantity Reel Size 7 Inch	500 Pieces/Reel
Reel Size 13 Inch	3000 Pieces/Reel

CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.

Notes:

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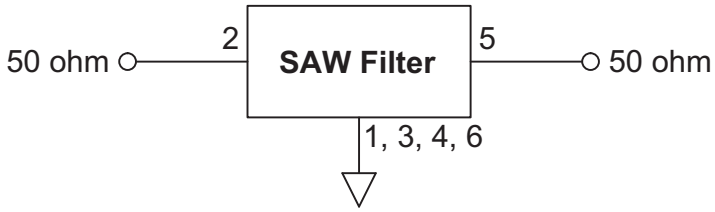
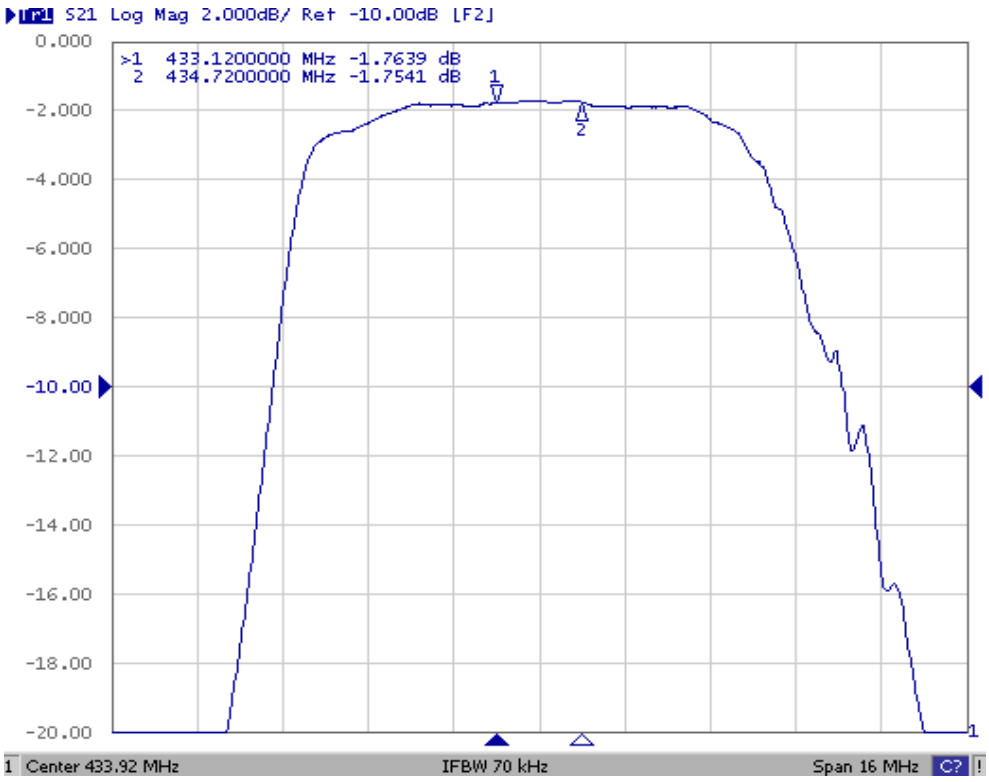
7. US and international patents may apply.
8. RFM, stylized RFM logo, and RF Monolithics, Inc. are registered trademarks of RF Monolithics, Inc

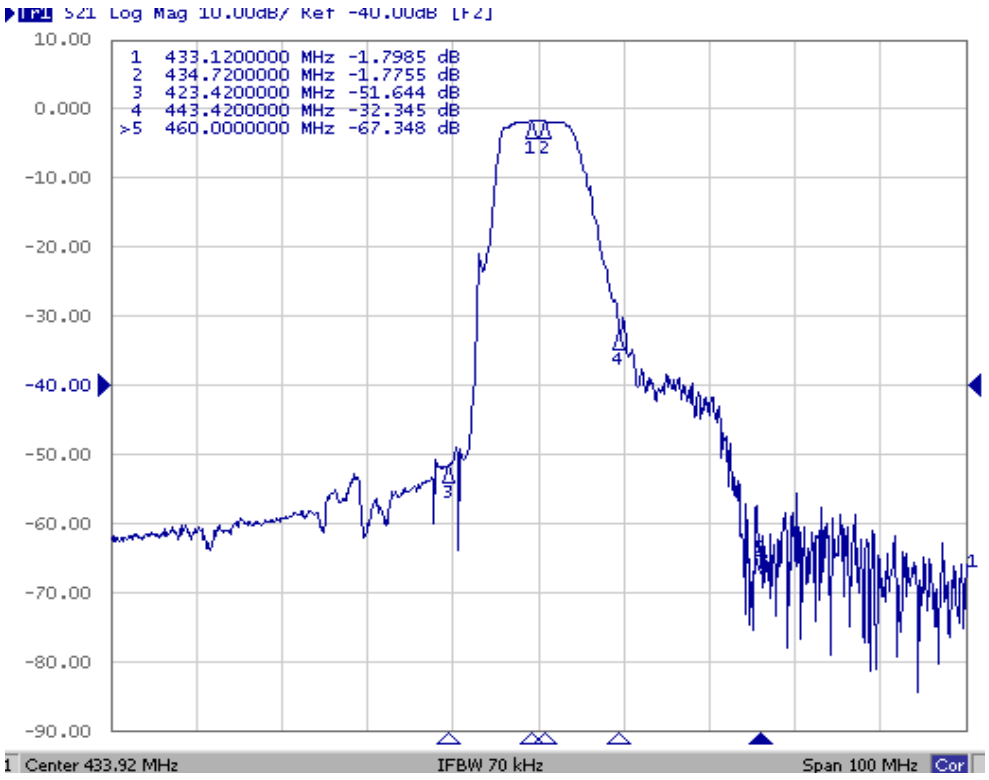
Filter Test Circuit

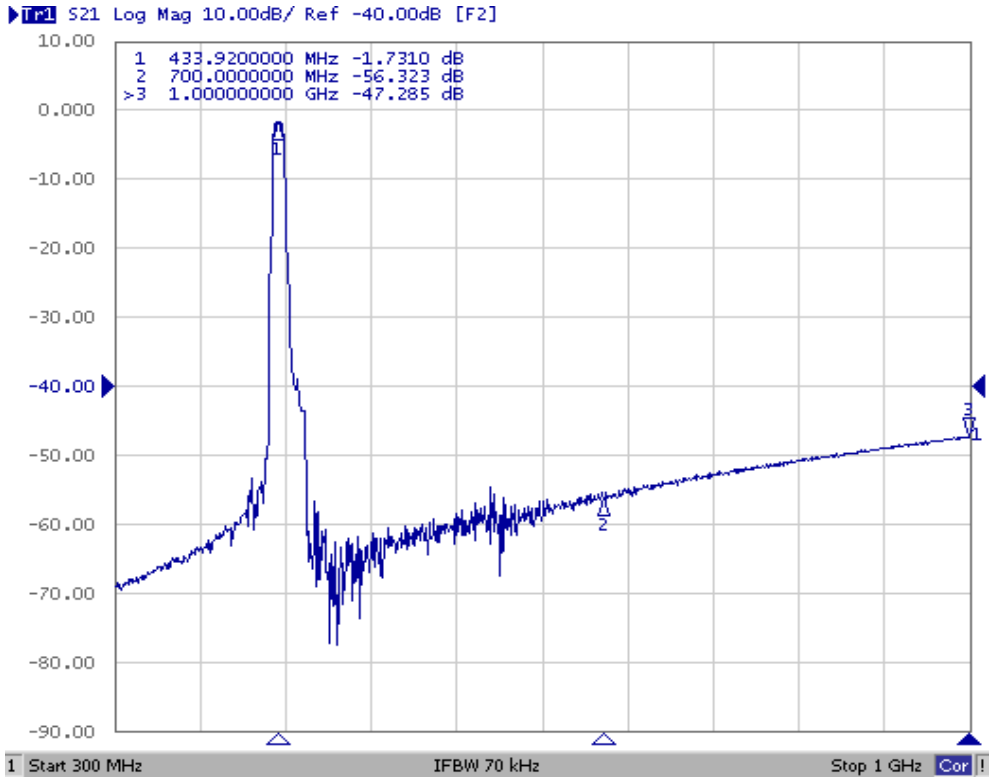


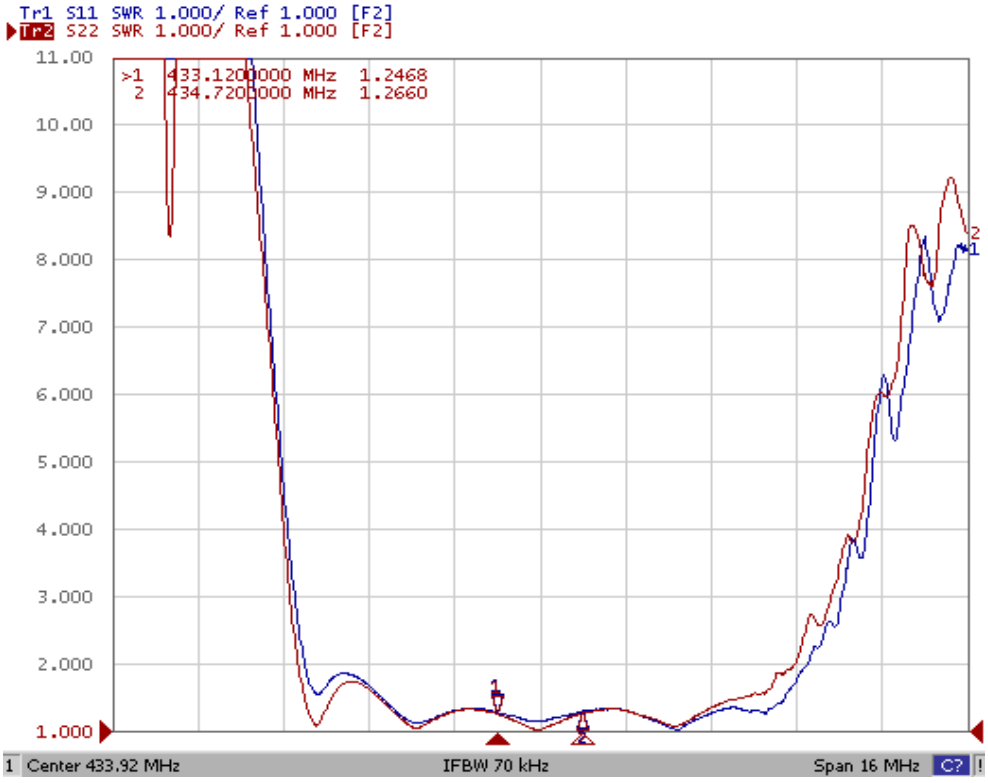
Connection	Terminals
Input	2
Output	5
Ground	All Others

Filter Response Plots



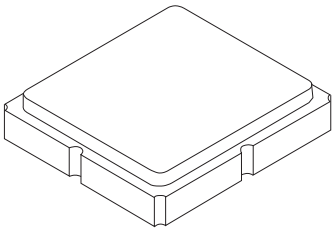


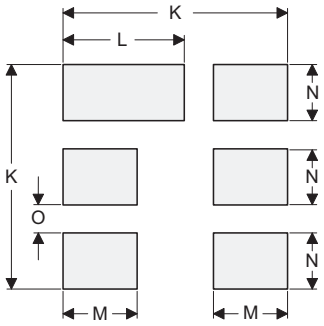




SM3030-6 Case

6-Terminal Ceramic Surface-Mount Case
3.0 X 3.0 mm Nominal Footprint





PCB Footprint Top View

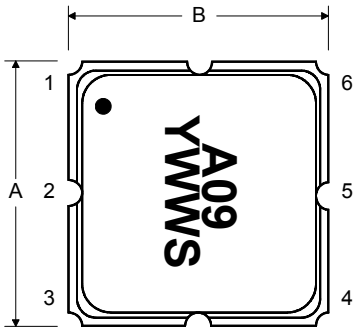
Case and PCB Footprint Dimensions

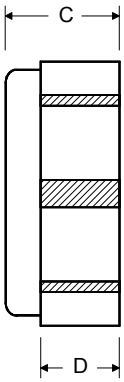
Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.00	3.13	0.113	0.118	0.123
B	2.87	3.00	3.13	0.113	0.118	0.123
C	1.12	1.25	1.38	0.044	0.049	0.054
D	0.77	0.90	1.03	0.030	0.035	0.040
E	2.67	2.80	2.93	0.105	0.110	0.115
F	1.47	1.60	1.73	0.058	0.063	0.068
G	0.72	0.85	0.98	0.028	0.033	0.038
H	1.37	1.50	1.63	0.054	0.059	0.064
I	0.47	0.60	0.73	0.019	0.024	0.029
J	1.17	1.30	1.43	0.046	0.051	0.056
K		3.20			0.126	
L		1.70			0.067	
M		1.05			0.041	
N		0.81			0.032	
O		0.38			0.015	

Case Materials

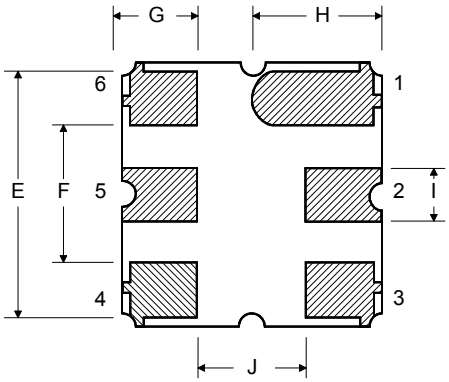
Materials	
Solder Pad Plating	0.3 to 1.0 µm Gold over 1.27 to 8.89 µm Nickel
Lid Plating	2.0 to 3.0 µm Nickel
Body	Al_2O_3 Ceramic
Pb Free	

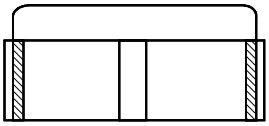
TOP VIEW



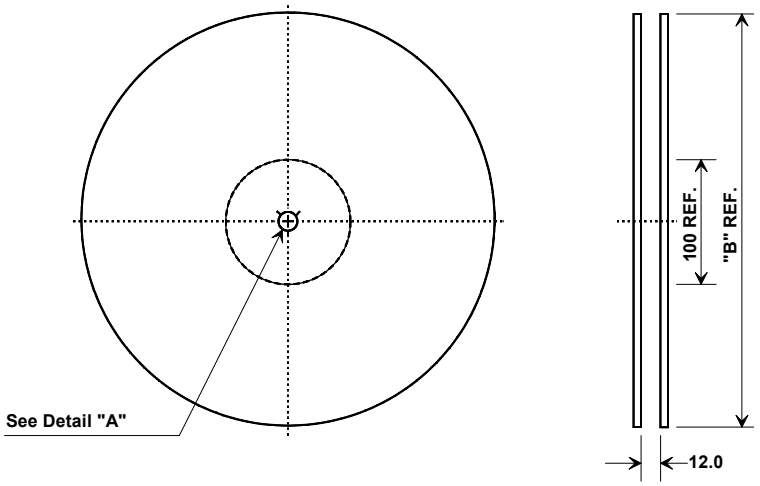


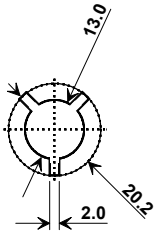
BOTTOM VIEW





Tape and Reel Specifications





"B"		Quantity Per Reel
Inches	millimeters	
7	178	500
13	330	3000

COMPONENT ORIENTATION and DIMENSIONS

Carrier Tape Dimensions	
Ao	3.35 mm
Bo	3.35 mm
Ko	1.40 mm
Pitch	8.0 mm
W	12.0 mm