

- **Designed for 402 to 405 MHz Medical Band Applications**
- **Low-loss Lithium Tantalate Design**
- **Complies with Directive 2002/95/EC (RoHS)** 

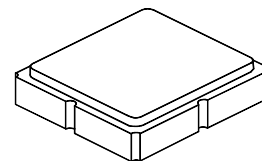
The RF3610E is a surface-acoustic-wave (SAW) filter designed to provide front-end selectivity in the 402-405 MHz band. This filter is ideal for short range wireless medical data applications where small size and low loss are important. Murata's advanced SAW design and fabrication technology is utilized to achieve high performance and low loss with simple external impedance matching.

#### Absolute Maximum Ratings

Rating	Value	Units
Input Power Level	+10	dBm
DC Voltage	3	V
Operating Temperature Range of Device	-10 to +60	°C
Storage Temperature Range of Device	-50 to +125	°C
Soldering Temperature, 10 seconds/5 cycles maximum	260	°C

**RF3610E**

**403.5 MHz  
SAW Filter**



**SM3030-8**

#### Electrical Characteristics

Characteristic	Sym	Notes	Min	Typ	Max	Units
Center Frequency at 25 °C	$f_C$	1, 2, 3		403.5		MHz
Insertion Loss	$IL_{MIN}$	1, 3		2.1	3.5	dB
Passband Amplitude Ripple, 402 to 405 MHz		1, 3		0.75	2.0	dB <sub>P-P</sub>
3 dB Bandwidth	$BW_3\text{ dB}$	1, 3		4.7		MHz
Rejection Referenced to $IL_{MIN}$						
DC to 390 MHz		1, 3	30	35		dB
390 to 400 MHz			20	28		
408 to 428 MHz			20	23		
428 to 2000 MHz			30	41		
Center Frequency Temperature Coefficient	FTC			-37		ppm/K
First Year Aging Frequency Drift		4			±10	ppm/yr
Balanced Source Impedance	$Z_S$			120		Ω
Single-ended Load Impedance	$Z_L$			30		Ω
Case Style			SM3030-8 3.0 x 3.0 mm Nominal Footprint			
Lid Symbolization (Y=year, WW=week, S=shift) dot=pin 1 indicator			914, YWWS			
Standard Reel Quantity	Reel Size 7 inch	8, 9	500 Pieces/Reel			
	Reel Size 13 inch	8, 9	3000 Pieces/Reel			

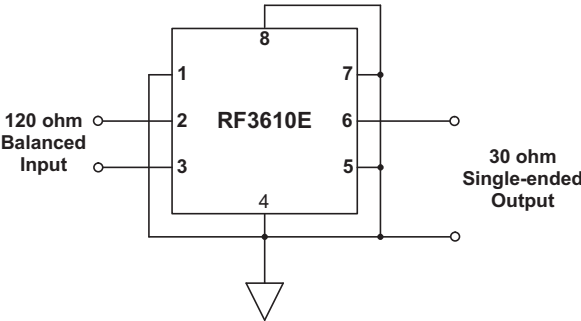
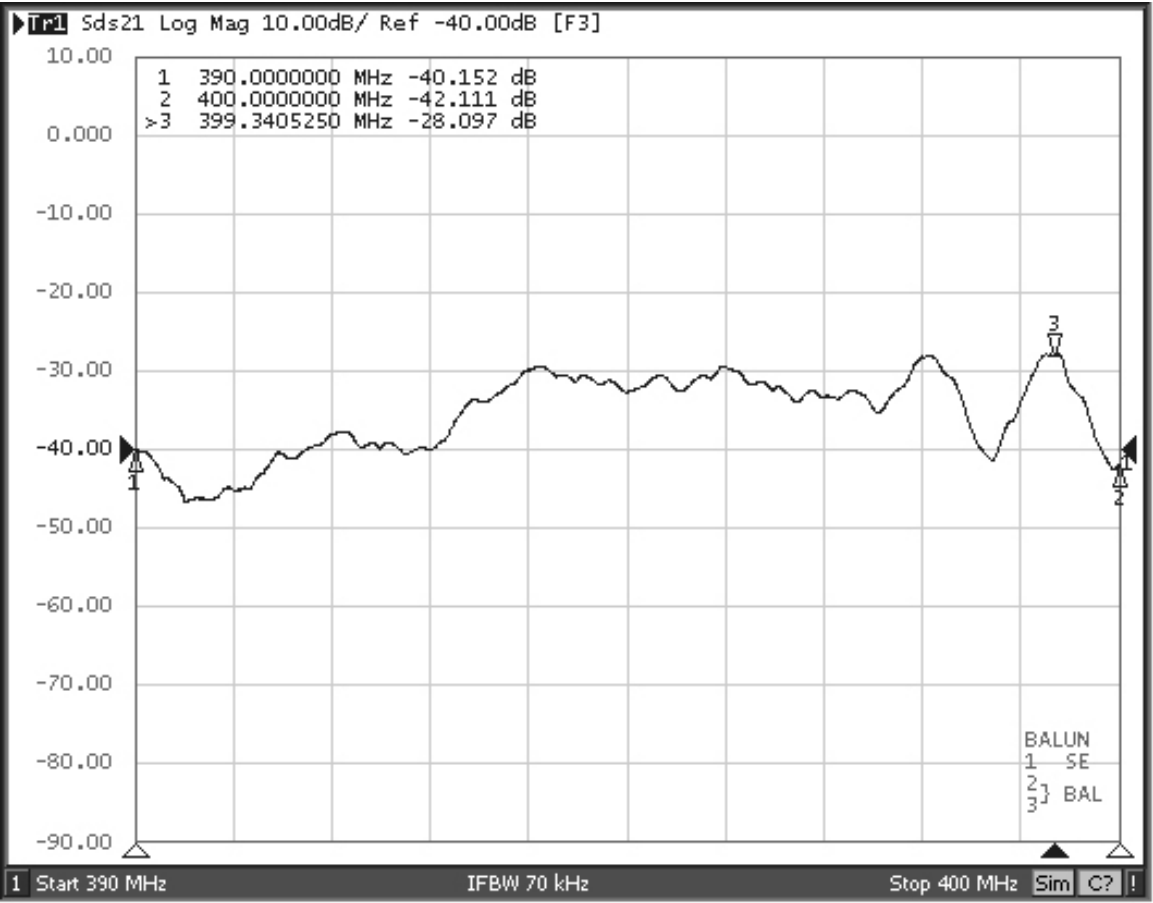


**CAUTION: Electrostatic Sensitive Device. Observe precautions for handling.**

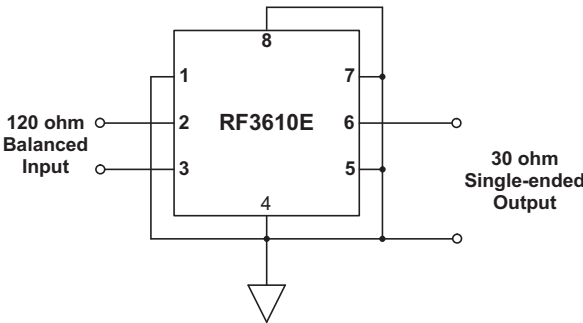
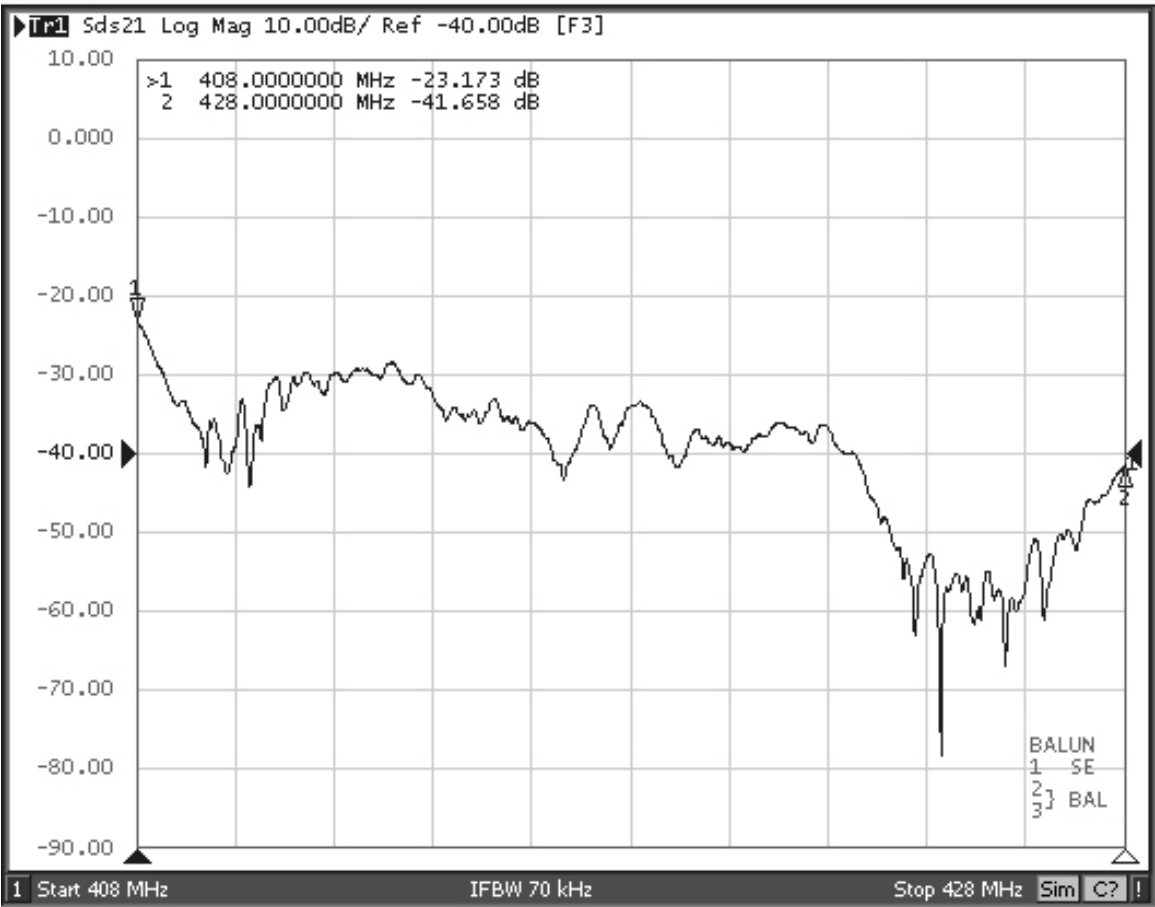
#### NOTES:

1. Unless noted otherwise, all measurements are made with the filter installed in the specified test fixture which is connected to a 50 Ω test system.
2. The frequency  $f_C$  is defined as the midpoint between the 3 dB frequencies.
3. Where noted specifications apply over the entire specified operating temperature range of -10 °C to +60 °C.
4. 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.
5. The design, manufacturing process, and specifications of this device are subject to change.
6. One or more of the following U.S. Patents apply: 4,54,488, 4,616,197, and others pending.
7. All equipment designs utilizing this product must be approved by the appropriate government agency prior to manufacture or sale.
8. Tape and Reel Standard per ANSI / EIA 481.
9. This product complies with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

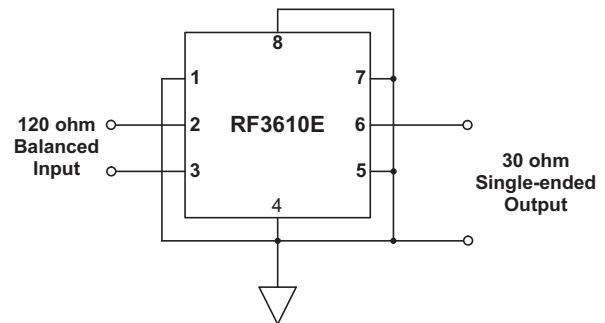
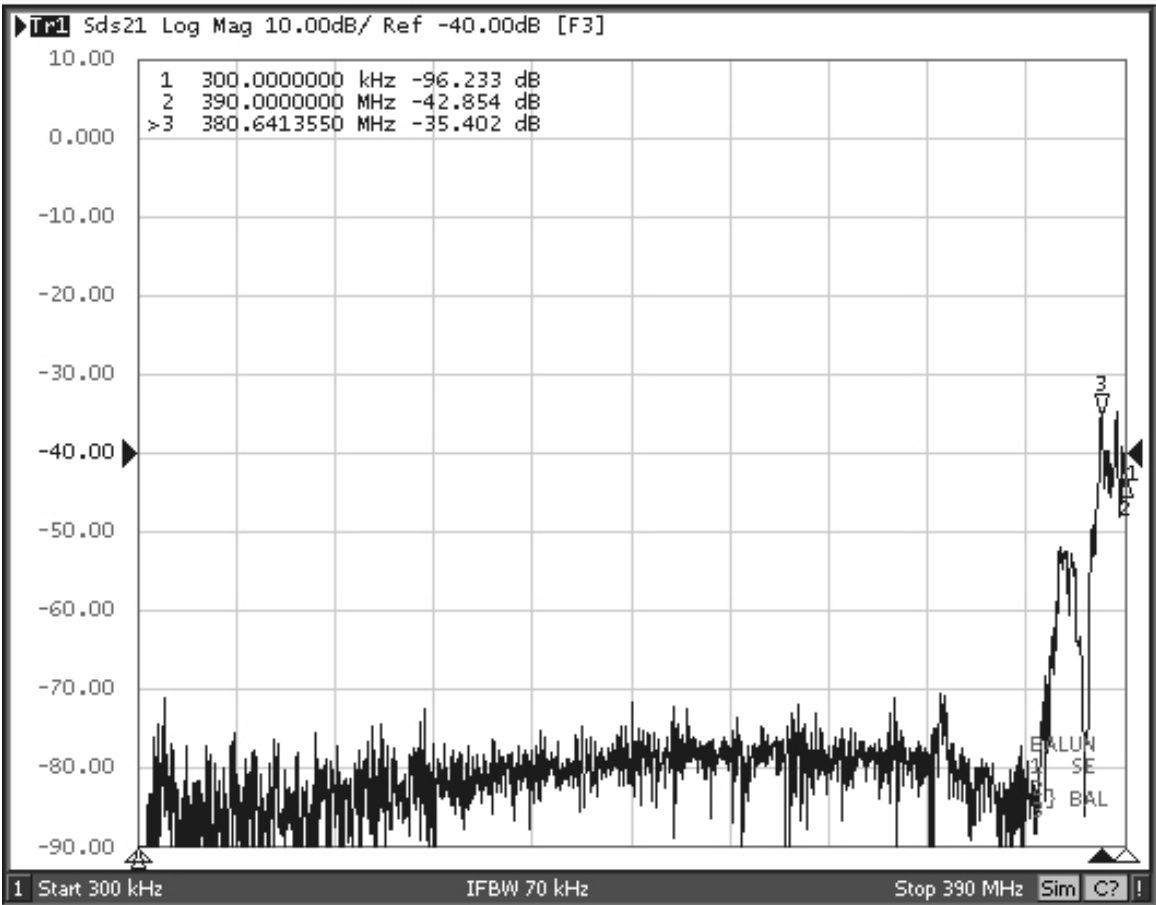
# Filter Rejection, 390 to 400 MHz



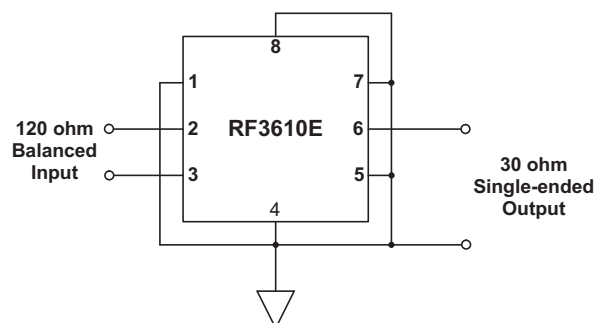
# Filter Rejection, 408 to 428 MHz



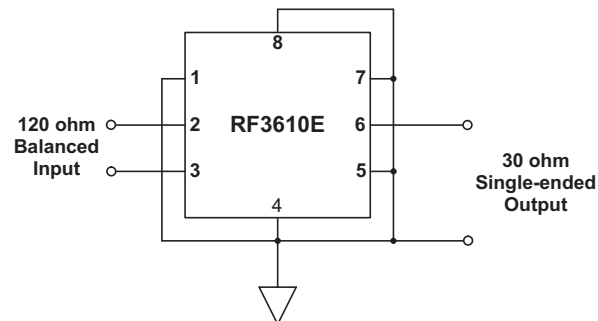
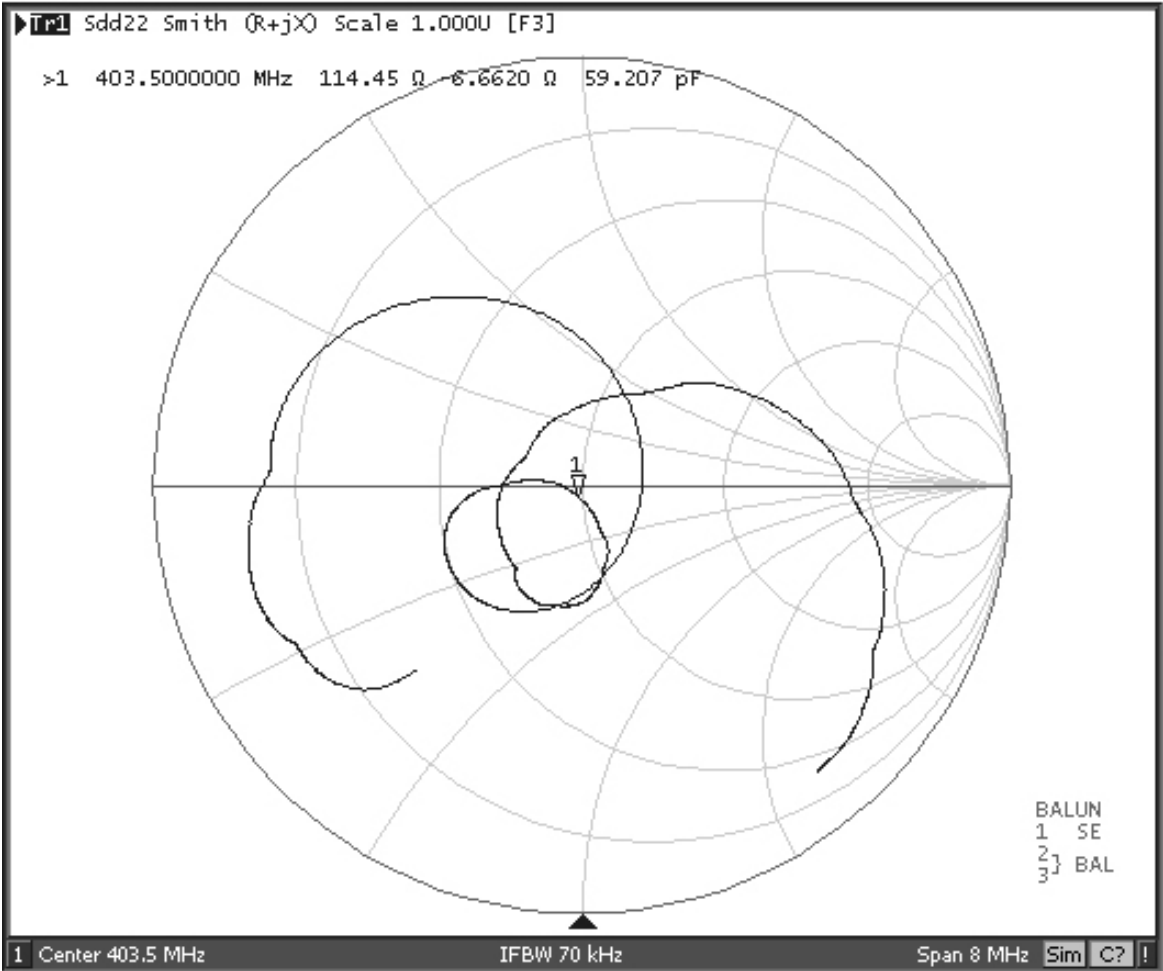
# Filter Low-side Rejection, 0.3 to 390 MHz



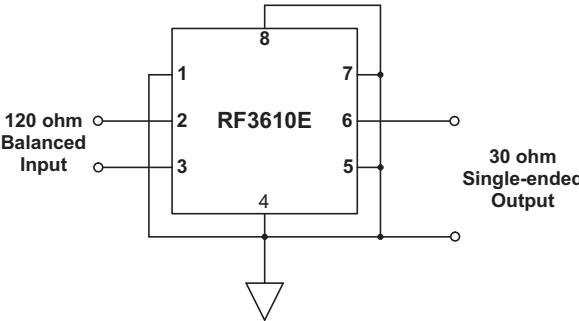
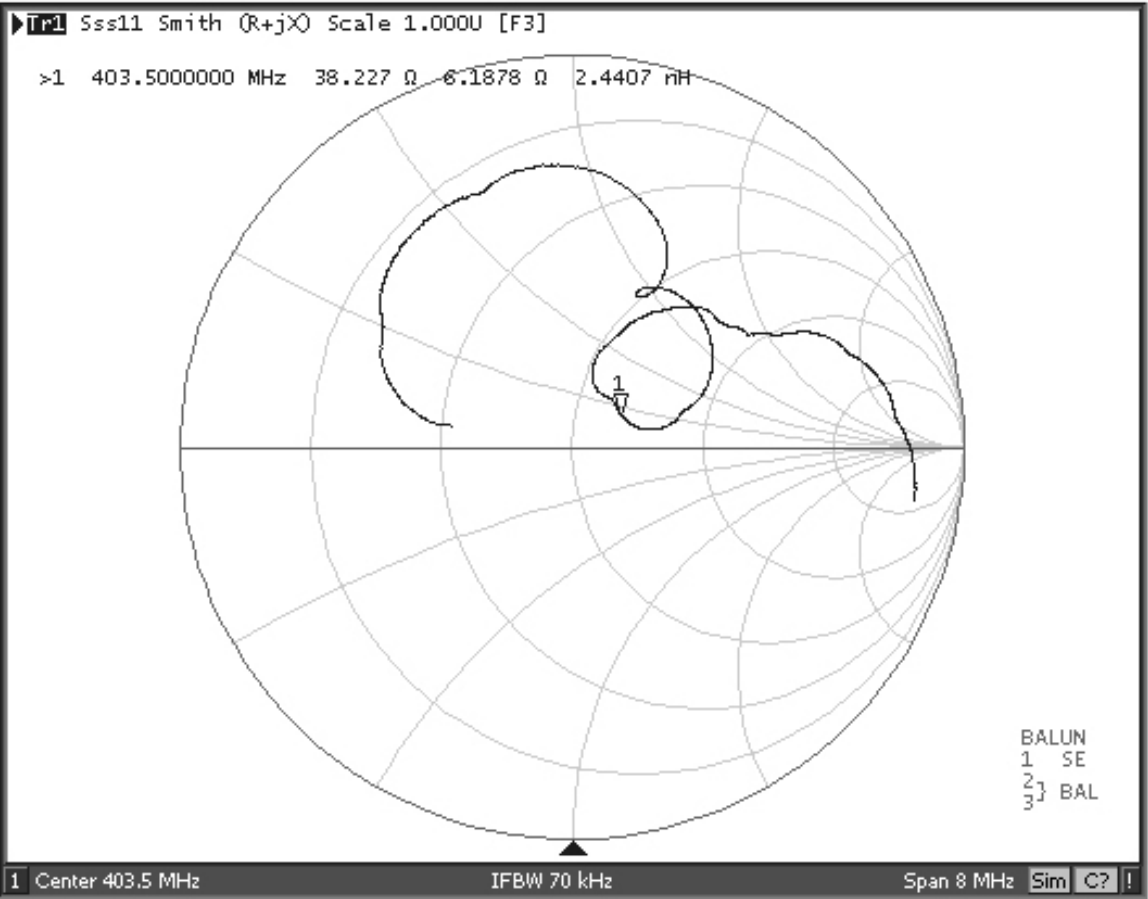
## Filter High-side Rejection, 428 to 2000 MHz



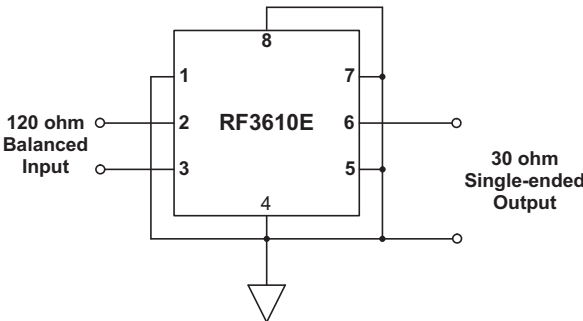
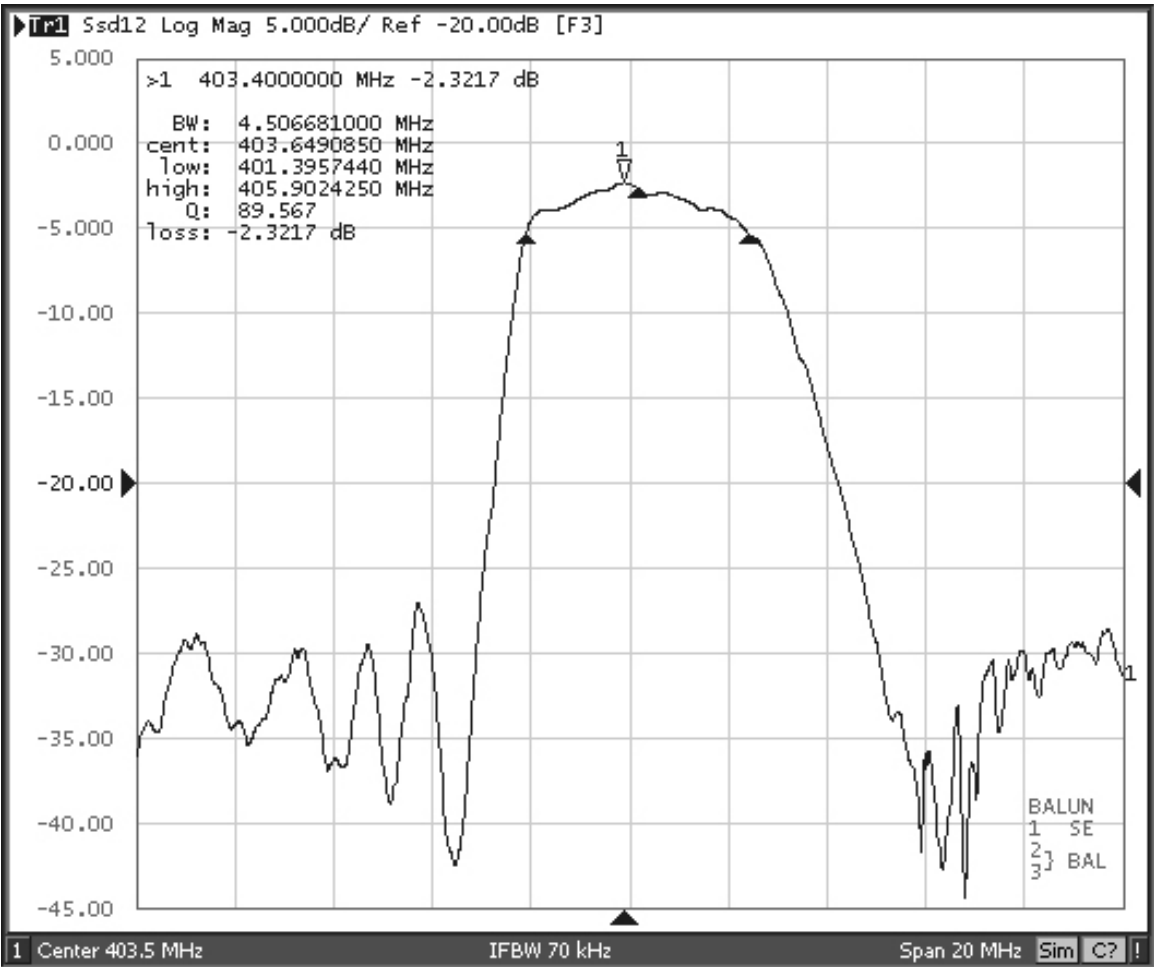
Filter Balanced Input Impedance, 399.5 to 407.5 MHz



Filter Single-ended Output Impedance, 399.5 to 407.5 MHz

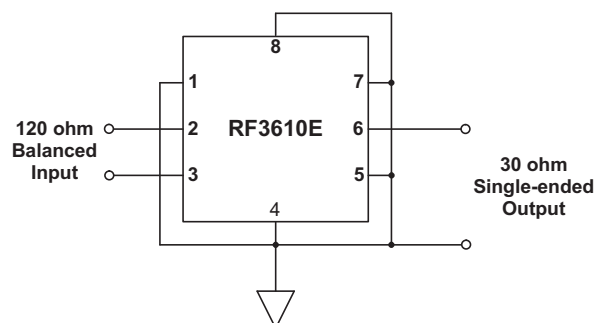
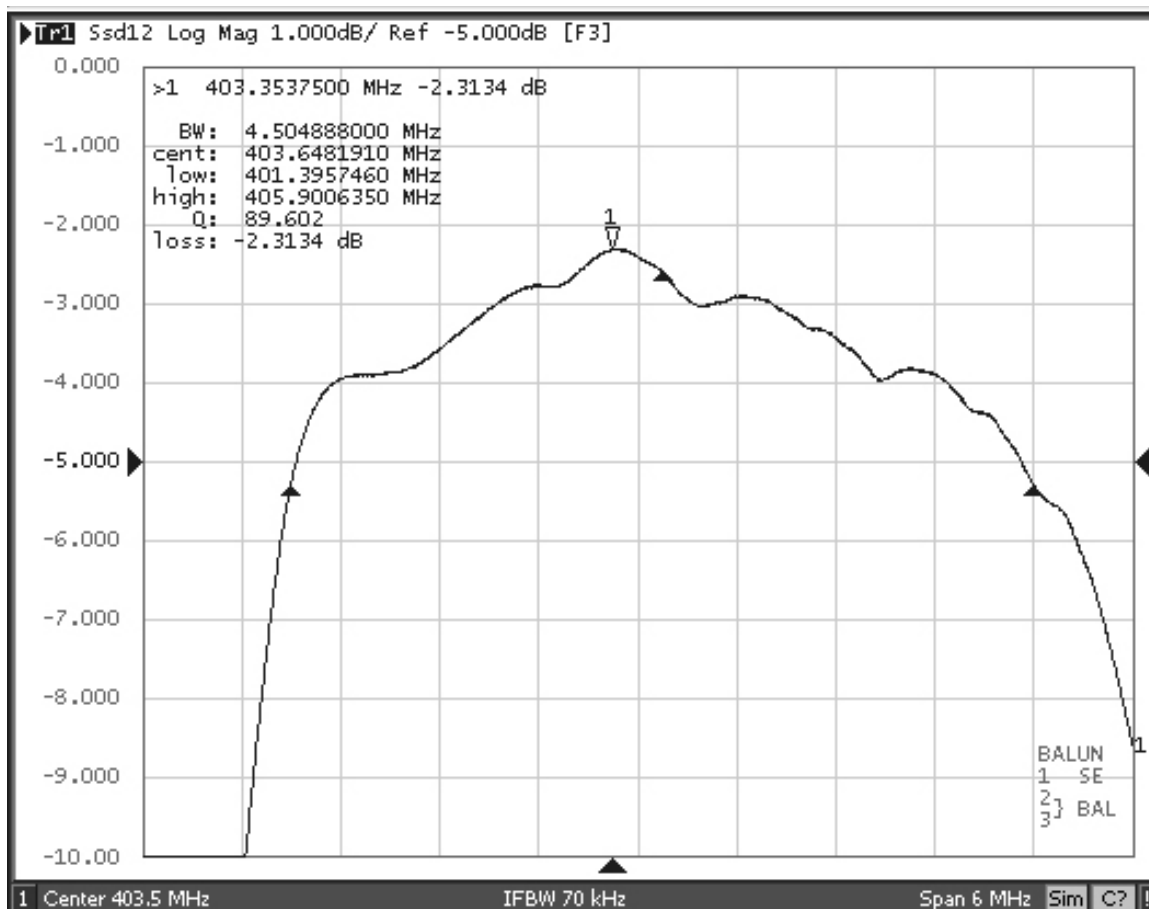


# Filter Response, 393.5 to 413.5 MHz

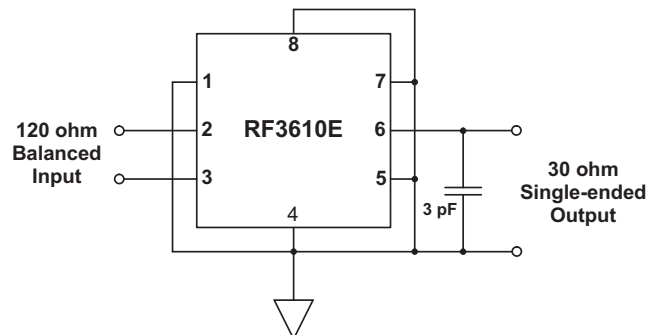
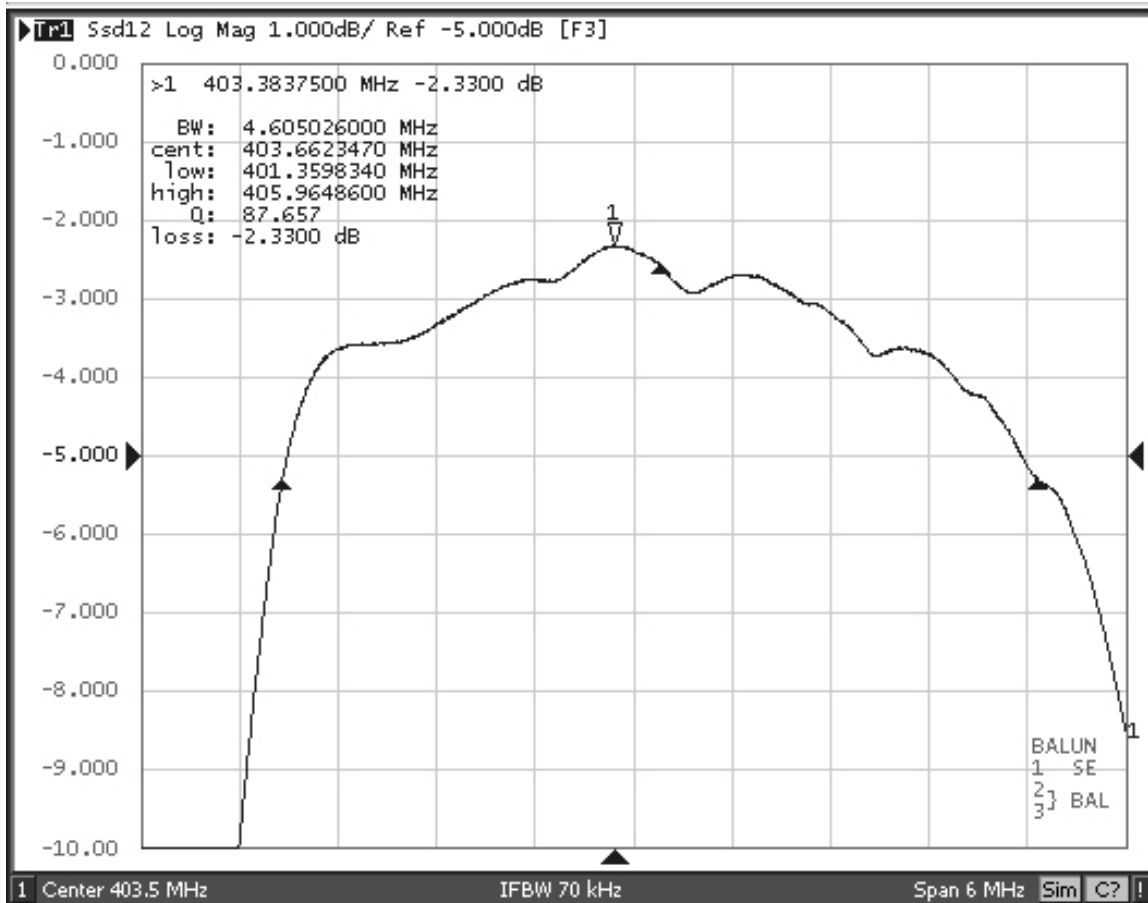




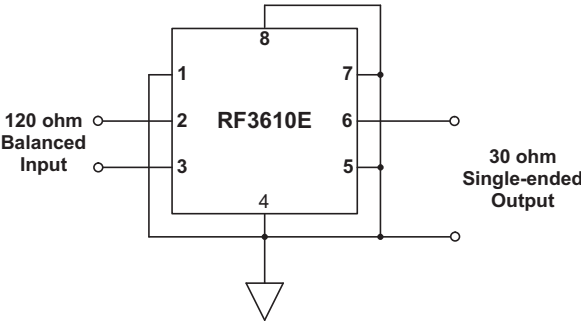
### Filter Pass-band Response, 400.5 to 406.5 MHz



## Filter Passband Response with Capacitive Tuning, 400.5 to 406.5 MHz



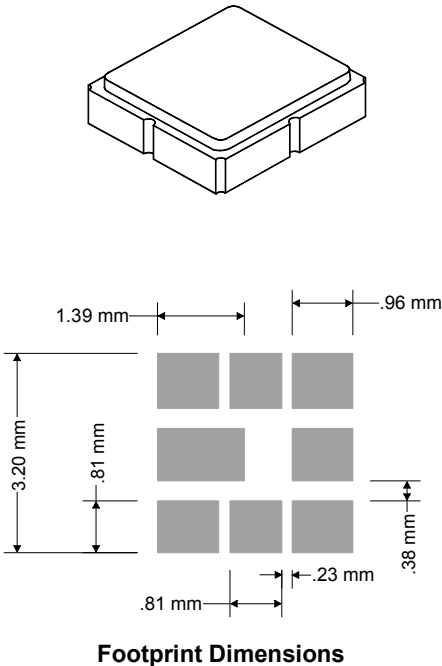
# Filter Response, 353.5 to 453.5 MHz



# SM3030-8 Case

## 8-Terminal Ceramic Surface-Mount Case

### 3.0 x 3.0 mm Nominal Footprint



Case Dimensions

Dimension	mm			Inches		
	Min	Nom	Max	Min	Nom	Max
A	2.87	3.0	3.13	0.113	0.118	0.123
B	2.87	3.0	3.13	0.113	0.118	0.123
C	1.14	1.27	1.40	0.045	0.050	0.055
D	0.79	0.92	1.05	0.031	0.036	0.041
E	0.62	0.75	0.88	0.024	0.029	0.034
F	0.47	0.60	0.73	0.018	0.024	0.029
G	0.47	0.60	0.73	0.018	0.024	0.029
H	1.07	1.20	1.33	0.042	0.047	0.052

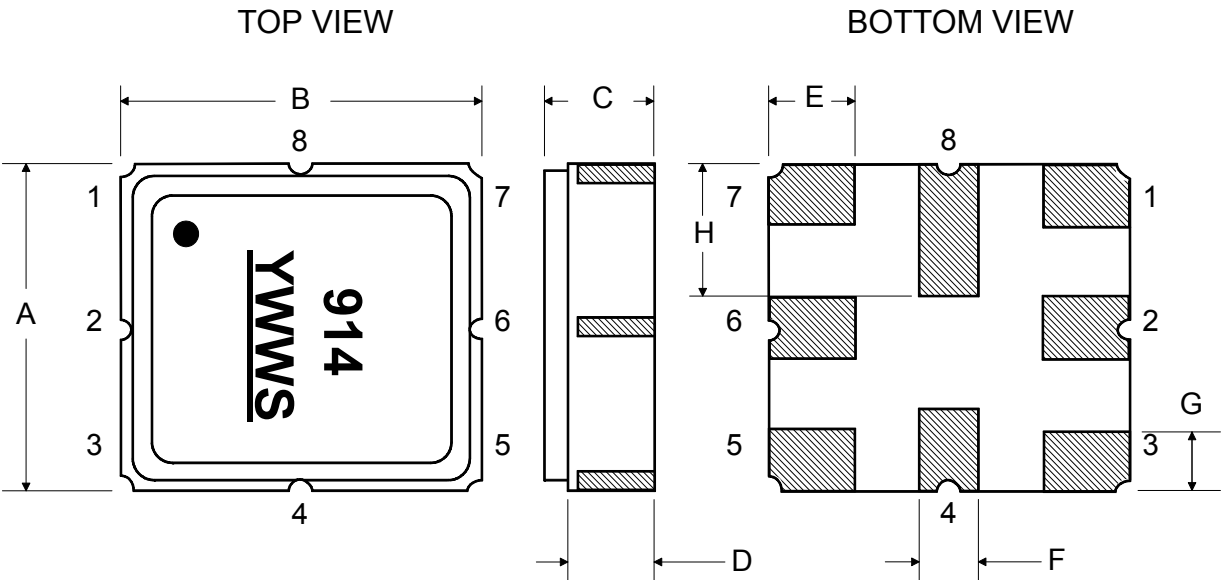
Electrical Connections

Connection		Terminals
Port 1	Balanced Input	2,3
Port 2	Single-ended Output	6
	Ground	All Others

Dot Indicates Pin 1

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 <sub>2</sub> O <sub>3</sub> Ceramic
Pb Free	



Technical drawing of a circular component. The top view shows a large outer circle and a smaller inner circle, both centered on a common point marked with a crosshair. A horizontal dashed line and a vertical dashed line intersect at the center. A leader line points from the text "See Detail 'A'" to the center of the inner circle. To the right, a cross-section view shows two parallel vertical lines representing the component's thickness. A dimension line indicates a width of 12.0. A vertical dimension line indicates a height of 100 REF. and a total height of "B" REF. Below the main view, a detail view (Detail A) shows a cross-section of the central hole. It is a circular hole with a diameter of 13.0. The hole has a central vertical slot with a width of 2.0. The distance from the center of the hole to the center of the slot is 20.2.

“B”		Quantity Per Reel
Inches	millimeters	
7	178	1000
13	330	3000

Carrier Tape Dimensions	
<b>Ao</b>	3.35 mm
<b>Bo</b>	3.35 mm
<b>Ko</b>	1.40 mm
<b>Pitch</b>	8.0 mm
<b>W</b>	12.0 mm

