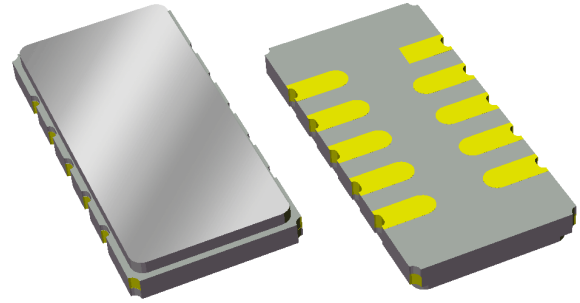


# 856980

## 70 MHz SAW Filter

### Applications

- General Purpose
- For IF applications



### Product Features

- Usable bandwidth 2.4 MHz
- Low loss
- High Attenuation
- Single-ended operation
- Ceramic Surface Mount Package (SMP)
- Small Size
- Dimensions: 13.30 x 6.50 x 1.5mm
- Hermetic **RoHS** compliant, **Pb-free**

### General Description

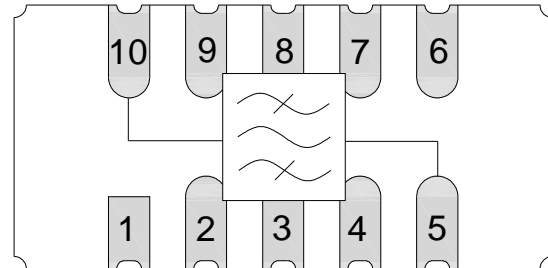
The 856980 is a high-performance IF SAW filter with a center frequency of 70 MHz and a usable bandwidth of 2.4 MHz. It is suitable for a wide variety of applications, including wireless data transceivers.

It features low loss with excellent attenuation, and is designed to be used with a single ended input and output.

The device is RoHS compliant and Pb-free.

### Functional Block Diagram

Top view



### Pin Configuration

Pin # SE	Description
10	Input
5	Output
1,6	Ground
2,3,4,7,8,9	Case Ground

### Ordering Information

Part No.	Description
856980	packaged part
856980-EVB	evaluation board

Standard T/R size = 2000 units/reel.

**Specifications**

**Electrical Specifications <sup>(1)</sup>**

Specified Temperature Range: <sup>(2)</sup> -55 to +85 °C

Parameter <sup>(3)</sup>	Conditions	Min	Typical <sup>(4)</sup>	Max	Units
Center Frequency		-	70	-	MHz
Insertion Loss	at 70 MHz	-	9	10	dB
3 dB Bandwidth <sup>(7)</sup>		2.4	2.5	-	MHz
Passband Ripple <sup>(5)</sup>	69.3 – 70.7 MHz	-	0.2	0.7	dB p-p
Phase Ripple	69.3 – 70.7 MHz	-	2	5	deg p-p
Absolute Group Delay at 70 MHz		-	1.22	-	µs
Group Delay Variation	69.3 – 70.7 MHz	-	58.4	130	ns
Stopband Attenuation <sup>(7)</sup>	5 – 30 MHz	65	72	-	dB
	30 – 50 MHz	50	56	-	dB
	50 – 63 MHz	40	47	-	dB
	77 – 85 MHz	35	43	-	dB
	85 – 105 MHz	45	48	-	dB
	105 – 130 MHz	55	58	-	dB
	130 – 150 MHz	30	33	-	dB
	150 – 200 MHz	70	74	-	dB
Source Impedance (single-ended) <sup>(8)</sup>	-	-	50	-	Ω
Load Impedance (single-ended) <sup>(8)</sup>	-	-	50	-	Ω

Notes:

1. All specifications are based on the TriQuint schematic for the main reference design shown on page 3
2. In production, devices will be tested at room temperature to a guardbanded specification to ensure electrical compliance over temperature
3. Electrical margin has been built into the design to account for the variations due to temperature drift and manufacturing tolerances
4. Typical values are based on average measurements at room temperature
5. Is defined as the peak to adjacent valley change in amplitude.
6. An external impedance matching network +/- 2% tolerance will be necessary to achieve proposed return loss
7. Relative to 0 dB.
8. This is the optimum impedance in order to achieve the performance shown

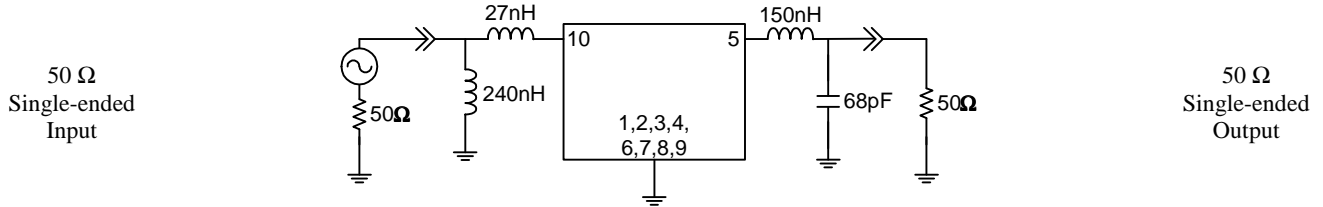
**Absolute Maximum Ratings**

Parameter	Rating
Operating Temperature	-55 to +85 °C
Storage Temperature	-55 to +85 °C

Operation of this device outside the parameter ranges given above may cause permanent damage.

**Reference Design – 50Ω SE Input, 50Ω SE Output**

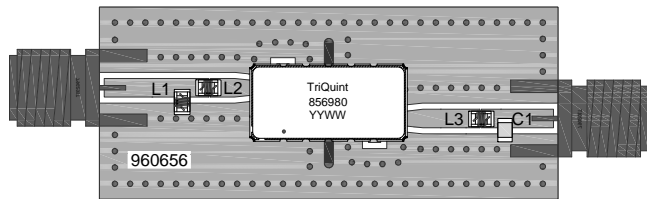
**Schematic**



Notes:

1. Actual matching values may vary due to PCB layout and parasitics

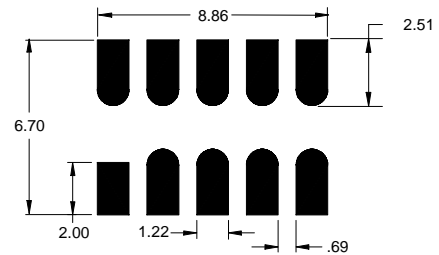
**PC Board**



Notes:

- Top, middle & bottom layers: 1 oz copper
- Substrates: FR4 dielectric, .031" thick
- Finish plating: Nickel: 3-8μm thick, Gold: .03-.2μm thick
- Hole plating: Copper min .0008μm thick

**Mounting Configuration**



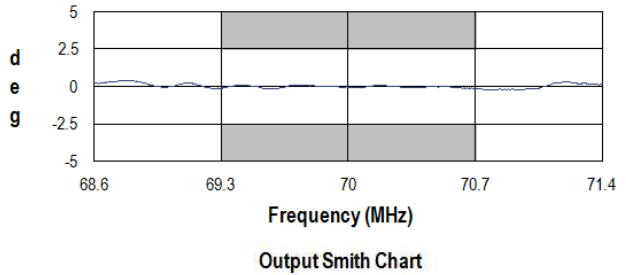
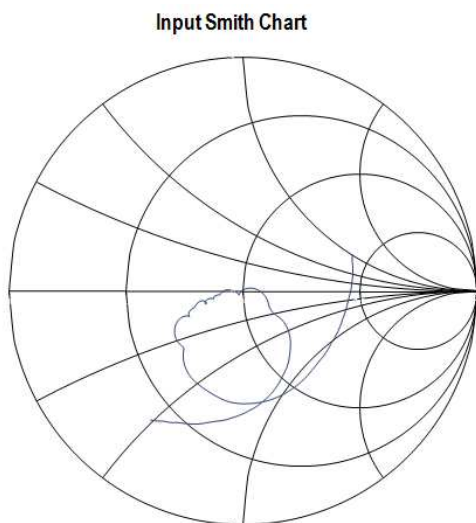
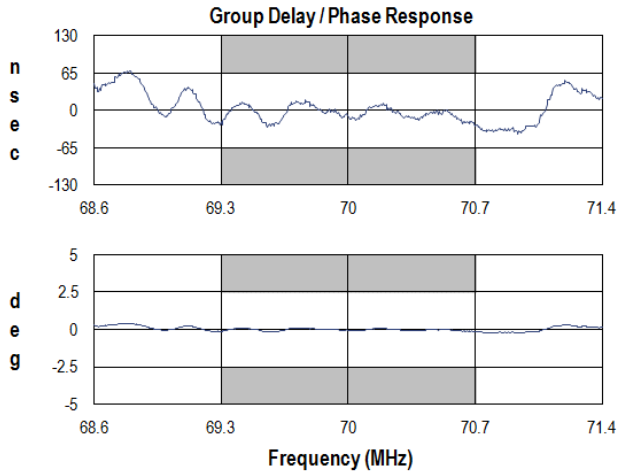
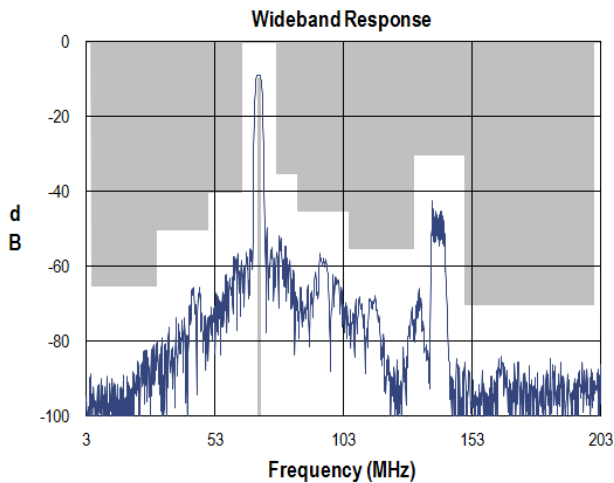
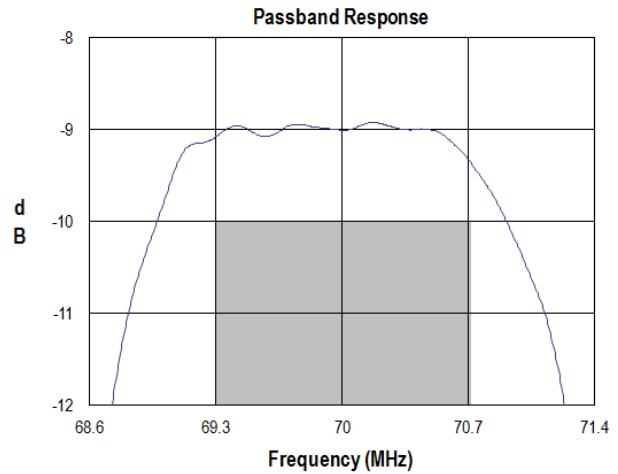
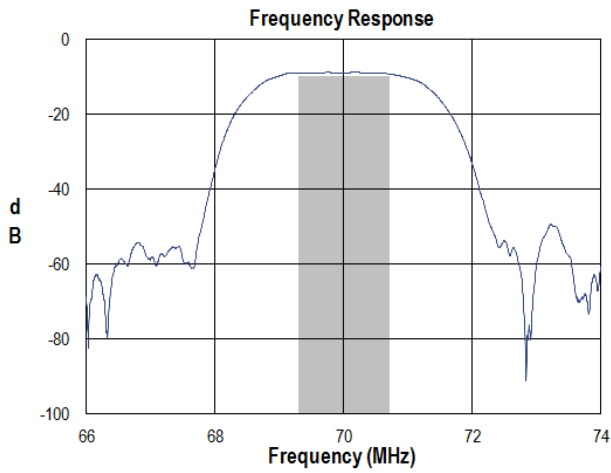
Notes:

1. All dimensions are in millimeters.
2. This footprint represents a recommendation only.

**Bill of Material**

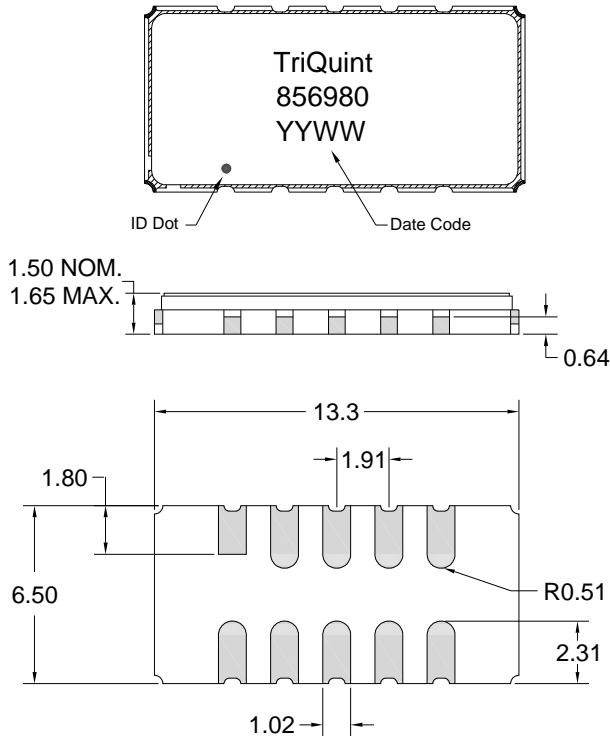
Reference Desg.	Value	Description	Manufacturer	Part Number
L1	240nH	Coil Wire-wound, 0805, 5%	CoillCraft	0805CS-241XJLC
L2	27nH	Coil Wire-wound, 08053, 5%	CoillCraft	0805CS-270XJLC
L3	150nH	Coil Wire-wound, 0805, 5%	CoillCraft	0805CS-151XJLC
C1	68pF	Chip Capacitor, 0805, 5%	Murata	GRM2165C1H680JZ01
SMA	N/A	SMA connector	Radiall USA Inc.	9602-1111-018
PCB	N/A	3-layer	multiple	960656

**Typical Performance (at room temperature)**



**Mechanical Information**

**Package Information, Dimensions and Marking**



Package Style: SMP-53C  
 Dimensions: 13.3 x 6.50 x 1.50 mm

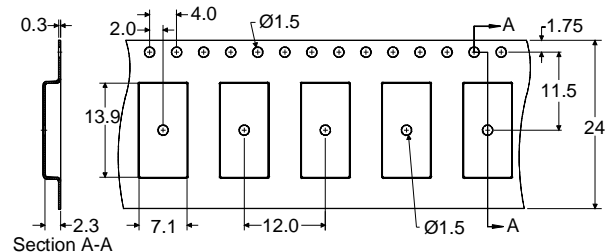
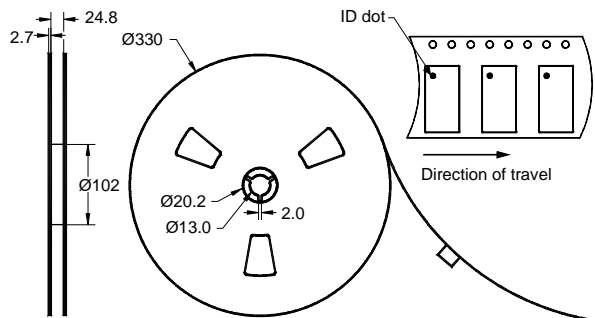
Body:  $Al_2O_3$  ceramic  
 Lid: Kovar, Ni plated  
 Terminations: Au plating 0.5 - 1.0 $\mu$ m, over a 2-6 $\mu$ m Ni plating

All dimensions shown are nominal in millimeters  
 All tolerances are  $\pm 0.15$ mm except overall length and width  $\pm 0.10$ mm

The date code consists of: YY = The last two digits of the year (2 Digits), WW = the calendar week of the year (2 Digits)

**Tape and Reel Information**

Standard T/R size = 2000 units/reel. All dimensions are in millimeters



## Product Compliance Information

### ESD Information



#### Caution! ESD-Sensitive Device

ESD Rating: TBD

Value: Passes  $\geq$  TBD V min.  
Test: Human Body Model (HBM)  
Standard: JEDEC Standard JESD22-A114

ESD Rating: TBD

Value: Passes  $\geq$  TBD V min.  
Test: Machine Model (MM)  
Standard: JEDEC Standard JESD22-A115

### MSL Rating

Devices are Hermetic, therefore MSL is not applicable.

### Solderability

Compatible with the latest version of J-STD-020, lead free solder, 260°C

Refer to [Soldering Profile](#) for recommended guidelines.

This part is compliant with EU 2002/95/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

This product also has the following attributes:

- Halogen Free (Chlorine, Bromine)
- Antimony Free
- TBBP-A (C<sub>15</sub>H<sub>12</sub>Br<sub>4</sub>O<sub>2</sub>) Free
- PFOS Free
- SVHC Free

## Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about TriQuint:

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Email: [info-sales@tqs.com](mailto:info-sales@tqs.com)      Fax: +1.407.886.7061

For technical questions and application information:

Email: [applications.engineering@tqs.com](mailto:applications.engineering@tqs.com)

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